# Florida Building Code, Seventh Edition (2020) - Energy Conservation

EnergyGauge Summit® Fla/Com-2020, Effective Date: Dec 31, 2020

C401.2.3: FBC Total Building Performance Compliance Option

Compliance applying the requirements of Sections C402.5, C403.2, C404,C405.2, C405.4, C405.5, C407 and C408. The building energy cost shall be equal to or less than 85 percent of the standard reference design building.

## Check List

CULVERS LAKE CITY

Applications for compliance with the Florida Building Code, Energy Conservation shall include:

- ☑ This Checklist
- ☑ The full compliance report generated by the software that contains the project summary, compliance summary, certifications and detailed component compliance reports.
- ☑ The compliance report must include the full input report generated by the software as contigous part of the compliance report.
- ☑ Boxes appropriately checked in the Mandatory Section of the complaince report.

— LOAD CALCS ATTACHED.

MDCI FLORIDA, INC.
405 2nd Street South • Suite B
Safety Harbor, Florida 34695
Engineering Business No. 9204

# PROJECT SUMMARY

| | | | |
|---|---|---|---|
| **Short Desc:** | Culvers | **Description:** | Culvers Restaurant |
| **Owner:** | Culvers | | |
| **Address1:** | U.S. Hwy 90 | **City:** | Lake City |
| **Address2:** | | **State:** | Florida |
| | | **Zip:** | 0 |
| **Type:** | Dining: Family | **Class:** | New Finished building |
| **Jurisdiction:** | LAKE CITY, COLUMBIA COUNTY, FL (221200) | | |
| **Conditioned Area:** | 4223 SF | **Conditioned & UnConditioned Area:** | 4223 SF |
| **No of Stories:** | 1 | **Area entered from Plans** | 4223 SF |
| **Permit No:** | 0-- | **Max Tonnage** | 12.7 |
| | | **If different, write in:** | _____ |

## Compliance Summary

| Component | Design | Criteria | Result |
|---|---|---|---|
| Gross Energy Cost (in $) | 3,531.0 | 4,479.0 | **PASSED** |
| LIGHTING CONTROLS | | | **PASSES** |
| EXTERNAL LIGHTING | | | **PASSES** |
| HVAC SYSTEM | | | **PASSES** |
| PLANT | | | **No Entry** |
| WATER HEATING SYSTEMS | | | **Not Checked** |
| PIPING SYSTEMS | | | **PASSES** |
| Met all required compliance from Check List? | | | **Yes No/NA** |

IMPORTANT MESSAGE
Info 5009 -- -- -- An input report of this design building must be submitted along with this Compliance Report

# CERTIFICATIONS

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code

Prepared By: Garland Patterson, PE #14175 Building Official: _____

Date: 4/14/22 Date: _____

I certify that this building is in compliance with the FLorida Energy Efficiency Code

Owner Agent: J.A. Fenaro Date: 4/14/22

If Required by Florida law, I hereby certify (*) that the system design is in compliance with the Florida Energy Efficiency Code

| | | | |
|---|---|---|---|
| Architect: | Joe Oliveri AIA | Reg No: AR0013137 | Signature |
| Electrical Designer: | Mike Spychala PE | Reg No: 31533 | Signature MPSpychala |
| Lighting Designer: | Mike Spychala, PE | Reg No: 59480 | Signature MPSpychala |
| Mechanical Designer: | Garland Patterson, PE | Reg No: 14175 | Signature |
| Plumbing Designer: | Garland Patterson, PE | Reg No: 14175 | Signature |

(*) Signature is required where Florida Law requires design to be performed by registered design professionals per C103.1.1.1.2

Garland Patterson

Digitally signed by Garland Patterson
Date: 2022.04.14 09:12:50 -04'00'

This item has been electronically signed and sealed by Garland Patterson P.E. on the Date and/or Time Stamp shown by using a digital signature.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

GARLAND PATTERSON LICENSE PE 14175 4/14/22 STATE OF FLORIDA PROFESSIONAL ENGINEER

**Project: Culvers**
**Title: Culvers Restaurant**
**Type: Dining: Family**
**(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)**

## Building End Uses

| | 1) Proposed | 2) Baseline |
|---|---|---|
| **Total** | *217.50* | *326.90* |
| | *$3,531* | *$5,269* |
| ELECTRICITY(MBtu/kWh/$) | 217.50 | 326.90 |
| | 63735 | 95808 |
| | *$3,531* | *$5,269* |
| AREA LIGHTS | 32.50 | 31.30 |
| | 9530 | 9181 |
| | *$528* | *$505* |
| MISC EQUIPMT | 21.10 | 21.10 |
| | 6187 | 6187 |
| | *$343* | *$340* |
| PUMPS & MISC | 0.20 | 0.10 |
| | 48 | 39 |
| | *$3* | *$2* |
| SPACE COOL | 103.60 | 121.70 |
| | 30342 | 35653 |
| | *$1,681* | *$1,961* |
| SPACE HEAT | 32.90 | 27.00 |
| | 9646 | 7916 |
| | *$534* | *$435* |
| VENT FANS | 27.20 | 125.70 |
| | 7982 | 36832 |
| | *$442* | *$2,026* |

**Credits Applied: None**
**Passing Criteria = 4479**
**Design (including any credits) = 3531**
**Passing requires Proposed Building cost to be at most 85% of Baseline cost. This Proposed Building is at 67%**

**PASSES**

**Project: Culvers**
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**(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)**

## External Lighting Compliance

| Description | Category | Tradable? | Allowance (W/Unit) | Area or Length or No. of Units (Sqft or ft) | ELPA (W) | CLP (W) |
|---|---|---|---|---|---|---|
| Ext Light 2 | Canopies (freestanding, attached and Overhangs) | Yes | 0.40 | 183.3 | 73 | 676 |
| Ext Light 1 | Canopies (freestanding, attached and Overhangs) | Yes | 0.40 | 767.7 | 307 | 136 |

**Tradable Surfaces: 812 (W) Allowance for Tradable: 880.392 (W)** **PASSES**
**All External Lighting: 812 (W)**
**Complicance check includes a excess/Base allowance of 500.00(W)**

