

NORTH DAKOTA STATE CAPITOL

PARKING STRUCTURE AND OFFICE BUILDING STUDY

Bismarck, North Dakota

Final Report
September 28, 2026



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Purpose of the Feasibility Study

The State of North Dakota sought to [increase the safety and efficiency of the State House and Senate legislators](#) by providing legislators with a secure and private office space to conduct legislative business and meet with constituents, provide larger and additional House and Senate meeting rooms, provide larger joint meeting rooms, provide secured legislator parking, secured legislator circulation from parking to offices and offices to the legislative meeting rooms, provide greater ADA accessibility for legislators, staff and the public, and provide secure Legislative Council offices located to allow for future growth which will also allow for other departments to grow within the Capitol.

Goals and Objectives

In order to evaluate various options and their responsiveness to the needs of the Capitol, the design team was given various goals and objectives to meet with all design concepts. Below is a list of these objectives:

- [Provide legislative meeting rooms that are adequately sized for ADA accessibility and in a quantity to satisfy current and future needs.](#)
- [Provide a greater level of security and safety for the legislators.](#)
- [Provide secure offices for Legislative Council.](#)
- Maintain 100' vehicle security setback from the Legislative Wing.
- Provide a net gain in parking spaces to replace the existing 329 in the surface lots.
- Minimize visibility of the new building from 4th Street.
- Avoid costly and invasive grade changes.
- Allow for creation of the legislative mall as per Master Plan.
- Improve Landscaping and Expand Green Space.
- Improve pedestrian access from parking areas to the Capitol.
- Easier access to parking spaces.
- Physically link the new building to the Capitol.
- Replace the elevator located outside of the existing House Chambers.

Space Programming

Initial projections of space needs were developed with agency representatives based on the future operational plan for the facility in addition to considering and the levels of supporting functions needed. The program identified:

• Legislative and Staff Parking - Level 1	86,574 gsf
• Legislative and Staff Parking - Level 2	86,574 gsf
• Assembly Meeting Space	79,965 gsf
• Assembly Offices	44,820 gsf
• Legislative Council	41,940 gsf
○ Total	<u>343,172 gsf</u>

Facility Concepts

The selected option was based on the Legislators [operational efficiency of keeping all meeting rooms on one floor for easier public movement and by locating them on Level 3, they connected via the skyway back to the Legislative Wing at](#)

Executive Summary & Recommendations

the exiting Senate and House Chambers level. The Senate and House legislative offices were located on one level where legislators can interact more effectively, and they are one level above the meeting room. Dedicated secure stairways and elevators are designed for legislators and staff to allow efficient and safe movement between committee rooms and offices, as well as safe egress in the event of an emergency. The Legislative Council Offices were located on Level 5 as they required a larger footprint than the legislative Offices. Mechanical space was included on Level 4 to allow for proper stacking effectiveness and to centrally locate the mechanical space between floors for greater efficiency and lower operational costs.

Design Renderings

The Committee desired an exterior design that complemented the design of the existing Capitol, with similar design characteristics in order to feel integrated into the campus. Being fiscally minded, the decision was not to try to use matching limestone but rather use materials that look similar to the Capitol's. The concept design by KMA uses a precast concrete wall system which allows for color variations similar to the existing Capitol, but at a more conservative price point. The concept design uses a modern interpretation of the Capitol's Art Deco design language without mimicking it. The overall goal was to give the building a similar monumental / civic character by using symmetry, repetition, and massing of design elements in a manner fitting of a legacy building.

Schedule

The Parking Structure and Office Building Study funding request is planned for the 2027 Legislative Session and provided it is funded, design would start in the summer of 2027, construction starts in June 2028, construction completes in May 2030, and the building is occupied in June 2030.

Opinion of Probable Cost

Opinion of Probable Cost (OPCC) is a professional assessment, typically prepared by engineers or architects, estimating the likely construction cost of a project based on available design information, market conditions, and the consultant's experience. It is not a guarantee or a fixed price, but rather a best professional judgment intended to guide budgeting and decision-making during project planning.

Based on the Opinion of Probable Cost for the Concept Plans and Design as shown in this Report:

- Total Square Footage 343,172 GSF
- Construction Cost \$130,768,174
- Soft Costs \$ 21,576,749
 - Total Estimated Project Cost \$152,344,922

Introduction

The State of North Dakota hired the Klein McCarthy Architects (KMA) Team, including Houston Engineering Inc. for civil engineering, CW Structural Engineers for structural engineering, Prairie Engineering, P.C. for mechanical and electrical engineering, and Kraus-Anderson Construction for the opinions of probable cost.

Purpose of the Feasibility Study

The State of North Dakota sought to increase the safety and efficiency of the State House and Senate legislators by providing legislators with a secure and private office space to conduct legislative business and meet with constituents, provide larger and additional House and Senate meeting rooms, provide larger joint meeting rooms, provide secured legislator parking, secured legislator circulation from parking to office, and offices to the legislative meeting rooms, provide greater ADA accessibility for legislators, staff and the public, and provide secure Legislative Council offices located to allow for future growth which will also allow for other departments to grow within the Capitol.

Background

As part of an extensive initiative to improve the overall security of the North Dakota State Capitol grounds and improve the character of the surrounding site, multiple phased projects have been developed and constructed to address security, parking needs, dedicated pedestrian circulation, landscape and site amenities. As part of the existing site masterplan and further developed by KMA in 2011, Phase I provided staff parking north of the State Capitol that incorporated secure setbacks from the buildings, designated staff walkways, a more formal north drive into the site and a designated west-east circulation loop road separating parking areas, and a loading dock/receiving expansion. Phase II included additional staff parking lots located at the northwest corner of the campus and north of the west-east road. Phase III was proposed to be a completion of the 2011 masterplan with a four hundred space structural parking deck proposed just west of the legislative entrance.

Since that Phase III Feasibility Study was completed in 2014, the State legislators have continued conducting legislative business from their chamber desks with no private space to work or meet with constituents, and they park in an unsecured surface parking lot that is badly in need of upgrading. They enter the west end of the legislative wing and travel through public circulation corridors to reach their meeting rooms. The meeting rooms are not adequately sized for modern technology and ADA accessibility for the legislators, staff or the public. In addition to meeting rooms that are too small, there are not enough meeting rooms to adequately conduct legislative business, especially when trying to conduct full House and Senate Appropriation meetings and combined House and Senate meetings. The majority of meeting rooms have one entrance used by all participants and do not allow for adequate safety and security for the legislators who must exit directly into public circulation corridors versus securely to staff only areas.

As the exact configuration of plazas and parking lots to the North of the Capitol have been more fully developed, the State decided that a more detailed analysis was needed of the feasibility of constructing a parking structure along with stacking legislative offices and meeting rooms above the parking in that area, which developed into this Feasibility Study.

Goals and Objectives

In order to evaluate various options and their responsiveness to the needs of the Capitol, the design team was given various goals and objectives to meet with all design concepts. Below is a list of these objectives along with a description of how the presented design meets the stated goals:

- Provide legislative meeting rooms that are adequately sized for ADA accessibility and in a quantity to satisfy current and future needs:
 - All meeting rooms are larger in size than the current meeting rooms to allow for complete ADA accessibility of legislators, staff and public.
 - All meeting rooms have adequate seating for the staff and the public attending meetings.
 - Meeting room quantities have been increased to include one Senate Appropriations meeting room, eight Senate meeting rooms, one House Appropriations meeting room, eight House meeting rooms and one Joint Committee meeting room that can be subdivided into three smaller meeting rooms each approximately the size of the current Brynhild Hausland Room.
- Provide a greater level of security and safety for the legislators:
 - Final concept provides more secured covered parking with designated “legislator only” stairs and elevators with direct access to their offices and meeting rooms above.
 - Secure stairs and elevators from the legislative offices to the designated House and Senate meeting rooms without utilizing any public corridors.
 - Multiple exits from the legislative meeting rooms into a secure corridor system used only by legislators.
 - Interior access from the offices and meeting rooms to the Capitol via a skyway.
- Provide secure offices for Legislative Council:
 - Provided secure offices with internal future growth potential. Providing new office space outside of the Capitol will allow future growth for existing Capitol departments.
- Maintain 100’ vehicle security setback from the Legislative Wing:
 - New plaza spaces are created west of the current legislative entry and security bollards and planters are provided to prevent vehicles from accessing any area within 100’ of the Legislative Wing.
- Provide a net gain in parking spaces to replace the existing 329 spaces in the surface lots:
 - Final concept provides 332 spaces including 19 ADA parking spaces.
- Minimize visibility of the new building from 4th Street:
 - As seen in 3-D model images, the parking structure is set back from 4th Street and screened with a row of planned trees along 4th Street to retain the residential character of the surrounding area. The building is also stepped back at the upper levels, so it is not out of scale for the neighborhood.
- Avoid costly and invasive grade changes:
 - The structure as proposed provides one level set roughly equal to the existing grade at the west entry to the Capitol and one level set roughly equal to the existing grade at 4th Street. By utilizing the current grades for these two levels, the amount of soil to be moved or removed for the structure is minimized.
- Allow for creation of the legislative mall as per Master Plan:
 - The location, orientation and layout of the structure leaves the area on axis with the legislative wing of the Capitol available for the creation of a formal legislative mall. This mall both serves as a primary vehicular access point off 4th Street and as an additional formal entry point to the Capitol campus.

Cohesive landscaping would link this entry road sequence to the similarly formal sequence created in Phase II from Divide Avenue to the north.

- Improve Landscaping and Expand Green Space:
 - Phase III adds over 50 trees to the Capitol grounds and expands landscaped area in the construction limits by 30% over existing conditions.
- Improve pedestrian access from parking areas to the Capitol:
 - Through dedicated pedestrian walkways between parking rows, dedicated pedestrian crossings, clear drop-off points and pedestrian only plazas Phase III provides an enhanced ease of access from parking to the Capitol. Additionally, the planned skyway from the new building structure gives those who park there a direct interior link to the Capitol building, a clear pedestrian amenity.
- Easier access to parking spaces:
 - The parking spaces are laid out in a rectilinear fashion with one way traffic to access the 60 degree parking stalls, which are all at a wide 10' width and varying in length for oversized SUV's and extended trucks. This layout simplifies navigation through the parking, allowing legislators and staff to find parking more quickly and enter / exit the site more efficiently.
- Physically link the new building to the Capitol:
 - The current design includes a skyway that links the new building to the Legislative Wing on the same level as the existing Senate and House Chambers.
- Replace the elevator located outside of the existing House Chambers:
 - The elevator will be replaced with an ADA accessible elevator.

Overall Masterplan

As part of an extensive initiative to improve the overall security of the North Dakota State Capitol grounds and improve the character of the surrounding site, multiple phased projects have been developed and constructed to address security, parking needs, dedicated pedestrian circulation, landscape, and site amenities. As part of the site masterplan developed by KMA in 2011, Phase I provided staff parking north of the State Capitol that incorporated secure setbacks from the buildings, designated staff walkways, a more formal north drive into the site and a designated west-east circulation loop road separating parking areas, and a loading dock/receiving expansion. Phase II included additional staff parking lots located at the northwest corner of the campus and north of the west-east road. Phase III was proposed to be a completion of the 2011 masterplan with a four hundred space structural parking deck proposed just west of the legislative entrance.

Along with engineering consultants, Klein McCarthy Architects analyzed the existing area available for a parking structure along with the Capitol grounds masterplan goal for a legislative mall on the West (in line with the legislative wing), and respecting the specified 100' vehicle setback that has been the basis for planning of adjacent plazas and parking areas. It was determined that a five story structure allowed for the least costly construction and worked best with existing grades to provide logical access points from existing vehicle circulation. Access to the lower level of the structure is to occur on the west from a loop road within the campus, near Fourth Street, and access to the upper level of the structure occurs on the north and south, adjacent the legislative wing.

Though vehicular access from floor to floor is possible it was determined that the priority for as many parking spaces as possible rendered this unnecessary. Legislatures and staff are able to circulate between the lower and upper levels by means of multiple stair towers and secure elevators within the structure to their offices and meeting rooms. This entire structure connects to a skyway which leads into the Capitol. This new skyway and entry allow those parking in the structure direct access to the House and Senate Legislative offices and meeting rooms, and to the Legislative Council offices.

In addition to the construction work necessary for the parking structure itself, a series of related projects would complete the master plan for this portion of the site and be most efficiently constructed in conjunction with the structure in order to minimize disruption to building users and take advantage of construction efficiencies. These projects include the new West plaza to complete the 100' vehicle setback, the new legislative mall road and associated landscape, and revisions to the access road off Fourth Street to allow for more cohesive entry points to the site.

The existing parking lots to the west of the Legislative Wing contain 329 spaces, with 148 at the north lot and 181 at the south legislative lot. The parking provided in the new parking structure will be 166 on each of the two levels for a total of 332 new spaces for a 3 space gain in parking. The parking will be laid out at a 60 degree angle for easier parking space access, and all spaces are 10' in width and vary in length from 20' – 24' to accommodate larger SUV's and extended cab trucks. Both parking levels contain 9 and 10 ADA spaces for a total of 19 ADA spaces for legislators and designated staff.

Intangibly, the three phases improve the formality and governmental character of the Capitol grounds while also creating functional and operational benefits.

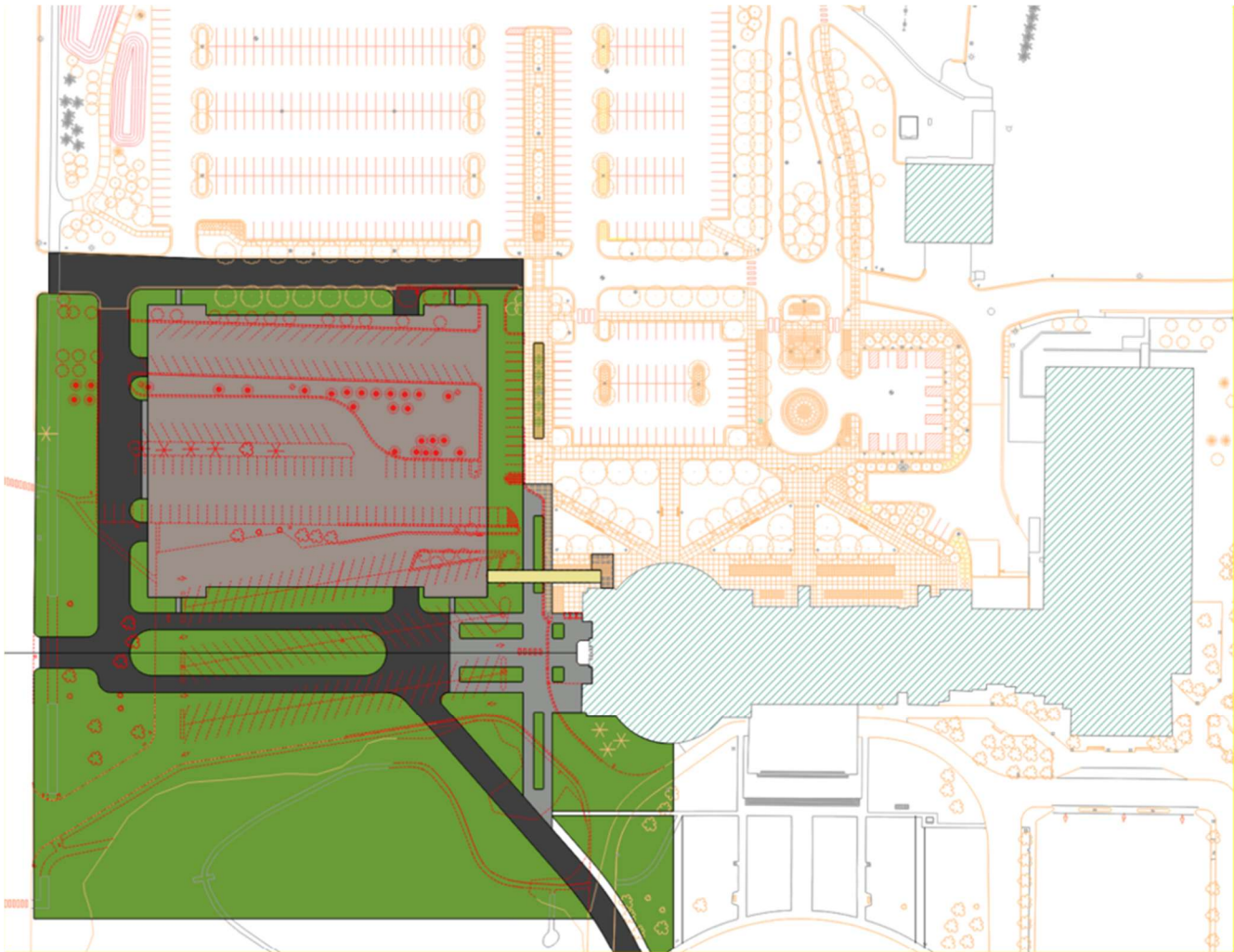
Previous Masterplan completed in 2014 – Through Phase III



Current Masterplan – Phase III Concept

The area shown in green, light gray and dark gray represents the area of work in Phase III proposed in this Study.

