



## TASK 2

# Community Pool Boulder City Project No. 17-1013-MC(1)



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R1 04.05.2021

R2 04.08.2021



## Company Data

**SCA Design, LLC**

**DBA:** sca design

### **NAICS Codes:**

**541310** Architectural Services

**541410** Interior Design Services

**541340** Drafting Services

### **Nevada Business License:**

NV20051301098

### **Henderson Business License:**

2016302980

### **Clark County Business License:**

2004748-054-190

### **Scottsdale Business License:**

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**Duns:** 61-457-5103

**Cage Code:** 879A7

**NV Local ESB- Tier 1**

### **NV Architectural License:**

7701 Sheldon Colen

1859 Gary Carlson

### **UT Architectural License:**

126227-0301 Gary Carlson

### **AZ Architectural License:**

69927 Sheldon Colen

### **ID Architectural License:**

AR-986966 Sheldon Colen

**Principal:** Sheldon Colen, AIA

**Principal:** Gary Carlson, AIA

## Architect:

### **Sheldon Colen**

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7527 East First Street, # 9

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## **EXECUTIVE SUMMARY**

A cost estimate of \$6,690,613.00 (Six-million, six-hundred and ninety-thousand, six-hundred and thirteen dollars) has been provided to repair and remodel the existing 40+ year old aquatic facility/pools to meet current building and health department codes with suggested future maintenance items included. Design Fees, Construction Management, and unknown conditions are not included in the cost estimate of repair.

In comparison the attached design allows removal of 2 aging pools (not in code compliance) and for a New Facility and 2 new pools at an estimated net cost of \$15,272,500. (Fifteen-million, two-hundred and seventy-two thousand, and five-hundred dollars) with 8,600 sf. 35-Meter x 25 Yard Competition Pool and 2,250 sf. Recreation Pool. Margins, adjustments, and design costs are included and estimated to bring the cost to \$20,974,447. (Twenty-million, nine-hundred and seventy-four thousand, four-hundred and forty-seven dollars.)

The benefits of the 2 new pools and facility allows for additional programming year-round to include Competitive Swimming, Fitness Swimming, Lap / Recreational Swimming, Masters Swimming, Learn-to-Swim Programs, Competitive Water Polo, Recreational Water Polo, Recreational Synchronized Swimming, Kayak Lessons, Scuba Lessons, Lifeguard and Swim Instructor Training, Red Cross Training, Public Safety Training, Deep Water Therapy Programs, Fitness Classes, Small, Medium and Large Group Classes, and One-meter springboard diving. The indoor pools make for year-round programming. Important to note: The 35 Meter Pool can support local, regional, and state championship swim meets and can serve multiple swim teams practicing simultaneously. The pool can support both a 25-yard and 25-meter floating goal water polo field of play. The pool can also support two (2) water polo teams practicing simultaneously. Maximum occupancy 430. The Recreational Pool supports additional programming complimentary to the 35-Meter or 25-Meter choice.

Cost savings and additional options have been estimated at:

1. 1,900 sf. Splashpad and Reuse of 900 sf. Kids Pool with new equipment, ADD \$913,247.
2. Substitute a 6,250 sf. 25-Meter x 25YD Pool for the 35-Meter Pool, SUBTRACT for COST REDUCTION -\$610,859.
3. Solar/ Photovoltaic Panels and Equipment, ADD \$546,662.
4. Convert Existing Lockers into Office Space, ADD \$275,503.

**It is our professional opinion, based on the current aging facility, to be a cost benefit for the City and Community to invest in the New “As Designed” facility.**



## TASK 1 RECAP

### Task 1: Summary

In March 2021, SCA Design presented The City of Boulder City with a report on the existing Aquatic Center Facility. Needed improvements were detailed as to what would be required to bring the existing facility up to current Building and Health Department Codes, including ADA accessibility. The existing facility is approximately 7,550 sf. This includes all areas under roof. The outdoor pool areas consist of 3 pools, approximately 6,252 sf. of surface area, 16,623 sf. recreational space.

A cost estimate of \$6,690,613.00 (Six-million, six-hundred and ninety-thousand, six-hundred and thirteen dollars) has been provided to repair and remodel the existing aquatic facility/pools to meet current building and health department codes with suggested future maintenance items included. Most of the maintenance items listed get resolved by going with new equipment, but should new equipment not be in the budget, these items need to be considered. Design, Construction Management, and the Bubble are excluded from the estimate. The report and estimate are based on visual findings, any past or current pool leaks are unknown, and not included in the assessment and estimate. The provided cost estimate is broken down in a way that some improvements can be completed as funding becomes available, while others need immediate attention for health/ life/safety purposes.

**Current Life Expectancy:** Generally, beyond useful life.

**Recommended Improvements:** Should be weighed by cost and life expectancy verses construction of new.

**A total budget of \$6,690,613.00 is estimated as needed to bring the existing facility up to code and make needed maintenance repairs.**

## TASK 2- NEW FACILITY

April 2021: This report shows a cost estimate to construct a new Community Pool Facility located in Boulder City, Nevada 89005. The scope of this estimate will be broad as the plans are purely conceptual and the inclusion of details have not been provided for the proposed facility.

Under the direction of the City and Ad-hoc Pool Committee provided narratives, the community preferred amenities including 2 pools, meeting/ multi-purpose room, locker rooms including family rooms, storage, break room, office, seating to accommodate 250, racquetball and gymnasium space. With a Mission Statement to provide high-quality and cost-effective recreation activities for all residents of Boulder City, consideration was made to keep the budget minimal. Variable swimming pool and structure construction types, solar, sunshades and Splashpad options have all been taken into consideration. Look and feel has been modernized and modeled after The Boulder Dam Hotel as suggested by the same.



Professional options have been compiled by licensed architects, engineers, pool consultant professionals and cost estimators under the direction of Boulder City by SCA Design.

Architectural Firm: SCA Design

Mechanical, Plumbing and Electrical Engineering Firm: Engineering Partners

Pool Consultant: Aquatic Design Group

Cost Estimator: RLB- Rider Levett Bucknall

SCA Design is please to present a cost estimate to construct a new Community Pool Facility.

Options have been included to provide the City of Boulder City with cost saving vs. benefit comparisons.

**As Designed, a total estimated net cost of \$15,272,500. is needed to construct a new 40,668+/- sf. building on 45,580 +/- sf. subject area with 8,600 sf. 35-Meter x 25 Yard Competition Pool and 2,250 sf. Recreation Pool.**

Cost savings and additional options have been estimated at:

1. **1,900 sf. Splashpad and Reuse of 900 sf. Kids Pool with new equipment, ADD \$913,247.**
2. **Substitute a 6,250 sf. 25-Meter x 25YD Pool for the 35-Meter Pool, SUBTRACT for COST REDUCTION -\$610,859.**
3. **Solar/ Photovoltaic Panels and Equipment, ADD \$546,662.**
4. **Convert Existing Lockers into Office Space, ADD \$275,503.**



## **CONCEPT DESIGN**

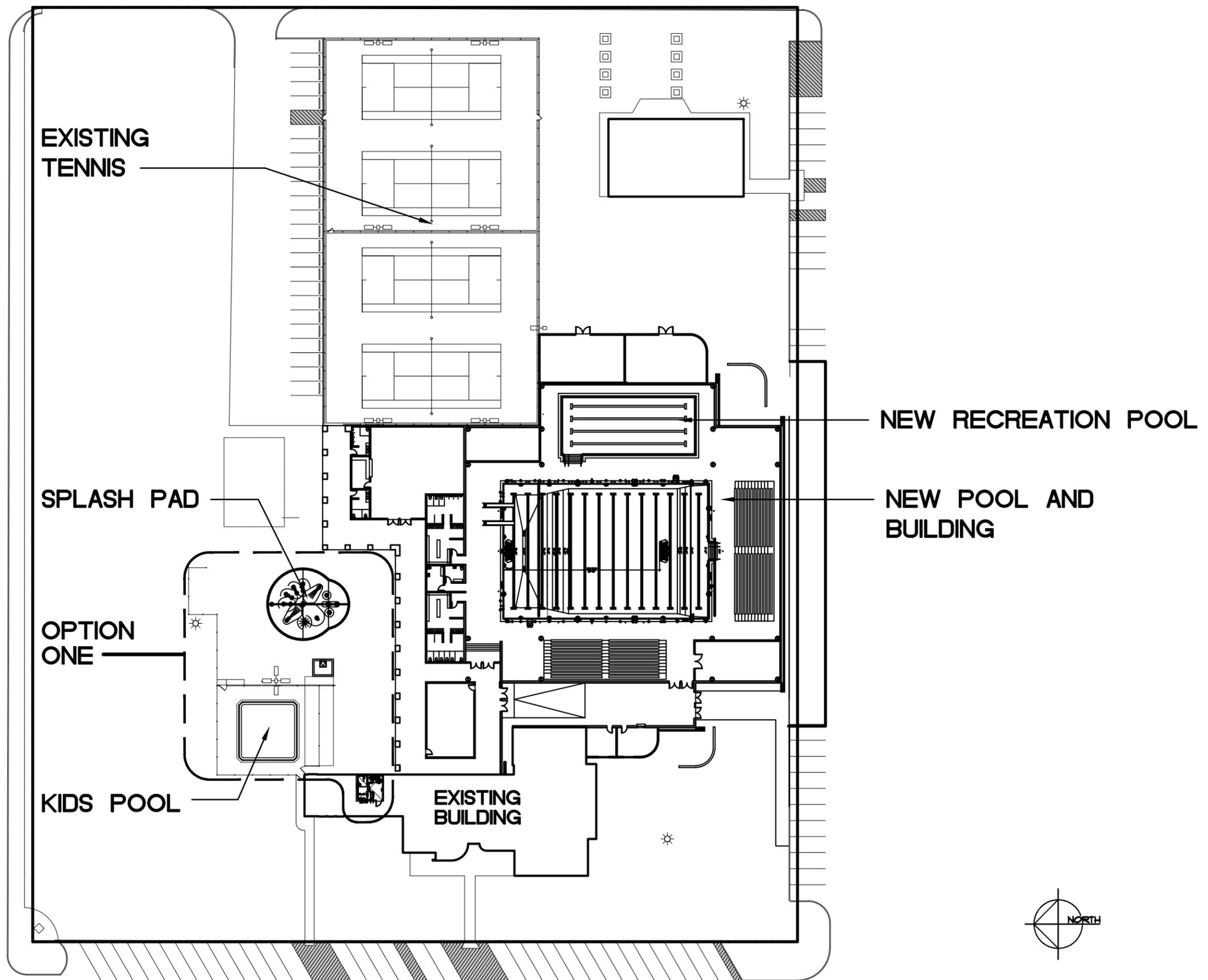
- RENDERINGS
- SITE PLAN
- FLOOR PLAN
- EXTERIOR ELEVATIONS
- BUILDING SECTIONS
- MEP





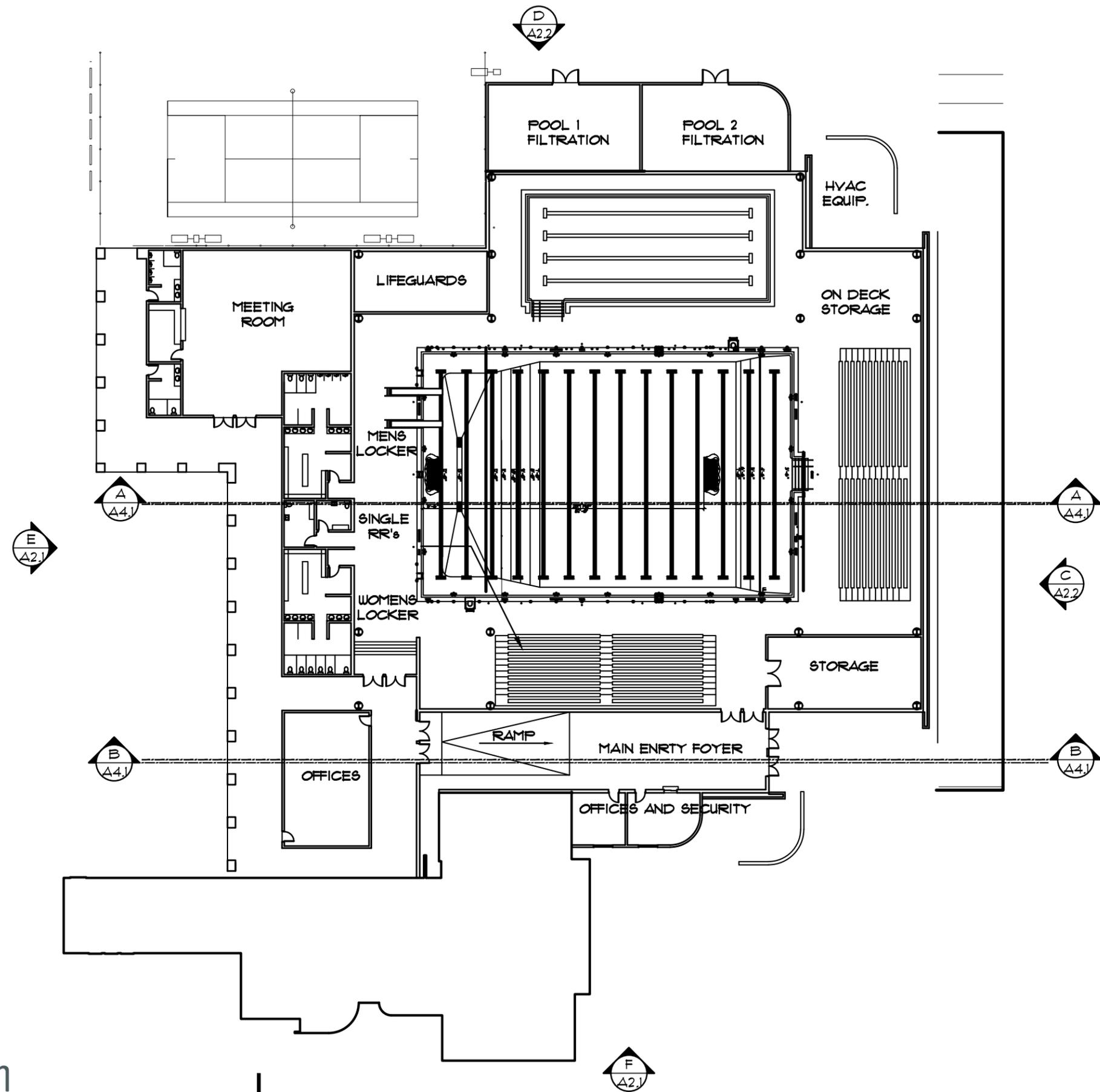
2525 W. HORIZON RIDGE PKWY.  
SUITE 230  
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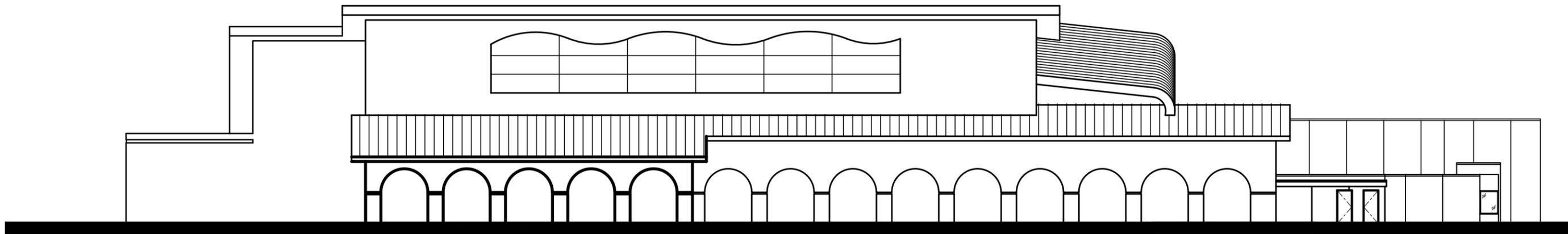
# Boulder City Community Pool



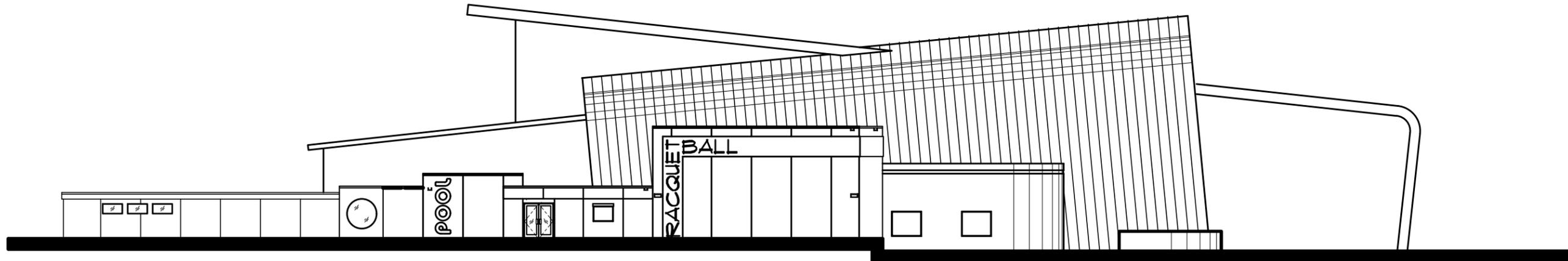
2525 W. HORIZON RIDGE PKWY.  
SUITE 230  
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PH (702) 719-2020 FX (702) 269-9673