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## Lighting Controls Compliance

| Acronym | Ashrae ID | Description | Area (sq.ft) | Design CP | Min CP | Compliance |
|---|---|---|---|---|---|---|
| Pr0Zo1Sp1 | 8 | Food Service - Leisure Dining | 4,223 | 8 | 2 | PASSES |

**PASSES**

**Project: Culvers**
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# System Report Compliance

**Pr0Sy1** **System 1** **Constant Volume Packaged System** **No. of Units 1**

| Component | Category | Capacity | Design Eff | Eff Criteria | Design IPLV | IPLV Criteria | Compliance |
|---|---|---|---|---|---|---|---|
| Cooling System | Air Conditioners Air Cooled 135000 to 240000 Btu/h Clg Capacity | 152000 | 12.00 | 11.00 | 12.70 | 12.40 | **PASSES** |
| Heating System | Electric Furnace | 51195 | 1.00 | 1.00 | | | **PASSES** |
| Air Handling System -Supply | Air Handler (Supply) - Constant Volume | 5200 | 0.20 | 0.82 | | | **PASSES** |
| Air Handling System - Return | Air Handler (Return) - Constant Volume | 4500 | 0.20 | 0.82 | | | **PASSES** |
| Air Distribution System (Sup) | ADS System (Sup) | | 6.00 | 6.00 | | | **PASSES** |
| Air Distribution System (Ret) | ADS System (Ret) | | 6.00 | 6.00 | | | **PASSES** |

**Pr0Sy2** **System 2** **Constant Volume Packaged System** **No. of Units 1**

| Component | Category | Capacity | Design Eff | Eff Criteria | Design IPLV | IPLV Criteria | Compliance |
|---|---|---|---|---|---|---|---|
| Cooling System | Air Conditioners Air Cooled 135000 to 240000 Btu/h Clg Capacity | 152000 | 12.00 | 11.00 | 12.90 | 12.40 | **PASSES** |
| Heating System | Electric Furnace | 51195 | 1.00 | 1.00 | | | **PASSES** |
| Air Handling System -Supply | Air Handler (Supply) - Constant Volume | 5200 | 0.20 | 0.82 | | | **PASSES** |
| Air Handling System - Return | Air Handler (Return) - Constant Volume | 4500 | 0.20 | 0.82 | | | **PASSES** |
| Air Distribution System (Sup) | ADS System (Sup) | | 6.00 | 6.00 | | | **PASSES** |
| Air Distribution System (Ret) | ADS System (Ret) | | 6.00 | 6.00 | | | **PASSES** |

**Pr0Sy3** **System 3** **Constant Volume Packaged System** **No. of Units 1**

| Component | Category | Capacity | Design Eff | Eff Criteria | Design IPLV | IPLV Criteria | Compliance |
|---|---|---|---|---|---|---|---|
| Cooling System | Air Conditioners Air Cooled 135000 to 240000 Btu/h Clg Capacity | 152000 | 12.00 | 11.00 | 12.90 | 12.40 | **PASSES** |

| | | | | | |
|---|---|---|---|---|---|
| Heating System | Electric Furnace | 51195 | 1.00 | 1.00 | **PASSES** |
| Air Handling System -Supply | Air Handler (Supply) - Constant Volume | 5200 | 0.20 | 0.82 | **PASSES** |
| Air Handling System - Return | Air Handler (Return) - Constant Volume | 4500 | 0.20 | 0.82 | **PASSES** |
| Air Distribution System (Sup) | ADS System (Sup) | | 6.00 | 6.00 | **PASSES** |
| Air Distribution System (Ret) | ADS System (Ret) | | 6.00 | 6.00 | **PASSES** |

**PASSES**

## Plant Compliance

| Description | Installed No | Size | Design Eff | Min Eff | Design IPLV | Min IPLV | Category | Compliance |
|---|---|---|---|---|---|---|---|---|

**None**

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## Water Heater Compliance

| Description | Type | Category | Design Eff | Min Eff | Design Loss | Max Loss | Compliance |
|---|---|---|---|---|---|---|---|
| Water Heater 1 | Gas Storage water heater | Unknown | 0.92 | | | | **Not Checked** |

**Not Checked**

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**(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)**

## Piping System Compliance

| Category | Pipe Dia [inches] | Is Runout? | Operating Temp [F] | Ins Cond [Btu-in/hr .SF.F] | Ins Thick [in] | Req Ins Thick [in] | Compl-iance |
|---|---|---|---|---|---|---|---|
| Domestic and Service Hot Water Systems | 1.00 | False | 120.00 | 0.28 | 1.00 | 0.50 | **PASSES** |

**PASSES**

## Mandatory Requirements (as applicable)

Requirements compiled by US Department of Energy and Pacific Northwest National Laboratory. Adopted for FBC with permission. Not all may be applicable