The area in green represents the area of site landscaping that will be modified, the area shown in light gray represents the building floor plan for the First Floor, and the proposed sidewalk/plaza extension. The area in dark gray represents the roadway system. The red lines under the proposed sitework and building represent the existing parking areas that will be affected.



Space Programming

Background

Initial projections of space needs were developed with agency representatives based on the future operational plan for the facility in addition to considering and the levels of supporting functions needed.

Agency representatives then reviewed operational concept option layouts which considered consolidation, centralization, co-location, coordination, and uses of technology. The goal of the space program was to provide the required space based on the 30 year facility needs including mechanical and electrical services.

As the concept layouts were developed, the space program was adjusted. Design concept alternatives were discussed, and the potential for shared use of spaces and facilities was explored, with the knowledge that actual facility design concepts would need to be developed for the project.

The space listings provide room-by-room estimated space requirements, and a net square feet factor (NSF) has been included for planning purposes for use in developing space preliminary concept plans. This factor, based on comparisons to other facilities, provides an estimate for additional area required for internal walls, chases, corridors, and the like, to provide an overall space allocation to accommodate the individual spaces.

Terminology

Net Square Footage (NSF) refers to the floor space assigned to a function (e.g., an exam room or office), within a building, measured from the inside face of the perimeter walls at each floor level. It excludes non-usable spaces such as exterior walls, columns, mechanical rooms, hallways, lobbies, and common areas. The NSF represents the actual space available for occupancy or use.

Department Gross Square Feet (DGSF) refers to the total area of a department or functional unit within a building, including all internal spaces such as rooms, internal corridors, walls, partitions, and circulation areas. It is calculated by applying a net-to-department gross conversion factor to the sum of Net Square Feet (NSF) - the usable, wall-to-wall area within rooms. DGSF accounts for internal departmental elements like corridor width, wall thickness, and internal mechanical or service spaces. The grossing factor varies by department type and is higher where corridors are wider or the department contains multiple smaller rooms. The grossing factor is lower in administrative areas with minimal circulation.

DGSF is used in pre-design planning to estimate department footprints, inform block schematic drawings, and support cost estimation. It does not include shared public corridors, elevators, stairs, or major mechanical spaces which are added at the floor or building gross level.

Gross Square Footage (GSF) includes all areas of a building, such as walls, mechanical systems, corridors, and common areas. GSF is the total area of enclosed space measured to the exterior walls of a building. This is an umbrella term that includes everything in a facility, even unusable spaces (think areas in between walls). It's the total space a facility takes up regardless of whether or not the space is used.

NO.	SPACE DESCRIPTION	PROPOSED AREA (GSF)
100 LEGISLATIVE BRANCH		
101	LEGISLATIVE AND STAFF PARKING - FLOOR 1	86,574
102	LEGISLATIVE AND STAFF PARKING - FLOOR 2	86,574
103	ASSEMBLY MEETING SPACE	79,965
104	ASSEMBLY OFFICES	44,820
105	LEGISLATIVE COUNCIL	41,940
	SKYWAY/STAIR & REMODELING IN LEGISLATIVE WING	3,300

GOVERNMENT SERVICES TOTAL GROSS BUILDING AREA
(GSF)

343,172

Design Narratives

Introduction

Klein McCarthy Architects (KMA) has worked with our engineering consultants to provide design narratives to accurately depict the materials and systems proposed, which allowed the cost estimating team to accurately develop cost estimates for the construction and to allow greater accuracy for the Legislative funding request. These narratives are included below.

Civil / Site Work

General Project Information

The new Capitol Parking Structure is proposed to occupy the existing North Parking Lot and West Legislative Parking lot located due west of the Capitol Building. Construction of the new Parking and Office structure will require the demolition of the existing parking lots, rerouting of existing storm sewer and site drainage, extension of new utility services for the structure, rerouting of access points and traffic circulation.

The existing utility infrastructure in the area proposed for the structure is limited. North 4th Street west of the Capitol Grounds contains no City of Bismarck sanitary sewer or watermain. The City of Bismarck utility infrastructure is located in the north-south alleyway half a block west of North 4th Street. The private sanitary sewer and watermain located on the Capitol grounds is generally located east of the Capitol Building, with sewer and water stubs extending on the south side of the Capitol Building west of the NDDOT Building. A single water line is stubbed west along Administration Avenue to just north of the Official Parking Lot. Please refer to the attached map showing the existing utility infrastructure.

Sanitary Sewer and Water Service

The new facility will require sanitary sewer service, domestic water, and fire protection service lines. As previously noted, existing infrastructure is limited and extension of the sanitary sewer and watermain will be required to serve the proposed facility. Extension of the sanitary sewer will require coordination with the City of Bismarck. Extension of the sanitary sewer from the existing sanitary sewer infrastructure on the Capitol grounds east of the project location is impractical and would require significant disruption and reconstruction of the existing infrastructure. The proposed sanitary sewer service will require coordination with the City of Bismarck. There is an existing sanitary sewer main located in the alleyway west of the project location and would be able to provide sanitary sewer service to the building. The existing sanitary manhole located at the intersection of the alleyway and Teton Ave would be tapped into and a new 8" SDR 26 PVC main would be extended east in the right of way of Teton Avenue across 4th Street terminating in a new manhole west of the parking structure. A service line would then be run into the structure as needed from the manhole. This option would require approximately 200' of City of Bismarck Street to be reconstructed.

Watermain extension for the Parking structure would be routed from the existing stub located north of the Official Parking Lot west along Administration Ave and then south in the grassed area west of the Parking Structure. From there the watermain would be routed west to an existing City of Bismarck 6" watermain located at the corner of 4th Street N and Teton Avenue. We anticipate that the new fire service and domestic water service would enter the parking structure along the north site of the Parking Structure. Connection and extension of the existing watermain will provide a looped system to ensure adequate water supply for domestic and fire service needs. Additionally, a line would be run south along the west side of the Parking Structure and then east along the south side of the parking structure. This would serve two purposes, first and foremost the line would provide fire hydrant coverage along the southern area of the project and as secondary benefit provide an opportunity to further extend the line and tie into the existing Capitol watermain

located just west of the NDDOT Building. The connection to the watermain at the NDDOT building is not anticipated as part of this project, but it provides for future improvements and additional looping of the water system to provide redundancy to the system. All new watermain would be 8" C900 PVC, with approximately 1,500' of new watermain installation and 6 fire hydrants anticipated as part of the project. The watermain extension would also require reconstruction of approximately 500' of Administration Avenue and the raised crosswalk from the Northwest Parking Lot.

Storm Sewer and Stormwater Management

The proposed Parking Structure requires rerouting the storm sewer in the project and providing drainage for the new project. Per the City of Bismarck North 4th Street has existing issues with storm water capacity and street drainage. While the Capitol Grounds are not required to comply with the City of Bismarck Stormwater Management requirements as part of the project, there will be some onsite stormwater management associated with the project. The goals of stormwater management associated with the project will be to maintain the current peak stormwater discharge rates from the project area. Maintaining the current peak stormwater discharges from the project area will ensure the no new stormwater issues or worsening of existing street flooding issues on North 4th Street will occur. The onsite stormwater management facilities are anticipated to be grassed dry bottom detention basins similar to the existing facilities located west of the Northwest Parking Lot. The final layout, sizing, and design of the detention basins will depend on the design of the project and amount of hard surface present on the site.

Currently the exiting parking lots generally sheet drain west towards North 4th Street with several storm sewer inlets collecting the stormwater and directing it to City of Bismarck storm sewer located in Teton Avenue. Existing storm sewer that drains the parking lots north of the Capitol Building will be required to be rerouted around the proposed Parking Structure. The proposed route for the new storm sewer will be down Administration Avenue. With Administration Avenue planned to be reconstructed due the needed watermain extension this reduces the impacts to the existing site as much as possible. New storm sewer will be installed between the proposed Parking Structure and Capitol Building to collect surface drainage from the area east of the Parking Structure and also west of the structure to provide drainage. It's anticipated that the new south access road and drop off loops will surface drain to the west to be collected by storm sewer and routed to the onsite stormwater management facilities.

Pavement

Proposed pavement sections for the project would consists of several proposed sections which would vary depending anticipated traffic loads and volumes. Heavy duty pavement section would be 8" of bituminous pavement over 9" of aggregate base with geotextile fabric, light duty pavement would be 6" of bituminous pavement over 6" of aggregate base and geotextile fabric. The heavy duty pavement section would be proposed for the reconstruction of Administration Avenue and the south loop roadway serving the new entrances to the Parking Structure. The remaining new pavement onsite would be light duty pavement.

Two areas of pavement reconstruction not directly impacted by the location of the Parking Structure are anticipated to need reconstruction. First as previously noted due to the extension of the watermain approximately 500' of Administration Avenue would need to be constructed. The area of this street reconstruction is needed to provide a corridor for the relocated storm sewer and watermain extension. The utility routing in the street, in lieu of locating them in the green space north of the proposed structure is intended to preserve as many of the existing trees along the corridor as possible. The second area of street reconstruction is approximately 200' of Teton Avenue west of the Capitol Grounds and would need to be coordinated with the City of Bismarck. Reconstruction of this portion of Teton Avenue and North 4th Street is required to allow for the extension of City of Bismarck sanitary sewer and watermain to the proposed Parking Structure.

Architectural

Project Areas:

Level 1 - Parking Ramp: 80,750 sf stalls, 5,824.5 sf support spaces
Level 2 - Parking Ramp: 80,750 sf stalls, 5,824.5 sf support spaces
TOTAL: 173,249 sf

Level 3 - Meeting Room Floor: 79,965 sf
Level 3 - Skyway Link and Remodel: 3,300 sf
Level 4 - Assembly Office Floor: 34,650 sf
Level 4 - Mechanical Penthouse: 10,170 sf
Level 5 - Council Office Floor: 41,940 sf
TOTAL: 170,025 sf

GRAND TOTAL: 343,172 sf

Building Envelope

Exterior walls

- Insulated Precast Panels
 - 3" Cast Concrete finished to look like limestone
 - 3" Rigid Insulation
 - 6" Structural Concrete
- Metal siding on Precast
 - 1" metal siding
 - 1" air space
 - 3" extruded polystyrene rigid insulation
 - Fluid applied weather barrier membrane
 - 6" Precast Structural Concrete
- Precast Integrated System
 - 3" Cast Concrete finished to look like limestone
 - 3" Rigid Insulation
 - Steel Frame Structure
 - 5/8" gypsum board
- Furring (at unfinished precast)
 - 3 5/8" Metal studs @ 16" o.c.
 - 5/8" gypsum board
 - Interior Finish

Floor Assemblies

- Parking Garage Lower Level
 - 6" slab on grade
 - Granular fill
- Parking Garage Upper Level
 - 3" concrete topping
 - 12" Hollow Core Plank
- Meeting Room Floor
 - 3" concrete topping

- 12" Hollow Core Plank
- Office Floors
 - 5-1/2" concrete composite deck

Roof Assemblies

- 1 1/2" metal roof decking
- Flat Roof
 - White Adhered (non-ballasted) EPDM roofing system
 - 1/4" Cover Board
 - Tapered polyisocyanurate on XPS rigid insulation
 - Vapor Barrier
 - 1/2" Deck Sheathing
 - Metal Deck
 - Steel Joist Roof Structure

Exterior Fenestration

- Aluminum storefront entrances and windows

Interiors:

Interior Partitions

- Metal stud interior partitions from floor to deck
- Concrete masonry unit (CMU) interior partitions
 - For use in elevator shaft and stairwell and as needed for structural systems.
- Precast Panel
 - For use in elevator shaft and stairwell and as needed for structural systems. (potential option)

Interior Openings

- Hollow metal doors and frames
- Solid Flush wood doors
- Door hardware
 - Commercial hardware
 - Low-energy automatic door operators at main entrance doors.

Interior Ceilings

- Standard
 - 2x2 Acoustical Ceiling Panel on 11/16" track
- Meeting Rooms
 - Gypsum Stepped Soffits
 - Acoustical Ceiling Panel
- Lobby
 - Acoustical Baffles and Clouds

Interior Finishes

- Latex wall paint throughout.
- Exposed concrete floor with sealer in mechanical and electrical rooms.
- Ceramic/porcelain tile on floors and walls in restrooms (full height).
- Carpet tile in offices, meeting rooms, storage, and circulation.
- Rubber base in rooms with carpet floor finishes - typical.

- Wood base in meeting rooms and public circulation
- Wood Panel Wainscott in meeting rooms
- Interior architectural casework
 - Solid surface countertops
 - Plastic laminate cabinets
- Committee Meeting Room Millwork
 - Wood paneled partial height metal stud walls at 1/2 circle committee desk
 - Solid surface caps
 - Plastic laminate worksurface countertops

Stairwell Finishes

- Metal Stairs and Railings
- Concrete Pan Steps
- Parking Level
 - Paint Exposed metal stairs and railings
 - Seal concrete steps
 - Schluter nosing with grip
- Meeting Level and above
 - Gypsum Soffit ceilings at stairs and landings
 - Carpet Floor Finish at steps, risers, and landings
 - Decorative Railings at public stairs

Mechanical Penthouses:

All mechanical Equipment to be housed inside the building in either specified rooms or a mechanical penthouse. Chillers to be roof mounted and screened with a louvered screening assembly.

Skyway:

Steel Beam and Post Structure
(Potential for Cast Concrete Posts)

Exterior Walls

- Precast panels finished to look like limestone
- 1" air space
- 3" extruded polystyrene rigid insulation
- Fluid applied weather barrier membrane
- 5/8" gypsum sheathing
- 6" Metal studs @ 16" o.c.
- 5/8" interior gypsum
- interior finish

Exterior Fenestration

- Aluminum storefront entrances and windows

Floor Assembly

- 4" concrete topping
- Metal Deck

Roof Assemblies

- Standing seam metal roofing tapered from the center
- Tapered polyisocyanurate on XPS rigid insulation
- Vapor Barrier
- 1/2" Deck Sheathing
- Metal Deck
- Steel Joist or Beam Roof Structure

Structural

Design Codes & Specifications:

2024 International Building Code as amended by the North Dakota State Building Code

Minimum Design Loads for Buildings & Other Structures (ASCE 7-22)

Building Code Requirements for Structural Concrete (ACI318-11)

Specification for Structural Steel Buildings (AISC 360-10)

Design Loads:

Superimposed Dead Loads

2 nd Floor	135 psf	(12" H.C., 2" topping slab, M&E, sprinkler, finishes, misc., etc.)
3 rd Floor & Above	85 psf	(5 1/2" composite slab, structural steel framing, M&E, sprinkler, finishes, ceiling, etc.)
Roof	30 psf	(metal roof deck, structural steel framing, ceiling, M&E, sprinkler, etc.)

