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$ **Cut Costs**

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→ **Streamlined Sourcing**

Take BuildVision's structured data and send it to suppliers at BuildVision.io

Customer Information

Customer Name	Norco College
Contact Person	Gerald Stosek
Contact Email	gerry.stosek@clarkconstruction.com
Contact Phone	N/A
Address	Norco, California
Invited Date	5/13/2025
Due Date	5/28/2025

Project Information

Project Name	Center for Human Performance & Kinesiology
Location	Norco College, Norco, California
Start Date	7/22/2025
Completion Date	N/A
Budget	N/A
Scope	HVAC system installation including air handling units, exhaust fans, split system air conditioners, fan coil units, and air terminal units
Project ID	75-21620-00
Project URL	BuildVision Project Link
Project Size	40,741 sq. ft.
Request Type	Proposal
Contract Type	_
RFIs Due	5/9/2025
Job Walk	4/29/2025

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Date: 2025-05-20

Project Equipment

Air Handling Units

Equipment Tag	Manufacturer	Model
AHU-1	Energy Labs	C661024-C
AHU-2	Energy Labs	C661024-C
AHU-3	Energy Labs	C661364-C
AHU-4	Energy Labs	C661364-C

Notes

Custom indoor central-station air-handling units

HVAC Fans

Equipment Tag	Manufacturer	Model
EF-1	Greenheck	CUE-140-VG
EF-2	Greenheck	CUE-140-VG
EF-3	Greenheck	CUE-140-VG
EF-4	Greenheck	CUE-100B-VG

Notes

Exhaust fans

Split System Air Conditioners

Equipment Tag	Manufacturer	Model
CU-1	Carrier	38MAR925DAA3
CU-2	Carrier	38MAR925DAA3
CU-3	Carrier	38MAR925DAA3
CU-4	Carrier	38MAR925DAA3
CU-5	Carrier	38MAR925DAA3
CU-6	Carrier	38MAR925DAA3
CU-7	Carrier	38MAR925DAA3
CU-8	Carrier	38MAR925DAA3

Notes

Condensing units with matching fan coil units

Fan Coil Units

Equipment Tag	Manufacturer	Model
FCU-1	Carrier	40KAH036026A3
FCU-2	Carrier	40KAH036026A3
FCU-3	Carrier	40KAH036026A3
FCU-4	Carrier	40KAH036026A3
FCU-5	Carrier	40KAH036026A3
FCU-6	Carrier	40KAH036026A3
FCU-7	Carrier	40KAH036026A3

Notes

Indoor units paired with condensing units

Air Terminal Units

Equipment Tag	Manufacturer	Model
CAV-3-10	Titus	DESV
CAV-3-11	Titus	DESV
CAV-3-4	Titus	DESV
CAV-3-9	Titus	DESV
CAV-4-12	Titus	DESV
VAV-3-1	Titus	DESV
VAV-3-12A	Titus	DESV
VAV-3-12B	Titus	DESV
VAV-3-13A	Titus	DESV
VAV-3-13B	Titus	DESV
VAV-3-14	Titus	DESV
VAV-3-15	Titus	DESV
VAV-3-2	Titus	DESV
VAV-3-3	Titus	DESV
VAV-3-5	Titus	DESV
VAV-3-6	Titus	DESV
VAV-3-7	Titus	DESV
VAV-3-8	Titus	DESV
VAV-4-10	Titus	DESV
VAV-4-11	Titus	DESV
VAV-4-13	Titus	DESV
VAV-4-1A	Titus	DESV
VAV-4-1B	Titus	DESV
VAV-4-2	Titus	DESV

VAV-4-3A	Titus	DESV
VAV-4-3B	Titus	DESV
VAV-4-4	Titus	DESV
VAV-4-5	Titus	DESV
VAV-4-6A	Titus	DESV
VAV-4-6B	Titus	DESV
VAV-4-6C	Titus	DESV
VAV-4-7A	Titus	DESV
VAV-4-7B	Titus	DESV
VAV-4-8	Titus	DESV
VAV-4-9	Titus	DESV

Notes

DESV model variable-air-volume and constant-air-volume terminal units

Suppliers

Air Terminal Units

Note: Cost differences are AI-estimated percentages relative to Basis of Design and are not based on actual project data. Always obtain accurate quotes from vendors directly via buildvision.io.