| Topic | Section | Component | Description | Yes | N/A | Exempt |
|---|---|---|---|---|---|---|
| **1. To be checked by Designer or Engineer** | | | | | | |
| Insulation | C303.2 | Envelope | Below-grade wall insulation installed per manufacturer's instructions. | ☐ | ☑ | ☐ |
| Insulation | C303.2 | Envelope | Slab edge insulation installed per manufacturer's instructions. | ☐ | ☑ | ☐ |
| Insulation | C303.2 | Envelope | Above-grade wall insulation installed per manufacturer's instructions. | ☑ | ☐ | ☐ |
| Insulation | C402.3 | Envelope | High-albedo roofs satisfy one of the following: 3-year-aged solar reflectance >= 0.55 and thermal emittance >= 0.75 or 3-year-aged solar reflectance index >= 64.0. | ☐ | ☑ | ☐ |
| Fenestration | C402.4.4 | Envelope | U-factor of opaque doors associated with the building thermal envelope meets requirements. | ☑ | ☐ | ☐ |
| HVAC | C403.2.7 | Mechanical | Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2). | ☐ | ☑ | ☐ |
| HVAC | C403.2.4.8 | Mechanical | HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.2.4.8.1 and C403.2.4.8.2). | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.3, C403.3.1, C403.3.2 | Mechanical | Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.3.2 | Mechanical | Economizer operation will not increase heating energy use during normal operation. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.3.3.3 | Mechanical | Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.3.3.3 for applicable device types and climate zones. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.3.3.4 | Mechanical | System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.3.3.5 | Mechanical | Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.2.4.3 for details. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.3.4, C403.3.4.1, C403.3.4.2, C403.3.1 | Mechanical | Water economizers provided where required, meet the requirements for design capacity, maximum pressure drop and integrated economizer control. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.1 | Mechanical | Three-pipe hydronic systems using a common return for hot and chilled water are not used. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.3.1 | Mechanical | Hydronic heat pump systems connected to a common water loop meet heat rejection and heat addition requirements. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.3.2 | Mechanical | Multiple-cell heat rejection equipment with variable speed fan drives are controlled to operate the maximum number of fans allowed and so that all fans operate at the same fan speed required for the instantaneous cooling duty. The minimum fan speed will be the minimum allowable speed of the fan drive system in accordance with the manufacturer's recommendations. | ☐ | ☑ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| SYSTEM_SPECIFIC | C403.4.3.4 | Mechanical | Open-circuit cooling towers having water cooled chiller systems and multiple or vairable speed condenser pumps, are designed so that tower cells can run in parallel with larger of flow crtieria. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4 | Mechanical | Supply air systems serving multiple zones have VAV systems with controls configured to reduce the volume of air that is reheated, recooled or mixed in each zone. See section for details. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4.1 | Mechanical | Single-duct VAV systems use terminal devices configured to reduce the supply of primary supply air before reheating or recooling takes place. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4.2 | Mechanical | Systems that have 1 warm air duct and 1 cool air duct use terminal devices configured to reduce the flow from one duct to a minimum before mixing of air from the other duct takes place. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4.3 | Mechanical | Individual dual-duct or mixing heating and cooling systems with a single fan and with total capacities > 90,000 Btu/h not equipped with air economizers. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C404.2 | Mechanical | Service water heating equipment meets efficiency requirements. | ☑ | ☐ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)a | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=40.2 gpm/hp . | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)b | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=20.0 gpm/hp. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)c | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=16.1 gpm/hp. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)d | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=7.0 gpm/hp | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)e | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=134 kBtu/h-hp w/ Ammonia test fluid. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)f | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=110 kBtu/h-hp w/ Ammonia test fluid. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)g | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=157 kBtu/h-hp w/ R-507A test fluid. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)h | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=135 kBtu/h-hp w/ R-507A test fluid. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | Table_C403.3.2(8)i | Mechanical | Heat Rejection Equipment: Minimum Efficiency Requirement >=176 kBtu/h-hp. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.1 | Mechanical | HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp. | ☑ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.2 | Mechanical | HVAC fan motors not oversized beyond allowable limits. | ☑ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.3 | Mechanical | Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.4 | Mechanical | Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.5 | Mechanical | Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section. | ☐ | ☑ | ☐ |