Live Loads

Offices	50 psf	(+15 psf interior partition allowance)
Assembly Areas	100 psf	
Exit Corridors & Stairs	100 psf	
Mechanical Rooms	125 psf	(+50 psf for 4" concrete housekeeping pads)

Wind Loading

115 mph, Category III, Exposure B (pressures per IBC and ASCE7-22)

Snow Loading

42.5 psf (plus drifting as required per IBC and ASCE7-22)

Structural Systems:

2nd Floor Framing (over parking)

- 12" Hollow Core Plank
- 3" cast-in-place concrete topping slab – reinforced with #3 bars at 18" o.c. each way – fibermesh added
- Precast Concrete Beams (spanning east-west at edges of drive lanes/column lines
 - approximately 3 to 4 feet in)
- Precast Concrete Columns (spaced at approximately 30' o.c. – within parking striping lines)

3rd Floor & Above Framing

- 5 1/2" cast-in-place concrete composite slab cast on 2" VLI x 19 gage (2VLI19 by Vulcraft) galvanized composite metal form decking reinforced with #4 bars at 16" o.c. each way
 - Composite Structural Steel Beams (spaced at approximately 7 to 8' o.c.)
 - approximately W21x44 beams
 - Composite Structural Steel Girder Beams (spaced at approximately 30' o.c.)
 - approximately W24x84 girder beams
 - Structural Steel Columns (stacked directly atop precast concrete columns on parking level)
 - Full height steel columns to be moment spliced at one point along their height – splice to consist of field bolted flange and web plates with tension controlled bolts and testing
 - Approximately W14x68 columns
- All structural steel is to be shop prime painted

Roof Framing

- 1 1/2" metal roof decking (1.5B20 by Vulcraft)
 - Roof decking to be shop prime painted (field painted if exposed to view)
 - Structural Steel Bar Joists or steel wide-flange beams (spaced at approximately 5' o.c.)
 - 18k7 Bar Joists or W14x22 beams
 - Structural Steel Girder Beams (spaced at approximately 30' o.c.)
 - Steel girder beams to be cantilevered over the steel columns with double angle beam splice connections.
 - W21x44 girder beams
 - Structural Steel Columns
- All structural steel is to be shop prime painted

Exterior Wall System

- 6" steel stud curtain wall framing with precast concrete exterior wall panels (4" maximum thickness finish panels only with insulation – not structural load bearing panels – possible shear load developed into precast panels)
- Curtain wall studs and precast panels supported vertically and laterally by structural steel frames at 3rd floor, 4th floor and roof and by precast beams at 2nd floor.

Lateral Load Resisting System

2nd Floor & Above

Steel x-bracing – comprised of HSS tubes, placed at each end of each exterior wall and at 100' o.c. max along exterior walls.

Main Floor (Parking Garage)

Precast Concrete Wall Panels – placed near corners and along exterior walls as required extending from foundation to underside of 2nd floor framing above.

Foundation System

Cast-in-Place Concrete Frost Wall and Spread Footings (pending soils report and geotechnical recommendations) (assuming competent bearing soils at 2,500 psf allowable soil bearing capacity).

All exterior wall and pad footings to bear at 5'-0" below exterior grade for heated areas (7'-0" for unheated areas). Interior pad footings may be placed with top of footings at 12" below finish floor elevation in heated

areas. Pad footings in unheated areas to extend to a minimum depth of 7'-0" below exterior grade or finish floor elevation.

Exterior foundation walls where grade is at FFE on interior and exterior shall be designed as a frost wall as outlined below. Exterior foundation walls where exterior grade is at a higher or lower elevation than the interior FFE shall be designed as cantilevered retaining walls with cantilevered retaining wall footings and reinforcing. Cantilevered retaining walls for a grade difference of 6' between interior and exterior shall contain an approximately 7'-0" wide x 16" thick footing with longitudinal and transverse reinforcing bars. Cantilevered retaining walls shall be reinforced with #7 vertical bars spaced at 12" o.c. and #5 horizontal bars spaced at 16" o.c.

Interior Pad Footings:	16'-0" x 16'-0" x 32" thick, reinforced with 14-#9 bars each way
Exterior Pad Footings:	13'-0" x 13'-0" x 26" thick, reinforced with 12-#8 bars each way
Exterior Frost Fdn Walls:	14" thick x 4'-0" reinforced with 2 - #5 top and bottom, #5 horizontal & vertical at 16" o.c.
	Concrete Piers engaged with foundation walls at all precast concrete columns above along exterior walls (piers reinforced with 6-#6 verticals and 2 sets of #3 ties spaced at 12" o.c. (3 sets of ties at top of piers) and 6 - #6 dowels to footings
Exterior Strip Footings:	2'-6" wide x 12" thick unreinforced footings

Parking Garage Slab-on-Grade:
5" thick reinforced with #4's at 20" o.c. each way
6" compacted granular base with 15 mil vapor barrier
Cure & Seal
Caulked Expansion, Construction and Contraction Sawcut Joints

Skywalk

Structural steel trusses within longitudinal exterior walls of the skywalk extending full height of skywalk from floor to roof.
Composite steel beams transverse across skywalk between bottom chords of trusses spaced at 8'-0" o.c. supporting 5 1/2" composite concrete floor slab on 2" x 19 gage composite steel decking (2VLI20 by Vulcraft or equal)
Steel roof beams transverse across skywalk between top chords of trusses at approximately 5'-0" o.c. supporting 1 1/2" type B roof decking (1.5B20 by Vulcraft or equal)
6" steel stud and precast concrete finish panels at exterior walls
Steel trusses to bear on steel columns each end of the skywalk with columns each end pulled away from the new and existing exterior wall/framing to form separate supports and foundations for an expansion joint between the skywalk and the new and existing buildings each end.
Steel columns to be supported by cast-in-place concrete piers and pad footings. Pad footings to be placed at the same depth as but separated from the adjacent new and existing building foundations.

Materials:

Concrete

Footings 3,000 psi, 0.45 w/c ratio, 4" slump, non-air-entrained, 30% fly ash

Foundation Walls	4,000 psi, 0.41 w/c ratio, 4" slump, air-entrained 5-7%, 30% fly ash
Structural Slabs	4,000 psi, 0.41 w/c ratio, 4" slump, with super, non-air-entrained, 15% fly ash
Precast Concrete	6,000 psi, 0.39 w/c ratio, 3" slump, with super, air-entrained
Topping Slab	3,000 psi, 0.45 w/c ratio, 4" slump, with super, non-air-entrained, 30% fly ash
Exterior Stoop Slabs	4,500 psi, 0.41 w/c ratio, 4" slump, with super, air-entrained 5-7%, 30% fly ash

Structural Steel

Wide Flanges	ASTM A992 (Grade 50)
HSS Tubes	ASTM A500 (Grade B)
Steel Angles & Channels	ASTM A36 (Grade 36)
Steel Plates	ASTM A572 (Grade 50)

Reinforcing Steel

ASTM A615 (Grade 60)
ASTM A706 (Grade 60 – weldable)

Special Inspections:

The Owner shall furnish Special Inspections through an Independent Testing Agency with supervision of a Licensed Professional Engineer as outlined in Chapter 17 of the current International Building Code.

Mechanical

Codes and Standards

The following codes and standards will apply this project. The codes listed are minimum requirements, and the Engineer or Architect may exceed these standards. Standard design team practices and specifications will usually address any items not sufficiently covered in standard codes. Unless otherwise noted, the most current version of the codes indicated will be utilized. Other codes and standards may apply.

- NFPA 13
- International Mechanical Code
- International Fuel Gas Code
- North Dakota Plumbing Code
- International Energy Conservation Code, as adopted by the State of North Dakota.
- ASHRAE
 - 15 – Safety Standard for Refrigeration Systems
 - 62.1 and 62.2 – Ventilation for Acceptable indoor Air Quality

UTILITY AND SITE REQUIREMENTS

Domestic Water Service:

Domestic cold water service is typically brought to within 5' of the building by the general or site contractor and extended into the building by the plumbing contractor. The facility will be served by a new domestic cold water service estimated to be 4" in size. The service will be brought into a dedicated water service room or the main mechanical room that will

include floor drains and appurtenances required. The final line size will be determined later in design and will include provisions to extend service to future planned additions as required.

Fire Sprinkler Service:

Fire sprinkler service is typically brought to within 5' of the building by the general or site contractor and extended into the building by the plumbing contractor. The fire sprinkler service will be 6" in size, and located within a dedicated Fire Sprinkler area in the Central Plant.

Sanitary Sewer Service:

Sanitary waste service will be brought to within 5 feet of the building by the general or site contractor and extended into the building by the plumbing contractor. The sewer service will be 6" in size. The location of the sewer services will be determined during further design. Multiple sewer services may be required depending on depth and location of nearby mains and to limit the total depth required inside the building.

Sizing of the waste systems is to be based on $\frac{1}{4}$ " or $\frac{1}{8}$ " slope per foot or otherwise according to Plumbing Code.

Storm Drainage Service:

Storm drain service will be brought to within 5 feet of the building by the general or site contractor and extended into the building the plumbing contractor. Multiple separate storm drain service connections may be required to minimize total depth required inside the building. Each drain leaving the building will be sized for the amount of roof area served.

The storm drainage system will include an overflow drainage piping system that will discharge above grade at various locations using roof drain outlets. The roof drain outlets will be equivalent to either a Zurn Z199-DC or Zurn Z199 and be sized per the flow requirements of the attached piping.

Sizing of the storm drain systems is to be based on $\frac{1}{8}$ " slope per foot, and 3" of rain per hour. Slope may differ depending on code and size of pipe.

Gas Service:

A new gas service will be brought to the building by the local gas utility company. The utility company typically installs everything up to and including the meter, with the plumbing or mechanical contractor extending the service from that location into the building. The owner typically pays for the utility company to provide and install the service and meter separately from the Building Contract. The preferred location for the gas service meter is on the east exterior wall of the Central Plant.

The service provided will be a Firm Gas rate unless otherwise directed by the Owner. The service will be sized to serve the building heating systems, steam humidification systems, domestic hot water heating systems, and other terminal units that may use gas such as unit heaters.

The sizes and pressures of the firm gas services will be determined in design but can be estimated at 2 PSI. With a service of this size, a 2 PSI gas line will be brought from the meter to feed equipment to minimize the size of gas piping within the building. It is assumed the utility company would bring a minimum of 4 PSI gas to their meter.

FIRE SPRINKLER SYSTEMS

The system will be NFPA 13 compliant. There are currently planned to be a single fire sprinkler service brought to the building with a number of zones depending on layout and square footage. Wet pipe systems are planned throughout the facility, but dry type systems are optional in certain areas if freezing is a concern. It is assumed that electrical and

data rooms will be served with wet pipe systems unless otherwise determined during design.

With the location of the building being the middle of Bismarck, and taking into account the overall height of the building, it is assumed at this time that a fire pump will not be required. A line item should be carried in pricing for the event that one is, if the design changes from this preliminary report to a final design.

Standpipes will be placed as required by design and code.

The fire sprinkler piping in exposed areas is to be painted. The prep and painting are to be performed by other contractors (not the fire sprinkler contractor).

A fire department Siamese connection will be installed on the exterior wall for fire fighter hoses. A horn and strobe light will be mounted above the Siamese connections. The connection will be piped to the main fire water supply line so the system can be pressurized by fire department truck pumps. All manual valves will be monitored using tamper switches. The location of the Siamese connection will be determined during design and coordinated with local fire department officials.

There will be additional fire department connections placed at locations as directed by the local authority having jurisdiction for their access.

Materials:

- Fire Main and Branch Piping: Steel
- Fire Sprinklers in ceiling spaces: Flush and concealed
 - Special finishes for sprinkler heads and covers will be required in spaces that require them (wood finishes, blacked out ceilings and clouds.)
 - Special requirements may be added depending on the insurance the owner carries
- Fire Sprinklers in exposed spaces: Exposed pendant, guards as required by design.

PLUMBING SYSTEMS

Domestic cold, hot, and recirculated hot water will be piped throughout the building to supply fixtures as required by the design. The hot water line will be piped so that a minimal amount of recirculation circuit setters is required. Public lavatories will have hot water piped within 2 pipe feet of the fixture per code guidelines.

Piping Materials:

- Domestic Water: Copper.
- Waste, vent, and rain conduit: PVC or cast iron as required by air plenum and code. Contractors option to fire insulate PVC piping in air plenums.

Plant Services – Domestic Cold Water

A water meter is required for the main building. A pressure reducing station (typically 2 pressure reducing valves for varying flow characteristics) is typically designed for new buildings of this size on city service, and during design it will be determined if it is necessary (once street and service pressures are known). At this time, a water softening and conditioning skid will be installed to serve the steam humidifier systems to minimize maintenance.

Plant Services – Domestic Hot Water

The domestic hot water system will consist of natural gas fired condensing tank type water heaters sized for the fixture units served. One system of 2 tanks is estimated to be required. The water heaters will output a minimum of 140 degree

hot water to prevent legionella growth.

Where code requires master temperature mixing valves for domestic hot water, Master Mixing Stations will be used. The mixing stations will include an electronic digital valve for temperature mixing, all required sensors and controls, a recirculation pump, and a frame for mounting to a wall or convenient location. The recirculation system will include circuit solvers or manual balance valves to ensure hot water flow at the end of any branch piping. The hot piping layout will be such that a minimum amount of balance devices will be required.

All fixtures that use hot water will be provided with a local tempering valve or be equipped with an integral mixing device that is code compliant to prevent scalding or burns.

Plumbing Fixtures and Specialty Equipment

General fixtures used in all areas of the building may include:

- Break Room / Mothers Room Sink: Counter mounted single or double bowl stainless steel fixture with 1 gpm manual pull out faucet. Connections will be provided for tabletop ice makers and coffee makers as required.
- Conference Room Sink: Counter mounted single bowl stainless steel fixture with 1 gpm manual faucet.
- Janitors Sinks: Molded stone, 24"x24" floor mounted with integral drain and stainless steel domed strainer with lint basket outlet. Mop hangers, manual faucet with vacuum breakers and check stops included. Faucet to be lever handled, basis of design Chicago Faucets 897-CP.
- Exterior freeze proof hydrants will be provided as required and will have keyed or other locked function as required. Minimum 1 per exterior directional wall.
 - Freeze proof hydrant: exterior non-freeze wall hydrant, anti-siphon, self draining, key operated or otherwise locked as directed, with garden hose outlet. To be compatible with exterior wall construction.
- Electric Water Coolers: Bi-level where required, front push bar for activation. Each station will include a bottle filler and water filter.
- Wall faucets: Wall mounted chrome hose outlet with vacuum breaker.
- Floor drains: round or square grid as determined by flooring type, waste connection size as determined by service. Institutional screws will be used where placed within the secure inmate perimeter or in inmate areas.
- Floor Cleanout: round floor cleanouts placed as required by code or underground piping design. Sized per connection size.
- Floor Sink: square floor sink provided to drain appliances that have a larger load than condensate drain. Partial grids to be provided where required for pipes.
- Trench Drains: Basis of design will be ACO KlassikDrain modular systems sized as required for use of the bay. A sump box will be installed where required.
- Spot drains will be used in the parking garage with concrete sloped to them to gather water drainage. These drains will include trash baskets for ease of cleanout and to minimize the amount of refuse that reaches the interceptor.
- Sand/Oil Interceptor: Polyethylene or concrete sand/oil separator with capacity as required to serve the parking garage. Cover to be water and gas tight, and have a rating for vehicle traffic.

General restroom fixtures may include:

- Lavatory: Counter or wall mounted porcelain lavatories with 0.5 gpm battery operated sensor faucets. For public use fixtures, a point of use hot water mixing valve will be provided to avoid scalding potential.
- Shower: Commercial grade solid surface unit where required by design and where tile is not provided (basis of design are Inpro solid surface systems). Shower faucet to be commercial grade pressure balance mixing valve, adjustable temperature lever, ADA units to include diverter valve.

- Tub/Shower: Commercial grade solid surface unit (for basis of design see showers above). Tub/shower valve to be commercial grade with pressure balanced mixing valve, adjustable temperature lever, ADA units to include diverter valve and shower wand with hose.
- Water Closets: Wall mounted porcelain water closets, 1.28 gpf battery operated sensor flush valves. Mounting heights to be determined by ADA.
- Urinals: Wall mounted porcelain urinals, 0.5 gpf battery operated sensor flush valves. Mounting heights to be determined by ADA. The flush valves will be mounted within the chase in areas inmates are unsupervised.
- Floor drains: round or square grid as determined by flooring type, waste connection size as determined by service. Institutional screws will be used where placed within the secure inmate perimeter or in inmate areas.
- Floor Cleanout: round floor cleanouts placed as required by code or underground piping design. Sized per connection size.

MECHANICAL PLANT SYSTEMS

Plant Services – Heating

The building service heating system generally consists of condensing natural gas boilers, a heat recovery chiller, boiler circulator pumps, heat recovery chiller circulator pumps, building circulator pumps, expansion tanks, air and dirt separators, and an automatic glycol fill station.

