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## Project Narratives by Discipline Schematic Design Submittal

22 May 2018

# National Ability Center Recreation Center



*1000 Ability Way  
Park City, UT 84060*

**Architect Project #18065**

# **Architectural**

## **General Scope**

This Schematic Design Package is being submitted for the proposed National Ability Center (NAC) Recreation Center building. This building consists of a gym, meeting room, warming kitchen and restrooms totaling approximately 7,877 square feet. The scope of work is in general compliance with the campus master plan and conditional use permit application design prepared by Architectural Nexus in 2016/2017.

## **Regulatory**

### Jurisdiction and Regulations

The Recreation Center expansion is planned to be constructed at the existing NAC main campus at 1000 Ability Way, Park City, UT 84060, and located south of the memory garden between the Administration Building to the east and the Equestrian Center to the west on the NAC campus. This site falls under the jurisdiction of Park City Planning. This building design was approved by the planning commission via Conditional Use Permit in 2017. The zoning of the site is regulated by Summit County Zoning, as part of the Snyderville Basin Planning District. The parcel number is NACS-1.

## **Codes**

### Applicable Codes

International Building Code (IBC) 2015

International Fire Code (IFC) 2015

International Mechanical Code (IMC) 2015

ANSI/ASHRAE Standard 90.1 2013

International Plumbing Code (IPC) 2015

National Electric Code 2012

ADA (ADAAG) 2010

ICC/ANSI A117.1 2009

Additional applicable codes can be found in attached narratives by other trades.

## **Construction Type and Occupancy**

The new building will primarily be used for group activities and gatherings. Therefore, the building and expansion will function as Assembly Group A-3 per section 304 of the IBC: assembly use intended for worship, recreation or amusement.

The proposed construction for this expansion is Type V-B, as defined in the International Building Code (IBC). As a result, most of the components of the building are not generally required to be fire-resistance-rated (per Table 601). See also the implications under “Height and Area Limitations” below.

## **Height and Area Limitations**

Under the 2015 IBC, a single-story, sprinklered, Type V-B, Group A-3 building has a tabular allowable area of 24,000 s.f. Even without consideration for an area increase due to frontage, we are well within the allowable area. The maximum allowable height is 2 stories above grade plane and has a limit of 60 feet. The new building is planned to be 1 story, and the tallest portion of the building is shown as 28'-3”.

## **Accessibility**

A goal of buildings owned and occupied by the NAC is to surpass ADA and accessibility standards. Where ADA would require a certain percentage of accessible lockers, counters, plumbing fixtures, etc., this building will provide more than the required minimum.

## **Site Improvements**

### Survey and Geotechnical

A site survey of the campus has been conducted by Alliance Engineering Inc. The information collected in the survey is currently being compiled. It is anticipated that a site survey will be issued to the project team in the coming weeks.

A Geotechnical study has been solicited by the National Ability Center. As of 3/9/18, the test pits were currently being dug. This report is also expected in the coming weeks.

### Site Utilities

As part of this project, infrastructure for the entire campus will be provided to minimize utility work and provide easy utility connections for future additions and renovations outlined in the campus masterplan. This scope of work is identified on attached utility plan. It is to be determined during the design phase whether T connectors for future additions will be part of this project, or if future project will tap into trunk lines. Utilities of future connections under paving areas of this project are to be minimized, so that new paving is not being disturbed in the near future.

### Site Design

The proposed site for the NAC Recreation Center building is centrally located on the NAC campus, where the outdoor riding arena currently exists. The site is flanked by the south end of the Equestrian Center on the west side, the memory garden and outdoor pavilion to the north, the administration building and

lodge to the east, and the existing playground to the south. The Recreation Center site is connected to the greater campus through a network of concrete pedestrian pathways on all four sides of the site, with direct connections to the administration building, equestrian center, lodge, and playground.

The proposed site design will generally include additional new concrete pedestrian pathways, realignment of existing concrete pedestrian pathways, exterior concrete patios and entry spaces, locally-sourced rock retaining on the west side of the building, a large outdoor activity space on the north side of the building with a playground-type surface, and a landscaped lawn area on the south side building. Landscaped planter beds are proposed around the foundation walls of the new building and along the perimeter of the site, adjacent to pedestrian pathways.