## 2. To be checked by Plan Reviewer

| | | | | | | |
|---|---|---|---|---|---|---|
| Plan Review | C103.2 | Envelope | Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed. | ☑ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Plan Review | C103.2 | Mechanical | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. | ☑ | ☐ | ☐ |
| Plan Review | C103.2 | Mechanical | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide. | ☑ | ☐ | ☐ |
| Plan Review | C103.2 | Interior Lighting | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices. | ☑ | ☐ | ☐ |
| Plan Review | C103.2 | Exterior Lighting | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices. | ☑ | ☐ | ☐ |
| Insulation | C402.2.5 | Envelope | Slab edge insulation depth/length. Slab insulation extending away from building is covered by pavement or >= 10 inches of soil. | ☐ | ☑ | ☐ |
| Insulation | C402.2.4 | Envelope | Installed floor insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. | ☐ | ☑ | ☐ |
| Insulation | C402.2.6 | Project | Radiant heating systems panels insulated to >=R-3.5 on face opposite space being heated. | ☐ | ☑ | ☐ |
| HVAC | C402.2.6 | Mechanical | Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5. | ☐ | ☑ | ☐ |
| Insulation | C402.2.6 | Envelope | Radiant panels and associated components, designed for heat transfer from the panel surfaces to the occupants or indoor space are insulated with a minimum of R-3.5. | ☐ | ☑ | ☐ |
| Air Leakage | C402.5.7 | Envelope | Vestibules are installed on all building entrances. Doors have self-closing devices. | ☐ | ☑ | ☐ |
| HVAC | C403.2.13 | Mechanical | Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch. | ☐ | ☑ | ☐ |
| HVAC | C403.2.4.2 | Mechanical | Each zone equipped with setback controls using *automatic time clock or programmable control* system. | ☐ | ☑ | ☐ |
| HVAC | C403.2.4.2 | Mechanical | Each zone equipped with setback controls using automatic time clock or programmable control system. | ☐ | ☑ | ☐ |
| HVAC | C403.2.4.2 | Mechanical | Each zone equipped with setback controls using automatic time clock or programmable control system. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.4.4 | Mechanical | Zone isolation devices and controls installed where applicable. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.4.4 | Mechanical | Zone isolation devices and controls installed where applicable. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.4.7 | Mechanical | Fault detection and diagnostics installed with air-cooled unitary DX units having economizers. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.5 | Mechanical | Hot water boilers supplying heat via one- or two-pipe systems include outdoor setback control. | ☐ | ☑ | ☐ |
| HVAC | C403.2.6 | Mechanical | Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4. | ☑ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| HVAC | C403.2.6.1 | Mechanical | Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.5.1 | Mechanical | Hydronic and multizone HVAC system controls are VAV fans driven by mechanical or electrical variable speed drive per Table C403.2.12.5. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.5.3 | Mechanical | Reset static pressure setpoint for DDC controlled VAV boxes reporting to central controller based on the zones requiring the most pressure. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2 | Mechanical | The heating of fluids in hydronic systems that have been previously mechanically cooled, and the cooling of fluids that have been previously mechanically heated are limited in accordance with Sections C403.4.2.1-C403.4.2.3. Single boiler systems >500,000 Btu/h have multistaged or modulating burner. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.3.2 | Mechanical | Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop. Open- or closed circuit cooling towers have a separate heat exchanger to isolate the cooling tower from the heat pump loop, and heat loss is controlled by shutting down the circulation pump on the cooling tower loop. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.4 | Mechanical | Hydronic systems greater than 500,000 Btu/h designed for variable fluid flow. See section language for full details. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.5 | Mechanical | System turndown requirement met through multiple single-input boilers, one or more modulating boilers, or a combination of single-input and modulating boilers.<br>Boiler input between 1.0 MBtu/h and 5 MBtu/h has 3:1 turndown ratio, boiler input between 5.0 MBtu/h and 10 MBtu/h has 4:1 turndown ratio, boiler input > 10.0 MBtu/h has 5:1 turndown ratio. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.6 | Mechanical | Chilled water plants with multiple chillers have capability to reduce flow automatically through the chiller plant when a chiller is shut down.<br>Boiler plants with multiple boilers have the capability to reduce flow automatically through the boiler plant when a boiler is shut down. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.3.1 | Mechanical | Fan systems with total system motor capacity >=5 hp associated with heat rejection equipment configured to automatically modulate the fan speed to control the leaving fluid temperature or condensing temp/pressure of heat rejection device. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.3.3 | Mechanical | Centrifugal fan open-circuit cooling towers having combined rated capacity >= 1100 gpm meets minimum efficiency requirement: >=40.2 gpm/hp. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4.5 | Mechanical | Multiple zone HVAC systems have supply air temperature reset controls. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4.6 | Mechanical | Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls. | ☐ | ☑ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| SYSTEM_SPECIFIC | C404.2.1 | Mechanical | Gas-fired water-heating equipment installed in new buildings: where a singular piece of water-heating equipment >= 1,000 kBtu/h serves the entire building, thermal efficiency >= 90 Et. Where multiple pieces of water-heating equipment serve the building with combined rating >= 1,000 kBtu/h, the combined input-capacity-weighted-average thermal efficiency >= 90 Et. Exclude input rating of equipment in individual dwelling units and equipment <= 100 kBtu/h. | ☑ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.2.1 | Mechanical | Gas-fired water-heating equipment installed in new buildings: where a singular piece of water-heating equipment >= 1,000 kBtu/h serves the entire building, thermal efficiency >= 90 Et. Where multiple pieces of water-heating equipment serve the building with combined rating >= 1,000 kBtu/h, the combined input-capacity-weighted-average thermal efficiency >= 90 Et. Exclude input rating of equipment in individual dwelling units and equipment <= 100 kBtu/h. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C404.4 | Mechanical | All piping insulated in accordance with section details and Table C403.2.10. | ☑ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.5, C404.5.1, C404.5.2 | Mechanical | Heated water supply piping conforms to pipe length and volume requirements. Refer to section details. | ☑ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.6.3 | Mechanical | Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C404.7 | Mechanical | Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F. | ☐ | ☑ | ☐ |
| Wattage | C405.4.1 | Exterior Lighting | Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts. | ☑ | ☐ | ☐ |
| Plan Review | C405.5.2 | Project | Group R-2 dwelling units have separate electrical meters. | ☐ | ☑ | ☐ |
| Plan Review | C406 | Project | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options. | ☐ | ☑ | ☐ |
| SYSTEM_SPECIFIC | C408.2.2.2 | Mechanical | HVAC hydronic heating and cooling coils have means to balance and have pressure test connections. | ☐ | ☑ | ☐ |