The main heating plant will be multiple high efficiency gas fired condensing water boilers with the heat recovery chiller (described in the Cooling Plant below) piped in a primary/secondary orientation with the building's terminal heating units and domestic hot water heat exchangers. The quantity of boilers is estimated for this stage of design, and will be adjusted as design continues. The individual boilers will be sized to provide redundancy. Advanced Thermal Hydronics, Fulton, Lochinvar, PattersonKelly, and Thermal Solutions will be allowed to provide boilers (with others being added or removed during design or by Owner request). The pumps serving the boilers shall be constant speed or speed controlled by the boiler depending on manufacturer recommendations. The quantity and size of the boilers will be determined during design.

The boiler venting material will be 29-4C stainless steel, and air intake will be PVC or CPVC as required by the boiler manufacturer installation guidelines. The boiler vent and intake will terminate on the same plane of the building for pressure equalization.

The secondary hot water system will be redundant pumping systems utilizing 3 pumps; 2 that are fully redundant for winter loads, and 1 smaller pump for seasonal and reheat in shoulder and summer months. The basis of design for the secondary pumps will be base mounted Bell & Gossette 1510 pumps with variable frequency drives (VFD). Redundancy will be achieved in the system by providing multiple fully redundant pumps.

Accessories will include:

- Automatic glycol fill station, basis of design is Wessels GMPD25100 with 100 gallon tank, (1) ½ hp motors, and (1) 120V connections with a 120V remote alarm output.
- Side stream filter, basis of design is Wessels BF11-2, 80 GPM bag filter, and circulator pump.
- Combination air/dirt separator with magnetic insert, basis is B&G R12-F with strainer.
- Bladder expansion tanks. Basis of design is (3) B&G B2500 or other as required based on expansion calculation for the system.
- Other accessories will be provided as required by the project.

The boilers, pumps, and hydronic accessories will be located in the main mechanical space.

The heating hot water system will be designed at 140°F max delivery temperature for heating, with 30° to 40°F dT designed on the heating coils and terminal devices. The hot water will contain 40% ethylene glycol solution for freeze protection down to -13°F and burst protection down to -60°F.

Plant Services – Humidification

Redundant gas fired low pressure steam boilers will be used to provide humidity control. Steam will be piped from the boilers to each air handler or zone duct that will contain dispersion tubes. Make up water will be treated domestic water, and require a water conditioning skid to minimize boiler maintenance.

Plant Services – Cooling

The cooling plant will consist of air cooled chillers, a heat recovery chiller, circulator pumps for the air cooled chillers, circulator pumps for the heat recovery chiller, expansion tanks, air and dirt separators, and an automatic glycol fill station. The general service building cooling pumps will be a distributed system, with each air handler or zone of cooling devices having their own dedicated pump with either a VFD or electronically commutated motor (ECM) for varying flow capability. The basis of design chillers shall be Smardt AD series air cooled chillers.

Cooling will be provided with air cooled chillers located outside the building in an equipment courtyard on the roof, and a heat recovery chiller that is capable of providing both hot and chilled water simultaneously as well as reject/absorb heat from the outdoors via a gas heat exchanger using CO₂.

The air cooled chillers will have the capability of either providing building cooling only. The heat recovery chiller will provide heating service hot water as well as chilled water, and either reject or absorb heat as needed from the outdoors. Each air cooled chiller and the heat recovery chiller will have their own dedicated pumps.

The chilled water loop will be piped in a primary/secondary orientation with primary pumps for the chillers/heat recovery chiller and distributed pumps located out in the system serving the terminal devices. The primary pumps will service chillers and the heat recovery chiller. The secondary/district pumps will be located on equipment coils or zone pumps, and either be dedicated to individual or groups of terminal devices throughout the building. Redundancy will be achieved in the primary systems by providing multiple fully redundant pumps. Redundancy for the air handler coils will be achieved by sizing similar pumps, and providing spare pumps for quick replacement.

The air cooled chillers will not operate during the winter months. The heat recovery chiller will provide chilled service water at all times during the year, and be sized to cool IT equipment rooms, and other cooling loads as required.

Accessories will include:

- Automatic glycol fill station, basis of design is Wessels GMPD25100 with 100 gallon tank, (1) ½ hp motors, and (1) 120V connections with a 120V remote alarm output.
- Side stream filter, basis of design is Wessels BF11-2, 80 GPM bag filter, and circulator pump.
- Combination air/dirt separator with magnetic insert, basis is B&G R12-F with strainer.
- Bladder expansion tanks. Basis of design is B&G B2500 sized for the expansion capacity
- Other accessories will be provided as required by the project.

Other accessories will be provided as required by the project. The central plant where the heat recovery chiller is installed will require a gas detection, exhaust, and supply air to purge refrigerant leaks and provide cooling to the space.

Basis of Design Equipment:

Air Cooled Chillers: 2 chillers. Daikin "Pathfinder" model 200 ton air cooled screw chillers

Heat Recovery Chiller: Flow Air to Water Heat Pump, 100 ton.

The chilled water system will be set up as follows:

Primary Chilled Water Temperatures delivered to coils:

- 40°F supply
- 58°F return
- The chilled water will contain 35% ethylene glycol solution for freeze protection down to -3°F and burst protection down to -45°F.

Heating and Cooling Piping Materials:

- Hot Water Heating and Chilled Water Cooling, 2" and smaller:
 - Type L Copper, soldered fittings.
 - Schedule 40 steel with cast iron fittings/flanges/threaded joints.
 - Schedule 40 steel with cold press joints.
- Hot Water Heating and Chilled Water Cooling, 2-1/2" and larger:
 - Type L, drawn-temper copper tubing; wrought-copper solder-joint fittings, and copper pressure-seal-joint fittings for up to 4".
 - Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
 - Schedule 40 steel pipe; grooved, mechanical joint coupling and fittings; and grooved, mechanical joints.
- Condensate Drain: PVC or copper as required by air plenum and code. Contractors option to fire insulate PVC piping in air plenums.

HVAC – General

All areas of the building will be provided fresh air via the air handling equipment serving zones and spaces per local, state, and national codes and guidelines. General fresh air exchange rates for all spaces will be between 2 and 6 air changes per hour, or higher as required by codes. Air-side energy recovery will be provided where required in order to adhere to local, state, and national codes and regulations.

Where ductwork is concealed, square plaque diffusers will be provided for interior spaces, with linear diffusers provided for washing exterior walls and windows. Diffusers will be selected to minimize the sound levels from them.

HVAC – General -

The building will be fitted with mechanical devices intended for use in commercial construction. Grilles/registers/diffusers, ceiling mounted active chilled beam units, and control sensors will be standard commercial grade. Temperature control devices will have a temperature display and be locally adjustable except for certain areas such as lobbies, and public spaces, where flat plate devices with no local adjustability will be used.

HVAC – General Systems Descriptions:

Variable Air Volume (VAV) with Reheat uses terminal boxes with controlled volume dampers and reheat coils to condition

a zone or space. The air handler serving air to the VAV may contain a supply fan, return fan, hot water heating coil, chilled water cooling coil, filters, and have economizing capability. Variable frequency drives will be provided to vary the amount of airflow. As an option, and where code requires, air side energy recovery will be provided integral to the air handler. This energy recovery system will use a spinning wheel to transfer energy between airstreams, which will have a fan to draw exhaust air through it. The return will be fully ducted from each space. This style system will be used throughout the building.

Variable Volume Single Zone uses an air handler ducted directly to the space for conditioning. The air handler will contain a supply fan, return fan, hot water heating coil, chilled water cooling coil, filters, and have economizing capability. Variable frequency drives will be provided to vary the amount of airflow. Energy recovery described in the VAV with Reheat system may also be utilized if required. The return will be fully ducted from each space. This style system is used for gyms or other large, open areas.

Fan Coils are self-contained units that have a fan, filter, hot water heating and chilled water coils. They will be used to serve certain isolated areas such as cooling IT spaces, large storage rooms, or loading dock areas. The return will be fully ducted from each space.

Energy Recovery Devices are self contained units that have a supply fan with VFD, return fan with VFD, energy recover medium (either a wheel or fixed plate), filters, and have economizing capability. These are typically ducted directly into an air handler serving an area and serve as a means of air side energy recovery from bathrooms/locker rooms or other areas that require high amounts of exhaust.

Heating Only rooms and spaces will be provided with hot water unit heaters or cabinet unit heaters in finished spaces. These spaces include, but are not limited to, vestibules, perimeter storage rooms, perimeter equipment chases, mechanical equipment penthouses, electrical rooms, etc.

Filters in all air handling units will be provided as listed in the system description. Primary and secondary filters may be used per zone and code requirements. Primary filters are intended to be MERV 8 minimum, with secondary filters being MERV 13 for further filtration. The medical area will have an electronic final filter that will be scheduled on the Drawings to provide MERV15 or higher.

HVAC – BY AREA

The below area descriptions are meant to be more specific descriptions of the systems serving each area of the building (general offices and large meeting spaces).

- All areas will include fully ducted return back to the air handler.
- Dedicated exhaust fans will be provided to serve spaces that require mechanical exhaust (such as bathrooms and locker rooms.) These fans will be located either on the roof, or in the ceiling (for small bathrooms). The control of these devices will be with the lights in the space, or by building automation schedule. The building automation system will monitor the operation of these fans. These fans have not been fully scheduled or sized at this time, but may be shown on the plans.
- All IT, Electrical, or other Data Rooms will have a dedicated means of heating and cooling. This will be a fan coil unit with a chilled water coil, located in the ceiling and ducted to grilles/registers.
- Mechanical spaces will be heated by hot water unit heaters. Ventilation and cooling will be provided as required.
- Stairwells include hot water cabinet unit heaters located on lower floors and fan coils for heating and cooling as required by exterior exposure located in the ceiling spaces.
- Vestibules will be provided with hot water cabinet unit heaters for heating only.
- Garbage and other similar rooms will be exhausted to the outdoors, and will be negatively pressurized when

compared to the spaces around them. These spaces will only be heated.

- Zoning: in general, 2-3 rooms may be on a zone depending on use and exposure. Corner and large offices for directors and congressmen/women may be dedicated to a single zone. Lobbies and other large areas will be single zones.
- Large conference and meeting rooms will have dedicated single zone variable airflow air handlers serving them.
- The setpoints for the airflow will be:
 - Heating Mode: 60°F leaving air temp from air handler, 80-90°F leaving air temp from VAV's or single zone air handlers
 - Cooling Mode: 51°F leaving air temp from the air handler.
 - Supply temperature reset will be provided, along with CO2 control.
- Blank plate space sensors will be provided within public areas, and space sensors with adjustment and display in others.

HVAC – Offices

The staff office and public areas will be served with a multi zone variable volume air handler that will include integral energy recovery, but will not have dedicated exhaust ducted to it. The air handler will provide air to the spaces and zones via VAV's with reheat coils. The lockers and other bathrooms and janitorial rooms that may be used 24/7 will be exhausted with a dedicated fans.

HVAC – Large Meeting Spaces

The large meeting spaces will each be provided heating and cooling with a single zone variable volume air handler. Economizing and CO2 control will be provided.

HVAC – Parking Garage (if enclosed)

The parking garage will be served by heating only, gas or hot water fired make up air units that may also recirculate when gas levels allow. These units will contain a fan, filter, and economizing section. The garage will be provided with code required exhaust, this equates to a minimum of 0.75 CFM/SF at high gas alarm, and constant exhaust at all times at 0.05 CFM/sf to allow for general ventilation. There may be gas fired or hot water unit heaters provided as a primary. Means of heating the garage when the make up air units are not in use.

HVAC – Building Automated Controls (BAS)

The building will be provided a central building automated control system to control and monitor all of the HVAC and plant equipment. The system will be web-based and accessible from anywhere wirelessly, and will adhere to state institution requirements. The BAS will be responsible for monitoring energy use and logging trends for certain systems (outlined below) for 1 calendar year. Systems to be monitored: Main chilled water system, secondary chilled water system, the hot water heating boiler system, and all large air handling equipment. The BAS shall provide all required components necessary to log data for one year for trends for these systems, and provide a yearly report summarizing each system that is saved on the same drive the trends are saved on. These reports are integral to operations decisions and any future additions to the building, as they can be used to verify equipment loading and use during different years in the lifespan of the building.

Individual zones will have wired sensors for temperature, CO2, humidity, or a combination of the three as required by the system design. Public areas, locker rooms, vestibules, storage rooms, IT, mechanical and electrical rooms, and restrooms will have blank plate sensors. Classrooms, offices, breakout spaces etc. will have a sensor with temperature display and buttons for control within +/- 5°F of setpoint. Occupancy overrides may be provided on room sensors as the design requires. Larger spaces may be provided with 2 or more sensors for averaging purposes.

Electrical, Communications And Security

Codes and Standards

The following codes and standards will apply this project. The codes listed are minimal requirements, and the Engineer or Architect may exceed these standards. Standard design team practices and specifications will usually address any items not sufficiently covered in standard codes. Unless otherwise noted, the most current version of the codes indicated will be utilized.

- NFPA 70 – National Electric Code (NEC) – 2026 Version (this version will be adopted by the State of North Dakota prior to the design of this facility)
- NFPA 72 – National Fire Alarm Code
- NFPA 101 – Life Safety Code
- IESNA – Illuminating Engineering Society of North America
- NEMA – National Electrical Manufacturers Association
- IECC 2021 – International Energy Conservation Code, as adopted by the State of North Dakota

Electrical Design Criteria

- Equipment Voltage Design Criteria
 - Motors 1 HP or larger 480-Volts, 3-phase
 - Motors less than 1 HP 120 or 208-Volts, single-phase
 - General Lighting 277-Volt
 - Receptacles Voltage configuration dependent on load
- Branch Circuit Sizing Criteria
 - Lighting 125% of actual wattage installed.
 - Receptacles 180 watts/duplex receptacle, or actual load.
 - Special Connections Actual wattage of equipment.
 - Motors 125% of motor wattage.
- Demand factors
 - Lighting 100% of actual wattage
 - Receptacles 100% of first 10 kW plus 50% of balance
 - Motors 125% of largest plus 100% of balance
 - Other Equipment 100% of actual wattage

Electrical Power Distribution – Primary Power System

The existing State Capitol grounds is served by a State of North Dakota owned medium voltage system. This system is 3-phase, 4160 Volt rated with 15 kV medium voltage conductors distributed throughout the site. This system is looped around the Capitol grounds, and the conductor sizes and configurations vary depending on what each run serves.

This new structure is proposed to be west of the current legislative wing on the Capitol grounds, west of the underground medium voltage and communications runs between manholes #11 and #12. It is anticipated that the construction of the new building would not impact the existing infrastructure to the point where it would need to be relocated, and for the purposes of this report, it is assumed this will remain in place.

It is also assumed that the existing medium voltage switchgear that serves the Capitol grounds has sufficient capacity to provide power to this proposed structure. As such, it is anticipated that the existing medium voltage loop conductors from the existing switchgear to Manhole #12 would need to be upsized to accommodate the new load for the new building. This run would be increased to parallel runs of #4/0 conductors. A new 15 kV pad mounted switch would then be provided to allow for the loop to continue to Manhole #11, then serve a new 2000 kVA transformer for the new parking structure and office building. This transformer would be served with one run of 350 kmil conductors. The new pad mounted switch would likely be installed on the north side of this new facility.

Existing fusing and breaker settings inside the existing Capitol grounds medium voltage switchgear would need to be adjusted for the new conductor runs and new loads. This information would need to be determined during the building and medium voltage system design.

Electrical Power Distribution – Secondary Power System

The secondary power system for this new facility would be 480-Volts, 3-phase. The medium voltage transformer noted above would step down the power to this system voltage.

A main 480-Volt distribution switchboard would be provided on the ground level of the parking structure to serve power to the building. 480-Volt branch circuit panels would be provided on each parking level to serve 277-Volt lighting and larger mechanical equipment. Step down transformers would also be provided to serve 120/208-Volt power to general receptacles, smaller electrical loads, and smaller mechanical equipment loads for the parking levels. It would currently be anticipated that each parking level would include one 200 ampere, 480-Volt panel and one 200 ampere 120/208-Volt panel, with one 75 kVA step down transformer. Additional 480-Volt power may be required for mechanical equipment depending on parking garage arrangement.