Materials for the proposed site improvements will generally include standard four inch-thick concrete for pathways and patios, blended top soil for lawn areas and planter areas, natural shredded bark mulch, and a softer playground surface material for the outdoor activity space suitable for wheelchair travel.

### Landscape Design

The proposed landscape design for the Recreation Center building will complement and enhance the existing landscaped areas throughout the NAC campus. Notable landscaped beds are proposed along the perimeter of the outdoor activity space to serve as transition buffer between pedestrian circulation routes and the activity space. Additional landscaped beds are proposed along the building foundation walls to soften the transition from horizontal planes to vertical planes. A proposed turfgrass area is proposed for the south side of the Recreation Center building for passive and active outdoor activities, which will incorporate the existing fire ring.

Planter bed areas will generally include, but not be limited to, native and water-wise trees, shrubs, ornamental grasses, flowering perennials, and ground covers. The proposed plant materials will be reflective of existing, on-site trees and plants which are proven to be suitable for the site. Deciduous trees shall be at least two-inch caliper, balled and burlapped nursery stock. Shrubs shall be a minimum #5 gallon container, nursery grown stock and ornamental grasses and flowering perennials shall be a minimum #1 gallon container nursery grown stock. Surface materials for landscaped areas will include natural shredded bark mulch and drought tolerant turfgrass.

Planter bed areas shall be separated from turfgrass and other non-vegetated surfaces with six inch by six inch concrete mow curbing and a 24-inch wide cobble rock drip edge is proposed along the northeast corner and south and west sides of the building.

### Irrigation Design

It is anticipated that the irrigation system for the Recreation Center building will tie into, and utilize, the existing campus irrigation system to the greatest extent possible. Turfgrass areas shall be irrigated with pop-up rotors and spray heads, while planter bed areas shall be irrigated with on-grade, point-source drip irrigation. Drip irrigation components shall include drip valve assemblies (in-line filter and pressure regulator), blank drip tubing, point-source drip emitters, and flush valve assemblies.

In the event that the existing campus irrigation system does not have the capacity to take on the new irrigation, a new point of connection to the Recreation Center water service line will be necessary. A new point of connection will generally include, but not be limited to a stop and waste valve, a backflow

prevention device, a master valve and flow sensor, a quick coupler valve, and a new automatic controller.

### Parking and Access

Access to the building expansion will be provided with new concrete sidewalks from other areas of the campus. Parking will be reviewed from a whole campus approach to determine the quantity of stalls needed for this phase of the master plan.

## **Building Exterior**

A Design Brief was developed by NAC, and Architectural Nexus for the campus masterplan: "Finding extraordinary in ordinary."

### Wall Construction

The exterior wall construction will be primarily 2x wood framing with 5/8" gypsum board on the interior, and plywood or exterior glass mat sheathing on the exterior as determined by the structural engineer. Impact resistant gypsum board will be required in the gymnasium area. There will be a weather resistive barrier and a minimum of 3" rigid insulation on the exterior side of the sheathing. Certain walls will be load bearing as identified by the structural engineer.

### Material Palette

Cementitious Siding – BOD: TBD

Natural Stone – BOD: Mountain Valley Sandstone, Building veneer, Browns Canyon

Rusted Metal Panel – RustWall Panel; 18 gage; 18 inches wide

Storefront – BOD: Kawneer Trifab VersaGlaze 451. Anodized, color TBD

Entrance doors – BOD: Kawneer 190 Medium Stile

Operable Panels – BOD: Kawneer Glassvent window for storefront framing - in select locations of storefront system

Corrugated Metal Roof Panels – BOD: Oxidized metal ABC Rustic Trail

Columns – Glulam wood columns

Beams – Glulam wood beams

## **Building Interior**

### Storage / Mechanical / Electrical

Floors to receive a penetrating concrete sealant. Provide 6" H rubber base and paint at all walls, whether exposed concrete or gypsum board. There will be no finished ceiling in these rooms, nor will the exposed structure be painted.