Manufacturer	Model	Representativ	AI Est. Cost D	Compatibility Notes	BoD
Titus	DESV	N/A		Basis of Design	**Yes**
Titus	DESV	N/A		Basis of Design	No
Krueger	LMHS	Denco		Krueger LMHS offers a similar single-duct, pressure independent VAV terminal unit with comparable performance to the Titus DESV.	No
Price Industries	SDV	Toro Aire		Price SDV offers a comparable single-duct VAV terminal unit with similar control options and performance characteristics.	No

Split System Air Conditioners

Note: Cost differences are AI-estimated percentages relative to Basis of Design and are not based on actual project data. Always obtain accurate quotes from vendors directly via buildvision.io.

Manufacturer	Model	Representativ	AI Est. Cost D	Compatibility Notes	BoD
Carrier	38MAR925DA	N/A		Basis of Design	**Yes**
Carrier	38MAR925DAA3/A	0KAH036	026A3	Basis of Design	No
Daikin	FTXS Series/RXS Series	Norman S. Wright Climatec Mechanical Equipment		Daikin systems offer high-efficiency operation with comparable capacity and features.	No
Mitsubishi Electric	PUZ/PLA Series	FUSE HVAC		Mitsubishi systems feature high-efficiency, low-noise operation with robust control options.	No
LG	Multi V S Series	Norman S. Wright Climatec Mechanical Equipment		LG's Multi V S Series offers variable refrigerant flow technology with energy-efficient operation.	No

Design Notes

HVAC System

Technical Observations:

- The project includes a mix of central air handling systems and localized split systems for different zones and areas of the building.
- The extensive use of VAV boxes suggests a zoned variable air volume approach for the primary air distribution system.
- The custom AHUs from Energy Labs indicate a higher level of specification for the central air handling equipment.

Concerns:

- Coordination between the multiple system types (central AHUs and distributed split systems) will be critical for proper system operation.
- Proper commissioning of the numerous VAV/CAV terminal units will be essential for balanced airflow and comfort.
- Control integration between all equipment components will require careful planning.

Opportunities:

- Consider adding integrated building automation system for optimized control of all HVAC components.
- Evaluate energy recovery options for the AHUs to improve overall system efficiency.
- Review alternate manufacturers for potential cost savings or performance improvements.

Air Distribution

Technical Observations:

- The extensive use of DESV terminal units from Titus indicates a focus on precise airflow control.
- The project uses both VAV and CAV terminal units, suggesting different control requirements for different spaces.
- Terminal units appear to be concentrated on the 3rd and 4th floors, based on equipment tagging.

Concerns:

- Acoustic performance of the terminal units in sensitive areas (classrooms, offices) will require attention.
- Maintenance access to all terminal units should be verified during design review.
- Ensure proper air balancing procedures are specified for the complex distribution system.

Opportunities:

- Consider upgrading terminal units to include energy-saving features like auto-reset or occupancy-based controls.

- Evaluate acoustic treatment options for areas with multiple terminal units.
- Review zoning arrangement to optimize comfort and energy efficiency.

Split Systems

Technical Observations:

- All split systems use the same Carrier models, suggesting a standardized approach to these systems.
- The quantity of split systems indicates they serve a significant portion of the building's conditioning needs.
- The specified Carrier equipment is designed for commercial applications with appropriate capacity for educational facilities.

Concerns:

- Refrigerant line routing and length limitations should be verified for all split system installations.
- Condensate drainage paths need to be coordinated with the building structure.
- Outdoor unit placement will need to address noise and aesthetic considerations.