480-Volt power distribution would be extended to 480-Volt panels on each floor of the building. The first level, consisting of mostly meeting rooms, is anticipated to have at least two 400 ampere, 480-Volt branch circuit panels located in different areas of the floor to distribute electrical loads. In each location, step down transformers would be provided to serve the 120/208-Volt loads for that area of the floor. These would be based on 112.5 kVA transformers and 400 ampere 120/208-Volt branch circuit panels. The locations of electrical rooms to house the electrical equipment would be located as centrally as possible to minimize homerun circuitry and provide better future access to electrical equipment for new loads.

The second level includes assembly offices, meeting rooms and a mechanical space for HVAC and related equipment. A 1,200 ampere, 480-Volt distribution panel would be included in the mechanical space to serve all mechanical equipment and remaining loads on this level. 200 ampere, 480-Volt branch circuit panels would be extended from the distribution panel to at least two locations on the floor, which would then serve 75 kVA transformers to provide power to 225 ampere 120/208-Volt branch circuit panels to serve general receptacle loads. These panels would be located throughout the floor to minimize branch circuit homeruns and provide better future access to electrical equipment for new loads.

The third level includes Legislative Council offices, meeting rooms and mechanical space for HVAC and related equipment. A 1,200 ampere, 480-Volt distribution panel would be included in the mechanical space to serve all mechanical equipment and remaining loads on this level. 200 ampere, 480-Volt branch circuit panels would be extended from the distribution panel to at least two locations on the floor, which would then serve 75 kVA transformers to provide power to 225 ampere 120/208-Volt branch circuit panels to serve general receptacle loads. These panels would be located throughout the floor to minimize branch circuit homeruns and provide better future access to electrical equipment for new loads.

All 480-Volt branch circuit panels would be either 42 or 60 circuit minimum panels. All 120/208-Volt panels would be 60 circuit minimum panels and would include feed-through lugs to provide additional branch circuits where needed. Depending on configuration and locations of electrical equipment rooms, larger step down transformers may be utilized with 120/208-Volt distribution panels to serve the 120/208-Volt branch circuit panels.

All sizing noted above is based on general block diagram layouts and anticipated square footages. All equipment and feeder sizing would need to be adjusted based on actual building layout, square footages, and mechanical systems selected for this facility.

Emergency/Life Safety and Stand-By Power Distribution

The current Capitol campus medium voltage distribution includes back-up generators that serve the entire campus. The new building medium voltage distribution will also be served from this system to allow for stand-by power to the entire building. This assumes that sufficient capacity remains in the existing stand-by generators.

Life safety power is provided to the Capitol campus using a 1500 kW, 480-Volt generator that is located at the northeast corner of the maintenance shop. A new 200 ampere feed (with conductors sized for 400-500 amperes due to voltage drop), would be extended to a new 200 ampere automatic transfer switch at the new building to provide life safety power. Life safety power would only include selected lighting throughout the building for egress. The “normal” power feed to the automatic transfer switch would be fed from the building main power distribution, such that the “normal” power feed is still backed up by the stand-by generators noted above.

General Power

General receptacles will be placed throughout as required by room layout and equipment layout. Receptacles in corridors will be placed no greater than 30' on center to allow for cleaning equipment to be used. Note: All receptacles will be tamper-resistant style.

Offices will be provided with a minimum of one receptacle on each wall. It is assumed that there will be one desk per office, and that the desk will be located on a wall opposite from the door, such that the office occupant will walk around the end of the desk and will be seated facing the door.

Receptacles in workspaces and breakrooms will be laid out based on casework and equipment in the spaces. There will be a higher receptacle density in these spaces than in the office spaces.

Meeting and conference rooms will have receptacles laid out based on National Electric Code spacing criteria. Most of these style rooms will include one or more floor boxes to provide locations for power and network in those rooms. Floor boxes will be laid out based on room needs, and to make sure National Electric Code requirements are met.

On the first level all meeting rooms will be laid out with receptacle and floor box locations to meet the functional requirements of the room. This will include power at representative tables, power at presenter/speaker podiums, and power in the general gallery areas where needed. These rooms will also be required to meet National Electric Code requirements for receptacle quantities and spacing.

All electrical circuits would be installed in metal conduit, and all conductors would be copper.

Exterior Lighting

New site lighting would be provided around the building grounds to match existing lighting along drive areas and revised parking areas. The existing façade of the Capitol building and legislative wing are illuminated using ground mounted flood lighting. It would be anticipated that a similar strategy would be used to illuminate the north, west and south facades of this facility. It is not anticipated that any wall/building mounted lighting would be used unless a different overall exterior building lighting strategy is employed.

All exterior lighting will utilize LED sources and will be controlled with dusk-to-dawn controls, similar to current exterior lighting controls for the Capitol grounds.

Interior Building Lighting

All interior lighting would utilize LED light engines as the light source. Lighting would be designed to meet applicable illumination levels (see below) while maintaining power densities set forth in the energy code. Many times, power densities are actually lower than code levels, providing the most energy efficient solution possible.

Luminaires would be selected with the Owner and Design Team to meet the aesthetic requirements of the project in required spaces. Remaining spaces would use lay-in, recessed or surface mounted commercial luminaires. Most offices and corridor spaces would utilize 2' by 2' lay-in style LED luminaires. Meeting rooms, conference rooms and similar spaces could also use the same lay-in style luminaire or could use downlights or suspended indirect/direct luminaires depending on ceiling style and ceiling height.

In storage, mechanical, electrical or similar rooms, a lensed 4' strip style LED light would be used. These luminaires would include lensing and are the most economical solution for these types of spaces.

All lighting would be specified to have 120/277-Volt LED drivers, and these drivers would be powered at 277-Volts.

Anticipated lighting levels would be as follows. Levels indicated are for average, maintained values:

- | | |
|------------------------------|----------------|
| • Offices | 30 footcandles |
| • Meeting/Conference Rooms | 40 footcandles |
| • Lobbies and General Spaces | 25 footcandles |
| • Storage Spaces | 20 footcandles |
| • Corridors | 20 footcandles |
| • Mechanical Areas | 25 footcandles |
| • Restrooms | 20 footcandles |
| • Any spaces not listed | 30 footcandles |

Lighting Control

Automatic lighting control of spaces is required by the inclusion of the IECC in the North Dakota Building Code. These standards would be used throughout general use spaces. Dimming controls would be provided in all offices, conference and meeting spaces.

A wireless lighting control system would be the most economical solution for the building and would provide the most flexibility in the future for changing control zones in different spaces. This system would allow luminaires or dimming switch packs to communicate wirelessly with the overall system and would provide for dimming without the need to extend

0-10 Volt control conductors to all luminaires (although some areas may require this depending on the specific luminaires used). Line-voltage powered wireless switches on the walls would then provide local control in offices, conference and meeting rooms.

Motion sensors integral to luminaires, or individual motion sensors mounted on the ceiling, would be used to provide automatic lighting control throughout the building. These devices would also communicate wirelessly with the overall system. Specific areas would then be able to be scheduled for automatic on/off control depending on building usage.

The parking areas would use surface mounted luminaires designed specifically for parking structures. These luminaires would include integral motion sensors and wireless nodes to allow for overall communication with the building wireless lighting control system. These luminaires would also have the capability of dimming down to a specified percentage when motion is not sensed and then rising to full illumination once motion is sensed.

Fire Alarm Systems

A fire alarm system would be provided throughout the entire facility for occupant notification of a fire emergency. An addressable fire alarm system would be provided and networked to the existing Capitol fire alarm system network. One fire alarm control panel would be provided in the new building to serve all new fire alarm devices and to provide the network card for communication back to the Capitol fire alarm network.

The system would be based on an Autocall 4100ES addressable fire alarm panel or equivalent. The system would include voice evacuation appliances to allow for voice instructions to be issued over the system throughout the entire facility. A remote annunciator would be provided at the main first responder entrance to indicate the fire alarm status and provide the one-way communication station for fire responders.

Smoke detection would be provided throughout egress pathways, in storage and similar rooms, and in mechanical/electrical spaces. Any air handling equipment rated 2000 CFM or over would also include duct detection on supply and return ductwork. The fire alarm system would also monitor fire sprinklers to provide alarms if the fire sprinkler system were to be activated.

Voice evacuation speaker/visual appliances would be placed throughout the entire building along egress pathways and in meeting/conference rooms to notify occupants of a fire emergency. Visual only appliances would be provided in specific areas (such as smaller restrooms or staff spaces) provided the sound pressure level of adjacent speaker appliances would be sufficient for occupants to hear fire alarm notifications.

This fire alarm system would also need to be added to the existing facility TruSite workstation. This would allow fire alarm devices to be monitored from that station.

Network Systems

Network systems would include fiber and copper data infrastructure cabling for all network systems in the building. The system will be composed of a main distribution frame (MDF) where main communications will enter the facility, and intermediate distribution frames (IDF's) on each occupied floor that will connect different areas of the building to the MDF.

At this time, it is assumed that communications services would be extended to the new facility via fiber from the Capitol complex. The exact location and routing would need to be determined during the design period of the project.

The MDF should be located on the first level of the office building. Fiber would be routed to this room through either the parking structure levels, or via the connecting link, depending on where the fiber would originate and be routed to the building. From the MDF, single mode and multimode fiber would be extended to an IDF located on each of the second and third levels. Each MDF and IDF should be centrally located on that respective floor to allow for one room to serve the entire floor. Ideally these rooms would also be stacked to provide better access, but that would not be required.

The MDF would include racks to house the incoming fiber serving the facility, fiber out to each IDF, and then copper infrastructure cabling to serve out to each data jack location, wireless access point location, surveillance camera location, and access control locations as required. All fiber and copper distribution could be installed in 2-post racks. 4-post racks may also be required based on equipment that would be provided in the MDF.

Each IDF would include 2-post racks for fiber and copper infrastructure cabling terminations. 4-post racks may also be required based on equipment needs.

Category 6 network cabling would be used to network jack and surveillance camera locations. All network cabling would be terminated in patch panels within 2-post racks in the MDF or each IDF.

Category 6A cabling would be extended to locations to be used for wireless access points. Wireless access points will be located throughout all floors to provide network access for wireless devices. Wireless access point spacing and locations would be determined during design based on layouts that would be provided by an outside vendor, such as Highpoint Networks.

All network switches, servers, wireless access points, patch cords, end user computers and end user software required for the Owner's network would be outside the scope of the design. Any telephone system equipment would also be outside the scope of the design.

Centralized uninterruptible power supply systems (UPS's) are not anticipated for this facility. Individual rack mounted UPS systems are anticipated to provide ride-through power during an outage for network systems equipment. These UPS's are anticipated to be Owner provided.

Cable TV

If required, RG-6 coaxial cable would be extended to required locations through the building from each MDF or IDF respectively. RG-11 backbone cabling would be used from the MDF to each IDF for cable TV distribution. Incoming cable TV services would need to be provided by either an outside vendor or from existing cable TV distribution within the Capitol complex.

Sound and Video Systems

All first level meeting rooms would include a sound and video system that would be similar to existing legislative meeting/hearing rooms. These systems include audio distribution to speakers within the room, microphone distribution for all legislators and presenters, and video distribution to local monitors/projectors within each room. The audio and video for each room is then distributed through local and wide area access using fiber infrastructure back through the IDF and MDF rooms.

Second and third level meeting or conference rooms would also include audio and video systems, however it is anticipated that these systems would be local only to these rooms. The exact style of audio and video systems of each room would be dependent on the size and layout of the room, but may include microphones, speakers, monitors and/or projectors.

Surveillance System

The surveillance system would consist of a fully IP based camera platform with digital cameras having Category 6 cabling extended from patch panels in the MDF or IDF rooms out to remote camera locations. Site cameras, if over the distance limitation for Category 6 cabling, would include PoE midspan devices, or would have fiber running to them. In the case that fiber is used, line voltage power will be provided to those cameras. The surveillance system cameras and equipment would need to match existing Capitol complex equipment and would be integrated into that system so that all new cameras could be monitored from the current operations center.

The surveillance system would consist of the following major components:

1. A client/server based IP video management system (VMS) providing seamless management of digital video and data across the IP network. The VMS consists of the following software components: Central Server software, Recording Services software, Configuration Client software, and Operator Client software (for Operator Client Workstations).
2. An IP video storage system that provides “plug-and-play” iSCSI-based recording and management. All disk arrays in the recording system will use RAID 5 storage protection and the system will have failover between arrays in the event of an array failure. Video retention will be for a minimum of 30 days at a 4CIF resolution (704x480) and 7.5 IPS continuous recording.
3. A video LAN, including servers for VMS application and recording software, network switches, video encoders, video decoders and Operator Client Workstations.
4. Cameras would be high resolution, color cameras with vandal-resistant enclosures.
5. Cameras would include microphones where needed for recording audio.
6. The system would be networked via single mode fiber infrastructure.

Surveillance cameras would be located throughout all areas of the building, including but not limited to the following areas:

1. Immediate site and entrances around the building and parking structure.
2. Within the parking structure levels.
3. In public corridors throughout the building.
4. In elevator cars
5. Around any secure doors leading to secure areas.
6. All stairwells at all levels.
7. All elevator cars.

The following camera types are expected to be used:

- Type 1 – Indoor vandal-resistant mini dome (similar to Bosch #MDE-5702-AL series)
- Type 2 – Outdoor bullet camera (similar to Bosch #NBE-7703-ALXT series)
- Type 3 – Outdoor vandal-resistant multi-imager with P/T/Z dome (similar to Hanwha #PNM-C34404RQPT Series)
- Type 3M – Outdoor vandal-resistant multi-imager with P/T/Z dome (pole mounted)
- Type 4 – Outdoor vandal-resistant mini dome (similar to Bosch #NDE-5703-AL series)
- Type 5 – Indoor 360 degree multi-image camera (similar to Bosch #NDM-7703-A series)
- Type 6 – Outdoor 360 degree multi-image camera (similar to Hanwha #PNM-C32083RVQ series)
- Type 7 – Dual image corridor camera (similar to Bosch #NDD-5703-AL-GOV series)

Centralized uninterruptible power supply systems (UPS's) are not anticipated for this facility. Individual rack mounted UPS systems are anticipated to provide ride-through power during an outage for surveillance equipment. These UPS's are anticipated to be Owner provided.

Controlled Access System

A controlled access system would be provided throughout the building on selected doors that would need to include access control. Access control would also be provided within elevator cars to limit access to specific floors. All stairwell doors that exit the stairwell into each level would include access control to limit access to each level. Specific doors on each level would also include access control to secure specific areas. All MDF or IDF rooms would include access control.

The access control system would be based on Schnieder Electric's Security Expert platform to match current State contract requirements. This will also allow for the access control system to be integrated into the current access control credentials data base so that access control cards or FOBs would work with any other Capitol complex access control locations.

Additional Systems

No other systems are anticipated at this time beyond what has previously been identified in this narrative. Should additional systems be required, those systems will need to be identified and brought to the attention of the design team.