### Activity Room

Provide rubber tile floor, equal or similar to Mannington Teles. Provide 6" H Johnsonite Millwork rubber base or equal on painted, abuse resistant gypsum walls. West wall to be a bouldering wall. Ceiling to be exposed glue lam beams and plywood. Provide ½" thick acoustical felt, equal or similar to Kirei, direct glued to ceiling between glue lam beams. Provide LED High Bay lighting.

### Vestibules

Provide Interface Super Flor walk-off carpet tile at vestibules. Walls to be painted gypsum. Provide 6" H Johnsonite Millwork rubber base or equal on painted gypsum walls. Ceilings to be painted gypsum board with recessed downlights.

### Lobby

Floors to be sealed, polished concrete with slip resistant finish and light color to hide dirt. Walls to be painted gypsum. Provide 6" H Johnsonite Millwork rubber base or equal on painted gypsum walls. Assume surface mounted or recessed fixtures.

### Conference Room

Provide carpet; allow \$30/sq. yd. for material only. Walls to be painted gypsum. Provide 6" H Johnsonite Millwork rubber base or equal at painted gypsum walls. Exposed ceiling with acoustical clouds with 2 x 2 acoustical tiles. Assume 24" x 24" light fixtures.

### Warming Kitchen

Floors to be sealed, polished concrete with slip resistant gloss finish and light color to hide dirt. Provide 6" H rubber base at painted gypsum board walls. Ceiling to be painted gypsum board. Provide quartz countertops and plastic laminate millwork below counter. Assume 24" x 24" light fixtures.

### Restrooms

Both floors and wet walls to be 12" x 24" colorbody porcelain tile, Daltile or equal. Remaining walls to receive paint and tile base to match floor. Ceilings to be painted gypsum board. Lighting to include downlights and continuous light cove at fixture wet wall. Provide accessible wall mounted sinks.

### Miscellaneous

Millwork: All millwork to receive plastic laminate vertical surfaces with a quartz countertop, where needed.

Door Finish & Hardware: All door and millwork hardware finish to match storefront system. Doors to include; wood solid core and hollow metal, depending on location.

Restroom Accessories: Provide grab bars, mirrors, dispensers and disposals.

## **Structure**

Exposed structure of the building will be glulam wood columns and beams, and wood floor/roof deck.

The interior walls will be 2x wood framing with 5/8" gypsum board on each side. Many interior walls will have batt insulation for acoustical purposes. Certain walls will be load bearing as identified by the structural engineer.

In unexposed areas, framing will be wood trusses and 2x wood bearing walls.

**Schematic Design Documents Submittal  
Mechanical Basis of Design  
NAC Recreation Center  
Park City, Utah**

The project consists of a new building of approximately 8,300 square feet on one level.

**PROJECT TEAM**

Owner	National Ability Center	Kevin Stickelman	435.649.3991
Architect	Archnexus	Julie Berreth	801.924.5039
Mechanical Engineer	Colvin Engineering	Bret Christiansen	801.505.5411
Electrical Engineer	BNA Consulting	Alvaro Bonilla	801.532.2196
Structural Engineer	ARW Engineering	Troy Dye	801.782.6008
Civil Engineer	Alliance Engineering	Michael Demkowicz	435.649.9467

**APPLICABLE CODES AND STANDARDS**

The project is located in Park City, Utah. The mechanical systems will be designed in accordance with:

- 2015 IBC
- 2015 IMC
- 2015 IPC
- 2015 IFC
- ANSI/ASHRAE Standard 90.1 2013.
- ANSI/ASHRAE Standard 55-2010.
- ANSI/ASHRAE Standard 62.1-2010.
- ANSI/ASHRAE Standard 52.2-1999.



## AVAILABLE UTILITIES

### CULINARY WATER

Culinary water available on site.  
New single stage Pressure Reducing Valve assembly, Reduced Pressure Backflow Preventer, meter and isolation valves.  
Water pressure is assumed to be adequate.  
No future capacity included in design.