## 3. To be checked by Inspector

| | | | | | | |
|---|---|---|---|---|---|---|
| Insulation | C303.1 | Envelope | Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the roof slope is <=3 in 12. | ☐ | ☐ | ☐ |
| Insulation | C303.1 | Envelope | Building envelope insulation is labeled with R-value or insulation certificate providing R-value and other relevant data. | ☐ | ☐ | ☐ |
| Insulation | C402.2.2 | Envelope | Insulation installed on a suspended ceiling having ceiling tiles is not being specified for roor/ceiling assemblies. Continuous insulation board installed in 2 or more layers with edge joints offset between layers. | ☐ | ☐ | ☐ |
| Insulation | C402.2.2 | Envelope | Skylight curbs are insulated to the level of roofs with insulation above deck or R-5. | ☐ | ☐ | ☐ |
| Fenestration | C303.1.3 | Envelope | Fenestration products rated in accordance with NFRC. | ☐ | ☐ | ☐ |
| Insulation | C303.2, C402.2.5 | Envelope | Floor insulation installed per manufacturer's instructions. Cavity or structural slab insulation installed in permanent contact with underside of decking or structural slabs. | ☐ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Insulation | C303.2.1 | Envelope | Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities. | ☐ | ☐ | ☐ |
| Insulation | C303.2.1 | Envelope | Exterior insulation is protected from damage with a protective material. Verification for exposed foundation insulation may need to occur during Foundation Inspection. | ☐ | ☐ | ☐ |
| Insulation | C402.1.3 | Envelope | Non-swinging opaque doors have R-4.75 insulation. | ☐ | ☐ | ☐ |
| Insulation | C104 | Envelope | Installed above-grade wall insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. | ☐ | ☐ | ☐ |
| Insulation | C104 | Envelope | Installed slab-on-grade insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. | ☐ | ☐ | ☐ |
| Insulation | C104 | Envelope | Installed roof insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. For some ceiling systems, verification may need to occur during Framing Inspection. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5 | Envelope | Building envelope contains a continuous air barrier that has been tested and deemed to limit air leakage <= 0.40 cfm/ft2. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.1 | Envelope | The building envelope contains a continuous air barrier that is sealed in an approved manner and either constructed or tested in an approved manner. Air barrier penetrations are sealed in an approved manner. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.1.1 | Envelope | All sources of air leakage in the building thermal envelope are sealed, caulked, gasketed, weather stripped or wrapped with moisture vapor-permeable wrapping material to minimize air leakage. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.1.2.1 | Envelope | The building envelope contains a continuous air barrier that is sealed in an approved manner and material permeability <= 0.004 dfm/ft2. Air barrier penetrations are sealed in an approved manner. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.1.2.2 | Envelope | The building envelope contains a continuous air barrier that is sealed in an approved manner and average assembly air leakage <= 0.04 cfm/ft2. Air barrier penetrations are sealed in an approved manner. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.2, C402.5.4 | Envelope | Factory-built fenestration and doors are labeled as meeting air leakage requirements. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.5, C403.2.4.3 | Envelope | Stair and elevator shaft vents have motorized dampers that automatically close. Refernece section C403.2.4.3 for operational details. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.6 | Envelope | Weatherseals installed on all loading dock cargo door openings and provide direct contact along the top and sides of vehicles parked in the doorway. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.6 | Envelope | Weatherseals installed on all loading dock cargo door openings and provide direct contact along the top and sides of vehicles parked in the doorway. | ☐ | ☐ | ☐ |
| Air Leakage | C402.5.8 | Envelope | Recessed luminaires in thermal envelope to limit infiltration and be IC rated and labeled. Seal between interior finish and luminaire housing. | ☐ | ☐ | ☐ |
| HVAC | C403.2.1 | Mechanical | HVAC systems and equipment design loads calculated in accordance with ANSI/ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.10 | Mechanical | HVAC piping insulation insulated in accordance with Table C403.2.10. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation. | ☐ | ☐ | ☐ |
| HVAC | C403.2.3 | Mechanical | HVAC equipment efficiency verified. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.3 | Mechanical | PTAC and PTHP with sleeves 16 in. by 42 in. labeled for replacement only as per Footnote b to Table C403.2.3(3). | ☐ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| SYSTEM_SPECIFIC | C403.2.3 | Mechanical | Centrifugal fan open-circuit cooling towers having combined rated capacity >= 1100 gpm meets minimum efficiency requirement: >=38.2 gpm/hp. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.4.1 | Mechanical | Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.4.1.1 | Mechanical | Heat pump controls prevent supplemental electric resistance heat from coming on when not needed. | ☐ | ☐ | ☐ |
| HVAC | C403.2.4.1.2 | Mechanical | *Thermostatic controls have a 5 °F deadband.* | ☐ | ☐ | ☐ |
| HVAC | C403.2.4.1.2 | Mechanical | Thermostatic controls have a 5 °F deadband. | ☐ | ☐ | ☐ |
| HVAC | C403.2.4.1.3 | Mechanical | Temperature controls have setpoint overlap restrictions. | ☐ | ☐ | ☐ |
| HVAC | C403.2.4.2.1, C403.2.4.2.2 | Mechanical | Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.4.2.3 | Mechanical | Systems include optimum start controls. | ☐ | ☐ | ☐ |
| HVAC | C403.2.4.5, C403.2.4.6 | Mechanical | Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls. | ☐ | ☐ | ☐ |
| HVAC | C403.2.6.2 | Mechanical | Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity. | ☐ | ☐ | ☐ |
| Air Leakage | C403.2.4.3 | Mechanical | Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed. Reference section language for operational details. | ☐ | ☐ | ☐ |
| HVAC | C403.2.9.1, C403.2.9.2 | Mechanical | HVAC ducts and plenums insulated in accordance with C403.2.9.1 and constructed in accordance with C403.2.9.2, verification may need to occur during Foundation Inspection. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.5.2 | Mechanical | VAV fans have static pressure sensors located so controller setpoint <=1.2 w.c.. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.2 | Mechanical | Two-pipe hydronic systems using a common distribution system have controls to allow a deadband >=15 °F, allow operation in one mode for at least 4 hrs before changeover, and have rest controls to limit heating and cooling supply temperature to <=30 °F. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.4.2.3.3 | Mechanical | Two-position automatic valve interlocked to shut off water flow when hydronic heat pump with pumping system >10 hp is off. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.4.4.7 | Mechanical | Parallel-flow fan-powered VAV air terminals have automatic controls configured to 1) turn off the terminal fan except when space heating is required or where required for ventilation, 2) turn on the terminal fan as the first stage of heating before the heating coil is activated, and 3) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air or, reverse the terminal damper logic and provide heating from the central air handler by primary air. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.2.12.5.3 | Mechanical | Systems with DDC of individual zones reporting to the central control panel configured to reset the static pressure setpoint based on zone requiring the most pressure. The DDC is capable of monitoring zone damper positions or have an alternative method of indicating the need for static pressure. See section for details. | ☐ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| SYSTEM_SPECIFIC | C403.2.12.5.2 | Mechanical | Static pressure sensors used to control VAV fans located such that the controller setpoint is <= 1.2 inches w.c.. Where this results in one or more sensors being located downstream of major duct splits, not less than one sensor located on each major branch. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.4.5 | Mechanical | Condenser heat recovery system that can heat water to 85 °F or provide 60% of peak heat rejection is installed for preheating of service hot water. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C403.4.6 | Mechanical | Hot gas bypass limited to:<br><=240 kBtu/h – 50%<br>>240 kBtu/h – 25% | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.3 | Mechanical | Heat traps installed on supply and discharge piping of non-circulating systems. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.6.1 | Mechanical | Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.6.1, C404.6.2 | Mechanical | Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.9.1 | Mechanical | Pool heaters are equipped with on/off switch and no continuously burning pilot light. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.9.2 | Mechanical | Time switches are installed on all pool heaters and pumps. | ☐ | ☐ | ☐ |
| SYSTEM_SPECIFIC | C404.9.3 | Mechanical | Vapor retardant pool covers are provided for heated pools and permanently installed spas. | ☐ | ☐ | ☐ |
| Controls | C405.2.1, C405.2.1.1 | Interior Lighting | Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces. | ☐ | ☐ | ☐ |
| Controls | C405.2.1.2 | Interior Lighting | Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. | ☐ | ☐ | ☐ |
| Controls | C405.2.1.3 | Interior Lighting | Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected. | ☐ | ☐ | ☐ |
| Controls | C405.2.2, C405.2.2.1, C405.2.2.2 | Interior Lighting | Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2. | ☐ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Controls | C405.2.2.2 | Interior Lighting | Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent. | ☐ | ☐ | ☐ |
| Controls | C405.2.3, C405.2.3.1, C405.2.3.2 | Interior Lighting | Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone. | ☐ | ☐ | ☐ |
| Controls | C405.2.4 | Interior Lighting | Separate lighting control devices for specific uses installed per approved lighting plans. | ☐ | ☐ | ☐ |
| Wattage | C405.2.4 | Interior Lighting | Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting. | ☐ | ☐ | ☐ |
| Controls | C405.2.6 | Exterior Lighting | Exterior lighting systems shall be provided with controls that comply with Sections C405.2.6.1 through C405.2.6.4. Decorative lighting systems shall comply with Sections C405.2.6.1, C405.2.6.2, and C405.2.6.4. | ☐ | ☐ | ☐ |
| Wattage | C405.3.1 | Interior Lighting | Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts. | ☐ | ☐ | ☐ |
| Mandatory Additional | C406.4 | Project | Enhanced digital lighting controls efficiency package: Interior lighting has following enhanced lighting controls in accordance with Section C405.2.2: Luminaires capable of continuous dimming and being addressed individually, <= 8 luminaires controlled in combination in a daylight zone, digital control system for fixtures, "Sequence of Operations" documentation, and functional testing per Section C408. | ☐ | ☐ | ☐ |
| Mandatory Additional | C406.6 | Project | Dedicate outdoor air system efficiency package: Buildings with hydronic and/or multiple-zone HVAC systems are equipped with an independent ventilation system designed to provide >= 100-percent outdoor air to each individual occupied space, as specified by the IMC. The ventilation system is capable of total energy recovery and includes HVAC system controls that manage temperature resets >= 25 percent of delta design supply-air / room-air temp. Reference section C406.6 for qualifying systems/equipment. | ☐ | ☐ | ☐ |
| Mandatory Additional | C406.7, C406.7.1 | Project | Enhanced Service Water Heat System efficiency package. One of the following SWH system enhancements must satisfy 60 percent of buildings annual hot water requirements, or 100 percent if the building requirements otherwise complies with heat recovery per Section C403.9.5: Waste heat recovery (from SWH, process equipment, OR on-site renewable water-heating. | ☐ | ☐ | ☐ |
| HVAC | C408.2.2.1 | Mechanical | Air outlets and zone terminal devices have means for air balancing. | ☐ | ☐ | ☐ |
| Testing | C408.2.3.2 | Mechanical | HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls. | ☐ | ☐ | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| HVAC | C403.2.14, C403.2.14.1, C403.2.14.2 | Mechanical | Commercial refrigerators, freezers, refrigerator-freezers and refrigeration equipment, defined in U.S. 10 CFR part 431.62, shall have an energy use in kWh/day not greater than the values of Table C403.2.14.1(1) when tested and rated in accordance with AHRI Standard 1200. Walk-in cooler and walk-in freezer refrigeration systems, except for walk-in process cooling refrigeration systems as defined in U.S. 10 CFR 431.302, shall meet the requirements of Tables C403.2.14.2(1), C403.2.14.2(2) and C403.2.14.2(3). | ☐ | ☐ | ☐ |