Facilities Options

Introduction

Klein McCarthy Architects (KMA) was tasked with exploring multiple facility options that included:

- Two levels of open but covered parking
- Legislative meeting rooms
- Legislative offices
- Legislative Council offices

The initial concepts were developed starting with the initial parking layouts to achieve two levels at or greater than the existing surface lots being replaced. The meeting rooms and offices were developed above the vehicle parking. The concepts developed included these options:

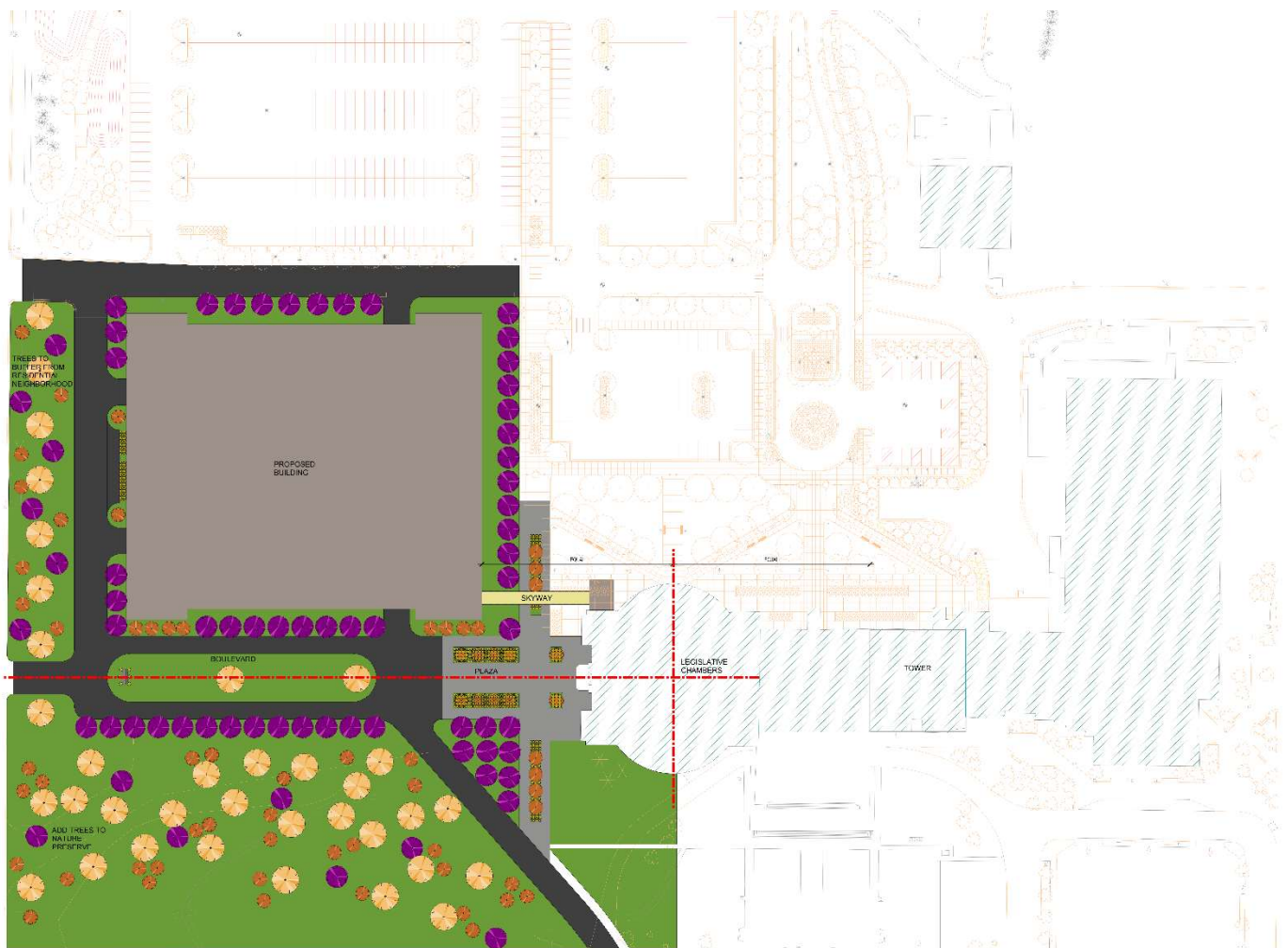
- Option:
 - Parking on two levels
 - Senate Meeting Rooms with Senate Offices on one floor
 - House Meeting Rooms and House Offices on one floor
 - Legislative Offices on one floor
- Option:
 - Parking on two levels
 - Legislative Meeting Rooms on one floor
 - Legislative Senate and House Offices on one floor
 - Legislative Council Offices on one floor
- Option:
 - Parking on two levels
 - Legislative Meeting Rooms on one floor
 - Legislative Senate, House, and Legislative Council Offices on one floor

The selected option was based on the Legislators operational efficiency of keeping all meeting rooms on one floor for easier public movement and by locating them on Level 3, they connected via the skyway back to the Legislative Wing at the exiting Senate and House Chambers level. The Senate and House legislative offices were located on one level where legislators can interact more effectively, and they are one level above the meeting room. Dedicated secure stairways and elevators are designed for legislators and staff to allow efficient and safe movement between committee rooms and offices, as well as safe egress in the event of an emergency. The Legislative Council Offices were located on Level 5 as they required a larger footprint than the legislative Offices. Mechanical space was included on Level 4 to allow for proper stacking effectiveness and to centrally locate the mechanical space between floors for greater efficiency and lower operational costs.

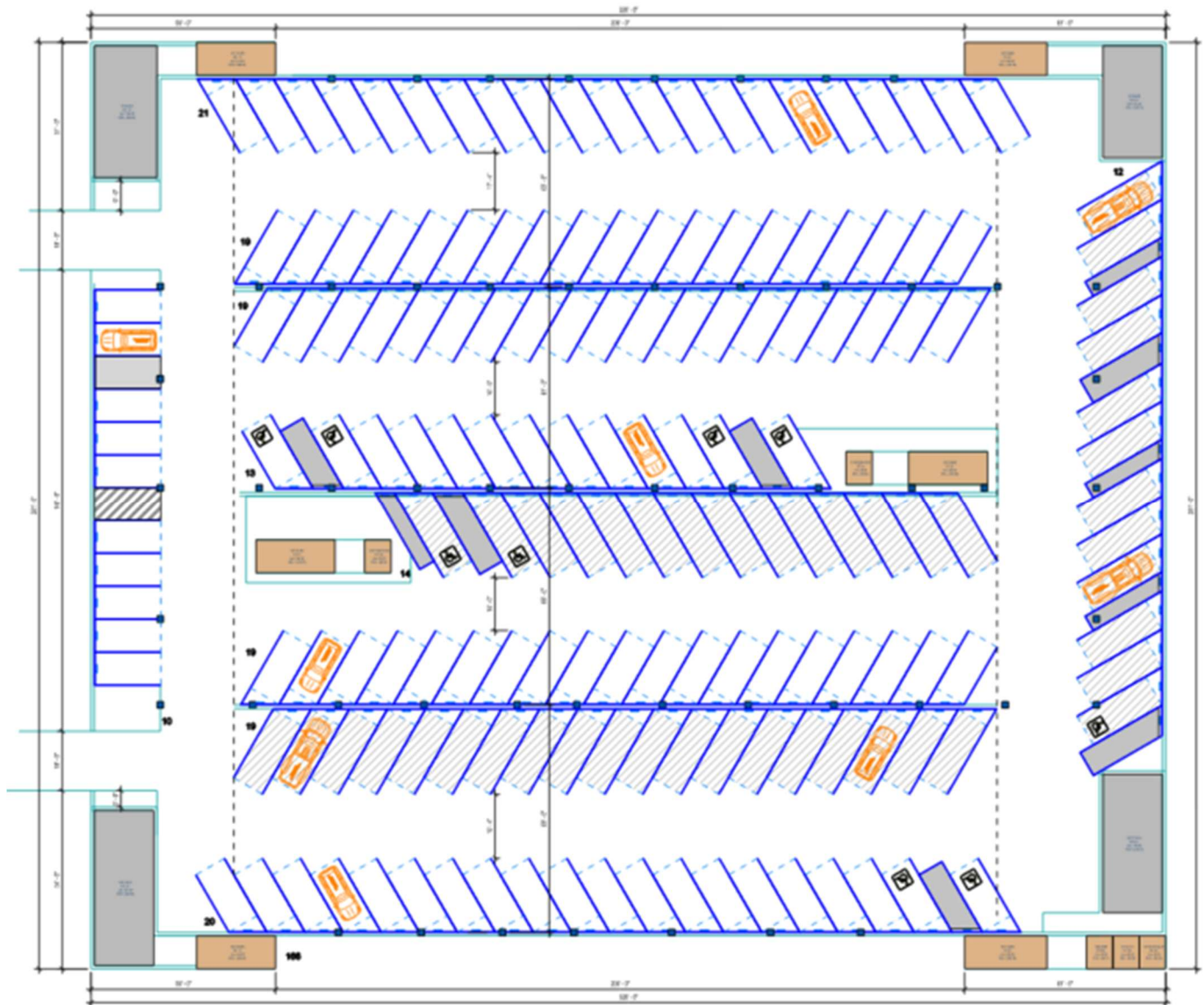
Option Selected

The concept included in the Study Report was selected as the best feasible option that met the goals set while utilizing the least building footprint possible while limiting the overall building height to be sensitive to the adjacent residential neighborhood and the Capitol Legislative Wing.

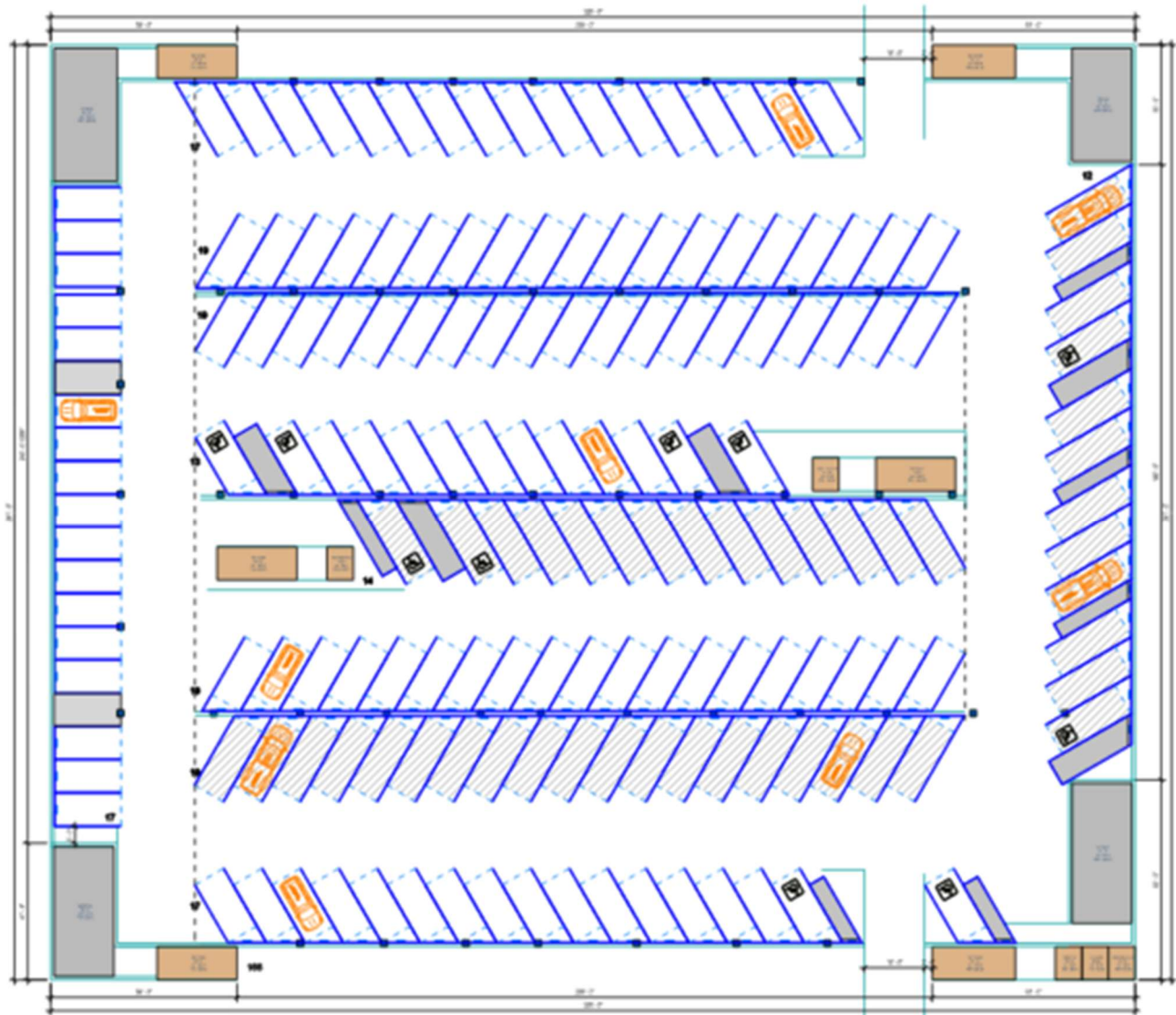
The siting of the proposed building was carefully considered in relationship to the existing Capitol and residential neighborhood along 4th Street. The site plan was developed to include better access to and from 4th Street and maintain an internal vehicle loop road on the site, to avoid vehicles leaving the site to reenter later when traveling in the north-south and south-north directions along the west side of the campus. It was also a goal of the site design to improve the view out the west windows of the existing Capitol by creating a boulevard plaza directly west to 4th Street. Existing fiber and electrical underground conduit line prevents the proposed building from being directly attached to the west side of the existing Capitol; therefore, the building would need to connect via a skyway over the conduits. Since it would need to be separated, the distance of the new building is approximately an equal distance from the center of the round form of the existing Legislative Wing as it is to the existing Tower, creating a balance between the buildings. The location setback from 4th street also leaves a buffer to the residential neighborhood while shortening the skyway connecting the new building back to the Legislative Wing. Separating the building from the Capitol allows for a designated pedestrian area between the buildings and removes all vehicle access between the buildings, providing a 100' public drive and parking setback from the Legislative Wing.