### SANITARY SEWER

Sanitary sewer available on site.  
New waste piping to connect to existing.  
No future capacity included in design.

### STORM SEWER

Storm water available on site.  
New storm sewer piping to connect to existing.  
No future capacity included in design.

### NATURAL GAS

Natural gas is available on site.

## GENERAL REQUIREMENTS

### SITE ELEVATION

7,000' ASL

### TEMPERATURE

Outdoor design temperatures:      winter ..... -7.0 °F  
(ASHRAE 99%, Park City, UT)      summer ..... 95.0<sub>DB</sub>/62.0<sub>WB</sub> °F

Indoor design temperatures:

	Occupied*		Unoccupied*	
	Cooling	Heating	Cooling	Heating
Normally occupied spaces	74	68	80	60
Utility Spaces, including mechanical rooms	80	60	80	60

\*All temperatures are dry bulb temperatures.

### HOURS OF OPERATION:

Day of Week	Occupied
M-F	0800 – 1800
Sat	0600 – 2100
Sun/Holiday	0600 – 2100

## LOAD CALCULATIONS

### Envelope

The following envelope performance is used for initial load calculations

Envelope Component	U-value (BTU/ft <sup>2</sup> /hr/°F)	SHGC (w/o blinds)
Walls:	0.045	n/a
Roof :	0.033	n/a
Fenestration: (WWR: 40%, max):	Nonmetal framing: 0.32 Metal Framing:0.42	Nonmetal framing: 0.4 Metal framing: 0.4

### Internal Loads

The following estimated internal loads form the basis for load calculations:

Room Type	ASHRAE 62.1 – 2010 Classification	People (Pers/ft <sup>2</sup> )	OSA Rate (cfm/ft <sup>2</sup> )	OH Lights (W/ft <sup>2</sup> )	Equip (W/ft <sup>2</sup> )	Exhaust Rate (cfm/unit)
Corridors	General: Corridors	0.000	0.060	0.5	0.00	N/A
Training Rooms	Conference/Meeting	0.050	0.120	0.9	1.00	N/A
Breakrooms	Office Building: Breakrooms	0.050	0.120	0.9	Tbd	N/A
Public Restroom	Table 6-4: Toilets-public	0.000	N/A	0.9	0.00	70
Storage	Office Bldg. Storage	0.000	0.060	0.8	0.10	N/A
Mechanical Rooms	Misc: Electrical equipment rooms	0.000	N/A	1.5	tbd	
Janitor closet	Table 6-4: Janitor closet	0.000	N/A	0.5	0.00	1 cfm/ ft <sup>2</sup>

Notes:      Lighting to be LED.  
                 Equipment Density per standard design practice

People:              Conference Room/Food Preparation:  
                            250 Btuh, sensible  
                            200 Btuh, latent

Multi-Use Space:  
305 Btuh, sensible  
545 Btuh, latent

## BUILDING PERFORMANCE

Energy code ASHRAE 90.1 – 2013

## SUSTAINABILITY/ENERGY EFFICIENCY

The project will not pursue LEED certification.

The design team will evaluate the building design and consider strategies, including but not limited to, daylighting, demand-controlled ventilation, spectrally selective glazing and low flow water closets and faucets.

The Owner will also identify and evaluate the suitability of any potential incentives, policies or rebates for energy efficiency and renewable, offered by federal, state, or local authorities, as well as those offered by private entities and utility companies. Of particular note is the Rocky Mountain Power FinAnswer incentive program, and ThermWise, by Questar.

Low flow plumbing fixtures

## HUMIDITY

There is no active control of humidity.

## HVAC

### HEATING AND COOLING

The heating and cooling source will be packaged and custom air handlers with high-efficiency air cooled DX and indirect natural gas heating.  
Ceiling fans will be designed by arch and provided by general contractor.

#### Fire Riser Room

Fire riser room will include a 2 KW electric unit heater.

#### Vestibules

Heating in vestibules by cabinet unit heaters. No cooling required.

#### Electrical Rooms

No electrical rooms require cooling or ventilation.