# Boulder City Community Pool

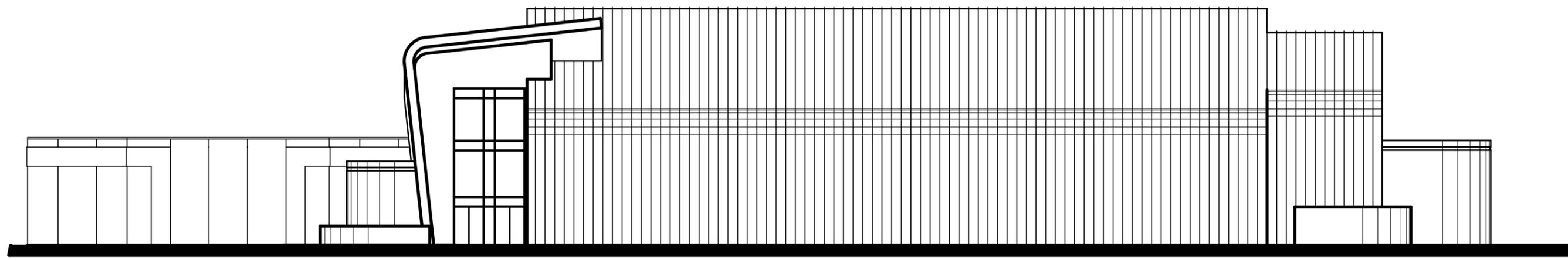




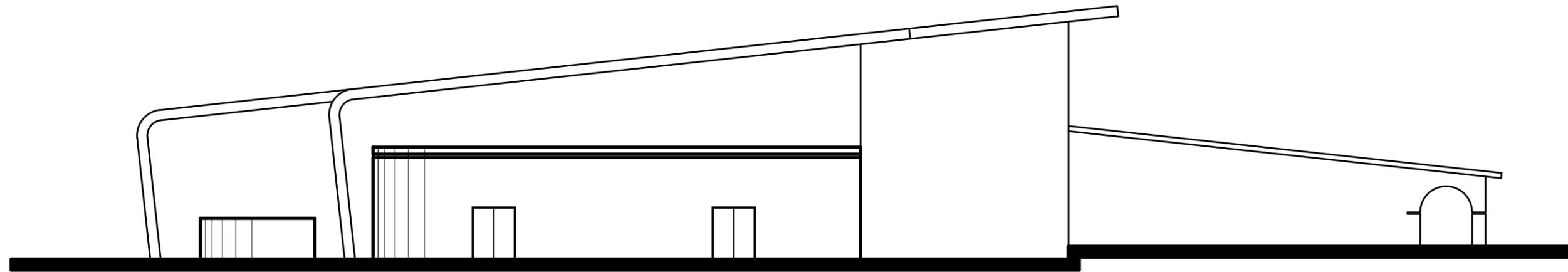
NORTH  
EXTERIOR ELEVATION E  
SCALE -



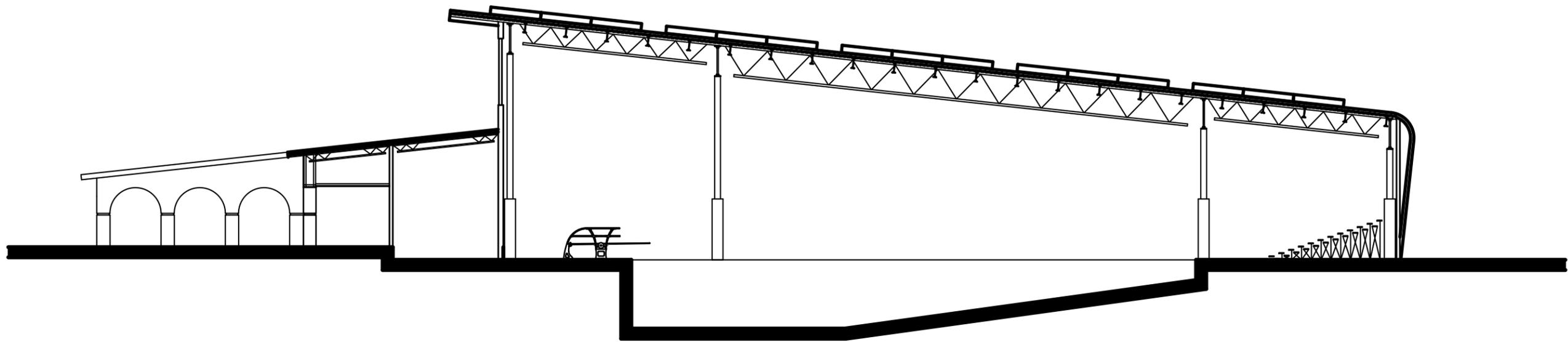
WEST  
EXTERIOR ELEVATION F  
SCALE -



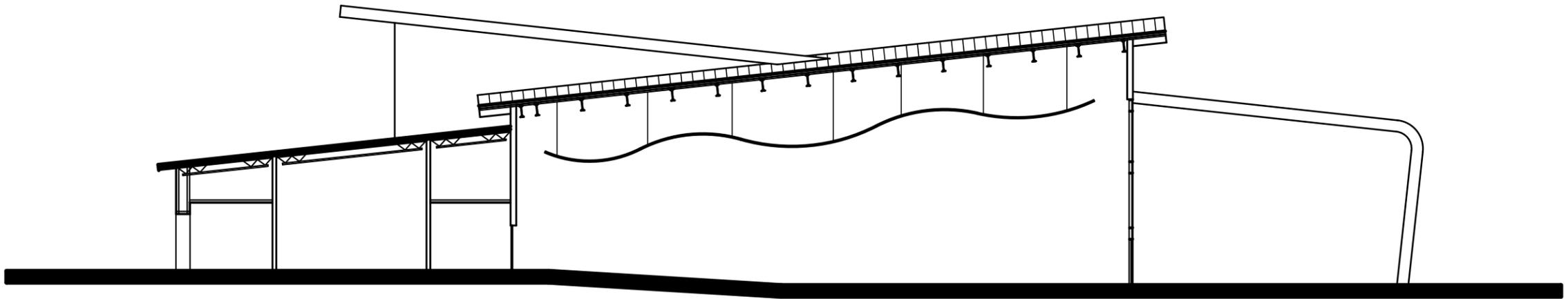
**SOUTH  
EXTERIOR ELEVATION** SCALE - (C)



**EAST  
EXTERIOR ELEVATION** SCALE - (D)



BUILDING SECTION SCALE - A



BUILDING SECTION SCALE - B



ENGINEERING PARTNERS

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Las Vegas, NV 89118  
(702) 931-3000  
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Hawaii | Las Vegas

PRELIMINARY  
Not for Construction

PRINT DATE: 2021-03-25

MEP OVERALL PLAN

DATE: March, 2021  
REV. 1  
REV. 2  
REV. 3

BOULDER CITY AQUATICS - NEW POOL BUILDING

861 AVENUE B,  
BOULDER CITY, NV 89005

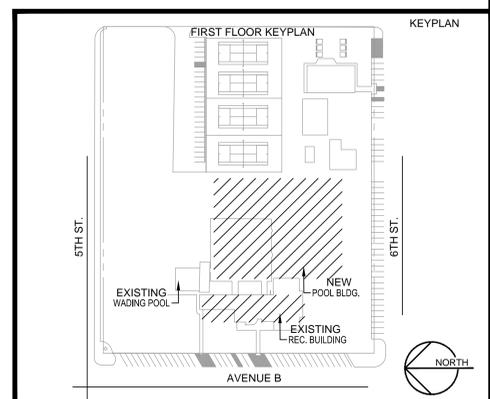
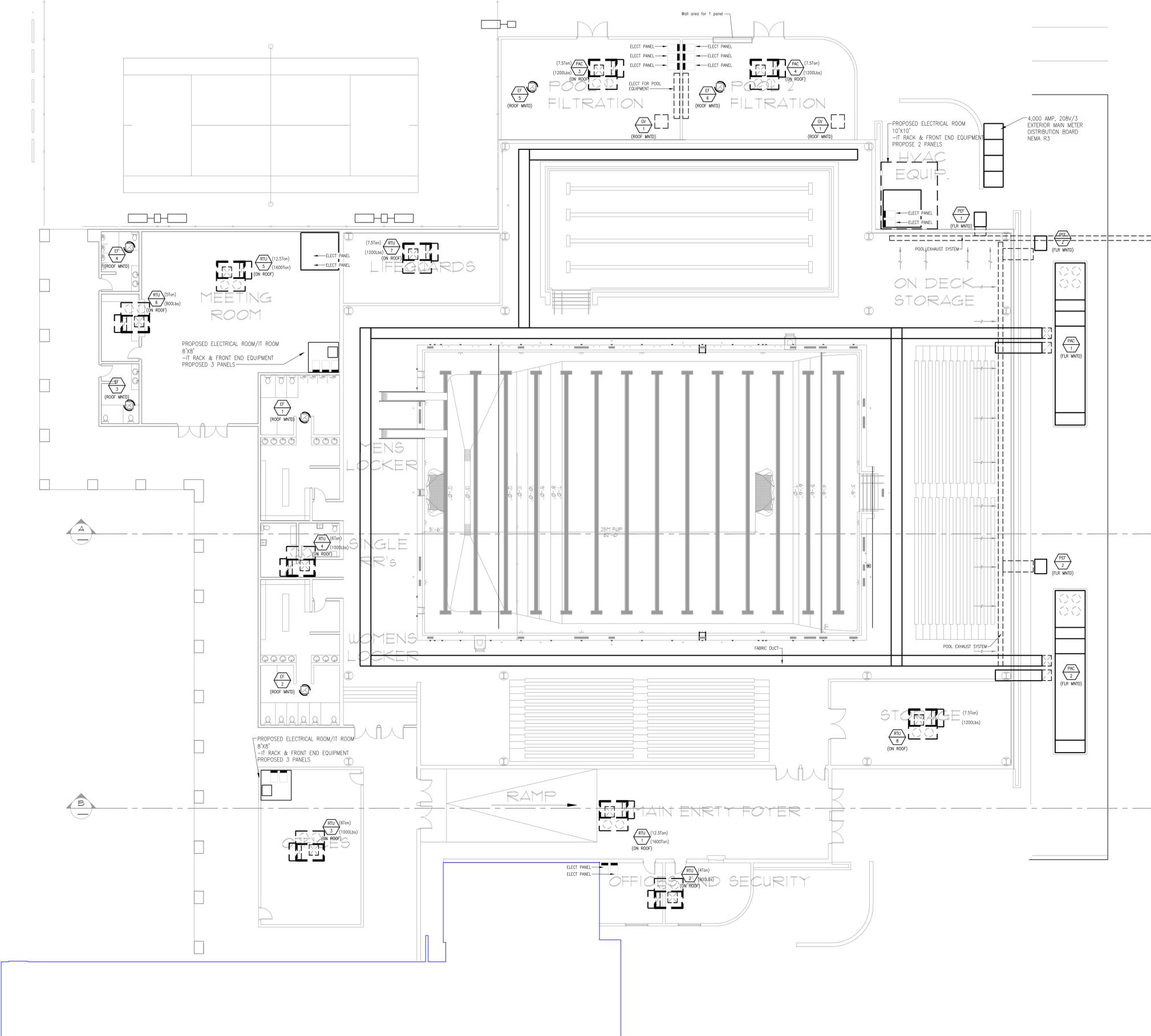
DRAWN BY: MFG  
DESIGNED BY: MFG  
CHECKED BY: MFG  
QC'D BY: MFG

JOB NO.  
25069-21-01

DWG. NO.

MEP-01

SHEET NO.



1 MEP FLOORPLAN -

SCALE: 3/32" = 1'-0"





ENGINEERING PARTNERS

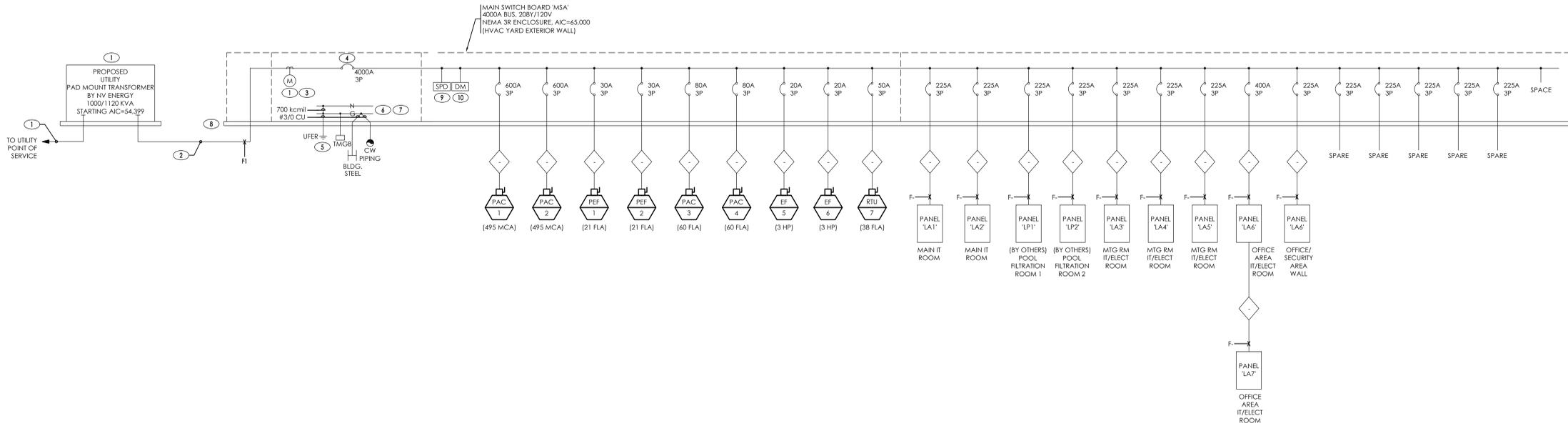
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### GENERAL NOTES (THIS SHEET ONLY)

- ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE FULLY RATED TO WITHSTAND THE AVAILABLE FAULT, UNLESS NOTED OTHERWISE.
- PROVIDE 4" HIGH HOUSEKEEPING PAD UNDER ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.
- MATERIALS AND INSTALLATION SHALL COMPLY WITH THE LATEST CODES, LAWS AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION INCLUDING THE LOCALLY ADOPTED AMENDMENTS.
- PROVIDE SHOP DRAWINGS SHOWING ELECTRICAL EQUIPMENT ROOM LAYOUTS IN COMPLIANCE WITH NEC ART 110 REQUIREMENTS BASED ON SUBMITTED EQUIPMENT.
- PROVIDE OVERSIZED LUGS, ADAPTERS, GUTTERS, WIREWAY AND ENCLOSURES AS REQUIRED WHERE CONDUCTORS HAVE BEEN INCREASED FOR VOLTAGE DROP.
- ALL ELECTRICAL EQUIPMENT AND DEVICES LOCATED OUTDOORS SHALL BE NEMA 3R WEATHERPROOF TYPE.
- PROVIDE A MINIMUM OF 20% FULLY RATED BUSSED SPACE IN ALL SWITCHBOARDS, DISTRIBUTION BOARDS AND DISTRIBUTION PANELS IN ADDITION TO THE DEVICES SHOWN.
- REFER TO SHEET ES.00 FOR VOLTAGE DROP AND FAULT CALCULATIONS.

### WORK NOTES (THIS SHEET ONLY)

- COORDINATE WITH NV ENERGY PROJECT MANAGER FOR EQUIPMENT SPECIFICATIONS AND EXACT REQUIREMENTS PRIOR TO ROUGH-IN AND PROCUREMENT.
- PROVIDE (11) 4" FOR NVE CONDUCTORS. COORDINATE WITH NVE PROJECT MANAGER AND DRAWINGS FOR ADDITIONAL REQUIREMENTS, CONDUCTORS BY NVE.
- PROVIDE UTILITY METERING IN THE MAIN SWITCHBOARD PER NV ENERGY REQUIREMENTS.
- PROVIDE SERVICE DISCONNECTING MEANS AND APPROPRIATE SIGNAGE AS REQUIRED BY AHJ.
- PROVIDE CONCRETE INCASED ELECTRODE CONSISTING OF 20' OF #3/0 CU.
- PROVIDE BONDING CONNECTIONS TO GROUND BUS AND TO BUILDING GROUNDING ELECTRODES AS REQUIRED PER NEC 250 AND AHJ REQUIREMENTS.
- PROVIDE BONDING FOR METAL PIPING IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 250.104, LOCAL UTILITY REQUIREMENTS AND AUTHORITY HAVING JURISDICTION.
- PROVIDE 4" HIGH CONCRETE HOUSEKEEPING PAD EXTENDING 4" OUTSIDE EQUIPMENT FOOTPRINT.
- PROVIDE SURGE PROTECTION DEVICE IN COMPLIANCE WITH UL 1449 3RD EDITION REQUIREMENTS.
- PROVIDE DIGITAL METER WITH DISPLAY AND ETHERNET CONNECTIVITY FOR CURRENT AND PEAK DEMAND RECORDINGS OF V, I, L, V, I, N, AMPACITY OF ALL PHASE AND NEUTRAL, W, VAR, VA, THD VALUES, ETC. PROVIDE 3/4" C BETWEEN MAIN SWITCHGEAR AND SERVER ROOM.

