Addison Athletic Club HVAC Improvements

Council Work Session

February 13, 2018

History – AAC Master Plan

- December 2014 – Athletic Club Master Plan Kick-off
- January 2015 – Design Charrettes/Community Feedback for Master Plan
- June 2015 – Presentation of the Athletic Club Master Plan including recommendations from the Master Plan Committee
- February 2016 – Council requests additional public input
- July 2016 – Public input meetings and online survey
- October 2016 – Public input findings presented to Council. Council approves Master Plan and funding priorities
- September 2017 – Council approved contract with PGAL for professional services

History – HVAC Improvements

- Professional Services Agreement with PGAL (9/13/2017)
  - Contract amount of $92,500
    1. Evaluation of the existing mechanical systems
    2. Existing mechanical system equipment sizes, types and life cycle expectancy for each major mechanical system
    3. Recommendation on replacement options of the existing mechanical systems and order of magnitude construction cost of each system

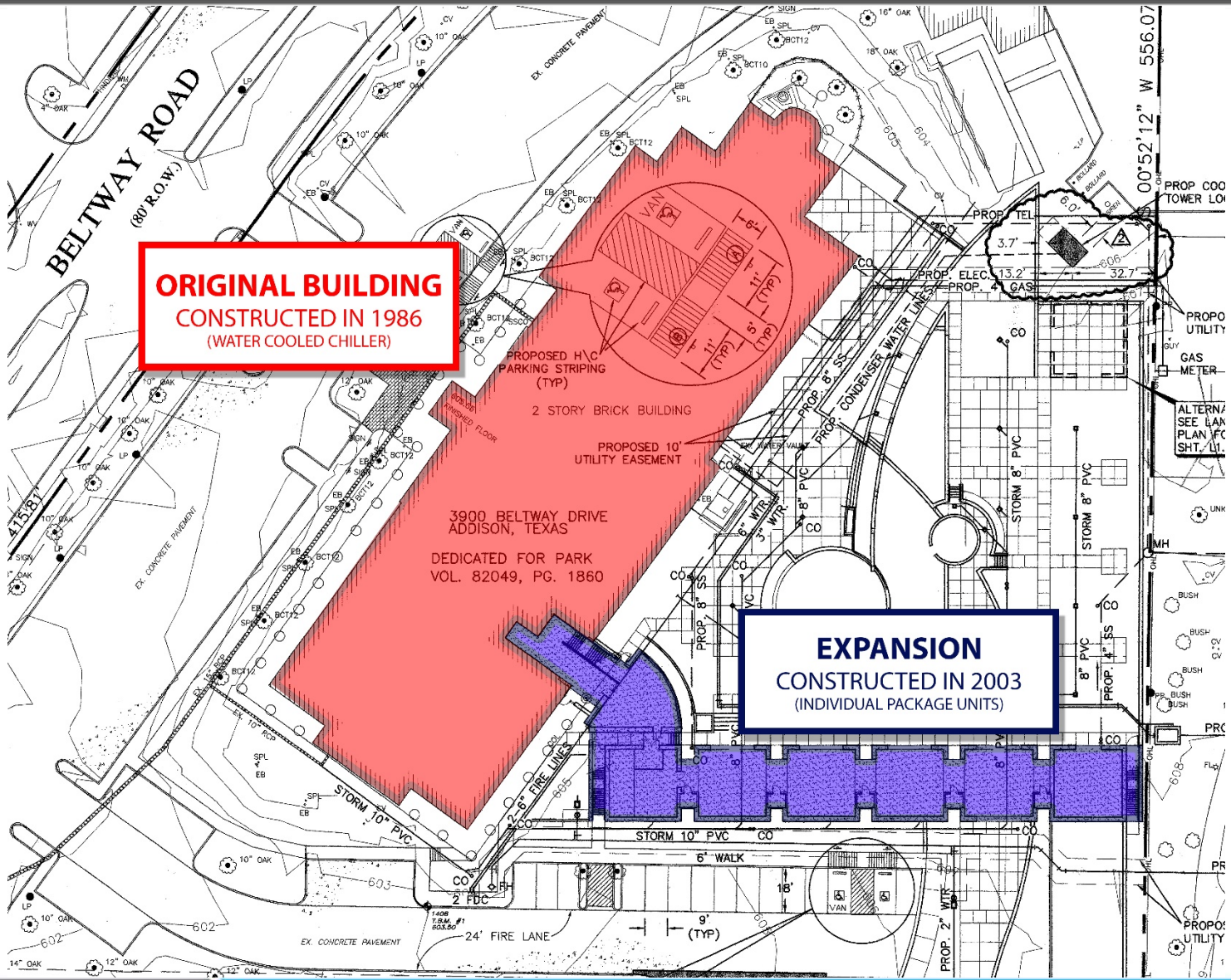
- Budget amendment for HVAC Improvements and Elevator Modernization in the amount of $1,047,000 (9/28/2017)

Project Budget

- **Project Budget – $1,047,000**
- **HVAC Improvements – $909,700**
  - PGAL Contract - $92,500
  - Construction Budget (including 10% contingency) - $817,200
- **Elevator Modernization – $120,000**
  - Contract Amount – $96,000
  - Change Order #1 – reduction of $30,166
    - Reuse the existing jacks and restore to an as new condition
- **Unassigned Funds – $17,300**
- **Updated HVAC Budget**
  - **$865,000***