#### Telecommunication / Data Rooms

No assigned room for this use, anticipated to be a small load. No dedicated cooling required.

#### Seismic

All equipment requiring seismic restraint will be calculated by a seismic engineer licensed in Utah by a design build performance specification.

#### Redundant systems

No mechanical redundancy required.

#### Emergency power

None.

## VENTILATION AND AIR DISTRIBUTION

Ventilation of all spaces will comply with the minimum requirements of ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

The ventilation system is designed for an air change effectiveness of 0.8, as determined by ASHRAE Standard 62.1-2010.

All supply and transfer air ductwork will be constructed with galvanized sheet metal. All low pressure ductwork will be constructed to SMACNA 2" pressure class. Ductwork will be sealed to SMACNA seal class "A" and require pressure testing in accordance with 2015 IMC.

Heating and cooling air will be generated by single zone air handlers and delivered to the space.

Ventilation air will be supplied to the building through the packaged air handler(s) outdoor air intake damper. Demand controlled ventilation will be included with CO2 sensors in all high occupancy spaces. Outdoor airflow will adjust CFM to spaces based on CO2 level and will maintain higher CFM until reduce CO2 levels.

The air handlers serving the activity room will be interlocked to operate with the large door that opens to additional recreation space. When the door is open fully, the system will not be required to operate. Natural ventilation of the space will be achieved through free area of the door opening. The free area of the open door is required to be at least 4% of the net occupiable floor area per ASHRAE 62.1-2016.

Exhaust for restrooms and building relief air will be ducted to inline fans located in the attic space. The exhaust will terminate through the roof. Exhaust rates will comply with the 2015 IMC and ASHRAE 62.1-2010. Exhaust and relief rates may be increased above code requirements if it is determined that additional exhaust is required to meet desirable building pressure relationships.

Duct pressure drop will be at a max of 0.08" WC per 100 feet of duct.

Exposed ductwork in areas with no ceilings.

No sound attenuators are planned.

Each space is provided with a single temperature control. A zoning plan will be developed that indicates proposed zoning plan for review.

Duct standards and classifications for duct construction per SMACNA standard.

Motorized damper will be used on exhaust fans

## COMMISSIONING

None

## CONTROLS

Controls will be simple comfort thermostats.

Temperature sensor to include push button temporary override to occupied mode for a set period time.

Demand controlled ventilation controls to integrate with air handler control.

Exhaust fans control by manual switch, thermostat or occupancy sensor.

## EQUIPMENT

### AH-1A, AH-1B

Two single zone, constant volume custom air handlers each serving half of the activity room space. The air handlers will be natural gas fired heating, and DX cooling with remotely located condensing unit(s). The supply duct will be a main trunk line down one side of the activity room, with drum louvers on both sides for air distribution. The supply duct will be approximately 100' long with the main trunk size at 28" diameter. There will be approximately 24 drum louvers. Return air will be ducted behind the bouldering wall next to the air handlers, with a few potential small return grilles to aid on stratification near the bouldering wall. The preliminary sizing criteria is listed below:

- 3500 CFM Supply, 800 CFM Outside air, 4300 CFM Total
- 2" ESP
- 13 Tons cooling, 55F supply temp max.
- 180,000 BTU heating, 95F supply temp min.

### AH-2

Single zone, packaged air handler serving the east wing. The unit will be located at grade at the north end of the building, and will be enclosed by a screen wall. The air handler will be natural gas fired heating, and a DX cooling unit. The supply and return duct will feed into a chase located in the north end, and will be approximately 60' long with a dimension of 20/12. The preliminary sizing criteria is listed below:

- 2000 CFM supply, 200 CFM outside air, 2200 CFM total
- 2.5" ESP
- 4 tons cooling, 55F supply temp max.
- 50,000 btu heating, 95F supply temp min.

### EF-1

Exhaust fan serving the restrooms. The fan shall be inline, and located in the attic space. The estimated airflow will be 550 CFM @ .5" ESP.

### EF-2

Exhaust fan serving the food preparation area. The fan shall be inline, and located in the attic space. The estimated airflow will be 200 CFM @ .4" ESP.