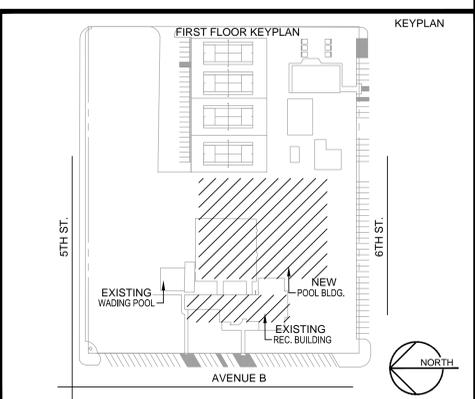


## 1 SINGLE LINE DIAGRAM - MSA

SCALE: N.T.S.

LOAD	CODE 1 (KVA)	CODE 2 (KVA)	CODE 3 (KVA)	CODE 4 (KVA)	CODE 5 (KVA)
<b>MECHANICAL/PLUMBING LOADS</b>					
PAC #1 (495 MCA)	178.7	0.0	0.0	0.0	0.0
PAC #2 (495 MCA)	0.0	178.7	0.0	0.0	0.0
PEF #1 (21 FLA)	0.0	7.4	0.0	0.0	0.0
PEF #2 (21 FLA)	0.0	7.4	0.0	0.0	0.0
PAC #3 (60 FLA)	0.0	21.7	0.0	0.0	0.0
PAC #4 (60 FLA)	0.0	21.7	0.0	0.0	0.0
RTU #1 (65 FLA)	0.0	23.5	0.0	0.0	0.0
RTU #2 (21 FLA)	0.0	7.4	0.0	0.0	0.0
RTU #3 (38 FLA)	0.0	13.7	0.0	0.0	0.0
RTU #4 (38 FLA)	0.0	13.7	0.0	0.0	0.0
RTU #5 (65 FLA)	0.0	23.5	0.0	0.0	0.0
RTU #6 (38 FLA)	0.0	13.7	0.0	0.0	0.0
RTU #7 (38 FLA)	0.0	13.7	0.0	0.0	0.0
EF #1 (3HP)	0.0	3.8	0.0	0.0	0.0
EF #2 (3HP)	0.0	3.8	0.0	0.0	0.0
EF #3 (3HP)	0.0	3.8	0.0	0.0	0.0
EF #4 (3HP)	0.0	3.8	0.0	0.0	0.0
EF #5 (3HP)	0.0	3.8	0.0	0.0	0.0
EF #6 (3HP)	0.0	3.8	0.0	0.0	0.0
<b>POOL LOADS</b>					
SWIMMING POOL FILTER PUMP (25HP)	0.0	27.0	0.0	0.0	0.0
TEACHING POOL FILTER PUMP (7.5HP)	0.0	8.7	0.0	0.0	0.0
SPRAYGROUND FILTER PUMP (5HP)	0.0	6.0	0.0	0.0	0.0
SPRAYGROUND BOOSTER PUMP (7.5HP)	0.0	8.7	0.0	0.0	0.0
SWIMMING POOL UV SECONDARY DISINFECTION	0.0	1.7	0.0	0.0	0.0
TEACHING POOL UV SECONDARY DISINFECTION	0.0	1.7	0.0	0.0	0.0
SPRAYGROUND POOL UV SECONDARY DISINFECTION	0.0	1.7	0.0	0.0	0.0
ELECT PNL FOR POOL EQUIP	0.0	57.8	0.0	0.0	0.0
<b>GENERAL LOADS</b>					
GENERAL LIGHTING (3 VA/SQ. FT.)	122.7	0.0	0.0	0.0	0.0
GENERAL RECEPTACLES (1 VA/SQ. FT.)	0.0	0.0	40.9	0.0	0.0
<b>SPECIALTY LOADS</b>					
COMPETITION POOL LIGHTING (1 VA/SQ. FT.)	25.2	0.0	0.0	0.0	0.0
<b>AUXILIARY LOADS</b>					
SIGNAGE	0.0	2.4	0.0	0.0	0.0
ELECTRIC VEHICLE CHARGING STATION	0.0	9.9	0.0	0.0	0.0
CONNECTED LOAD (KVA)	326.6	495.1	40.9	0.0	0.0
DEMAND LOAD (KVA)	408.3	495.1	25.5	0.0	0.0
TOTAL DEMAND =	928.8	KVA			
	2578	AMPS @	208Y/120V, 3Ø, 4W		
25% SPARE CAPACITY	1161	KVA			
	3223	AMPS @	208Y/120V, 3Ø, 4W		

PROPOSE (1) 4000 AMP, 208Y/120 SERVICE



PRINT DATE: 2021-03-25

### ELECTRICAL SINGLE LINE AND LOAD ESTIMATE

DATE: March, 2021

REV. 1

REV. 2

REV. 3

BOULDER CITY AQUATICS - NEW POOL BUILDING

861 AVENUE B,  
BOULDER CITY, NV 89005

DRAWN BY: MFG

DESIGNED BY: MFG

CHECKED BY: MFG

QC'D BY: MFG

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MEP-02

SHEET NO.



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PRELIMINARY  
Not for Construction

PRINT DATE: 2021-03-27

PLUMBING OVERALL PLAN

DATE: March, 2021  
REV. 1  
REV. 2  
REV. 3

BOULDER CITY AQUATICS - NEW POOL BUILDING

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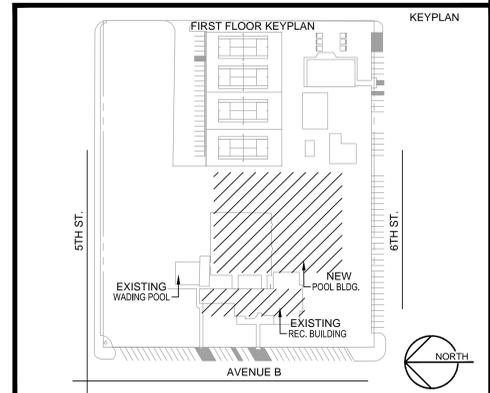
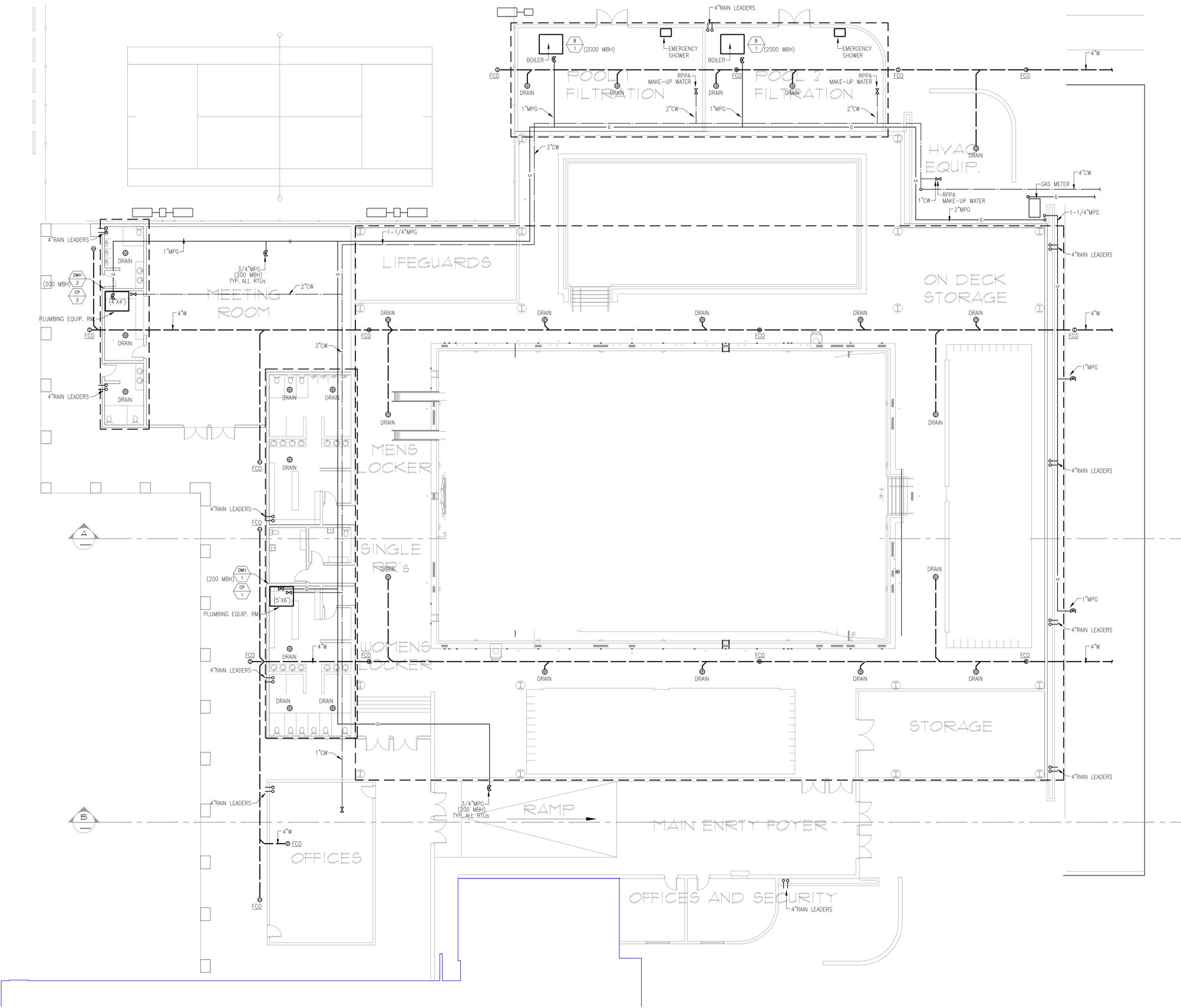
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CHECKED BY: MFG  
OCD BY: MFG

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DWG. NO.

MEP-03

SHEET NO.



1 MEP FLOORPLAN -

SCALE: 3/32" = 1'-0"



## **NEW FACILITY**

- New 6<sup>th</sup> Street Entrance
- Offices and Security
- Main Entry Foyer with ADA Accessibility Ramp
- Bleacher Style Seating to accommodate 250
- Storage Room
- On Deck Storage
- Women’s Locker Rooms, Men’s Locker Rooms and Single Restrooms
- Meeting Room
- Lifeguard Room
- 35-Meter Pool- Indoor Competition Pool
- Recreation Pool- 2,250 sf. – Indoor Pool
- Pool 1 Filtration Room
- Pool 2 Filtration Room
- Parking along south side building, utilizing 6<sup>th</sup> Street
- Parking along west side building, B Street

## **OPTIONS for NEW FACILITY**

1. Option 1,900 sf. Splashpad & Kids (Wading) Pool- Outdoors (Reuse of existing pool, new mechanics/piping) Reuse of Existing Pool Filtration Room
2. Option of or 25-Meter Pool- Indoor Competition Pool to replace 35-Meter Pool
3. Photovoltaic/ Solar PV system
4. Reuse of exiting locker room and convert to office (multi-purpose) space

## **REUSE of EXISTING SPACE**

Reuse of existing space could be beneficial.

Existing Aquatics Center Building and Mechanical/Pump/Lifeguard Rooms. The reuse prevents the need for complete demolition of the site and facility. With construction of the new facility, the current facility does not need to be fully renovated to be brought up to ADA compliance since the new construction brings much of the required percentage into compliance. There would be direct access from the old building to the new building.



- Reuse of existing Aquatics Center Building
- Reuse of Mechanical/Pump/Lifeguard Rooms
- Reuse of Locker Rooms
- Reuse of Wading Pool
- Continued use of Racquetball/ Gymnasium/ Office and Lobby spaces



## **FINAL REPORT**

### **Findings. Recommendations. Conclusions. Costs.**

The newly proposed Boulder City Community Pool Facility located at 861 Avenue B, Boulder City, Nevada 89005 to be constructed based on available funding. Estimates have been based on current year (2021) construction costs.

Basis of current site conditions are strictly visual and are unknown until demolition of existing are discovered. Unknown conditions could be present and budget allocation may need to be taken into consideration. Our observations are based strictly on conditions we could observe during site visits, provided through as-built drawings, and information provided by staff and public works departments.

This report should be considered in its entirety with no exceptions as a full recommendation based on findings and has been prepared exclusively for The City of Boulder City for the Boulder City Community Pool facility. No liability is accepted for any use of or reliance on the report by third parties.

The report is broken down into three sections, highlighting cost and recommendations for each.

1. Architectural
2. Mechanical, Electrical, Plumbing
3. Pools/ Equipment



## **ARCHITECTURAL**

Renderings, Elevations, Floorplan, and Site Plans indicate suggestions for new construction. See attachments to follow.

The architectural recommendations are intended to offer an alternative cost vs. benefit to construct a new facility.

Current building, life health and safety codes, and ADA accessibility are taken into consideration with architectural design of a new facility. The intent is to provide recommendations that include highest and best use for programming, as well as for the safety of staff, patrons, and occupant usage. Data has been provided by independent consultants hired to provide respective costs for the new facility including architectural/engineering assessments.

The cost estimate is broken down sufficiently and organized with options listed as separate line items allow for a pick and choose options based on final budget allowance. Costs for structural analysis of current building, mechanical rooms, pools, and spaces may require destructive testing, which is not included in estimates. Please plan accordingly should it be needed during the demolition/ construction process.

### **Building Codes**

Building and safety standards are in place to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, location and maintenance of all buildings and structures and certain specifically regulated equipment within the city.

<https://www.bcnv.org/163/Building-and-Safety-Division>

As of July 14, 2020, the City has adopted national and local codes. Permit applications for all projects submitted on or after January 14, 2021, must be designed in accordance with the newly adopted codes listed below.

The following codes are applicable to the facility as codes that have been adopted by the City

- 2020 Building and Safety Division Administrative Code
- 2018 International Building Code
- 2018 International Existing Building Code
- 2018 Uniform Mechanical Code



2018 Uniform Plumbing Code  
 2017 National Electrical Code  
 2018 International Swimming Pool and Spa Code  
 2018 International Energy Conservation Code  
 2018 International Fire Code  
 Southern Nevada Amendments  
 2018 Southern Nevada Health District -The Aquatic Facility Regulations went into effect on July 1, 2019. <https://www.southernnevadahealthdistrict.org/permits-and-regulations/aquatic-health-program/regulations/> (as applicable)

Additionally, “The Boulder City Public Works Department is committed to compliance with Title VI of the Civil Rights Act of 1964 and subsequent related regulations and directives. Public Works assures that no person shall on the grounds of race, color, national origin, gender, age, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any service, program or activity.” <https://www.bcnv.org/221/Public-Works>

#### ADA Accessibility Standards

“Accessibility standards issued under the Americans with Disabilities Act (ADA) apply to places of public accommodation, commercial facilities, and state and local government facilities in new construction, alterations, and additions. The ADA Standards are based on minimum guidelines set by the Access Board.” <https://www.access-board.gov/ada/#about-the-ada-accessibility-standards>

#### Photovoltaic/ Solar PV system

Industry standards and calculations should be met. City of Boulder City to determine what standards are relevant to the jurisdiction and in accordance with the City’s Net Metering Policy. The National Fire Protection Association has established the criteria for minimizing the hazards associated with energy storage systems with the NFPA 855 Standard. This standard for the installation of stationary energy systems can be found in the link. <https://www.nfpa.org/News-and-Research/Publications-and-media/Blogs-Landing-Page/NFPA-Today/Blog-Posts/2019/07/16/mapping-the-codes-for-solar-photovoltaic-pv-systems> Incentives may be available, and resources can be found at the Office of Energy Efficiency & Renewable Energy and through the Database of State Incentives for renewables and Efficiency (DSIRE). <https://www.energy.gov/eere/buildings/state-and-local-incentives> And <https://www.bcnv.org/DocumentCenter/View/623/Boulder-City-Net-Metering-Policy-PDF?bidId=>

#### Historical Resources

The City’s municipal code, Historical Resources, and Historical Preservation Committee may be of use when determining final design. <https://www.bcnv.org/DocumentCenter/View/106/The-Historic-District-of-Boulder-City-PDF>, and <https://www.bcnv.org/173/Historic-Preservation>



## **RECOMMENDATIONS**

### **AS DESIGNED**

Construct a New 45,580 +/- sf. state of the art indoor/outdoor facility with optional amenities.

New 40,668+/- sf. building on 45,580 sf. subject area to include a new 6<sup>th</sup> Street Entrance, 2 new Offices and 1 new Security room, Main Entry Foyer with ADA Accessibility Ramp, Bleacher Style Seating to accommodate 250 patrons, Storage Room off the entrance near the pool, On Deck Storage, ADA Accessible Women's Locker Rooms, Men's Locker Rooms and Single Restrooms, Meeting Room with prep Style Kitchen, Lifeguard Room, new Pool 1 Filtration Room (services 1 pool), new Pool 2 Filtration Room (services 1 pool), and a 35-Meter Pool and 2,250 sf. Recreation Pool.

#### The Building.

Construct a new 40,668+/- sf. building to accommodate year-round pool operations.

With a contemporary design and arcades synonymous of the neighboring historical district, the new building can be designed to complement the architectural plans for the area and historic character of the neighborhood. While the importance of striving to maintain the small-town charm is high, the need to provide a state-of-the-art facility is a desire of the community.

#### Architectural Arcades Reminiscent of Historical District.

Arcades line the north side of the facility (facing 5<sup>th</sup> Street) and are evocative of the nearby historic district. With succession of contiguous arches, each arch is supported by a colonnade of piers, that helps support loads from above. Exterior arcades are designed to provide a sheltered walkway for pedestrians. This shaded area provides a retreat for guests and staff. Decorative archways span openings, creating connection from outside to inside. They generally follow the adaptive guidelines of original architectural plan for the city and the design team is happy to work with the Historical Preservation Committee to meet the desired design style.