## 4. To be checked by Inspector at Project Completion and Prior to Issuance of Certificate of Occupancy

| | | | | | | |
|---|---|---|---|---|---|---|
| Post Construction | C408.1.1, C408.2.5.2 | Interior Lighting | Furnished O&M instructions for systems and equipment to the building owner or designated representative. | ☐ | ☐ | ☐ |
| Post Construction | C408.1.1, C408.2.5.3 | Mechanical | Furnished O&M manuals for HVAC systems within 90 days of system acceptance. | ☐ | ☐ | ☐ |
| Fenestration | C402.4.2.2 | Envelope | Skylights in office, storage, automotive service, manufacturing, non-refrigerated warehouse, retail store, and distribution/sorting area have a measured haze value > 90 percent unless designed to exclude direct sunlight. | ☐ | ☐ | ☐ |
| Post Construction | C408.1.1 | Project | Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.1 | Mechanical | Commissioning plan developed by registered design professional or approved agency. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.3.1 | Mechanical | HVAC equipment has been tested to ensure proper operation. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.3.3 | Mechanical | Economizers have been tested to ensure proper operation. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.4 | Mechanical | Preliminary commissioning report completed and certified by registered design professional or approved agency. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.5.1 | Mechanical | Furnished HVAC as-built drawings submitted within 90 days of system acceptance. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.5.3 | Mechanical | An air and/or hydronic system balancing report is provided for HVAC systems. | ☐ | ☐ | ☐ |
| Post Construction | C408.2.5.4 | Mechanical | Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy. | ☐ | ☐ | ☐ |
| Post Construction | C408.3 | Interior Lighting | Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation. | ☐ | ☐ | ☐ |
| Post Construction | C405.6 | Project | Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6. | ☐ | ☐ | ☐ |
| Post Construction | C405.7 | Project | Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist). | ☐ | ☐ | ☐ |
| Post Construction | C405.8.2, C405.8.2.1 | Project | Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers. | ☐ | ☐ | ☐ |
| Post Construction | C405.5.3 | Project | Total voltage drop across the combination of feeders and branch circuits <= 5%. | ☐ | ☐ | ☐ |

# Input Data Report

## Project Information

**Project Name:** Culvers **Project Title:** Culvers Restaurant

**Address:** U.S. Hwy 90 **State:** Florida **Zip:** 0

**Owner:** Culvers

**Building Type:** Dining: Family **Building Classification:** New Finished building

**No.of Stories:** 1 **GrossArea (SF):** 4,223

**Bldg. Rotation:** None

### Zones

| No | Acronym | Description | Type | Area [sf] | Multi | Total Area [sf] | |
|---|---|---|---|---|---|---|---|
| 1 | Pr0Zo1 | Zone 1 | CONDITIONED | 4222.6 | 1 | 4222.6 | ☐ |