Opportunities:

- Consider VRF (Variable Refrigerant Flow) alternatives for enhanced zoning and efficiency.
- Evaluate control integration options to incorporate split systems into the central building management system.
- Review refrigerant type and efficiency ratings against current best practices.

BuildVision Recommendations

1. Consider VRF system alternatives for some or all of the split system locations

Rationale: Modern VRF systems offer improved energy efficiency, flexible zoning, and reduced refrigerant piping compared to traditional split systems. Manufacturers like Daikin, Mitsubishi, and LG offer VRF solutions that could provide better performance.
Estimated Impact: Potential 15-30% energy savings for cooling and heating operations, improved zone-level comfort control, and reduced maintenance requirements.
Implementation: Would require modification of the design specification to incorporate VRF outdoor units and indoor fan coils. Additional control wiring would be needed, but refrigerant piping requirements might be reduced.
Priority: Medium

2. Integrate all HVAC components into a unified building automation system

Rationale: The project includes multiple system types (AHUs, VAV boxes, split systems) that would benefit from centralized control. A unified BMS would optimize overall system performance and provide better data for operations.
Estimated Impact: Improved energy efficiency through coordinated control, enhanced troubleshooting capabilities, and better management of indoor environmental conditions.
Implementation: Specify compatible controls for all equipment and include BACnet or similar protocol for integration. Include front-end software for monitoring and control.
Priority: High

3. Add energy recovery to the air handling units

Rationale: For a facility like the Center for Human Performance & Kinesiology, ventilation requirements are likely significant. Energy recovery devices could capture waste energy from exhaust air and reduce overall HVAC energy consumption.
Estimated Impact: Potential 10-20% reduction in heating and cooling energy for the ventilation load, improving overall building efficiency.
Implementation: Work with Energy Labs to incorporate energy recovery wheels or plates into the custom AHU designs. May require some additional space allocation for the equipment.
Priority: Medium

4. Evaluate acoustic treatment for areas with multiple terminal units

Rationale: Educational facilities require good acoustic conditions for effective learning. The extensive use of VAV and CAV terminal units could create noise issues if not properly addressed.
Estimated Impact: Improved learning environment, reduced complaints, better speech intelligibility in classrooms and meeting spaces.
Implementation: Add sound attenuators downstream of terminal units, specify low-noise diffusers, and ensure proper equipment selection for noise-sensitive areas.
Priority: Medium

5. Consider demand-controlled ventilation for high-occupancy spaces

Rationale: Spaces with variable occupancy like gymnasiums, classrooms, and assembly areas can benefit from CO2-based ventilation control to match fresh air delivery with actual occupancy.
Estimated Impact: Reduced energy consumption while maintaining or improving indoor air quality. Typical savings of 5-15% on ventilation-related energy costs.
Implementation: Add CO2 sensors in key spaces, ensure VAV terminal units serving these areas are properly configured for demand control, and program the BMS accordingly.
Priority: Medium

Conclusion

Key Findings

- The project employs a mixed-system approach with central AHUs and multiple split systems, requiring careful coordination.
- Extensive use of VAV terminal units provides good zone-level control capabilities but requires proper commissioning.
- Standard equipment selections are suitable for the application, but opportunities exist for enhanced efficiency.
- Control integration will be critical for optimal system performance.
- Alternative manufacturers could provide comparable performance with potential advantages in specific areas.

Highest Priority Actions

- Integrate all HVAC components into a unified building automation system for coordinated control and monitoring.
- Evaluate VRF alternatives for the split system locations to improve efficiency and zoning capabilities.
- Incorporate energy recovery into the air handling units to reduce ventilation energy consumption.
- Address acoustic considerations for terminal units, particularly in learning environments.
- Implement demand-controlled ventilation in variable occupancy spaces.

Summary

The HVAC system design for the Norco College Center for Human Performance & Kinesiology utilizes a combination of central air handling units with VAV distribution and distributed split systems. The equipment specification includes quality manufacturers with appropriate commercial-grade equipment. Several opportunities exist to enhance the design through system integration, energy efficiency improvements, and careful attention to acoustics and controls.

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