#### Exterior Windows & Diffused Kalwall System.

Aesthetically pleasing, the addition of multiple windows and a high performance diffused Kalwall System adds well-balanced highly insulated, natural light. Natural light is known to improve mood and performance. Kalwall is the most highly insulating diffused light transmitting system available. The translucent sandwich panels are a composite of fiberglass face sheets permanently bonded to an aluminum or thermally broken interlocked grid core. Kalwall reduces heating and cooling loads by controlling solar heat gain to deliver significant energy savings while creating more balanced and comfortable spaces. It is a great choice for sustainable projects and an ideal for the harsh Southern Nevada climate. Other windows to be store front systems.



#### Accessibility.

Building accessibility includes ADA accessible routes, walking services, doors, doorways, ramps, stairways, and handrails. Drinking fountains, toilet and bathing rooms, water closets and toilet compartments, urinals, lavatories and sinks, shower compartments, grab bars, seats, fire alarm systems, signs, communications systems, wheelchair space, companion seats, designated aisle seats, dining and work surfaces, service counters, transfer systems, sloped entries, transfer walls, pool stairs, and grab bars.

#### Landscape.

With a new entrance, a landscape plan would include a sidewalk and create a walkable path from the adjacent High School, better connecting the community while keeping students off 6<sup>th</sup> Street with a designated walkway. Maintaining mature trees (when possible) will prevent added expense to the landscape plans.

#### Main Entry Foyer with ADA Accessibility Ramp.

A new main entry and foyer with needed ADA accessibility ramp welcomes the community through new doors and creates a sense of place for all, regardless of disability. The formal entrance to the building welcomes the community in. A new entry makes a statement for those touring the nearby historical district, and for traveling guests that may be visiting the facility from out of town for swim meets and other programming.

#### Building Humidity.

Since the new building will be constructed with proper ventilation for indoor pools, building humidity will not be a problem.

#### Building Façade/ Finishes.

A Standing Seam Metal Roof has been specified for its durability and lifespan benefits. A series of panels lock together to increase durability. They are undeniably efficient and can last 30- 50 years.

#### New 6<sup>th</sup> Street Entrance/Parking.

With the new building comes a new building orientation, creating a new 6<sup>th</sup> Street entrance. With the new construction of a facility, a new entrance would give the area a needed facelift. It would also utilize adjacent parking lot allowing for needed ADA accessible concrete walkway, entrance, and access to parking with zero curb, standard stalls plus van accessible stall(s). Parking along the south side of building, utilizing 6<sup>th</sup> Street, parking along the west side of the building, B Street (remains) and parking along the north side of the building, adjacent to tennis courts (remains) and all parking supports the facility growth.



#### Offices and Security.

New offices and security allow for staff oversight of entry and needed screening of staff, patrons, or facility guests.

#### Retractable Bleacher Style Seating to accommodate 250.

With the addition of bleacher style seating, up to 250 guests can be seated in the stands watching and supporting the swimmers. The ADA compliant seating would allow for designated wheelchair space, companion seats, designated aisle seats, stairways, and handrails. With the ability to retract the bleachers, the deck space can be used in alternate ways when not needed.

#### Storage Room.

A new on deck storage room allows for needed storage for supplies, equipment, and facility tools.

#### On Deck Storage.

On Deck Storage can be used for mobile objects and equipment, visiting team storage or for team huddles.

#### ADA Compliant Women's Locker Rooms, Men's Locker Rooms and Single Restrooms.

All new locker rooms and restrooms will be ADA compliant, with ADA ambulatory toilets, stalls, accessories, accessible showers, and lavatory. Slip resistant floors.

#### Meeting Room/ Office Space.

A new meeting room with prep style kitchen will allow for the addition of new community space that can be rented for parties, events and become an additional income stream to support the facility or an amenity for staff use. Additionally, family-oriented programming, classes, multi-use recreation, wellness, instructional, arts, crafts, youth center, classroom, fitness center, and group exercise are all to be considered for this space.

#### Lifeguard/First Aid Room.

A new Lifeguard/ First Aid room allows for staff retreat, and for those in need of minor medical attention, for storage of medical supplies and equipment.

#### Pools & Decks.

New decking would be ADA compliant and appropriately sloped to meet health and safety codes.



### 35-Meter Pool- Indoor Competition Pool.

Replacement of current pool with a new 35-meter x 25-yard competition pool (8,600 sf.) will better serve programming and sustainability. A new 35-Meter Pool could support the following: Competitive Swimming, Fitness Swimming, Lap / Recreational Swimming, Masters Swimming, Learn-to-Swim Programs, Competitive Water Polo, Recreational Water Polo, Recreational Synchronized Swimming, Kayak Lessons, Scuba Lessons, Lifeguard and Swim Instructor Training, Red Cross Training, Public Safety Training, Deep Water Therapy Programs, Fitness Classes, Small, Medium and Large Group Classes, and One-meter springboard diving. The indoor pool makes for year-round programming. **Important to note: The 35 Meter Pool can support local, regional, and state championship swim meets and can serve multiple swim teams practicing simultaneously. The pool can support both a 25-yard and 25-meter floating goal water polo field of play. The pool can also support two (2) water polo teams practicing simultaneously. Maximum occupancy 430.**

### 2,250 sf. Recreation Pool- Indoor Pool.

A new 75'-1" long x 28'-6" wide 2,250 sf. Recreational Pool can support the following: warm-up and warm-down for competitive swim and water polo events, Fitness Swimming, Lap / Recreational Swimming, Learn-to-Swim Programs, Swim Instructor Training, Red Cross Training, Public Safety Training, Shallow Water Therapy Programs, Fitness Classes, Small and Medium Group Classes. The indoor pool makes for year-round programming.

### Pool 1 & 2 Filtration Rooms.

Construct 2 New Pool Filtration Rooms. Per code, each pool requires designated filtration systems. Each pool has as designated system and room. New designated space provides the necessary allotment for plumbing, mechanical, and electrical components.



## OPTIONS 1-4

Options have been provided to allow the decision makers to determine highest and best use for the new facility based on desired programming needs for the community and based on budget to complete construction.

### Option 1

Add Splashpad & Reuse of Kids Pool with New Pool Equipment, Option 1.

### Option 2

Cost Reduction for 25-Meter Pool in Lieu of 35-Meter Pool, Option 2.

### Option 3

Additionally, we have provided an option for solar, Option 3.

### Option 4

Finally, we have provided an option for the reuse of the existing locker rooms to be converted to office/multi-purpose space, Option 4.



## **OPTION 1**

# **Add Splashpad & Reuse of Kids Pool with New Pool Equipment**

### Splashpad.

Adding a 1,900 sf. Splashpad (often referred to as a Sprayground) to the facility would create an additional space for guests and patron use at a for fee or at a no use cost to patrons.

Programming of open recreation and rentals would be possible of this new space.

The proposed recirculating Splashpad would require new mechanical equipment and piping of its own.

### Existing Kids (Wading) Pool.

10-12" deep Existing Pool (900 sf.) - reuse. Outdoor (Accessible seasonally.)

Reuse of the existing kids pool requires the pool to run on independent equipment to be code compliant. Field verification that the existing accessible ramp (installed during a past pool renovation) meets current standards will be needed to determine if any modifications to the ramp should be added to the project scope. New piping will be required as it is currently connected to the two existing pools, recommended for demolition.

Typical programs that can be accommodated in the existing kids pool include open recreation and parent and child swim classes.

### Kids Pool & Splashpad Filtration Room- Utilize current filtration room.

Reuse of existing room with modifications to support this option. The new mechanical equipment and piping for the splashpad and kids pool would be housed in the existing filtrations/pump room. This existing mechanical space would be redesigned to accommodate the 2 new systems. Per code, each feature requires designated filtration systems.

New mechanical equipment for the existing kids pool and the splashpad would include chemical control monitors, chemical metering pumps, circulation pumps and motors, a booster pump and motor (splash pad only), hair and lint strainers, filter tanks, surge tanks, ultraviolet (UV) light systems and new underground piping. Additionally, a UV secondary disinfection system will also be necessary to bring the system into code-compliance.



## OPTION 2

# Cost Reduction for 25-Meter Pool in Lieu of 35-Meter Pool

### 25-Meter Pool- Indoor- Competition Pool

This option reduces the size of the 35- Meter replacement pool for a cost saving option. Replacement of current pool with a 25-meter x 25-yard competition pool (6,200 sf.) will serve programming and sustainability with an ability to support programming needs of the facility. This size option keeps the 2,250 sf. Recreation Pool- Indoor Pool and Pool 1 & 2 Filtration Rooms.

Although not as comprehensive as the 35-Meter Pool, a new 25-Meter Pool could support the following: Competitive Swimming, Fitness Swimming, Lap / Recreational Swimming, Masters Swimming, Learn-to-Swim Programs, Competitive Water Polo, Recreational Water Polo, Recreational Synchronized Swimming, Kayak Lessons, Scuba Lessons, Lifeguard and Swim Instructor Training, Red Cross Training, Public Safety Training, Deep Water Therapy Programs, Fitness Classes, Small, Medium and Large Group Classes and One-meter springboard diving. **Important to note: The pool can support only local swim meets and a single team practicing at any one time. Competitive swim and non-regulation water polo. Maximum occupancy 310.**

### The difference between 35-Meter and 25-Meter Pools

The main difference between 35-Meter Pool and a 25-Meter pool are the ability for a 35-Meter Pool to support local, regional, and state championship swim meets, multiple swim teams practicing simultaneously, competitive swim, two (2) water polo teams practicing simultaneously, while the 25-Meter is limited to local swim meets and a single team practicing at any one time and non-regulation water polo. The pools are approximately 2,350 sf. different in size and have a difference of 120 in occupancy levels.



## **OPTION 3**

### **Add Photovoltaic/ Solar PV System**

Photovoltaic/ Solar PV System.

With the New Facility facing South/ North, the rooftop Solar system will benefit from being exposed to many hours of direct daylight. Solar Photovoltaic (PV) cells generate electricity by absorbing sunlight and using the light to create an electrical current. PV cells make up solar panels. Adding rooftop solar panels allows for renewable energy options that can reduce energy bills and carbon footprint. Federal Solar Tax Credits may be available to recoup a percentage of the total system costs. There are several methods to acquiring a private generation system, including direct purchase or lease. Typically, warranties on solar panels range between 20 and 25 years and guarantee that the system will continue to produce at about 80 percent after 20 to 25 years. This means you can expect about a one percent or less drop in production each year. Net Metering Solar plus Energy Storage Device (ESD) Incentives or Energy Storage Only Incentives maybe available. Applications need to be completed based on facility needs and planned solar use.

## **OPTION 4**

### **Convert Existing Lockers into Office Space**

Reuse of Existing Locker Rooms and conversion to Office/ Multi-use/Purpose Space.

Locker Rooms. With the reuse of the existing locker rooms, and conversion into office space, it gives the facility an additional meeting/office or multi-purpose space. Example programming for this space could include, new weight/workout room, birthday party/ meeting spaces, rentable conference rooms or office space. Additionally, family-oriented programming, classes, multi-use recreation, wellness, instructional, arts, crafts, youth center, classroom, fitness center, and group exercise are all to be considered for this space. The estimate has it designated as office space.



# MECHANICAL, ELECTRICAL, PLUMBING

**Boulder City Aquatics New Pool Building**

**861 Avenue B**

**Boulder City, NV 89005**

**MEP Systems Narrative**

March 29, 2021

Prepared for:

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## Executive Summary

### Project Scope

The proposed natatorium project is located at Boulder City, Nevada. It will be a new natatorium building, consisting of two (2) competitive pools with supporting areas and spaces. The large pool is approximately 8,600 sf (35 meter) and recreation pool is 2,250 sf. The total natatorium space including deck and spectator area is approximately 25,200 sf. The project will also consist of supporting areas. The project program of areas is as noted below.

### General Program

<u>Square Feet</u>	<u>Areas</u>
1) 3,000	Meeting Rooms
2) 2,000	Restrooms/Locker Rooms
3) 1,100	Offices
4) 1,100	Storage Rooms
5) 3,400	Main Entry/Foyer
6) 800	Lifeguard Area
7) 2,500	Pool Equipment Rooms
8) 1,800	MEP Equipment Rooms
15,700	Ancillary Space
25,200	Natatorium Pool Total
<b>40,900</b>	<b>Grand Total</b>

## **Optional Programs**

### **Option 1: Splash Pad**

Additional scope may be added to program.

1. Splash pad (with own mechanics) 1,900sf
2. Add use of existing Child's Pool (Wading) with upgrade new mechanics and piping (to be housed in existing building) and needed ADA accessibility

### **Option 2: Pool Size Reduction**

This option can be substituted for cost savings.

1. Natatorium Building
2. 25 Meter Pool
3. Recreation Pool 2250sf
4. Removal of existing Dive Pool
5. Removal of existing Pool

### **Option 3: Solar**

Additional scope for solar may be added to program.

1. Solar/ Photovoltaic System

### **Option 4: Office Space**

Additional scope show below may be added to program.

1. Existing Locker Room may be converted to New Office Space in existing building.

**Project Location**

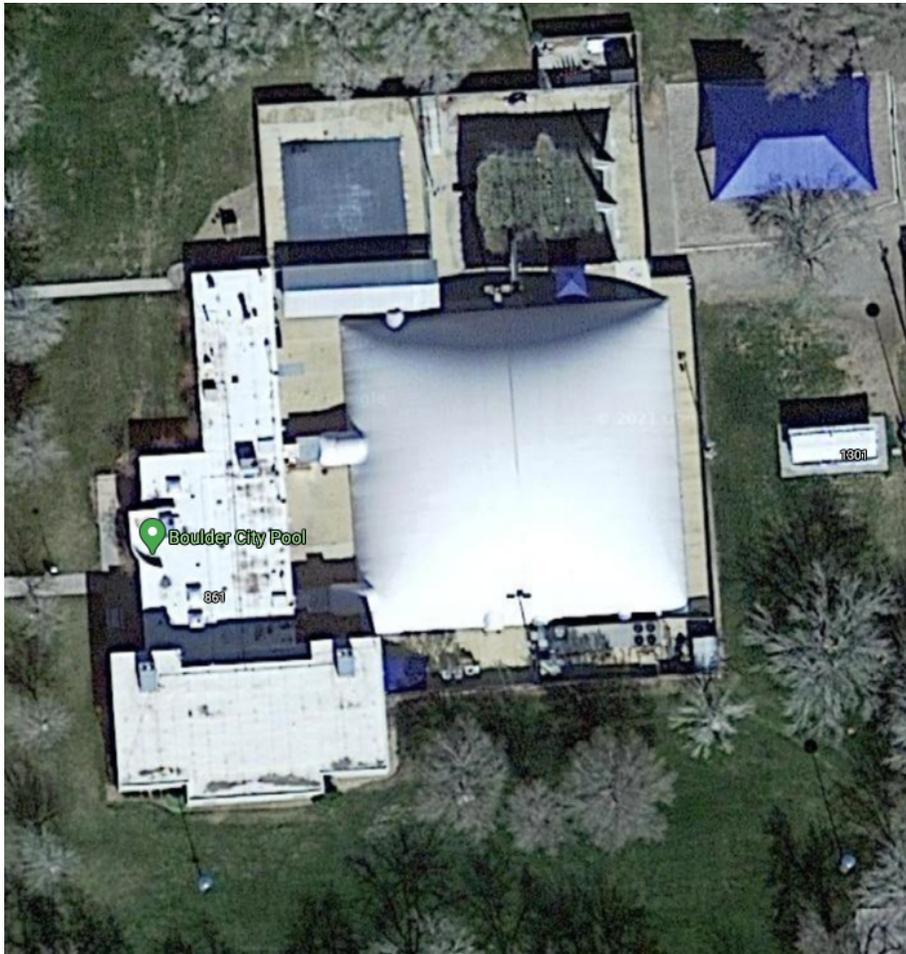
The building will be constructed in Boulder City.



*Area Map - Overall*

## Project Area View

The building is centrally located near the center of the city. Exhibit and the photo below describe the overall existing campus building layout. The new proposed pool building will eliminate the existing temporary tent structure. The surrounding systems, large pool and diving pools are to be removed to accommodate new pools and new pool building. It is the current intent to maintain the existing building facility and renovate as part of alternate option. The waddling pool located top left in the arial view is being proposed as an alternate is to remain and repair/replace as needed the systems serving this pool's operation.