### Spaces

| No | Acronym | Description | Type | Depth [ft] | Width [ft] | Height [ft] | Mult | Total Area [sf] | Total Vol[cf] | |
|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | | | |
| 1 | Pr0Zo1Sp1 | Restaurant | Food Service - Leisure Dining | 49.10 | 86.00 | 12.00 | 1 | 4222.6 | 50671.2 | ☐ |

# Lighting

| No | Type | Category | No. of Luminaires | Watts per Luminaire | Power [W] | Control Type | No.of Ctrl pts | |
|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | |
| **In Space: Pr0Zo1Sp1** | | | | | | | | |
| 1 | LED | General Lighting | 58 | 12 | 696 | Central control | 1 | ☐ |
| 2 | LED | General Lighting | 16 | 50 | 800 | Central control | 1 | ☐ |
| 3 | LED | General Lighting | 15 | 38 | 570 | Central control | 1 | ☐ |
| 4 | LED | General Lighting | 11 | 8 | 87 | Central control | 1 | ☐ |
| 5 | Incandescent | General Lighting | 7 | 100 | 700 | Central control | 1 | ☐ |
| 6 | Incandescent | General Lighting | 3 | 60 | 180 | Central control | 1 | ☐ |
| 7 | LED | General Lighting | 1 | 41 | 41 | Central control | 1 | ☐ |
| 8 | LED | General Lighting | 4 | 10 | 38 | Central control | 1 | ☐ |

# **Walls** (Walls will be rotated clockwise by building rotation value)

| No | Description | Type | Width [ft] | H (Effec) [ft] | Multiplier | Area [sf] | Orientation | Conductance [Btu/h.sf.F] | Heat Capacity [Btu/sf.F] | Dens. [lb/cf] | R-Value [h.sf.F/Btu] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | | | | | |
| 1 | Pr0Zo1Wa1 | 4" Brick /8"CMU/3/4"ISO BTWN24" oc/.5" Gyp | 49.00 | 10.00 | 1 | 490.0 | South | 0.2180 | 17.695 | 80.01 | 4.6 | ☐ |
| 2 | Pr0Zo1Wa2 | 4" Brick /8"CMU/3/4"ISO BTWN24" oc/.5" Gyp | 49.00 | 10.00 | 1 | 490.0 | North | 0.2180 | 17.695 | 80.01 | 4.6 | ☐ |
| 3 | Pr0Zo1Wa3 | 4" Brick /8"CMU/3/4"ISO BTWN24" oc/.5" Gyp | 86.00 | 10.00 | 1 | 860.0 | East | 0.2180 | 17.695 | 80.01 | 4.6 | ☐ |
| 4 | Pr0Zo1Wa4 | 4" Brick /8"CMU/3/4"ISO BTWN24" oc/.5" Gyp | 86.00 | 10.00 | 1 | 860.0 | West | 0.2180 | 17.695 | 80.01 | 4.6 | ☐ |

## **Windows** (Windows will be rotated clockwise by building rotation value)

| No | Description | Orientation | Shaded | U [Btu/hr sf F] | SHGC | Vis.Tra | W [ft] | H (Effec) [ft] | Multi plier | Total Area [sf] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | | | | |
| **In Wall: Pr0Zo1Wa1** | | | | | | | | | | | |
| 1 | Pr0Zo1Wa1Wi1 | South | No | 0.6000 | 0.30 | 0.30 | 5.33 | 4.16 | 2 | 44.4 | ☐ |
| 2 | Pr0Zo1Wa1Wi2 | South | No | 0.6000 | 0.30 | 0.30 | 8.00 | 4.16 | 2 | 66.6 | ☐ |
| 4 | Pr0Zo1Wa1Wi4 | South | No | 0.6000 | 0.30 | 0.30 | 1.33 | 4.16 | 1 | 5.5 | ☐ |
| **In Wall: Pr0Zo1Wa2** | | | | | | | | | | | |
| 1 | Pr0Zo1Wa2Wi1 | North | No | 0.6000 | 0.30 | 0.30 | 1.33 | 4.16 | 1 | 5.5 | ☐ |
| **In Wall: Pr0Zo1Wa3** | | | | | | | | | | | |
| 1 | Pr0Zo1Wa3Wi1 | East | No | 0.6000 | 0.30 | 0.30 | 8.00 | 4.25 | 2 | 68.0 | ☐ |
| 2 | Pr0Zo1Wa3Wi2 | East | No | 0.6000 | 0.30 | 0.30 | 7.33 | 4.33 | 1 | 31.8 | ☐ |
| 3 | Pr0Zo1Wa3Wi3 | East | No | 0.7000 | 0.56 | 0.56 | 2.44 | 6.16 | 1 | 15.0 | ☐ |
| **In Wall: Pr0Zo1Wa4** | | | | | | | | | | | |
| 1 | Pr0Zo1Wa4Wi1 | West | No | 0.6000 | 0.30 | 0.30 | 8.00 | 4.25 | 2 | 68.0 | ☐ |
| 2 | Pr0Zo1Wa4Wi2 | West | No | 0.7000 | 0.56 | 0.56 | 2.33 | 6.16 | 2 | 28.7 | ☐ |

## Doors

| No | Description | Type | Shade? | Width [ft] | H (Effec) [ft] | Multi plier | Area [sf] | Cond. [Btu/h.sf.F] | Dens. [lb/cf] | Ht Cap. [Btu/sf. F] | R [h.sf.F/ Btu] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | | | | | |
| **In Wall: Pr0Zo1Wa2** | | | | | | | | | | | | |
| 1 | Pr0Zo1Wa2Dr1 | Solid core flush | No | 3.50 | 7.00 | 1 | 24.5 | 0.7000 | 16.00 | 0.75 | 1.43 | ☐ |
| **In Wall: Pr0Zo1Wa3** | | | | | | | | | | | | |
| 1 | Pr0Zo1Wa3Dr1 | Solid core flush | No | 3.00 | 7.00 | 2 | 21.0 | 0.7000 | 16.00 | 0.75 | 1.43 | ☐ |
| **In Wall: Pr0Zo1Wa4** | | | | | | | | | | | | |
| 1 | Pr0Zo1Wa4Dr1 | Solid core flush | No | 3.00 | 7.00 | 2 | 21.0 | 0.7000 | 16.00 | 0.75 | 1.43 | ☐ |