### EW-1

Instantaneous water heaters serving the lavatories and sink. There are a total of 7 units, sized at 3.5 kw each.

### EH-1

Electric heaters serving the bathrooms and vestibules. There are a total of 4 units. The two units in the vestibule will be wall mounted-recessed @ 4 kw each. The two bathroom ceiling heaters are sized at 1 kw.

## PLUMBING

### Fixtures

Water Closet: Wall mounted 1.28 GPF sensor type flush valve.

Urinal: Wall mounted low flow type with sensor type flush valve.

Lavatory: Wall mounted sensor type faucet 0.5 gpm.

Sink: Wall mounted manual faucet 0.5 gpm.

Electric water cooler with bottle filler station.

Disposer in sink.

Supply and drain for ice maker (ice maker specified by others)

### Cold Water

Water service to the building will be provided from a new 2" main. The domestic cold water service shall be provided with a water meter, pressure reducing valve (PRV) assembly and reduced backflow prevention device assembly

Piping inside the building will be Type L copper.

No domestic water booster is anticipated at this time.

Provide reduced pressure backflow preventer (RPBP) for any make up water to ice maker, refrigerator, etc..

### Hot Water

Electric instant hot water heaters will be provided for the plumbing fixtures at point of use.

### Natural Gas

A new gas meter and gas piping will be run to the packaged air handler units and unit heaters using schedule 40 black steel piping.

### Sanitary Waste

Sanitary 4" waste and vent piping will be no-hub cast iron above grade and PVC below grade.

Floor drains, located in each restroom and mechanical room, will be provided with deep seal traps or trap guards.

No grease waste or grease interceptor required.

### Roof Drains

The roof primary drainage system shall be routed from roof drains down through the building out to 5'-0" beyond building footprint where Site Utilities will connect and secondary drains will route down exterior columns and daylight out wall at 18" AFG.

## FIRE PROTECTION

Fire sprinkler protection will be provided throughout building and specified with a design build performance specification only, No hydraulic calculations included in design documents.

Fire pipe will enter the building to a fire riser room at the east end of the building.

System will comply with NFPA, IBC requirements and State of Utah Fire Marshal requirements.

A fire pump is not anticipated.

Sprinkler piping is schedule 40 steel throughout. Grooved couplings are acceptable (Victaulic)

Sprinkler heads will be centered on ceiling tiles

Sprinkler Occupancy Hazard Classifications are as follows:

Office and Public Areas: Light Hazard.

Service Areas: Ordinary Hazard, Group 1.

Mechanical Equipment Rooms: Ordinary Hazard, Group 1.

Building Service Areas: Ordinary Hazard, Group 1.

Electrical Equipment Rooms: Ordinary Hazard, Group 1.

General Storage Areas: Ordinary Hazard, Group 1.

Minimum Density for Automatic-Sprinkler Piping Design: As follows: (Reduce Design areas with quick response heads when applicable and increase design area as required for pitched ceilings.

Light-Hazard Occupancy: 0.10 gpm over 1500 ft<sup>2</sup>. area.

Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500 ft<sup>2</sup>. area.

Maximum Protection Area per Sprinkler: As follows (except as modified by authorities having jurisdiction)

Office Space: 225/400 ft<sup>2</sup>.

Storage Areas: 130/400 ft<sup>2</sup>.

Mechanical Equipment Rooms: 130 ft<sup>2</sup>.

Electrical Equipment Rooms: 130 ft<sup>2</sup>.

Other Areas: According to NFPA 13 recommendations, unless otherwise indicated.

## **REVIT LEVEL OF DESIGN**

### **Colvin Engineering Revit models will include the following model elements:**

1. All ductwork and air handling equipment. Ductwork will be modeled showing any required insulation.
2. Mechanical piping 2" or greater nominal pipe diameter associated with mechanical equipment. Pipe will be modeled to the outside diameter of the pipe or pipe insulation, whichever is greater.
3. All plumbing and gas piping 2" or greater nominal pipe diameter. Pipe will be modeled to the outside diameter of the pipe or pipe insulation, whichever is greater. Modeled sanitary and roof drain piping will reflect required slope in areas where conflicts are highly probable.
4. All plumbing equipment will be modeled to its overall dimensions.
5. Where contracted, fire protection piping will be modeled up to the standpipe and FDC.