*Area Map - Enlarged*

## **Codes Standards and Conditions**

### **Air Conditioning and Ventilation Systems**

The air conditioning design will comply with applicable codes and standards, including those listed below:

1. Codes
  - a. 2018 International Building Code (IBC) with local Amendments
  - b. 2018 Uniform Mechanical Code (UMC) with local Amendments
  - c. 2018 Uniform Plumbing Code (UPC) with local Amendments.
  - d. 2018 International Fire Code (IFC) with local Amendments.
  - e. 2018 International Energy Conservation Code (IECC).
  - f. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
2. Standards
  - a. Air Conditioning and Refrigeration Institute (ARI) Standards
  - b. NFPA 90A - Installation of Air Conditioning and Ventilating Systems
  - c. Air Moving and Conditioning Association (AMCA) Standards
  - d. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

### **Plumbing Systems**

Plumbing design will comply with applicable codes and standards, including those listed below:

1. 2018 International Building Code (IBC) with local Amendments.
2. 2018 Uniform Plumbing Code (UPC) with local Amendments.
3. 2018 International Fuel Gas Code (IFGC) NFPA 54
4. 2018 International Energy Conservation Code
5. Americans with Disability Act (ADA)

## **Electrical Systems**

The electrical design will comply with applicable codes and standards, including those listed below:

1. Codes
  - a. 2017 National Electrical Code (NEC) with local Amendments
  - b. 2018 International Energy Conservation Code
2. Standards
  - a. AHJ – Authority Having Jurisdiction
  - b. ANSI – American National Standards Institute
  - c. IEEE – Institute of Electrical and Electronic Engineers
  - d. IESNA – Illuminating Engineering Society of North America
  - e. NEMA – National Electrical Manufacturer’s Association
  - f. NETA – Inter National Electrical Testing Association
  - g. NFPA – National Fire Protection Association
  - h. UL – Underwriter’s Laboratories

## **Fire Protection Systems**

The fire protection design will comply with applicable codes and standards, including those listed below:

1. 2018 International Building Code (IBC) with local Amendments.
2. 2018 International Fire Code (IFC) with local Amendments.
3. National Fire Protection Association (NFPA) Standards
4. NFPA 13 - Installation of Sprinkler Systems
5. NFPA 14 - Standpipes and Hose Systems
6. NFPA 20 – Stationary Pumps for Fire Protection

## **Commissioning - 2018 International Energy Code**

The Commissioning process will comply with applicable codes and standards as outlined and required per the requirements of the Energy Code.

## MEP Design Criteria

The design intent is to provide a new facility that will achieve the expectations of the neighbors and visitors alike. The design will comply with all applicable building Codes and will use the most cost-effective systems with consideration of maintenance and operations.

## Envelope

The envelope will at a minimum follow the Energy Code, targeting beyond code where informed by the energy modeling analysis.

1. Roof: R-38 ci; U-0.027 (with vapor barrier for natatorium)
2. Walls, Above Grade, Group R: R-19+R-8.5 ci; U-0.055 (with vapor barrier for natatorium)
3. Floors, Mass: R-30 ci; U-0.031
4. Floors, Joist/Framing: R-30; U-0.029
5. Opaque Doors: R-4.75; U-0.34
6. Windows, Metal framing, fixed U-0.34
7. Windows, Metal framing, operable U-0.40
8. Glass doors U-0.60
9. Window SHGC:  
Orientation SEW N  
PF <0.2 0.40 0.53  
0.2 < PF <0.5 0.48 0.58  
PF > 0.5 0.64 0.64

## Climatological Data

Weather Data used for Boulder City is similar to nearby Las Vegas which is an ASHRAE registered city.

1. Outdoor Summer Design: 115°F DB/66°F WB (ASHRAE 0.4%, Las Vegas, NV)
2. Outdoor Winter Design: 27°F (ASHRAE 99.6%, Las Vegas, NV)

# Mechanical System Descriptions

## Mechanical Design Criteria

1. Indoor Summer/Winter Design:
  - a. All Areas: 75°F/70°F (per 2018 IECC) – Non-Natatorium Area
  - b. Natatorium: Water Temperature of 80°F with Space Air temperature set 2° higher & 50%-60% RH
  - c. Exceptions:
    - i. Electrical/Telecom Room: 75°F
    - ii. Humidity Control: 50% to 60%
2. Ventilation Criteria
  - a. All areas: Per 2018 Uniform Mechanical Code
  - b. Public Spaces
    - i. Meeting/Conference room: 20 sq.ft./person; 5 cfm/person; 0.06 cfm/sq.ft.
    - ii. Office spaces: 200 sq.ft./person; 5 cfm/person; 0.06 cfm/sq.ft.
    - iii. Reception area: 33.3 sq.ft./person; 5 cfm/person; 0.06 cfm/sq.ft.
    - iv. Main entry lobbies: 100 sq.ft./person; 5 cfm/person; 0.06 cfm/sq.ft.
3. Exhaust to Outdoors
  - a. All areas: Per 2018 Uniform Mechanical Code
  - b. Public Spaces:
    - i. Toilet Rooms: Minimum rate of 50 cfm/water closet and urinal
    - ii. Janitor closet: 1.0 cfm/sq.ft.
    - iii. Break room w/microwave or kitchenette: 0.3 cfm/sq.ft.
    - iv. Locker rooms: 0.25 cfm/sq.ft.
    - v. Shower rooms: 50 cfm per showerhead

#### 4. Internal Heat Gain

- a. Lighting: per 2018 IECC
- b. Receptacle Power:
  - i. Room Type Lighting Load (net area) W/ft<sup>2</sup>
  - ii. Electrical Plug Load (net area) W/ft<sup>2</sup>
  - iii. Lobby/Reception 0.47 0.5
  - iv. Office 0.55 1.5
- c. Occupants:
  - i. General: 245 Btu/hr sensible; 155 Btu/hr latent
  - ii. Walking/Standing: 250 Btu/hr sensible; 200 Btu/hr latent
  - iii. Meeting Room: 275 Btu/hr sensible; 275 Btu/hr latent

#### 5. Occupancy Criteria

- a. See Ventilation Criteria.

#### 6. Ductwork Design Criteria

- a. Natatorium ductwork main supply will be fabric as manufactured by NanoSox or equal.
- b. Air velocities above these maximum values require acoustical treatment. Sizing to be selected for largest of pressure loss or velocity.
  - i. Low Pressure Supply ducts:
    - 1) Runouts to GRDs or w/ duct mounted grilles: 0.08" w.g./100 ft or 750 fpm
    - 2) Exposed in occupied spaces: 0.08" w.g./100 ft or 1,100 fpm
    - 3) Above ceiling in occupied spaces: 0.08" w.g./100 ft or 1,400 fpm
    - 4) In shafts: 0.20" w.g./100 ft or 1,500 fpm
  - ii. Return/exhaust ducts:
    - 1) Exposed in occupied spaces: 0.08" w.g./100 ft or 1,100 fpm
    - 2) Above ceiling in occupied spaces: 0.08" w.g./100 ft or 1,400 fpm
    - 3) In shafts: 0.08" w.g./100 ft or 1500 fpm

## **Mechanical Design Parameters**

1. One zone per 850 square feet (sq.ft.); 60% perimeter and 40% interior.
2. One supply air outlet per 250 sq.ft.; 500 fpm maximum neck velocity.
3. One return inlet per 1,500 sq.ft..
4. Filtration
  - a. All air handling equipment will be fitted with 30% efficient filters.
5. Motors
  - a. Provide shaft grounding system on all motors served by a variable frequency drive.

## **Natatorium HVAC System**

1. The system will utilize (2) two dedicated package units that are refrigerant dual circuit DX/gas-fired.
  - i) Each unit will be 40,000 CFM, as Manufactured by Desert Aire, Model SP80PPG7. There will be two (2) pool exhaust fans located on ground level connected to chloramine evacuation system as manufactured by Desert Aire.

## **Supporting areas and Auxiliary space HVAC System**

1. The HVAC systems for these spaces will consist of packaged rooftop DX/gas-fired units that will range in size as indicated on plan.
2. The (2) pool equipment rooms will each have high ventilation air with DX/gas-fired units that will have coated coils for protection from corrosive air inside room. The units sizes are as indicated on plans.

## **Life/Safety Pressurization and Exhaust**

1. Not required.

## **Ventilation**

1. Each packaged rooftop unit serving its dedicated area will provide it's own source of ventilation from the unit serving that area.

## **Building Management System (BMS)**

1. Open-Protocol
  - a. All Building Automation System (BAS) peer-to-peer network controllers, central system controllers and local user displays shall be UL Listed under Standard UL 916, category PAZX.
  - b. Global Controllers will be capable of hosting throughput speeds of 10/100/1000 MBPS.
2. The operator's workstation, all building controllers, application controllers, and all input/output (I/O) devices shall communicate using the protocols and network standards as defined by ANSI/ASHRAE Standard 135–2008, BACnet. In other words, all workstations and controllers, including unitary controllers, shall be native BACnet devices. No gateways shall be used for communication to controllers installed under this section. Gateways may be used for communication to systems installed under other sections if the only communication protocol is something other than BACnet.

## **Plumbing System Descriptions**

### **Domestic Water Service**

A single domestic water connection from the municipal system is expected for the entire building. The incoming static water pressure is anticipated at 60-psi. The water service entrances will have the required domestic water backflow prevention as required.

1. Service Size: A 4-inch service from an 3-inch meter. See plan for proposed routing.

### **Domestic Water Heating**

Gas fired storage tank types will be primary system for domestic hot water heating to serve the lavatories, showers and aux. support. EC motor circulation pumps will be provided with both systems. Tempering valves for thermostatic mixing will be provided. A water softener system will be provided to assist in protecting the heating water equipment.

### **Natural Gas**

Estimated Service Size: 4-inch. (medium Pressure service)

Service to pool heating boilers, gas domestic heaters, HVAC systems

## **Sanitary Sewer and Vent**

Estimated Service Size: 4-inch. (multiple outlets)

1. Provide two (2) waste main to drain to south end of the property as noted on plan.
2. Vent risers will be multiple locations throughout for all areas with sewer drains.

## **Storm**

The overflow and roof drain piping will discharge to surface ground drains.

Storm drainage piping is based on a rainfall rate of 3.0-inch/hour overflow and drain per UPC.

## **Plumbing Fixtures and Drains**

Plumbing fixtures and drains will be chosen for long service and water savings. Fixtures will be flush valve commercial type for all water closets and urinals and be wall hung.

1. Lavatories, water closets and urinals, and electric water coolers provisions shall be specified to be ADA compliant.
2. Basis of Design Fixture List:
  - a. Water Closets: Kohler K-4325, wall mounted flush valve.
  - b. Urinals: Kohler K-4991-ET-0 Bardon with Sloan (0.125 gpf) ECOS Electronic Sensor Flushometer.
  - c. Lavatories: Kohler Ladena Undermount with Sloan (0.5 gpm) Basys Electronic Sensor Faucet.
  - d. Janitor Sinks: Stern-Williams CORLOW 24"x24"x12" Service Sink with Chicago Wall Mounted faucet.
3. Floor drains will be in each toilet room with two or more fixtures and floor sinks/drains will be provided in all mechanical rooms and adjacent to equipment requiring drainage.
4. All floor sinks/drains will be automatically trap primed to maintain trap seals. Drains will be provided throughout the pool area deck.
5. Wall hydrants and hose bibbs will be located throughout the facility for washdown.

## **Condensate Drains**

Condensate drains shall be routed from any cold HVAC coils that may extract moisture from the air. Piping will be 3/4", or greater, routed to the nearest sewer waste drain system.

## **Piping Insulation**

Fiberglass insulation is required per code for domestic hot and cold-water piping and horizontal runs of rainwater leaders located in humid environment.

Condensate piping to be insulated with closed cell Armaflex (or equal) insulation.

## **Piping Materials**

Below are the recommend piping materials for each system:

1. Domestic Hot and Cold Water
  - a. Type L copper with soldered joints or stainless steel.
2. Sanitary Waste.
  - a. Schedule 40 PVC or ABS for above and below floor piping.
3. Vent
  - a. ABS
4. Pumped Sanitary
  - a. Copper or Steel with VIC couplings
5. Condensate
  - a. Type M copper tubing
6. Storm
  - a. Schedule 40 PVC

## **Electrical System Descriptions**

### **Electrical General Requirements**

All work under this section shall comply with the requirements of the general conditions, include all electrical sections specified herein.

All public and common spaces shall utilize LED Lights and room occupancy/vacancy sensors where recommended for automatic shut-off lighting controls.

System requirements:

1. Utility Service and Utility Transformer by local power company
2. Main Switchboards and Associated Equipment
3. Feeder Conductors and/or Busway
4. Automatic Transfer Switches
5. Lighting
6. Lighting Controls
7. Fire Alarm
8. Switches and Receptacles
9. Disconnects and Motor Rated Switches
10. Distribution Panels, Panelboards and Dry-Type Transformers
11. Telephone/Data/CATV distribution

### **Electrical Project Description**

1. The building will have a Utility service and main switchboard. It is anticipated that the Utility Transformer will be located adjacent to the building near the main switch gear.
2. Preliminary Utility service estimates
  - a. (1) 4000 A, 208V, 3 Phase, 4 wire, electrical service switchboards are anticipated to serve the site.
  - b. No generator is anticipated for this project.
3. Preliminary Photovoltaic Sizes
  - i. One 70 kW on-site array is anticipated to be installed on-site using rooftop photovoltaics arrays on the main pool building roof.

## Scope of Work

### 1. General

- a) Furnish and install underground, exposed busway and/or concealed conduit raceway systems, and pull boxes for 208V 3 phase service feeds including service entrance equipment, facility branch circuit panel boards, fire alarm, security, access control, DAS/EMS, Tele/Data for Site and Buildings.
- b) Provide complete and fully functioning systems for, but not limited to Electrical Power Distribution, low Voltage rough-in, Fire Alarm, Telephone rough-in, security and Access Control.

### 2. Basic Methods and Materials

- a) All materials must be of the quality herein specified. All materials shall be new, of the best quality and free from defects. They shall be designed to insure satisfactory operation and operational life in the environmental conditions which will prevail where they are being installed.
- b) Each type of material shall be of the same make and quality. The materials furnished shall be standard products of the manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design.
- c) All materials shall be UL or ETL listed for the purpose for which they are used.
- d) All wiring shall be installed in conduit as directed in project specifications or as allowed by code or required by drawings. No direct burial methods are allowed. Pull boxes shall be provided where needed for wire pulling.
- e) All wiring to be soft, annealed copper of best quality and purchased new.
- f) Install cabling and raceways in concealed locations, unless otherwise indicated. Install raceways indicated to be exposed at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise. Install raceways above accessible ceilings to allow sufficient space for ceiling panel removal. Coordinate all installations with other trades and ensure that

adequate clearances are maintained for the work of other trades including all required access, supports, etc.

- g) Provide all flashing, sleeves, sealing, and fire stopping of all penetrations through walls, floors, roofs and ceilings required for your work. Application of sealants shall be in strict accordance with the manufacturer's instructions in every respect. This includes all fire/smoke sealing required to maintain rating of walls and floors, as well as packing and sealing through exterior walls.
- h) Provide convenience outlets in the public areas, in the electrical, mechanical equipment room, in janitor closets, in storage rooms and on the roof. Weatherproof (in-use) receptacles will be located outside the building near each service door.
- i) Power connections and branch circuits for all mechanical and miscellaneous equipment shall be provided.
- j) Equipment ground conductors will be run in all conduits with each branch circuit and feeder.
- k) Raceway: Galvanized rigid steel (GRS), electrical metallic tubing (EMT), metal clad cabling (MC), or rigid nonmetallic (PVC) conduit may be used except where not allowed by code. No PVC conduit shall be ran above grade or less than 18" below grade. Seal all raceway penetrations at buildings and floor slabs; seal interior of raceways where they pass through roofs and/or exterior walls.
- l) Wires and Cables: 600 volt, subject to code requirements. Minimum wire size is 12 AWG.
- m) All branch circuit wiring will be copper. The metallic raceway will be used as the ground.
- n) Feeders for panelboards are to be sized for the panel rating, allowing for connected loads plus 25% spare capacity. As the Basis of Design, all feeders will be copper.

- o) As a Deductive Alternate, Stabiloy® aluminium alloy conductors may be used for all feeders 100 amps or greater. Feeders supplying rotating equipment will remain copper in all cases.
- p) Feeders to HVAC equipment shall be sized per NEC (as a minimum), or as recommended by the manufacturer.
- q) All feeders and branch circuits larger than 10AWG will utilize stranded conductors.
- r) Dedicated neutrals for each circuit will be provided to comply with NEC 210.4(B).
- s) Conductors will be upsized for voltage drop (3% VD 60% loaded or actual load if higher).
- t) The lighting, power, and fire alarm systems will be in conduit. Steel metal clad (MC) for branch power wiring will be allowed in walls if concealed. Electrical raceways below grade or in concrete slab on grade will be PVC schedule 40.
- u) The telecom and security system cabling will be in conduit or cable tray.
- v) Junction Boxes: Non-metallic or constructed of zinc coated steel, minimum 4" size. Provide as required. Where used outside, shall be gasketed, and completely of corrosion resistant construction.
- w) Switches and Receptacles: Switches shall be "specification grade," side wired, plastic handle, configuration to suit application, Hubbell or equal. Receptacles shall be duplex type, NEMA 5-20R; Hubbell 5342-I or equal. Receptacles in wet locations or within 3 ft. of sinks shall be GFCI type as indicated, Hubbell or equal.
- x) Disconnects: Shall be fused type, heavy duty, single throw, lockable type, having door interlock (to prevent opening when energized), enclosure to suit environment. Fuses shall be Bussman low peak dual element type, to suit application, or approved equal. Provide spare set of fuses for each disconnect. Coordinate all fuse sizing with equipment supplier to insure proper sizing.
- y) Motor Rated Switches: Toggle switch type, rated for 1 HP, 115-230 and 277 volt, NEMA 1, with thermal overload, Allen Bradley series 600 or equal.