***Original HVAC Construction Budget + Elevator Cost Savings + Unassigned Funds (Rounded to the nearest thousand)**

HVAC Evaluation – Site Map



HVAC Evaluation

- **Existing issues identified by Staff and AAC members**
  - Inability to heat and cool fitness wing in extreme temperatures
  - The packaged units that serve the fitness wing break down frequently
  - Lack of air flow in the fitness wing and jogging track
  - Temperature control problems in the aerobic studio
  - Cold temperatures in Women's Locker Room in winter
  - Humidity problems in the Men's Locker Room
  - Air handling unit above the conference room and aerobics studios are very loud
  - Chiller is very loud and can be heard throughout the facility

HVAC Evaluation

Design Options

1. Utilize a air cooled chiller to produce chilled water for the entire facility. **(Recommended by Consultant)**

2. Utilize a variable refrigerant flow system (VRF) to replace the packaged units serving the Cardio wing.

HVAC Evaluation

Recommendations from the Consultant

1. Replace the five (5) packaged units with chilled water units. The new equipment will also provide heating, outside air to ventilate and pressurize the wing (Included in All Options)

2. Install large diameter ceiling fans in the Fitness area to generate air movement and provide a cooling effect. (Included in All Options)

3. Replace the wall mounted supply grilles in the Fitness area with new grilles that allow the direction of air flow to be adjusted. (Included in All Options)

4. Replace all of the air handling units except the unit serving the Natatorium (AHU-4) (Included in Option 3)

5. Modify or completely replace the ductwork in the Gym to provide better air distribution. (Included in Option 3)

6. Clean the cooling tower basin, fill media, and adjust the chemical content in the condenser water system. This will extend the life of the towers as well as improve the performance of the cooling towers. (Included in Option 3)

7. Replace the pneumatic controls system with a new electronic system. (Included in Option 3)

HVAC Evaluation – Option 1 ($860,000)

- Option 1 makes significant improvements to the HVAC system.
  - Pros:
    - The undersized packaged units for the expansion will be replaced with an appropriately sized air cooled chiller (70 ton)
    - High priority air handling units will be replaced
    - The project could be completed within the current budget.
  - Cons:
    - The existing chiller will remain and is at life expectancy
    - The cooling tower will need to be replaced in the future to serve the original building
    - Two separate HVAC systems at the AAC
    - The remaining air handling units and pumps will need to be replaced at a later date

HVAC Evaluation – Option 2 ($960,000)

- **Staff recommends Option 2.**

  - Pros:
    - The undersized packaged units for the expansion will be replaced with an appropriately sized air cooled chiller (200 ton)
    - One HVAC system for the entire AAC
    - Future cost savings by eliminating the need to replace the existing chiller and cooling tower
    - High priority air handling units will be replaced

  - Cons:
    - The remaining air handling units and pumps will need to be replaced at a later date
    - Over budget by $95,000

HVAC Evaluation – Option 3 ($1,336,000)

- Option 3 upgrade all the HVAC equipment (except for AHU #4).
  - Pros:
    - The undersized packaged units for the expansion will be replaced with an appropriately sized air cooled chiller (200 ton)
    - One HVAC system for the entire AAC
    - Future cost savings by eliminating the need to replace the existing chiller and cooling tower
    - All handling units will be replaced (except for AHU#4)
    - All pumps will be replaced
    - New Energy Management Software
    - Pneumatic Controls converted to Electronic Controls
    - Modify or replace the ductwork for the Gym
  - Cons:
    - Over budget by $471,000

HVAC Evaluation – Design Options

Existing Equipment	Option 1 - HVAC Improvements Entire Facility (70 Ton)	Option 2 - HVAC Improvements Entire Facility (200 Ton)	Option 3 - Complete HVAC Upgrade (200 Ton)
Chiller	✗	—	—
Cooling Tower	✗	—	—
Boiler #1	✗	✗	✓
Package Unit #1*	✓	✓	✓
Package Unit #2*	✓	✓	✓
Package Unit #3*	✓	✓	✓
Package Unit #4*	✓	✓	✓
Package Unit #5*	✓	✓	✓
Air Handling Unit #1	✗	✗	✓
Air Handling Unit #2	✗	✗	✓
Air Handling Unit #3	✗	✗	✓
Air Handling Unit #4	✗	✗	✗
Air Handling Unit #5	✓	✓	✓
Air Handling Unit #6	✗	✗	✓
Air Handling Unit #7	✗	✗	✓
Air Handling Unit #8	✓	✓	✓
Air Handling Unit #9	✓	✓	✓
Air Handling Unit #10	✓	✓	✓
Pump #8	✗	✗	✓
Pump #9	✗	✗	✓
Pump #10	✗	✗	✓
(7) Large Diameter Ceiling Fans	✓	✓	✓
Gym Ductwork	✗	✗	✓
70 ton air cooled chiller	✓	—	—
200 ton air cooled chillers	—	✓	✓
Sitework and tree removal**	✓	✓	✓
Total Improvements Cost	**$860,000.00**	**$960,000.00**	**$1,336,000.00**
* Replace the existing DX units with chilled water units			
**$50,000 allowance for screening the new unit.			

PRIORITY AIR HANDLING UNITS

AHU 5 – Conference Room

AHU 8 – Women's Locker Room

AHU 9 – Men's Locker Room

AHU 10 – Aerobics Studio

Project Summary

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Questions?