### **Colvin Engineering Revit models will be coordinated with other disciplines as follows:**

1. Air handling equipment
2. Mechanical piping 2" or greater nominal pipe diameter.
3. All plumbing and gas piping 2" or greater nominal pipe diameter. Modeled pipe will reflect required slope in areas where conflicts are highly probable.
4. All Fire protection piping up to the standpipe and FDC.

### **The following elements will be noted on the 2D construction documents, but NOT modeled in 3D:**

1. Thermostats
2. Cleanouts
3. Restroom group plumbing will be represented in an isometric diagram.
4. Plumbing fixtures will be placed by the Architect.
5. Mechanical and plumbing piping less than 2" nominal pipe diameter may be modeled for the purpose of generating 2D construction documents, but shall not be coordinated for interferences with other disciplines.
6. Piping accessories (valves, etc) will be shown schematically, but will not be modeled.



# NAC Rec Center Narrative

To: Kelly Holland  
Nexus Architects

From: Michelle Gutknecht

Date: May 21, 2018

Re: NAC Rec Center; Narrative

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## CODES AND STANDARDS

1. ASHRAE (2015) will be used for compliance.
2. 2015 National Electric Code (NEC)
3. 2015 International Building Code (IBC)
4. 2015 International Fire Code (IFC)
5. National Electrical Manufacturer's Association (NEMA)

## SITE UTILITY DISTRIBUTION

An existing 12,470, 3-phase, 4-wire connection from a high voltage, pad-mounted switch connected to Rocky Mountain Power is located on site. During coordination, it will be determined if the current transformer size is sufficient for existing loads and loads that will be added in this addition.

## ELECTRICAL DISTRIBUTION

Electrical power distribution system will be robust yet simple, receiving (1) feed from Rocky Mountain Power. Selective coordination and arc flash studies will be performed for the distribution system.

We anticipate a 400A 120/208V 3-Phase 4-Wire service to the building that will service receptacles, small motors, kitchen equipment, lighting, power for ADA doors and other miscellaneous equipment.

An electronic meter will be provided at the main electrical service entrance and panelboards to monitor volts, amps, kW hours, power factor, etc.

25% future space for additional overcurrent protection devices in panel boards and switchboards. Provide 25% additional load capacity in addition to the capacity required for continuous loads in panel boards and switchboards.

Distribution switchboards and appliance panel boards shall be UL listed, with steel enclosure, with 16-gauge minimum thickness, and dead-front construction. Distribution boards shall be equipped with copper bus bars, full-sized neutral bus, and ground bus.

Lighting and appliance panel boards shall be UL listed, with steel enclosure. Panel front shall include hinged door-in-door construction, with flush locks and keys, all panels, keyed alike. Panels shall include interior index card in a clear plastic holder, and engraved laminate label on the outside of the enclosure. Panels shall be equipped with copper bus bars, full-sized neutral bus, and ground bus. Lugs shall be CU-AL rated. Circuit breakers shall be bolt-on type, thermal magnetic trip. Panels shall be designed with 10 percent spare circuit breakers and 10 percent space only for future installation of circuit breakers.

## CONDUCTORS

High Voltage (25kV) Conductors shall be aluminum with cross-linked polyethylene insulation. Conductors for 600 volts and less shall be copper. Solid conductor for sizes #12 AWG and smaller; stranded conductor for sizes #10 AWG and larger. Insulation shall be THHN/THWN, rated for 600 volts. Aluminum conductors may be considered in a value engineering/cost reduction scenario as directed by Architect/Owner. Minimum conductor size for branch circuits shall be #12 AWG. All 20 amp branch circuits over 100 feet in length shall be #10 conductors. All conductors will be color coded according to the NEC.