- z) Panelboards: Rated at proper voltage and current for intended use. Panels shall be 3-phase, 4-wire, 100% neutral. Panelboards shall have a separate ground bus bonded to the frame. Coordinate with local Power Utility for minimum AIC rating on service entrance panels. 10,000 AIC shall be considered minimum. All panelboards shall be in a lockable enclosure (and keyed alike) to suit the environment. Provide 10 additional spare keys.
  - aa) Circuit Breakers: Type to suit panels; with minimum AIC symmetrical interrupting capacity to match panel value. Mount breakers such that handles operate in a horizontal plane. Bolt in type only. Provide common trip on all multiple pole breakers. Provide minimum of (4) 1-pole 20 amp spare breakers per panel.
  - bb) Provide nameplates constructed of plastic (black-on-white) laminated material engraves through black surface material to white sublayer for all panelboards, transformers, ATS units, disconnects, starters, and switches.
  - cc) Provide complete and operational systems with code-required access to each maintenance point. Installation of equipment to be in accordance with manufacturer's instructions. Access to all electrical control and power panels shall be in accordance with the National Electrical Code and all state and local amendments.
3. Grounding
- a) A copper building main reference ground bus will be installed in the main electrical room. It will connect to the main switchboard, to the main incoming water line, to the UFER grounding electrode, to building steel and to the neutral point of all local transformers. A 3/0 kcmil copper grounding riser will be run the full height of the building to inter tie copper ground bars in electric and telecom rooms on each floor and transformers on each floor.
  - b) Green ground conductors shall be provided in all feeder conduits.
  - c) The telecom system shall be fully grounded, including cable tray, cabinets, etc.

#### 4. Mechanical Equipment

- a) Refer to the mechanical basis of design for mechanical system.
- b) Electrical provides all disconnects as required for mechanical equipment.  
(Mechanical contractor will provide VFDs as required.)
- c) Connections will be made for all mechanical equipment. All motors greater than 3 hp but greater than 1/2 hp will be wired for 208 volt, 3-phase power. Motors less than 1/2 hp will be wired for 120 volt, 1-phase power. Magnetic starters and VFDs will be furnished by mechanical contractor and installed by the electrical contractor with the necessary power wiring to the starter and from the starter to the motor. All VFD's not integral to the factory assembled equipment will be physically mounted at the equipment by electrical contractor. Necessary power wiring to the VFD and from the VFD to the motor is to be installed.

#### 5. Site Electrical

- a) Provide all labor, materials, tools, equipment, and supplies required to complete installation of site wiring systems.
- b) Provide all underground conduit and cable.
- c) Provide all labor, material and equipment required to complete the installation of light fixtures, lamps, based, access control, and security within the project boundary.
- d) Light pole bases will be form poured by others. This Subcontractor will coordinate locations of light poles, anchor bolt locations and conduit placement. Provide conduit and wire, fixture installation and final connections.

#### 6. Testing

- a) All electrical systems will be tested.
- b) Manufacturer testing and start-up reports will be provided on UPS systems.

#### 7. Exterior Building Lighting

- a) Complete exterior building lighting system, including conduit, fixtures, lamps, poles, pole bases and switches is to be included.

- b) Exterior Fixtures: Corrosion resisting metal, a (non-ferrous, stainless steel or special finish) and in all cases suitable for outdoor service without tarnishing or other damage due to exposure. Coordinate color and finish prior to ordering. Cadmium plates all metal parts concealed by canopies, including screws, plates, and brackets. All exposed fasteners shall be tamperproof. All exterior lighting shall be controlled by Photocell on, Timeclock Off.

#### 8. Interior Lighting

- a) All lighting fixtures shall be Commercial Grade; LED lighting will be used predominantly.
- b) All materials must be of the quality herein specified. All materials shall be new, of the best quality and free from defects. They shall be designed to ensure satisfactory operation and operational life in the environmental conditions which will prevail where they are being installed.
- c) Each type of material shall be of the same make and quality. The materials furnished shall be standard products of the manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design.
- d) All materials shall be UL or ETL listed for the purpose for which they are used.
- e) Interior Fixtures: Steel or aluminum with 300°F, baked enamel finish, brushed. aluminum with baked acrylic clear lacquer finish, or stainless steel with a brushed finish. Coordinate color and finish prior to ordering.
- f) Light Transmitting components: Virgin acrylic plastic (0.125-inch thick overall minimum) or glass. Shall be contained in a steel frame hinged and which remains attached to the fixture when door is in open position.
- g) Adapters, Plates, Brackets and Anchors: Provide where required by construction. features of the building to suitably mount lighting fixture. All such appurtenances and mounting methods shall be prior to fabrication and installation.

- h) LED Lamps with 0-10V dimmable drivers; color temperature of 3500 K; CRI 80-85; average life of 50,000 hours.
- i) Install lighting fixture diffusers only after construction work, painting and cleanup are completed. Prior to final acceptance, remove all lamps, reflectors and diffusers, wash, rinse and reinstall.
- j) Recessed Troffer Type: For fixtures supported by the ceiling suspension system, provide integral tabs, which rotate into position after fixture is lifted into the ceiling cavity. Provide two safety chains secured to structural members above suspended ceiling. Circuit connection shall be through use of 60-inch flexible conduit from a rigidly supported junction box. For plaster or GWB ceilings, provide a plaster frame compatible with light fixture.
- k) Recessed Downlight Type: Mount in frames suitable for the ceiling, with the recessed portion of the fixture securely supported from the ceiling framing. For fixtures supported by a ceiling suspension system, provide two safety chains secured to structural members above suspended ceiling.
- l) Surface and Pendant Mounting Type: Where mounted on accessible ceilings, hang from structural members by means of hanger rods through ceiling or as approved. Where ceiling is of insufficient strength to support weight of lighting fixture, provide additional framing to support as required. Fixtures shall be supported from structure with seismic bracing independent of ceiling. For Pendant Mount Type: Provide a unistrut channel for mounting fixtures entire fixture length unless light fixture is designed specifically for supporting itself. Provide 3/8-inch thread rod secured to structural members for support of unistrut channel.
- m) LED Fixtures
- n) Fixtures shall be UL or Intertek (ETL) Listed.
- o) Drivers shall be capable of accepting the voltage indicated by the manufacturer and capable of 0-10Volt dimming if required. The driver shall meet the following requirements:

- i. Class A Sound Rating
- ii. Total Harmonic Distortion of less than 20 percent.
- iii. Operating temperature between -40 degree Celsius and 40 degrees Celsius.
- iv. Driver shall not contain any Polychlorinated Biphenyl (PCB).
- v. All LED fixtures shall be tested to IES LM-79 and IES LM-80 and meet the following:
  - 1. Fixture Efficacy (Lumens per watt): 60 or greater.
  - 2. Color Accuracy: Color Rendering Index (CRI): 70 or greater.
  - 3. Light Color: As indicated on lighting fixture schedule.
- p) Outdoor fixtures shall be IP65 Rated.
- q) LEDs, driver and all components shall have a system lifetime of 50,000 hours or more at 25 degrees Celsius.
- r) Fixture shall have a minimum of a five year warranty on all components and finishes.

#### 9. Lighting Control System

- a) The building exterior will include a 2018 IECC approved low voltage lighting control system with astronomical time clock and photo sensors. For the interior spaces the system will have occupancy sensors, for automatic "ON" operation and will automatically turn off when the room is vacant. System time clock will turn off lights during "Night Time" operation after normal business hours. 2-hour by-pass switches will be provided for each area to allow occupants to override the automatic off as required by code. The system will be zoned and user programmable to allow for flexible use of the building. Photo sensor lighting controls shall also be provided in all perimeter daylighting zones for daylight harvesting.
  - i. Approved lighting controls manufacturers include:
    - 1. Acuity Light air
    - 2. Eaton Wavelinx

### 3. Lutron Vive

#### 10. Fire Alarm System

- a) The work covered by this Scope of Work includes the designated construction described herein including providing all material, labor, equipment, design, and services necessary to perform the installation of a complete, fully operational, intelligent (analog) and addressable (digital), low voltage 24 Volts D.C., point identification, microprocessor based Fire Alarm System, in accordance with the required and advisory provisions of the latest edition of N.F.P.A. #72 accepted by the Authority having Jurisdiction and project specifications, except as modified herein.
- b) Batteries and battery cabinets shall be provided as required to meet the required 24 hours of standby and 5 minutes of full alarm.
- c) Provide System Initiation in accordance with NFPA and local code requirements.
- d) Initiation to include but not limited to:
  - i. Manual Pull Stations
  - ii. Smoke and Heat Detectors
  - iii. Duct Detectors
  - iv. Manual Pull Station located behind the front desk
- e) Provide Occupant Notification in accordance with NFPA, federal accessibility rules, and local code requirements. Notification to include but not limited to:
  - i. Combination Horn/Speaker Strobe Devices
  - ii. Horn/Speaker Only Devices
  - iii. Strobe Only Devices
  - iv. Remote Indicators for Duct Detectors
- f) Provide Weatherproof devices outdoors or in spaces subject to high levels of humidity.
- g) Provide addressable devices as required to monitor sprinkler flow and tamper switches and control operation of smoke dampers, elevator recall, shutdown of mechanical equipment and elevator power shutdown as required by code.

- h) Provide Voice Evacuation capabilities
- i) Copy of completed permit from the Authority Having Jurisdiction.
- j) The Fire Alarm Systems described by this specification shall be manufactured by one of the following manufacturers or equal:
  - i. Simplex
  - ii. Notifier
  - iii. Edwards
- k) The fire alarm system shall operate as a low voltage, Intelligent, point identification fire management system. The fire detection control system shall monitor Intelligent (Analog) and Addressable (Digital) devices, point identify the alarm location and transmit a signal to the monitoring agency.
- l) The fire alarm control panel shall allow for loading and editing special instructions and operating sequences as required. The system shall be capable of on-site programming to accommodate and facilitate expansion, building parameter changes or changes as required by local codes. All software operation shall be stored in a non-volatile programmable memory within the fire alarm control panel. Loss of primary and secondary power shall not erase the instructions stored in memory.
- m) All system output programs assigned via control-by-event equations to be activated by the particular point in alarm shall be executed, and the associated System Outputs (Alarm Indicating Appliances and/or relays) shall be activated. Unacknowledged alarm messages shall have priority over trouble messages, and if such an Alarm occurs during a Trouble sequence, the Alarm condition will have display priority.
- n) Alarm Verification: Each of the Intelligent/Addressable Smoke Detectors in the system may be independently selected and enabled to be an alarm verified detector. The Alarm Verification Function shall be from 5-50 seconds and each detector shall be able to be enabled/disabled during the field programming of

the system, or any time after system turn-on. The Alarm Verification shall not require any additional hardware to be added to the Fire Alarm Control Panel.

- o) The Central Processing Unit shall communicate with, monitor, and control all other modules within the control panel. Removal, disconnection or failure of any control panel module shall be detected and reported to the System Common Control Annunciator by the Central Processing Unit.
- p) The Central Processing Unit shall contain and execute all control-by-event programs for specific action to be taken if an alarm condition is detected by the system. Such control-by-event programs shall be held in non-volatile programmable memory (NVRAM) and shall not be lost even if system primary and secondary power failure occurs.
- q) Horn/speaker units shall be 24 VDC, red, and compatible with the control panel. The horn/speaker shall have field selectable sounds, a minimum of 100 DB at 10 feet, screw terminals and can operate independent of the strobe.
- r) Strobe units shall be 24 VDC, red, and compatible with the control panel. The strobe shall be xenon flash tube type rated as required by NFPA and shall meet or exceed the requirements of the Americans With Disabilities Act (ADA).
- s) Systems plywood back board(s) shall be used to mount enclosures of any kind, to any wall or surface. The systems plywood backboard shall be securely fastened to the walls to accommodate no less than ten times the total weight of the equipment to be mounted. The systems plywood backboard shall be a minimum of 3/4", APA exterior grade Douglas Fir A-C, and fire retardant with a flame spread rating not more than 25 when tested according to ASTM E-84. Provide the systems plywood backboard from the floor up to ceiling height (not exceeding 12'-0") on three walls of the MDF and one wall of the IDF. The entire backboard shall be painted with three (3) coats of fire retardant paint (the color shall match the adjacent surface). Do not paint over area of plywood that displays plywood is certified.

- t) Provide complete and operational systems with code-required access to each maintenance point. Installation of equipment to be in accordance with manufacturer's instructions. Access to all electrical control and panels shall be in accordance with the National Electrical Code and Local AHJ requirements.

11. Low Voltage and Telecommunication – General

- a) The Main telecommunications room will be provided.
- b) Provide (1) primary conduit from EACH Telecommunications provider to the site MPOP.
- c) One (1) TIA/EIA 19" wide equipment racks will be required for rack-mounted equipment such as fiber optic distribution panels, video surveillance equipment, building owned network equipment (e.g. WIFI head-end), and patch panels for structured cabling terminations within the MDF.

## **Commissioning of MEP systems**

The project will require that commission of the MEP system be provided.

The role of the Commissioning Authority is to coordinate the commissioning process.

1. Responsibilities include:
  - a) Develops commissioning requirements and directs commissioning activities.
  - b) Review plans, specifications, and design intent document (for informational purposes only. No formal review).
  - c) Coordinate commissioning work with CM/GC and owner

Systems That Shall Be Commissioned per 2018 IECC

- 2) Mechanical:
  - a) Mechanical and refrigeration systems.
- 3) Plumbing:
  - a) Service water heating systems.
- 4) Electrical:
  - a) Electrical power and lighting systems.

# Exhibits and Supporting Documents

Schematic Plans



## POOLS/ EQUIPMENT

# **BOULDER CITY AQUATIC CENTER STUDY OPTIONS:**

Boulder City,  
Nevada

**March 2021**

Submitted By:



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760.438.8400

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## A. INTRODUCTION

The Boulder Aquatic Center in Boulder City, Nevada has been maintained well for over 40 years, but is aging and nearing the end of its useful life. In a previous report we identified all of the components that need to be repaired or replaced to bring the pools to a like-new condition and comply with current codes. In lieu of the repairs we have also examined three options for new pools to better serve programming and sustainability. An improved facility would provide Boulder City with modern amenities and programs the existing facility cannot support, as well as provide flexible spaces to allow for a better ability to react to future programmatic needs. Three options for consideration are provided:

- As Designed: New 35-meter pool and new 2,250 square foot recreation pool
- Option 1: New 1,900 square foot splash pad and new mechanical equipment and piping for the existing kids pool
- Option 2 (Cost Savings Alternative to As Designed Option): New 25-meter pool and new 2,250 square foot recreation pool

## B. AS DESIGNED

The As Designed option features two new swimming pools:

- 35-meter x 25-yard competition pool (8,660 square feet)
- 2,250 square foot recreation pool

In the As Designed option, both the existing swimming pool and the existing diving pool are removed. In addition, the kids pool is taken offline. The As Designed competition pool has entry stairs and two 1-meter springboard diving boards. The As Designed recreation pool also has entry stairs. Both pools will feature ADA compliant accessible means of entry.

The As Designed competition pool, with dimensions of 114'-8" long x 75'-1" wide, provides fourteen 25-yard lanes (assuming each lane is 8-feet wide). The pool deep end can be approximately 12-feet deep to support one-meter springboard diving. The main body of the pool can be 7-feet deep to support competitive swim and water polo. The pool can support local, regional and state championship swim meets and can serve multiple swim teams practicing simultaneously. The pool can support both a 25-yard and 25-meter floating goal water polo field of play. The pool can also support two (2) water polo teams practicing simultaneously in the 25-yard direction. The shallow end of the pool can be 3.5-feet to 4.5-feet deep to support learn-to-swim and other shallow water programs. Typical programs that can be accommodated in the As Designed competition pool include:

- Competitive Swimming
- Fitness Swimming
- Lap / Recreational Swimming
- Masters Swimming
- Learn-to-Swim Programs
- Competitive Water Polo
- Recreational Water Polo
- Recreational Synchronized Swimming
- Kayak Lessons
- Scuba Lessons
- Lifeguard and Swim Instructor Training
- Red Cross Training
- Public Safety Training
- Deep Water Therapy Programs
- Fitness Classes
- Small Group Classes
- Medium Group Classes
- Large Group Classes

The As Designed recreation pool, with dimensions of 75'-1" long x 28'-6" wide, provides four 25-yard lanes (assuming each lane is 7-feet wide). The pool depths can range from 3'6" to 6'-0" but could be shallower or deeper depending on Boulder City preference. The pool can support warm-up and warm-down for competitive swim and

water polo events. Typical programs that can be accommodated in the As Designed recreation pool include:

- Fitness Swimming
- Lap / Recreational Swimming
- Learn-to-Swim Programs
- Swim Instructor Training
- Red Cross Training
- Public Safety Training
- Shallow Water Therapy Programs
- Fitness Classes
- Small Group Classes
- Medium Group Classes

## C. OPTION 1

Option 1 features a new recirculating 1,900 square foot splash pad and new mechanical equipment and piping for the existing kids pool.

The recirculating splash pad, with interactive water features, can accommodate aquatic play for all ages or tailor to a specific age range. Boulder City can identify the target splash pad user and influence the splash pad design choices accordingly. The splash pad can be designed to be Universally Accessible, if desired. Typical programs that can be accommodated in the Option 1 splash pad include:

- Open Recreation
- Rentals (e.g., birthday parties)

The existing kids pool, with dimensions of 30'-0" long x 30'-0" wide (900 square feet), provides recreational water for young children and accompanying adults. The pool features depths of 10 to 12 inches and an accessible ramp. Field verification that the existing accessible ramp (installed during a past pool renovation) meets current standards will be needed to determine if any modifications to the ramp should be added to the project scope. Typical programs that can be accommodated in the existing kids pool include:

- Open Recreation
- Parent and Child Swim Classes

New mechanical equipment and piping for the existing kids pool would be a necessary addition to bring it back into service. The existing singular mechanical system would not be possible to salvage and repurpose for the existing kids pool during mechanical room reconstruction. The splash pad will also need its own mechanical system. New mechanical equipment for the existing kids pool and the splash pad would include chemical control monitors, chemical metering pumps, circulation pumps and motors, a booster pump and motor (splash pad only), hair and lint strainers, filter tanks, surge tanks, ultraviolet (UV) light systems and new underground piping. The kids pool modernization will bring the system into a code-compliant 30-minute turnover rate through its independent filtration circulation system. The addition of UV secondary disinfection will also bring the system into code-compliance, as kids pools are required to have UV secondary disinfection systems. This equipment will be housed in a repurposed existing pool mechanical equipment room.