Site Plan



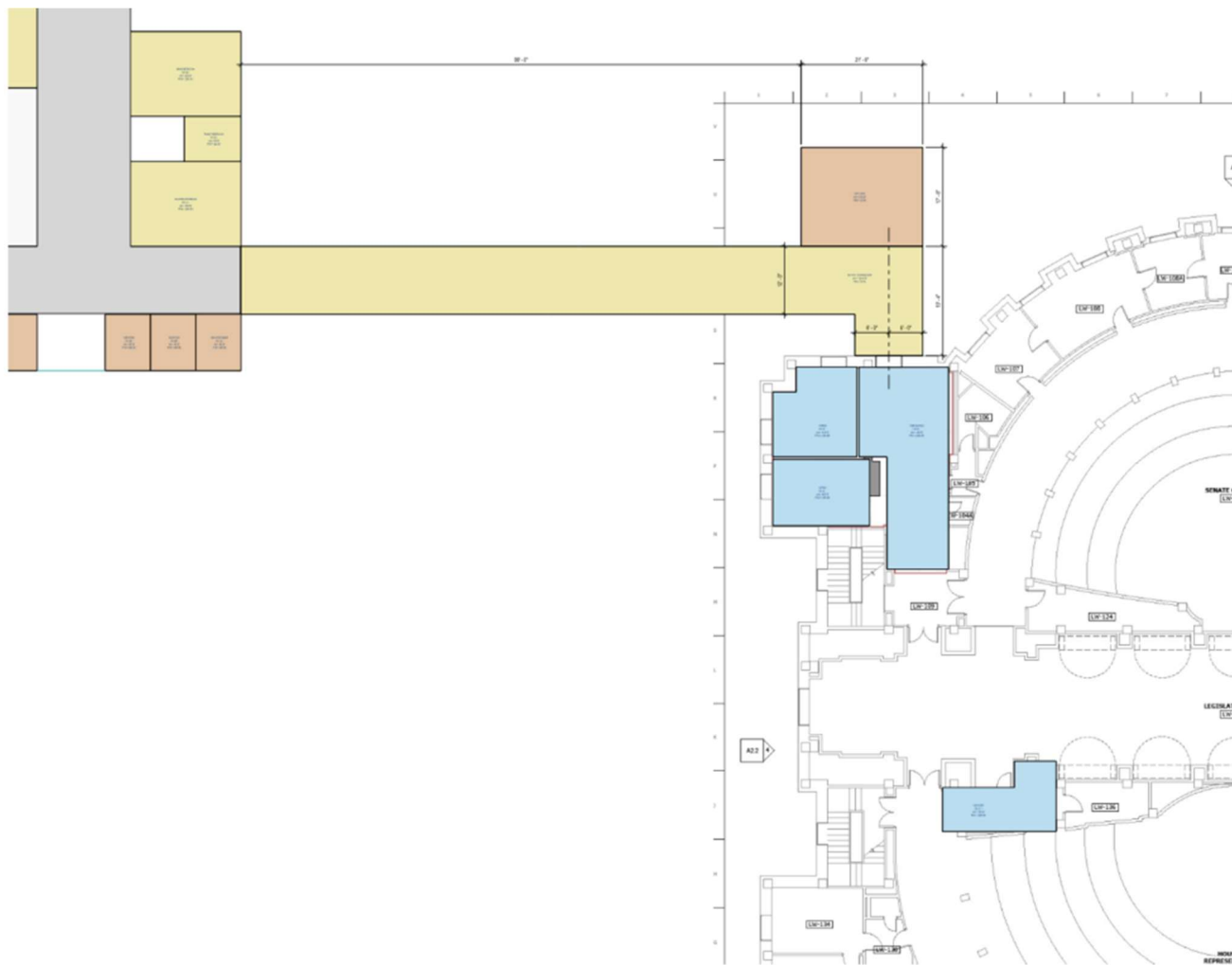
Floor 1 - Parking



Floor 2 – Parking



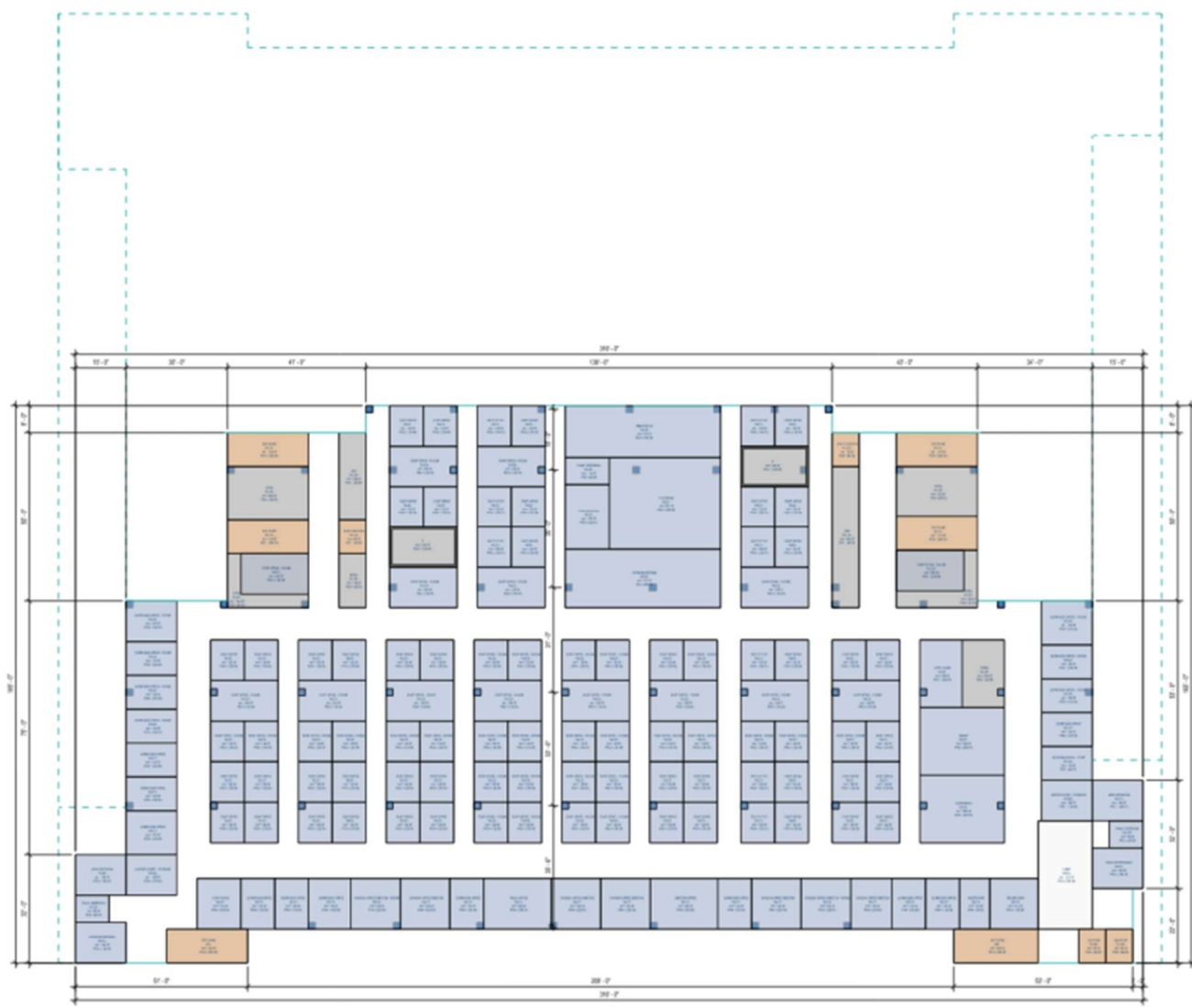
Floor 3 – Legislative Meeting Rooms



Floor 3 – Skyway Link to Existing Legislative Wing



Floor 4 – Legislative Offices and Mechanical



Floor 5 – Legislative Council Offices

Design Renderings

The Committee desired an exterior design that complemented the design of the existing Capitol, with similar design characteristics in order to feel integrated into the campus. Being fiscally minded, the decision was not to try to use matching limestone but rather use materials that looks similar to the Capitol's. The concept design by KMA uses a precast concrete wall system which allows for color variations similar to the existing Capitol, but at a more conservative price point. The concept design uses a modern interpretation of the Capitol's Art Deco design language without mimicking it. The overall goal was to give the building a similar monumental / civic character by using symmetry, repetition, and massing of design elements in a manner fitting of a legacy building.



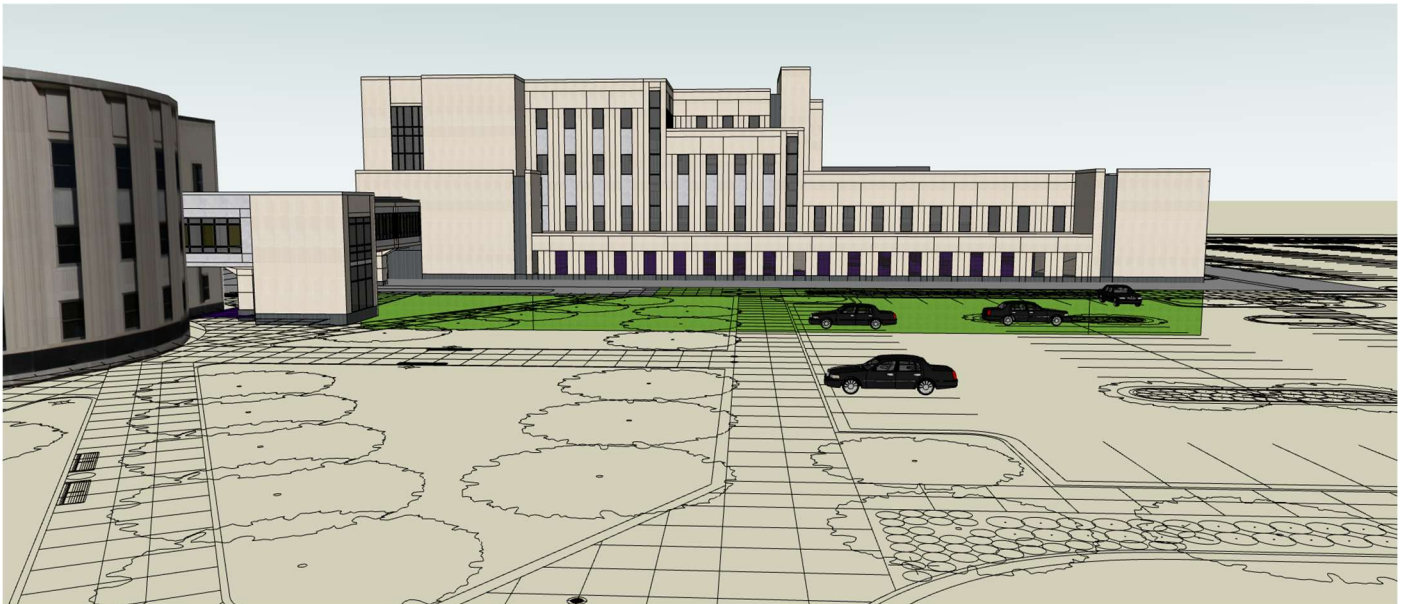
Building Elevation – South



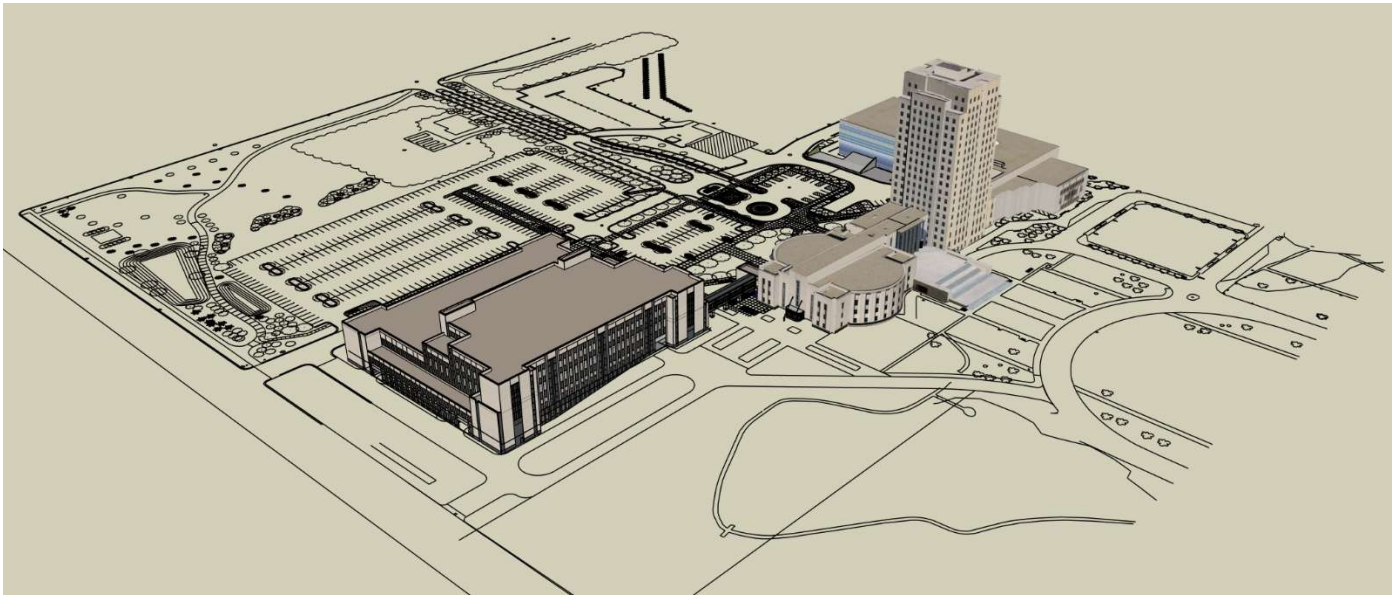
Building Elevation – West



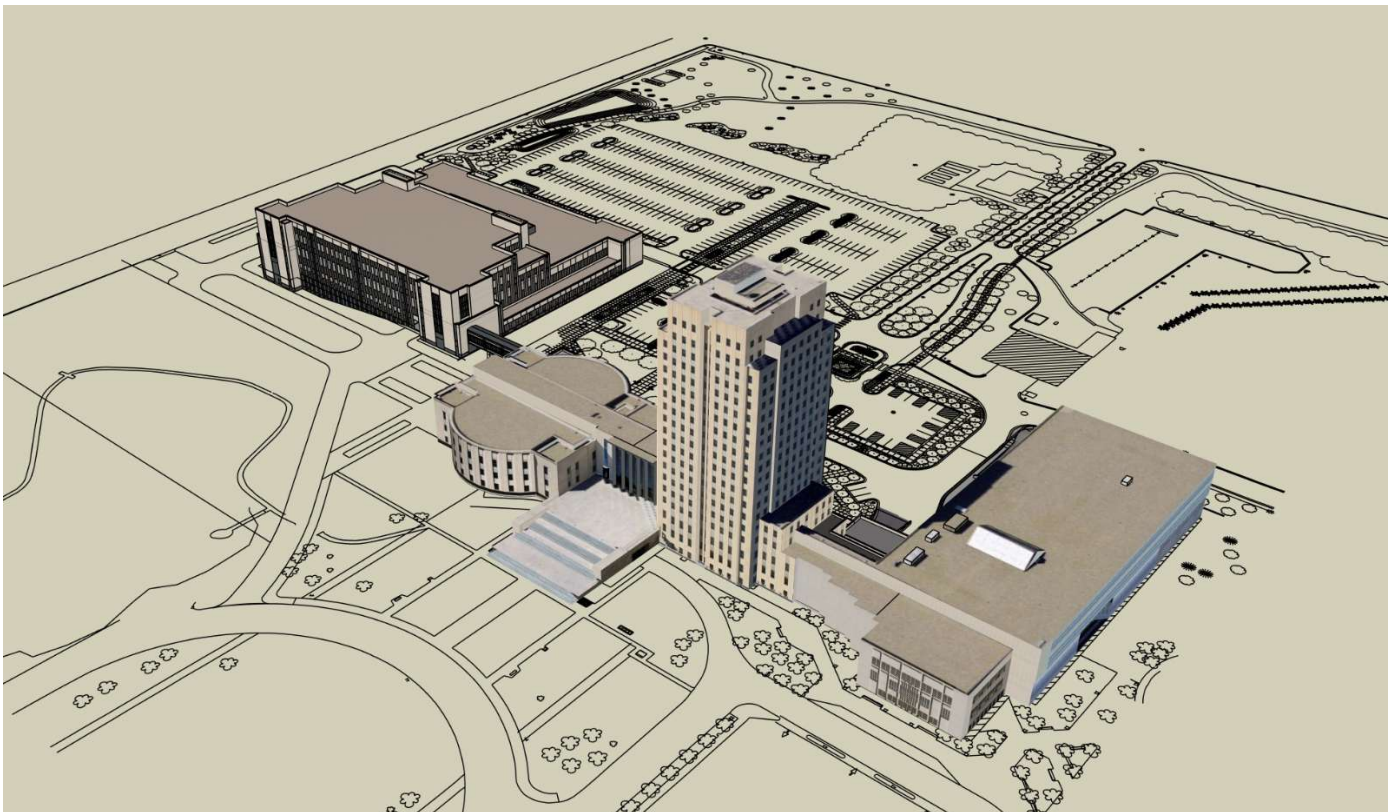
Building Elevation – North



Building Elevation – East



Massing Study - Aerial from the Southwest



Massing Study - Aerial from the Southeast



Massing Study - Aerial from the Northeast



South Elevation with Capitol



Southwest Corner Perspective



Boulevard Plaza view from 4th Street



Skyway View from Plaza



Skyway view from North



South Elevation - Rendered



North Elevation - Rendered



East Elevation – Rendered



West Elevation - Rendered

Schedule

The anticipated schedule below is based on State funding being appropriated for the Project.

	Duration	Start	Finish
Funding Appropriated	6 months	January 2027	July 2027
Designer Selection / Contract	2 months	May 2027	June 2027
Schematic Design	3 months	July 2027	September 2027
Design Development	3 months	October 2027	December 2027
Construction Documents	3 months	January 2028	March 2028
Bidding	1 month	April 2028	April 2028
Contract Period	1 month	May 2028	May 2028
Construction Period	24 months	June 2028	May 2030
Midpoint of Construction	12 months	June 2029	
Substantial Completion		July 2030	

Opinion of Probable Cost

Introduction

Kraus-Anderson Construction Company provided the opinion of probable construction costs for the final concept option that was selected by the User Group.

Opinion of Probable Cost

Opinion of Probable Cost (OPCC) is a professional assessment, typically prepared by professional cost estimators, construction managers, engineers or architects, estimating the likely construction cost of a project based on available design information, market conditions, and the consultant's experience. It is not a guarantee or a fixed price, but rather a best professional judgment intended to guide budgeting and decision-making during project planning.

Key Characteristics of an Opinion of Probable Cost:

- **Based on Professional Judgment:** Developed using historical data, current market rates, and the consultant's expertise, not exact quantities or final designs.
- **Not a Bid or Quote:** Unlike contractor bids, an OPCC does not represent a binding commitment to perform work at a specific price.

Includes Key Components:

- **Direct Construction Costs:** Labor, materials, equipment, and subcontractor work.
- **Incidental Costs:** Permits, insurance, testing, professional fees, furniture, and equipment.
- **Contingency:** A reserve (often 5–15%) for unforeseen conditions or design changes.
- **Escalation Allowances:** Adjustments for future inflation or material cost increases.
- **Used for Budgeting and Feasibility:** Helps clients determine if a project is financially viable and supports funding requests.

Accuracy Varies by Design Phase:

- **30% Design (Preliminary OPCC):** Accuracy range of +20% to +50% (upper) and -15% to -30% (lower).
- **50% Design (Class 4 Estimate):** More refined, with tighter accuracy ranges.
- **100% Design (Final OPCC):** Based on detailed quantities and unit prices, with higher accuracy.