## WIRING DEVICES

Wiring devices shall comply with NEMA standards Pub. No. WD 1. Switches and receptacles shall be specification grade, and rated at 20 amps and 120 volts AC. Receptacles shall be 3-wire grounding type. GFI (Ground fault circuit interrupter) type receptacles shall be rated 20 amps, 120 volts AC, with solid-state ground fault sensing and 5 milliamp trip levels. Receptacles in toilet rooms, wet areas, or within 6 feet of any sink shall be GFI type. Receptacles on the building exterior shall be GFI type with a weatherproof "In Use" cover. All cover plates shall be stainless steel or otherwise as directed by Architect and/or Owner.

## STRUCTURED CABLING / COMMUNICATIONS SYSTEM

A structured cabling system that can accommodate the current and future needs of the data and voice network is planned. The fiber feed location to and from will be determined and then coordinated with owner. The system components will consist of patch panels, cable organizers, network cabling, terminations, etc. Service will be provided by Comcast.

1. Electrical Related
  - a. Target kW per rack is 3kW unless notified otherwise.
2. Telecommunications Cabling
  - a. Two data cables are anticipated from each network outlet shown on the plans. A 1" conduit will be provided to the accessible ceiling space, with non-continuous open top cable supports utilized to cable tray to the nearest telecommunications room.
  - b. Mid-level Category 6 cabling will be utilized for all horizontal cabling.
  - c. One data cable is needed for every wireless access point (WAP) throughout the building.
  - d. Two data outlets per office will be installed.
  - e. No shielded cabling is required anywhere.

3. Spare Communication System Capacities: Provide 100% future space for cabling, data, and communications electronic equipment.

## **LIGHTING DESIGN**

The interior spaces and any exterior building lighting will be illuminated exclusively with LED fixtures and at a minimum will meet the illumination levels per IESNA standards. Point-by-point calculations will be created to determine light levels of the spaces. All lighting fixtures will have a color temperature of 4000K and a CRI of 80. The fixtures will have dimming capability to allow the user to adjust the light levels in most spaces. The lighting design will be energy efficient and will comply with the current ASHRAE 90.1 – 2015 commercial energy code.

### **Lighting Controls:**

All lighting controls will meet the requirements of the energy code. Multi-button wall stations and occupancy sensors will be utilized. In spaces with windows, day-lighting control will be provided to reduce the light output when adequate daylight is available.

### **Fixtures**

2x4 or 2x2 lay-in fixtures will be provided in entry areas/conference spaces/kitchen with lay-in ceilings. Restrooms will utilize 1x4 lay-in fixtures with gyp trim. The Activity Room will have robust, high-bay, suspended fixtures. Exterior lighting will be provided as desired for aesthetic highlighting of building elements, and as required for wayfinding at entrances and for security around the building perimeter.

## **EMERGENCY LIGHTING**

Emergency lighting to be provided per code utilizing fixtures with integral battery packs.

## **AUDIOVISUAL SYSTEMS**

There will be various types of audiovisual (AV) systems throughout the building. Areas we anticipate audiovisual systems are the following:

1. Conference Room
2. Activity Room

Activity Room will consist wall plate HDMI/audio inputs at each of the (4) corners for versatility.

Conference Room may consist of wall plates or floor boxes for video and audio. Wireless connections may be included, if desired. LED screens will be used for presenting.

## **FIRE ALARM AND DETECTION SYSTEMS**

The fire alarm and detection system will be an automatic system capable of detecting fire through the use of smoke detectors and/or air sampling systems. The fire alarm system shall be analog addressable, class A loop type, and electrically supervised. Horn/strobe devices shall be 95 dB and a minimum of 15 candelas.

### **Summary of System Components:**

1. Initiating Devices:

- a. Smoke detectors will be provided in:
    - i. Above Fire Alarm Control Panel per Utah code.
    - ii. Fire/Smoke Dampers
  - b. Tamper/Flow switches will be provided as required at fire/sprinkler lines.
  - c. Duct Detectors will be provided in all fans over 2,000CFM and designated main trunk lines.
2. Notification Appliances
- a. Horn/strobes
  - b. Strobe only devices