## D. OPTION 2

Option 2 reduces the size of the competition pool from the As Designed option.

- 25-meter x 25-yard competition pool (6,250 square feet)
- 2,250 square foot recreation pool

In Option 2, both the existing swimming pool and the existing diving pool are removed. In addition, the kids pool is taken offline. The Option 2 competition pool has entry stairs and two 1-meter springboard diving boards. The Option 2 recreation pool also has entry stairs. Both pools will feature ADA compliant accessible means of entry.

The Option 2 competition pool, with dimensions of 82'-1" long x 75'-1" wide, provides ten 25-yard lanes (assuming each lane is 8-feet wide). The pool deep end can be approximately 12-feet deep to support one-meter springboard diving. The main body of the pool can be 7-feet deep to support competitive swim and non-regulation water polo. The pool can support local swim meets and a single team practicing at any one time. The pool can also support a 25-yard fixed goal and non-regulation floating goal water polo fields of play. The shallow end of the pool can be 3.5-feet to 4.5-feet deep to support learn-to-swim and other shallow water programs. Typical programs that can be accommodated in the Option 2 competition pool include:

- Competitive Swimming
- Fitness Swimming
- Lap / Recreational Swimming
- Masters Swimming
- Learn-to-Swim Programs
- Competitive Water Polo
- Recreational Water Polo
- Recreational Synchronized Swimming
- Kayak Lessons
- Scuba Lessons
- Lifeguard and Swim Instructor Training
- Red Cross Training
- Public Safety Training
- Deep Water Therapy Programs
- Fitness Classes
- Small Group Classes
- Medium Group Classes
- Large Group Classes

The Option 2 recreation pool, with dimensions of 75'-1" long x 28'-6" wide, provides four 25-yard lanes (assuming each lane is 7-feet wide). The pool depths can range from 3'-6" to 6'-0" but could be shallower or deeper depending on Boulder City preference. The pool can support warm-up and warm-down for competitive swim and water polo events. Typical programs that can be accommodated in the Option 2 recreation pool include:

- Fitness Swimming
- Lap / Recreational Swimming
- Learn-to-Swim Programs
- Swim Instructor Training
- Red Cross Training
- Public Safety Training
- Shallow Water Therapy Programs
- Fitness Classes
- Small Group Classes
- Medium Group Classes

**E. PROGRAMMING OVERVIEW**

For many communities in search of a swimming pool that satisfies programmatic needs and fiscal responsibilities, a 35-meter swimming pool is the solution. For other communities, the capital investment and ongoing operational and utility expenses incurred by a 35-meter swimming pool versus a 25-meter swimming pool are not viable. The following table outlines athlete capacities and programming opportunities afforded by 25-meter and 35-meter swimming pools as it relates to the popular aquatic sports of swimming and water polo. The information can be used in combination with the details from previous sections of this report in effort to help Boulder City make the best choice for future aquatic needs.

<b>FEATURE</b>	<b>25-Meter</b>	<b>35-Meter</b>
<b>Length</b>	82'	114'
<b>Surface Area (Sq. Ft.)</b>	6,200	8,600
<b>Number of 8' Lanes</b>	10	14
<b>Max Swimmers 8' Lanes</b>	60	84
<b>Maximum Occupancy</b>	310	430
<b>Wall Goal H<sub>2</sub>O Polo</b>	1	2
<b>Floating Goal H<sub>2</sub>O Polo</b>	Non-regulation	25Y and 25M
<b>Swim Meet</b>	Local	Local, Regional and State Championships



## ROUGH COST ESTIMATE

## **BOULDER CITY AQUATIC CENTER**

### **Task 2 - New Building Concept Estimate**

Prepared for:

SCA Design  
2525 W. Horizon Ridge Parkway, Suite 230  
Henderson, NV 89052

1-Apr-21

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1



### PROJECT DETAILS

#### Basis of estimate

This Concept Estimate has been prepared at the request of SCA Design to provide an estimate of the anticipated cost to construct a new facility at the Boulder City Aquatic Center.

The scope of work allows for a new 40,000 +/- sf building built in place of the existing pool area. RLB were provided with a floor plan and elevations of the new building and from this information approximate quantities were measured and priced at rates considered applicable for the type of work being undertaken.

Options have been included for various changes in pool configurations and other potential upgrade options. The options are additive to the base estimate.

All pool estimates have been provided by Aquatic Design Group.

It is assumed that the project will be competitively bid by four to six general contractors and that the awarded contractor will be required to pay prevailing wage rates.

Unit pricing is based on March 2021 costs. An estimating contingency of 10% has been included, as well and an allowance of 4% for escalation to cover a 12-month period until commencement of construction. The timing of this needs to be confirmed and the escalation re-visited should the duration extend beyond 12- month.

***Please note that the estimate includes for those additional costs arising from the typical on-site measures implemented to curb the transmission of the COVID-19 virus (such as daily temperature checks, health questionnaires, mask wearing, provision of hand sanitizer, procedures to maintain social distancing, etc), However, the estimate does not include any allowance for future cost impacts resulting from the evolution of the pandemic, such as those that may arise from disruptions to the supply chain or that may increase the cost of labor, materials, equipment, subcontractors, general conditions, etc.***

#### Items specifically included

Please refer to estimate detail.

#### Items specifically excluded

- . Hazardous materials abatement
- . Utility tap fees and charges
- . Work outside the site boundaries unless noted otherwise
- . Special testing & inspections
- . Staff relocations and temporary accommodations
- . Owner's contingency
- . Construction phase contingency
- . Work outside of normal hours
- . Items marked as "Excl." in the estimate

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1



### PROJECT DETAILS

#### Documents

Please refer to basis of estimate.

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1



### LOCATION SUMMARY

GFA: Gross Floor Area  
Rates Current At March 2021

Rel Location	GFA SF	GFA \$/SF	Total Cost \$
A As Designed Base Estimate Incl Design Fees	40,668	515.75	20,974,447
B Option 1 - Add Splash Pad and Reuse Kids Pool With New Pool Equipment			913,247
C Option 2 - Cost Reduction for 25-M x 25-D Pool In Lieu of 35-M x 25-YD			-610,859
D Option 3 - Photovoltaic Panels and Equipment			546,662
E Option 4 - Convert Existing Lockers Into Office Space			275,503

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



Gross Floor Area: 40,668 SF  
Rates Current At March 2021

### DIVISIONS SUMMARY

Ref	Description	GFA \$/SF	Total Cost \$
02	Existing Conditions	2.46	100,000
03	Concrete	9.20	374,170
04	Masonry	9.09	369,488
05	Metals	63.41	2,578,909
06	Wood, Plastics, and Composites	1.22	49,467
07	Thermal and Moisture Protection	52.34	2,128,654
08	Opening	5.57	226,560
09	Finishings	11.90	483,851
10	Specialties	1.48	60,284
11	Equipment	3.80	154,600
13	Special Construction	87.77	3,569,345
21	Fire Suppression	4.73	192,224
22	Plumbing	14.81	602,117
23	Heating, Ventilation, and Air Conditioning	48.00	1,952,064
26	Electrical	39.92	1,623,380
31	Earthwork	6.25	254,007
32	Exterior Improvements	9.65	392,500
33	Utilities	3.96	160,880
<b>ESTIMATED NET COST</b>		<b>375.54</b>	<b>15,272,500</b>

### MARGINS & ADJUSTMENTS

General Conditions	6.5%	992,713
Insurance and Bonds	2.5%	406,629
Overhead and Profit	3.0%	500,155
Estimating Contingency	10.0%	1,717,199
Escalation Allowance (12 Months)	4.0%	755,251
<b>ESTIMATED TOTAL CONSTRUCTION COST</b>	<b>483.04</b>	<b>19,644,447</b>

Design Fees - ADA		20,000	
Design Fees - MPE		450,000	
Design Fees - Structural		100,000	
Design Fees - Civil		100,000	
Design Fees - Architectural		400,000	
Design Fees - Pool		215,000	
Design Fees - Cost Consultant		45,000	
<b>ESTIMATED TOTAL DESIGN FEES</b>	<b>6.77%</b>	<b>32.70</b>	<b>1,330,000</b>

<b>ESTIMATED TOTAL COST AS DESIGNED</b>	<b>515.75</b>	<b>20,974,447</b>
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# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 40,668 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>02</b>	<b>EXISTING CONDITIONS</b>				
<b>F2010</b>	<b>Building Elements Demolition</b>				
90	Demolish existing swimming pools (2 ea)	LS	1	100,000.00	100,000
	<b>Building Elements Demolition</b>			<b>2.46/SF</b>	<b>100,000</b>
	<b>EXISTING CONDITIONS</b>			<b>2.46/SF</b>	<b>100,000</b>
<b>03</b>	<b>CONCRETE</b>				
<b>A1010</b>	<b>Standard Foundations</b>				
1	Foundations - grade beams and spread footings	SF	46,041	5.00	230,205
	<b>Standard Foundations</b>			<b>5.66/SF</b>	<b>230,205</b>
<b>A1020</b>	<b>Special Foundations</b>				
2	Piled foundations excluded	SF	40,668		Excl.
	<b>Special Foundations</b>				<b>Excl.</b>
<b>A1030</b>	<b>Slab on Grade</b>				
3	Slab on grade (excludes pool deck)	SF	13,850	6.50	90,025
9	Breeze way slab on grade	SF	5,373	6.50	34,925
25	Form steps	LF	97	55.00	5,335
26	Form ramp	SF	912	15.00	13,680
	<b>Slab on Grade</b>			<b>3.54/SF</b>	<b>143,965</b>
	<b>CONCRETE</b>			<b>9.20/SF</b>	<b>374,170</b>
<b>04</b>	<b>MASONRY</b>				
<b>C1010</b>	<b>Partitions</b>				
124	CMU partitions	SF	23,093	16.00	369,488
	<b>Partitions</b>			<b>9.09/SF</b>	<b>369,488</b>
	<b>MASONRY</b>			<b>9.09/SF</b>	<b>369,488</b>
<b>05</b>	<b>METALS</b>				
<b>B1020</b>	<b>Roof Construction</b>				
4	Structural steel framing - high roof 20 psf	T	341.33	5,000.00	1,706,650
5	Structural steel framing - low roof 12 psf	T	90.05	5,000.00	450,250
6	Metal roof deck	SF	49,141	3.50	171,994
123	Factory applied paint to structural steel	T	341.33	500.00	170,665
	<b>Roof Construction</b>			<b>61.46/SF</b>	<b>2,499,559</b>
<b>B2010</b>	<b>Exterior Walls</b>				
31	Structural steel to exterior walls (3psf of wall area)	T	14.65	5,000.00	73,250
	<b>Exterior Walls</b>			<b>1.80/SF</b>	<b>73,250</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 40,668 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>C1030 Fittings</b>					
28	Allowance for misc metals	SF	40,668	0.15	6,100
	<b>Fittings</b>			<b>0.15/SF</b>	<b>6,100</b>
	<b>METALS</b>			<b>63.41/SF</b>	<b>2,578,909</b>
<b>06 WOOD, PLASTICS, AND COMPOSITES</b>					
<b>C1030 Fittings</b>					
30	Allowance for rough carpentry	SF	40,668	0.10	4,067
	<b>Fittings</b>			<b>0.10/SF</b>	<b>4,067</b>
<b>E2010 Fixed Furnishings</b>					
40	Washroom vanities	LF	58	300.00	17,400
41	Kitchen millwork	LF	21	500.00	10,500
42	Kitchen serving counter	LF	10	250.00	2,500
89	Allowance for undesigned millwork	LS	1	15,000.00	15,000
	<b>Fixed Furnishings</b>			<b>1.12/SF</b>	<b>45,400</b>
	<b>WOOD, PLASTICS, AND COMPOSITES</b>			<b>1.22/SF</b>	<b>49,467</b>
<b>07 THERMAL AND MOISTURE PROTECTION</b>					
<b>B2010 Exterior Walls</b>					
8	Split face CMU walls	SF	31,898	22.00	701,756
10	Standing seam metal wall panels	SF	9,766	18.00	175,788
21	Metal stud framing, sheathing, insulation and drywall	SF	10,886	15.00	163,290
	<b>Exterior Walls</b>			<b>25.59/SF</b>	<b>1,040,834</b>
<b>B3010 Roof Coverings</b>					
16	Membrane roof	SF	3,421	8.00	27,368
17	Standing seam metal roof	SF	45,720	18.00	822,960
18	Metal panel soffits at high roofs	SF	3,100	30.00	93,000
	<b>Roof Coverings</b>			<b>23.20/SF</b>	<b>943,328</b>
<b>C1030 Fittings</b>					
29	Allowance for caulking and sealants	SF	40,668	0.25	10,167
	<b>Fittings</b>			<b>0.25/SF</b>	<b>10,167</b>
<b>C3030 Ceiling Finishes</b>					
19	Stucco soffits at breezeway, include for metal stud suspension framing	SF	5,373	25.00	134,325
	<b>Ceiling Finishes</b>			<b>3.30/SF</b>	<b>134,325</b>
	<b>THERMAL AND MOISTURE PROTECTION</b>			<b>52.34/SF</b>	<b>2,128,654</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 40,668 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>08</b>	<b>OPENINGS</b>				
<b>B2020</b>	<b>Exterior Windows</b>				
11	Curtain wall	SF	478	100.00	47,800
145	Kalwall glazing system	SF	1,174	60.00	70,440
12	Windows	SF	61	70.00	4,270
	<b>Exterior Windows</b>			<b>3.01/SF</b>	<b>122,510</b>
<b>B2030</b>	<b>Exterior Doors</b>				
13	Aluminum framed glass doors, frames, hardware	EA	12	3,500.00	42,000
14	Insulated HM doors, frames, hardware, finish	EA	12	2,000.00	24,000
15	Extra cost for vision panels	EA	6	350.00	2,100
	<b>Exterior Doors</b>			<b>1.67/SF</b>	<b>68,100</b>
<b>C1020</b>	<b>Interior Doors</b>				
23	Hollow metal doors, frames, hardware, finish	EA	13	2,000.00	26,000
24	Extra cost for vision panels	EA	4	350.00	1,400
43	Overhead coiling door at kitchen servery	SF	35	100.00	3,500
	<b>Interior Doors</b>			<b>0.76/SF</b>	<b>30,900</b>
<b>C1030</b>	<b>Fittings</b>				
44	Mirrors at vanities	SF	202	25.00	5,050
	<b>Fittings</b>			<b>0.12/SF</b>	<b>5,050</b>
	<b>OPENINGS</b>			<b>5.57/SF</b>	<b>226,560</b>
<b>09</b>	<b>FINISHINGS</b>				
<b>C1010</b>	<b>Partitions</b>				
144	Furring wall to interior face of standing seam metal wall panels	SF	9,766	10.00	97,660
	<b>Partitions</b>			<b>2.40/SF</b>	<b>97,660</b>
<b>C3010</b>	<b>Wall Finishes</b>				
56	Main entrance foyer - paint	SF	10,548	0.80	8,438
57	Pool area - paint	SF	26,685	1.00	26,685
58	Washroom finish - tile full height	SF	5,974	15.00	89,610
59	Kitchen - paint	SF	504	0.80	403
60	Meeting room - paint	SF	2,074	0.80	1,659
61	Offices - paint	SF	1,815	0.80	1,452
62	Security - paint	SF	664	0.80	531
63	Lifeguards - paint	SF	4,331	0.80	3,465
64	Storage - paint	SF	5,044	0.80	4,035

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 40,668 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
65	Pool filtration - epoxy paint	SF	5,206	2.50	13,015
<b>Wall Finishes</b>				<b>3.67/SF</b>	<b>149,293</b>
<b>C3020</b>	<b>Floor Finishes</b>				
47	Main entrance foyer - tile	SF	2,594	18.00	46,692
46	Pool deck finish assume with pool deck cost in division 13	SF	13,207		Incl.
48	Washroom finish - tile	SF	2,034	18.00	36,612
49	Kitchen - VCT	SF	180	5.00	900
50	Meeting room - carpet	SF	2,393	4.50	10,769
54	Offices - carpet	SF	1,367	4.50	6,152
55	Security - VCT	SF	349	5.00	1,745
51	Lifeguards - sealed concrete	SF	777	1.00	777
52	Storage - sealed concrete	SF	1,066	1.00	1,066
53	Pool filtration - epoxy paint	SF	2,476	5.00	12,380
120	Breezeway concrete slab - sealed concrete	SF	5,373	1.50	8,060
66	Rubber base	LF	1,661	2.50	4,153
67	Tile base	LF	598	8.00	4,784
68	Epoxy coved base	LF	290	8.00	2,320
<b>Floor Finishes</b>				<b>3.35/SF</b>	<b>136,410</b>
<b>C3030</b>	<b>Ceiling Finishes</b>				
79	Main entrance foyer - paint exposed structure	SF	2,594	1.00	2,594
80	Pool deck -paint exposed structure	SF	25,426	1.75	44,496
81	Washroom finish - painted drywall	SF	2,034	10.00	20,340
82	Kitchen - washable ACT	SF	180	6.50	1,170
83	Meeting room - 80% ACT 20% painted drywall	SF	2,393	6.50	15,555
84	Offices - 80% ACT 20% painted drywall	SF	1,367	6.50	8,886
85	Security - ACT	SF	349	5.00	1,745
86	Lifeguards - paint exposed structure	SF	777	1.75	1,360
87	Storage - paint exposed structure	SF	1,066	1.75	1,866
88	Pool filtration - paint exposed structure	SF	2,476	1.00	2,476
<b>Ceiling Finishes</b>				<b>2.47/SF</b>	<b>100,488</b>
<b>FINISHINGS</b>				<b>11.90/SF</b>	<b>483,851</b>
<b>10</b>	<b>SPECIALTIES</b>				
<b>C1030</b>	<b>Fittings</b>				
27	Allowance for general building specialties - code signage, fire extinguishers, etc	SF	40,668	0.50	20,334