Purpose and Use:

- **Client Decision-Making:** Enables clients to compare design alternatives, adjust scope, or revise budgets before committing funds.
- **Contractual Tool:** Often required at key project milestones. If bids significantly exceed the OPCC, the design team may be obligated to revise the project at no extra cost (per some contracts).
- **Risk Management:** Helps identify cost overruns early. A large gap between OPCC and bids may signal issues like unclear plans, contractor pricing errors, or potential bid-rigging.

Legal and Contractual Notes:

- **No Warranty:** OPCC's explicitly state they do not guarantee actual construction costs will match.
- **Open-Book Process:** Many agencies require transparency in assumptions and cost data during preconstruction.
- **Market Volatility:** Factors like supply chain issues, labor shortages, or material price spikes can cause actual costs to differ significantly.

In short, an Opinion of Probable Cost is a strategic planning tool, not a price tag, used to manage expectations, allocate funds, and ensure project feasibility.

Opinion of Probable Cost by Kraus Anderson

State of ND - Office Building & Parking Structure

Concept Estimate Summary - 8.8.2026

			08/18/2026 Concept Estimate
Total Square Feet			343,172
Construction Cost per Square Foot			\$381
CONSTRUCTION COSTS			
Site Development			\$5,031,514
Parking Structure			\$27,518,059
Office, Skyway, & Renovation			\$84,207,725
Escalation ¹			12.0%
Subtotal Construction			\$130,768,174
SOFT COSTS			
A/E Fees	8.0%		\$10,461,454
Owner Additional Soft Costs	2.5%		\$3,269,204
FFE	5.0%		\$6,538,409
Commissioning	1.0%		\$1,307,682
Owners' Contingency	3.5%		\$4,576,886
Subtotal Soft Costs			\$21,576,749
TOTAL ESTIMATED PROJECT COST			\$152,344,922

Notes:

¹ Based on 24 Month Construction Schedule starting Spring of 2028

Appendix

Space Program

Net Square Footage (NSF) refers to the floor space assigned to a function (e.g., an exam room or office), within a building, measured from the inside face of the perimeter walls at each floor level. It excludes non-usable spaces such as exterior walls, columns, mechanical rooms, hallways, lobbies, and common areas. The NSF represents the actual space available for occupancy or use.

Department Gross Square Feet (DGSF) refers to the total area of a department or functional unit within a building, including all internal spaces such as rooms, internal corridors, walls, partitions, and circulation areas. It is calculated by applying a net-to-department gross conversion factor to the sum of Net Square Feet (NSF) - the usable, wall-to-wall area within rooms. DGSF accounts for internal departmental elements like corridor width, wall thickness, and internal mechanical or service spaces. The grossing factor varies by department type and is higher where corridors are wider or the department contains multiple smaller rooms. The grossing factor is lower in administrative areas with minimal circulation.

DGSF is used in pre-design planning to estimate department footprints, inform block schematic drawings, and support cost estimation. It does not include shared public corridors, elevators, stairs, or major mechanical spaces which are added at the floor or building gross level.

Gross Square Footage (GSF) includes all areas of a building, such as walls, mechanical systems, corridors, and common areas. GSF is the total area of enclosed space measured to the exterior walls of a building. This is an umbrella term that includes everything in a facility, even unusable spaces (think areas in between walls). It's the total space a facility takes up regardless of whether or not the space is used.

NO.	SPACE DESCRIPTION	PROPOSED AREA (GSF)	NOTES
100 LEGISLATIVE BRANCH			
101	LEGISLATIVE AND STAFF PARKING - FLOOR 1	86,574	
102	LEGISLATIVE AND STAFF PARKING - FLOOR 2	86,574	
103	ASSEMBLY MEETING SPACE	79,965	
104	ASSEMBLY OFFICES	44,820	
105	LEGISLATIVE COUNCIL	41,940	
	SKYWAY/STAIR & REMODELING IN LEGISLATIVE WING	3,300	

GOVERNMENT SERVICES TOTAL GROSS BUILDING AREA (GSF)

343,172**Special Considerations / Notes:**

1. Provide data closets stacked and dispersed on each floor. Part of M&E factor.
2. Provide one M&E Storage Room (500sf) for supplies. This can be on any of the three floors. See Assembly Office floor.

NO. SPACE DESCRIPTION		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
101 LEGISLATIVE AND STAFF PARKING - FLOOR 1					
101.01	PARKING			0	
101.02	Parking Space	157		0	Parking space width is 10' and the length varies for oversized vehicles.
101.03	ADA Parking Space	9		0	Parking space width is 10' and the length varies for oversized vehicles.
101.04				0	
101.05	SUPPORT SPACES			0	
101.06	Storage	1	760	760	
101.07	Storage	1	612	612	
101.08	Electrical Room	1	756	756	
101.09	Electrical Room	1	846	846	
101.10				0	
101.11	VERTICAL CIRCULATION			0	
101.12	Exit Stairs - Public	4	250	1,000	
101.13	Exit Stairs - Legislator	2	240	480	
101.14	Elevator - Public	2	80	160	
101.15	Elevator - Legislator	2	80	160	
101.16				0	
TOTAL FLOOR GROSS SQUARE FOOTAGE				86,574	

Special Considerations / Notes:

1. Parking spaces are 10' in width and vary in length from 20' - 24' to accommodate oversized vehicles.
- 2.

		PROPOSED		
NO.	SPACE DESCRIPTION	QTY	NET EACH	TOTAL NET
102 LEGISLATIVE AND STAFF PARKING - FLOOR 2				
102.01	PARKING			0
102.02	Parking Space	157		0
102.03	ADA Parking Space	9		0
102.04				0
102.05	SUPPORT SPACES			0
102.06	Storage	1	760	760
102.07	Storage	1	612	612
102.08	Electrical Room	1	756	756
102.09	Electrical Room	1	846	846
102.10				0
102.11	VERTICAL CIRCULATION			0
102.12	Exit Stairs - Public	4	250	1,000
102.13	Exit Stairs - Legislator	2	240	480
102.14	Elevator - Public	2	80	160
102.15	Elevator - Legislator	2	80	160
102.16				0
TOTAL FLOOR GROSS SQUARE FOOTAGE				86,574

Special Considerations / Notes:

1. Parking spaces are 10' in width and vary in length from 20' - 24' to accommodate oversized vehicles.
- 2.

NO. SPACE DESCRIPTION		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
103 ASSEMBLY MEETING SPACE					
103.01	PUBLIC SPACE			0	
103.02	Lobby	1	500	500	Include vendor kiosk location.
103.03	Men's Restroom	4	300	1,200	
103.04	Women's Restroom	4	300	1,200	
103.05	Family Restroom	4	60	240	
103.06	Lactation Room - Public	2	60	120	Provide counter and sink.
103.07	Janitor Closet / Storage	2	200	400	
103.08	Elevator	2	80	160	
103.09	Elevator Equipment	1	80	80	
103.10	Exit Stairs	4	200	800	Verify stair occupancy capacities during code review.
103.11	Business Center	1	600	600	Provide small workstations, printer, conference tables.
103.12				0	
103.13	SHARED MEETING SPACES			0	
103.14	Joint Meeting Room - Theater	0	0	0	Theater style seating - Senate & House meetings.
103.15	Joint Committee Meeting Room - Large	3	2,000	6,000	Dividing acoustical walls to open to one large room. Currently using the Brynhild Hausland Room which is too small at 1,944sf.
103.16				0	
103.17	MEETING ROOMS			0	
103.18	Senate Meeting Room - Appropriations	1	1,890	1,890	Provide for 16 committee and staff. Podium for presenters and audience seating of 35 people. Half circle committee table with small staff tables in rear corners. Designated ADA public seating areas.
103.19	Senate Meeting Room	8	1,470	11,760	Provide for 12 committee and staff. Podium for presenters and audience seating of 30 people. Half circle committee table with small staff tables in rear corners. Designated ADA public seating areas.
103.20	House Meeting Room - Appropriations	1	3,150	3,150	Provide for 25 committee and staff. Podium for presenters and audience seating of 45 people. Half circle committee table with small staff tables in rear corners. Designated ADA public seating areas.

NO. SPACE DESCRIPTION		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
103 ASSEMBLY MEETING SPACE					
103.21	House Meeting Room	8	2,346	18,768	Provide for 20 committee and staff. Podium for presenters and audience seating of 30 people. Half circle committee table with small staff tables in rear corners. Designated ADA public seating areas.
103.22				0	
103.23	STAFF SUPPORT			0	
103.24	Temporary Staff Work Area	24	70	1,680	6 groups of 4 workstations at 70 sf/each. Printer nearby.
103.25	Copy/Work Area	1	150	150	Provide 2 copiers and a table in between.
103.26	Kitchenette Area	2	80	160	Counter with sink, microwave and small refrigerator.
103.27	Men's Restroom	2	300	600	
103.28	Women's Restroom	2	300	600	
103.29	Family Restroom	2	60	120	
103.30	Janitor Closet / Storage	2	120	240	
103.31	Staff Elevator	2	80	160	
103.32	Elevator Equipment	1	80	80	
103.33	Legislator Emergency Exit Stair	4	200	800	
103.34				0	

Total Department Net Square Footage 51,458

Department Circulation Wall Area Factor 0.20 10,127

TOTAL DEPARTMENT GROSS SQUARE FOOTAGE (DGSF) 61,585

Major Circulation Factor 0.30 18,380

TOTAL FLOOR GROSS SQUARE FOOTAGE 79,965

Special Considerations / Notes:

1. Meeting Rooms preliminarily sized at 25 sf per occupant.
2. Meeting Rooms sized based on table shape and clearances.

		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
NO.	SPACE DESCRIPTION				
104 ASSEMBLY OFFICES					
104.01	PUBLIC SPACES			0	
104.02	Lobby	1	500	500	
104.03	Men's Restroom	1	200	200	
104.04	Women's Restroom	1	200	200	
104.05	Family Restroom	1	60	60	
104.06	Janitor Closet / Storage	1	120	120	
104.07	Elevator	2	80	160	
104.08	Elevator Equipment	0	80	0	
104.09	Exit Stairs	1	200	200	Verify stair occupancy capacities during code review.
104.10				0	
104.11	OFFICES			0	
104.12	Caucus Leader Office	5	240	1,200	Provide desk and conference table with seating for 4.
104.13	Caucus Leader Receptionist	5	100	500	
104.14	Caucus Leader Waiting	5	40	200	Seating for 4.
104.15	Caucus Work Room/Storage/Kitchenette	5	80	400	
104.16	Committee Chair Office	30	120	3,600	28 current offices and 2 flex offices. Type 120-C.
104.17	Senate Office	32	80	2,560	47 less caucus and chair offices (47 - 15 = 32 required)
104.18	Senate Office - Future/Flex	3	80	240	
104.19	House Office	78	80	6,240	94 less caucus and chair offices (94 - 16 = 78 required)
104.20	House Office - Future/Flex	6	80	480	
104.21				0	
104.22	LEGISLATIVE WORK SPACE			0	
104.23	Temporary Staff Work Area	1	0	0	Located on Meeting Room Floor.
104.24	Copy/Work Room	1	250	250	Casework for laminators, staplers, copy machines.
104.25	Supply Storage	1	100	100	Heavy duty adjustable shelving on 3 sides.
104.26	Print Stations	2	40	80	Dispersed on the floor. In addition to main Copy/Work Room.
104.27	Staff Break Area	1	350	350	Provide seating for 12.
104.28	Conference Rooms - Large	2	500	1,000	Locate near Caucus Leader Offices Majority Offices.
104.29	Conference Rooms - Medium	2	250	500	Locate near Minority offices.

NO. SPACE DESCRIPTION		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
104 ASSEMBLY OFFICES					
104.30	Conference Rooms - Small	2	165	330	Dispersed on the floor.
104.31	Men's Restroom	1	240	240	
104.32	Women's Restroom	1	240	240	
104.33	Family Restroom	2	60	120	
104.34	Lactation Room - Staff	1	60	60	Provide counter, sink and small refrigerator.
104.35	Janitor Closet / Storage	1	120	120	
104.36	Legislator Elevator	2	80	160	
104.37	Elevator Equipment	0	80	0	
104.38	Legislator Emergency Exit Stair	3	200	600	Access to parking levels.
104.39	Staff Stairs	2	200	400	Access to the meeting room and staff floors only.
104.40	Mechanical /Electrical Supply Storage	1	500	500	Can be located on any floor.
104.41				0	
104.42	MECHANICAL / IT ROOMS			0	
104.43	IT Room	1	240	240	Located within the Mechanical Room.
104.44	Mechanical Room	1	9,522	9,522	
104.45				0	
104.46	FUTURE / RENTAL AREA			0	
104.47	Future/Rental Area Available	1	1,120	1,120	Additional space due to floor stacking
104.48				0	

Total Department Net Square Footage 32,792
 Department Circulation Wall Area Factor 0.37 12,028

TOTAL DEPARTMENT GROSS SQUARE FOOTAGE (DGSF) **44,820**

Major Circulation Factor 0.00 0

TOTAL FLOOR GROSS SQUARE FOOTAGE **44,820**

Special Considerations / Notes:

- 1.
- 2.

		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
NO.	SPACE DESCRIPTION				
105 LEGISLATIVE COUNCIL					
105.01	PUBLIC SPACES			0	
105.02	Lobby at Elevators	1	200	200	
105.03	Men's Restroom	0	0	0	
105.04	Women's Restroom	0	0	0	
105.05	Family Restroom	1	60	60	Low public visitor volume.
105.06	Janitor Closet / Storage	1	120	120	
105.07	Elevator	2	80	160	
105.08	Elevator Equipment	0	80	0	
105.09	Exit Stairs	1	200	200	Verify stair occupancy capacities during code review.
105.10	Secure Lobby	1	120	120	Located off of the elevator lobby.
105.11				0	
105.12	STAFF OFFICES			0	
105.13	Receptionist	2	80	160	Secure door to staff area.
105.14	Clerical	12	64	768	Replaces offices.
105.15	Clerical - Future	8	64	512	Replaces offices.
105.16	Director Office	1	300	300	
105.17	Fiscal Office	1	300	300	
105.18	Division Office Director	5	220	1,100	
105.19	Division Office Director - Future	2	220	440	
105.20	Supervisor Office	8	150	1,200	Includes IT Supervisor and Assistant Directors.
105.21	Supervisor Office - Future	8	150	1,200	
105.22	Staff Office	41	120	4,920	
105.23	Staff Office - Future	62	120	7,440	
105.24	IT Staff				
105.25				0	
105.26	STAFF SUPPORT			0	
105.27	Conference	1	500	500	Locate between Director and Fiscal Office. Seating for 16.
105.28	Library	1	500	500	Includes 3 racks, scanner, and microfiche.
105.29	Break Room	1	700	700	Seating for 20 - 24 staff.

NO. SPACE DESCRIPTION		PROPOSED			
		QTY	NET EACH	TOTAL NET	REMARKS
105 LEGISLATIVE COUNCIL					
105.30	Copy / Work Room	1	400	400	Casework for laminators, staplers, copy machines. Publishes a lot of documents. Locate close to clerical.
105.31	Storage/Supplies	1	800	800	Includes vault storage relocated. Vault area of 400 sf could be on a different floor.
105.32	IT Storage Room	1	900	900	Locked room.
105.33	IT Server Room	1	240	240	Locked room. Provide 20' x 12' configuration.
105.34	Men's Restroom	1	180	180	
105.35	Women's Restroom	1	180	180	
105.36	Family Restroom	1	60	60	
105.37	Lactation Room - Staff	1	60	60	Provide counter, sink and small refrigerator.
105.38	Janitor Closet / Storage	1	120	120	
105.39	Staff Elevator	2	80	160	
105.40	Elevator Equipment	0	80	0	
105.41	Staff Emergency Stair	3	200	600	
105.42	Staff Stair	2	200	400	Access to the meeting room and staff floors only.
105.43	Future/Rental Space	1	1,416	1,416	Additional space due to floor stacking

Total Department Net Square Footage		26,416
Department Circulation Wall Area Factor	0.59	15,524

TOTAL DEPARTMENT GROSS SQUARE FOOTAGE (DGSF)	41,940
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Major Circulation Factor	0.00	0
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TOTAL FLOOR GROSS SQUARE FOOTAGE	41,940
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Special Considerations / Notes:

1. All staff offices behind card access control.
2. 70 staff currently.
3. 150 staff in the future. Comparable to Montana.