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 40,668 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
33	Toilet partitions - ADA	EA	4	1,600.00	6,400
34	Toilet partitions - standard	EA	8	1,400.00	11,200
36	Shower partitions	EA	4	450.00	1,800
35	Urinal diividers	EA	6	450.00	2,700
32	Allowance for washroom accessories	EA	14	800.00	11,200
37	Allowance for shower accessories	EA	4	350.00	1,400
38	Lockers	LF	65	50.00	3,250
39	Locker benches	LF	20	100.00	2,000
	<b>Fittings</b>			<b>1.48/SF</b>	<b>60,284</b>
	<b>SPECIALTIES</b>			<b>1.48/SF</b>	<b>60,284</b>
<b>11</b>	<b>EQUIPMENT</b>				
<b>E1020</b>	<b>Institutional Equipment</b>				
45	Kitchen equipment - prep kitchen	LS	1	6,500.00	6,500
	<b>Institutional Equipment</b>			<b>0.16/SF</b>	<b>6,500</b>
<b>E2010</b>	<b>Fixed Furnishings</b>				
104	Retractable bleacher seating	LF	1,481	100.00	148,100
	<b>Fixed Furnishings</b>			<b>3.64/SF</b>	<b>148,100</b>
	<b>EQUIPMENT</b>			<b>3.80/SF</b>	<b>154,600</b>
<b>13</b>	<b>SPECIAL CONSTRUCTION</b>				
<b>F1040</b>	<b>Special Facilities</b>				
92	35-Meter x 25-YD competition pool and equipment	SF	8,660	235.00	2,035,100
140	Recreation pool	SF	2,250	225.00	506,250
94	Pool deck and deck drainage	SF	14,600	45.00	656,995
95	Allowance for pool utilities	LS	1	100,000.00	100,000
96	Allowance for deck equipment and competitive equipment	LS	1	271,000.00	271,000
	<b>Special Facilities</b>			<b>87.77/SF</b>	<b>3,569,345</b>
	<b>SPECIAL CONSTRUCTION</b>			<b>87.77/SF</b>	<b>3,569,345</b>
<b>21</b>	<b>FIRE SUPPRESSION</b>				
<b>D4010</b>	<b>Sprinklers</b>				
102	Sprinklers	SF	40,668	4.00	162,672
103	Sprinklers to breezeway	SF	5,373	5.50	29,552
	<b>Sprinklers</b>			<b>4.73/SF</b>	<b>192,224</b>
	<b>FIRE SUPPRESSION</b>			<b>4.73/SF</b>	<b>192,224</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 40,668 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>22</b>	<b>PLUMBING</b>				
<b>D2090</b>	<b>Other Plumbing Systems</b>				
97	Plumbing fixtures, domestic water, sanitary sewer	EA	42	5,000.00	210,000
98	Plumbing to kitchen	SF	180	50.00	9,000
99	General plumbing allowance to building	SF	40,668	9.00	366,012
100	Rain water drainage to flat roofs	SF	3,421	5.00	17,105
	<b>Other Plumbing Systems</b>			<b>14.81/SF</b>	<b>602,117</b>
	<b>PLUMBING</b>			<b>14.81/SF</b>	<b>602,117</b>
<b>23</b>	<b>HEATING, VENTILATING, AND AIR CONDITIONING</b>				
<b>D3090</b>	<b>Other HVAC Systems &amp; Equipment</b>				
101	Allowance for HVAC	SF	40,668	48.00	1,952,064
	<b>Other HVAC Systems &amp; Equipment</b>			<b>48.00/SF</b>	<b>1,952,064</b>
	<b>HEATING, VENTILATING, AND AIR CONDITIONING</b>			<b>48.00/SF</b>	<b>1,952,064</b>
<b>26</b>	<b>ELECTRICAL</b>				
<b>D5090</b>	<b>Other Electrical Systems</b>				
105	Allowance for electrical - service and distribution, lighting and power, low voltage systems	SF	40,668	35.00	1,423,380
	<b>Other Electrical Systems</b>			<b>35.00/SF</b>	<b>1,423,380</b>
<b>G4090</b>	<b>Other Site Electrical Utilities</b>				
119	Allowance for site electrical	LS	1	200,000.00	200,000
	<b>Other Site Electrical Utilities</b>			<b>4.92/SF</b>	<b>200,000</b>
	<b>ELECTRICAL</b>			<b>39.92/SF</b>	<b>1,623,380</b>
<b>31</b>	<b>EARTHWORK</b>				
<b>G1010</b>	<b>Site Clearing</b>				
106	Clear site	SF	60,987	1.00	60,987
	<b>Site Clearing</b>			<b>1.50/SF</b>	<b>60,987</b>
<b>G1020</b>	<b>Site Demolition and Relocations</b>				
107	Demolish existing site structures	LS	1	12,500.00	12,500
	<b>Site Demolition and Relocations</b>			<b>0.31/SF</b>	<b>12,500</b>
<b>G1030</b>	<b>Site Earthwork</b>				
91	Soil preparation for swimming pool construction	LS	1	85,000.00	85,000
108	Site grading	SF	60,987	0.50	30,494
109	Form building pad	SF	52,021	1.25	65,026
	<b>Site Earthwork</b>			<b>4.44/SF</b>	<b>180,520</b>
	<b>EARTHWORK</b>			<b>6.25/SF</b>	<b>254,007</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - AS DESIGNED BASE ESTIMATE



Gross Floor Area: 40,668 SF  
Rates Current At March 2021

### DIVISIONS/ELEMENTS ITEM

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>32</b>	<b>EXTERIOR IMPROVEMENTS</b>				
<b>G2040</b>	<b>Site Development</b>				
110	Site paving (includes splash pad area)	SF	16,508	10.00	165,080
113	Utility building	SF	113	250.00	28,250
114	Fence - metal picket	LF	316	150.00	47,400
115	Gates	EA	3	2,500.00	7,500
116	Shade canopy	SF	806	45.00	36,270
121	Concrete footing for low walls	LF	80	100.00	8,000
	<b>Site Development</b>			<b>7.19/SF</b>	<b>292,500</b>
<b>G2050</b>	<b>Landscaping</b>				
117	Allowance for landscaping	LS	1	100,000.00	100,000
	<b>Landscaping</b>			<b>2.46/SF</b>	<b>100,000</b>
	<b>EXTERIOR IMPROVEMENTS</b>			<b>9.65/SF</b>	<b>392,500</b>
<b>33</b>	<b>UTILITIES</b>				
<b>G2040</b>	<b>Site Development</b>				
122	CMU screen wall 6' high above grade	SF	640	17.00	10,880
	<b>Site Development</b>			<b>0.27/SF</b>	<b>10,880</b>
<b>G3090</b>	<b>Other Site Mechanical Utilities</b>				
118	Allowance for wet site utilities	LS	1	150,000.00	150,000
	<b>Other Site Mechanical Utilities</b>			<b>3.69/SF</b>	<b>150,000</b>
	<b>UTILITIES</b>			<b>3.96/SF</b>	<b>160,880</b>
	<b>ESTIMATED NET COST</b>			<b>375.54/SF</b>	<b>15,272,500</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 1 - ADD SPLASH PAD AND REUSE KIDS POOL WITH NEW POOL EQUIPMENT



### DIVISIONS SUMMARY

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	GFA \$/SF	Total Cost \$
13	Special Construction		700,000
31	Earthwork		10,000
<b>ESTIMATED NET COST</b>			<b>710,000</b>

### MARGINS & ADJUSTMENTS

General Conditions	46,150
Insurance and Bonds	18,904
Overhead and Profit	23,252
Estimating Contingency	79,831
Escalation Allowance	35,110
Estimated Total Construction Cost	913,247
<b>ESTIMATED TOTAL COST</b>	<b>913,247</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 1 - ADD SPLASH PAD AND REUSE KIDS POOL WITH NEW POOL EQUIPMENT



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>13</b>	<b>SPECIAL CONSTRUCTION</b>				
<b>F1040</b>	<b>Special Facilities</b>				
111	Exterior kids pool upgrades	SF	1,211	165.15	200,000
112	Sprayground / Splashpad	SF	1,380	362.32	500,000
	<b>Special Facilities</b>				<b>700,000</b>
	<b>SPECIAL CONSTRUCTION</b>				<b>700,000</b>
<b>31</b>	<b>EARTHWORK</b>				
<b>G1010</b>	<b>Site Clearing</b>				
147	Soil preparation for splash pad construction	LS	1	10,000.00	10,000
	<b>Site Clearing</b>				<b>10,000</b>
	<b>EARTHWORK</b>				<b>10,000</b>
	<b>ESTIMATED NET COST</b>				<b>710,000</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 2 - COST REDUCTION FOR 25-M X 25-YD POOL IN LIEU OF 35-M X 25-YD



### DIVISIONS SUMMARY

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	GFA \$/SF	Total Cost \$
13	Special Construction		-474,895
<b>ESTIMATED NET COST</b>			<b>-474,895</b>

### MARGINS & ADJUSTMENTS

General Conditions	-30,868
Insurance and Bonds	-12,644
Overhead and Profit	-15,552
Estimating Contingency	-53,396
Escalation Allowance	-23,504
Estimated Total Construction Cost	-610,859
<b>ESTIMATED TOTAL COST</b>	<b>-610,859</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 2 - COST REDUCTION FOR 25-M X 25-YD POOL IN LIEU OF 35-M X 25-YD



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>13</b>	<b>SPECIAL CONSTRUCTION</b>				
<b>F1040</b>	<b>Special Facilities</b>				
141	Cost reduction for 25-Meter x 25-YD competition pool in lieu of 35-M x 25-YD	SF	-2,410	235.00	-566,350
94	Pool deck and deck drainage	SF	2,410	45.00	108,455
146	Reduction in allowance for deck equipment and competitive equipment	LS	1	-17,000.00	-17,000
	<b>Special Facilities</b>				<b>-474,895</b>
	<b>SPECIAL CONSTRUCTION</b>				<b>-474,895</b>
	<b>ESTIMATED NET COST</b>				<b>-474,895</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 3 - PHOTOVOLTAIC PANELS AND EQUIPMENT



### DIVISIONS SUMMARY

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	GFA \$/SF	Total Cost \$
26	Electrical		425,000
<b>ESTIMATED NET COST</b>			<b>425,000</b>
<b>MARGINS &amp; ADJUSTMENTS</b>			
	General Conditions		27,625
	Insurance and Bonds		11,316
	Overhead and Profit		13,918
	Estimating Contingency		47,786
	Escalation Allowance		21,017
	Estimated Total Construction Cost		546,662
<b>ESTIMATED TOTAL COST</b>			<b>546,662</b>

**BOULDER CITY AQUATIC CENTER**  
**TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 -**  
**OPTION 3 - PHOTOVOLTAIC PANELS AND EQUIPMENT**



Gross Floor Area: 0 SF  
 Rates Current At March 2021

**DIVISIONS/ELEMENTS ITEM**

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
26	<b>ELECTRICAL</b>				
D5090	<b>Other Electrical Systems</b>				
142	Allowance for solar panels and associated control equipment (100kw)	SF	40,668	10.45	425,000
	<b>Other Electrical Systems</b>				<b>425,000</b>
	<b>ELECTRICAL</b>				<b>425,000</b>
	<b>ESTIMATED NET COST</b>				<b>425,000</b>

**BOULDER CITY AQUATIC CENTER**  
**TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 -**  
**OPTION 4 - CONVERT EXISTING LOCKERS INTO**  
**OFFICE SPACE**



**DIVISIONS SUMMARY**

Gross Floor Area: 0 SF  
 Rates Current At March 2021

Ref	Description	GFA \$/SF	Total Cost \$
02	Existing Conditions		16,568
03	Concrete		5,996
09	Finishings		59,955
12	Furnishings		Excl.
21	Fire Suppression		5,139
22	Plumbing		23,750
23	Heating, Ventilating, and Air Conditioning		49,678
26	Electrical		53,103
<b>ESTIMATED NET COST</b>			<b>214,189</b>

<b>MARGINS &amp; ADJUSTMENTS</b>		
General Conditions		13,922
Insurance and Bonds		5,703
Overhead and Profit		7,014
Estimating Contingency		24,083
Escalation Allowance		10,592
Estimated Total Construction Cost		275,503
<b>ESTIMATED TOTAL COST</b>		<b>275,503</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 4 - CONVERT EXISTING LOCKERS INTO OFFICE SPACE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>02</b>	<b>EXISTING CONDITIONS</b>				
<b>F2010</b>	<b>Building Elements Demolition</b>				
125	Demolish existing CMU walls	LF	143	35.00	5,005
126	Demolish ceiling	SF	1,713	0.75	1,285
127	Demolish floor finish	SF	1,713	1.00	1,713
129	Misc interior demolition	SF	1,713	5.00	8,565
	<b>Building Elements Demolition</b>				<b>16,568</b>
	<b>EXISTING CONDITIONS</b>				<b>16,568</b>
<b>03</b>	<b>CONCRETE</b>				
<b>A1030</b>	<b>Slab on Grade</b>				
132	Patch slab on grade as required	SF	1,713	3.50	5,996
	<b>Slab on Grade</b>				<b>5,996</b>
	<b>CONCRETE</b>				<b>5,996</b>
<b>09</b>	<b>FINISHINGS</b>				
<b>F1020</b>	<b>Integrated Construction</b>				
133	Interior build out including partitions, door, finishes (assume mainly open plan)	SF	1,713	35.00	59,955
	<b>Integrated Construction</b>				<b>59,955</b>
	<b>FINISHINGS</b>				<b>59,955</b>
<b>12</b>	<b>FURNISHINGS</b>				
<b>E2020</b>	<b>Movable Furnishings</b>				
138	Work stations, desks, chairs, furniture, equipment etc excluded	LS	1		Excl.
	<b>Movable Furnishings</b>				<b>Excl.</b>
	<b>FURNISHINGS</b>				<b>Excl.</b>
<b>21</b>	<b>FIRE SUPPRESSION</b>				
<b>D4010</b>	<b>Sprinklers</b>				
135	Allowance for sprinkler alterations	SF	1,713	3.00	5,139
	<b>Sprinklers</b>				<b>5,139</b>
	<b>FIRE SUPPRESSION</b>				<b>5,139</b>
<b>22</b>	<b>PLUMBING</b>				
<b>D2090</b>	<b>Other Plumbing Systems</b>				
134	Allowance for misc plumbing work	SF	1,713	4.38	7,500
	<b>Other Plumbing Systems</b>				<b>7,500</b>

# BOULDER CITY AQUATIC CENTER

## TASK 2 - NEW BUILDING CONCEPT ESTIMATE R1 - OPTION 4 - CONVERT EXISTING LOCKERS INTO OFFICE SPACE



### DIVISIONS/ELEMENTS ITEM

Gross Floor Area: 0 SF  
Rates Current At March 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
<b>F2010</b>	<b>Building Elements Demolition</b>				
128	Demolish plumbing fixtures and cap pipework	EA	25	650.00	16,250
	<b>Building Elements Demolition</b>				<b>16,250</b>
	<b>PLUMBING</b>				<b>23,750</b>
<b>23</b>	<b>HEATING, VENTILATING, AND AIR CONDITIONING</b>				
<b>D3090</b>	<b>Other HVAC Systems &amp; Equipment</b>				
136	Allowance for HVAC	SF	1,713	27.50	47,108
	<b>Other HVAC Systems &amp; Equipment</b>				<b>47,108</b>
<b>F2010</b>	<b>Building Elements Demolition</b>				
131	HVAC demolition	SF	1,713	1.50	2,570
	<b>Building Elements Demolition</b>				<b>2,570</b>
	<b>HEATING, VENTILATING, AND AIR CONDITIONING</b>				<b>49,678</b>
<b>26</b>	<b>ELECTRICAL</b>				
<b>D5090</b>	<b>Other Electrical Systems</b>				
137	Allowance for electrical and low voltage	SF	1,713	30.00	51,390
	<b>Other Electrical Systems</b>				<b>51,390</b>
<b>F2010</b>	<b>Building Elements Demolition</b>				
130	Electrical demolition and make safe	SF	1,713	1.00	1,713
	<b>Building Elements Demolition</b>				<b>1,713</b>
	<b>ELECTRICAL</b>				<b>53,103</b>
	<b>ESTIMATED NET COST</b>				<b>214,189</b>





2525 W HORIZON RIDGE PARKWAY  
SUITE 230  
HENDERSON, NV 89052  
702-719-2020

SCA DESIGN- TASK 2  
Community Pool  
Boulder City Project No. 17-1013-MC(1)

APRIL 2021

R1 04.05.2021  
R2 04.08.2021