## Roofs

| No | Description | Type | Width [ft] | H (Effec) [ft] | Multi plier | Area [sf] | Tilt [deg] | Cond. [Btu/h.Sf. F] | Heat Cap [Btu/sf. F] | Dens. [lb/cf] | R-Value [h.sf.F/Btu | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | | | | | |
| 1 | Pr0Zo1Rfl | Built-up Gravel/2" ISO/Mtl Deck | 86.00 | 49.10 | 1 | 4222.6 | 0.00 | 0.0499 | 1.49 | 9.50 | 20.1 | ☐ |

## Skylights

| No | Description | Type | U [Btu/hr sf F] | SHGC | Vis.Trans | W [ft] | H (Effec) [ft] | Multi-plier | Area [Sf] | Total Area [Sf] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone:** | | | | | | | | | | | |
| **In Roof:** | | | | | | | | | | | ☐ |

## Floors

| No | Description | Type | Width [ft] | H (Effec) [ft] | Multi plier | Area [sf] | Cond. [Btu/h.sf.F | Heat Cap. [Btu/sf. F] | Dens. [lb/cf] | R-Value [h.sf.F/Btu | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **In Zone: Pr0Zo1** | | | | | | | | | | | |
| 1 | Pr0Zo1Fl1 | Concrete floor, carpet and rubber pad | 86.00 | 49.10 | 1 | 4222.6 | 0.5987 | 9.33 | 140.00 | 1.67 | ☐ |

# Systems

| Pr0Sy1 | System 1 | Constant Volume Packaged System | No. Of Units 1 |
|---|---|---|---|

| Component | Category | Capacity | Efficiency | IPLV | |
|---|---|---|---|---|---|
| 1 | Cooling System | 152000.00 | 12.00 | 12.70 | ☐ |
| 2 | Heating System | 51195.00 | 1.00 | | ☐ |
| 3 | Air Handling System -Supply | 5200.00 | 0.20 | | ☐ |
| 4 | Air Handling System - Return | 4500.00 | 0.20 | | ☐ |
| 5 | Air Distribution System (Sup) | | 6.00 | | ☐ |
| 6 | Air Distribution System (Ret) | | 6.00 | | ☐ |

| Pr0Sy2 | System 2 | Constant Volume Packaged System | No. Of Units 1 |
|---|---|---|---|

| Component | Category | Capacity | Efficiency | IPLV | |
|---|---|---|---|---|---|
| 1 | Cooling System | 152000.00 | 12.00 | 12.90 | ☐ |
| 2 | Heating System | 51195.00 | 1.00 | | ☐ |
| 3 | Air Handling System -Supply | 5200.00 | 0.20 | | ☐ |
| 4 | Air Handling System - Return | 4500.00 | 0.20 | | ☐ |
| 5 | Air Distribution System (Sup) | | 6.00 | | ☐ |
| 6 | Air Distribution System (Ret) | | 6.00 | | ☐ |

| Pr0Sy3 | System 3 | Constant Volume Packaged System | No. Of Units 1 |
|---|---|---|---|

| Component | Category | Capacity | Efficiency | IPLV | |
|---|---|---|---|---|---|
| 1 | Cooling System | 152000.00 | 12.00 | 12.90 | ☐ |
| 2 | Heating System | 51195.00 | 1.00 | | ☐ |
| 3 | Air Handling System -Supply | 5200.00 | 0.20 | | ☐ |
| 4 | Air Handling System - Return | 4500.00 | 0.20 | | ☐ |
| 5 | Air Distribution System (Sup) | | 6.00 | | ☐ |
| 6 | Air Distribution System (Ret) | | 6.00 | | ☐ |

# Plant

| Equipment | Category | Size | Inst.No | Eff. | IPLV |
|---|---|---|---|---|---|

## Water Heaters

| | W-Heater Description | Capacity | Cap.Unit | I/P Rt. | Efficiency | Loss | |
|---|---|---|---|---|---|---|---|
| 1 | Gas Storage water heater (1 units) | 98 | [Gal] | 75 [Btu/h] | 0.9200 [Ef/Et] | [Btu/h] | ☐ |

## Ext-Lighting

| | Description | Category | No. of Lumin-aires | Watts per Lumin-aire | Area/Len/No [sf/ft/No] | Control Type | Wattage [W] | |
|---|---|---|---|---|---|---|---|---|
| 1 | Ext Light 2 | Canopies (freestanding, attached and Overhangs) | 26 | 26 | 183.32 | Photo Sensor contr | ##### | ☐ |
| 2 | Ext Light 1 | Canopies (freestanding, attached and Overhangs) | 8 | 17 | 767.66 | Photo Sensor contr | ##### | ☐ |

## Piping

| No | Type | Operating Temp [F] | Insulation Conductivity [ Btu-in/h.sf.F] | Nomonal pipe Diameter [in] | Insulation Thickness [in] | Is Runout? | |
|---|---|---|---|---|---|---|---|
| 1 | Domestic and Service Hot Water Systems | 120.00 | 0.28 | 1.00 | 1.00 | No | ☐ |

## Fenestration Used

| Name | Glass Type | No. of Panes | Glass Conductance [Btu/h.sf.F] | SHGC | VLT |
|---|---|---|---|---|---|
| ApLbWnd9 | User Defined | 1 | 0.7000 | 0.5600 | 0.5600 |
| ApLbWnd10 | User Defined | 1 | 0.6000 | 0.3000 | 0.3000 |

# Materials Used

| Mat No | Acronym | Description | Only R-Value Used | RValue [h.sf.F/Btu] | Thick [ft] | Cond-uctivity [Btu/h.ft.F | Density [lb/cf] | Sp. Heat [Btu/lb.F] | |
|---|---|---|---|---|---|---|---|---|---|
| 187 | Matl187 | GYP OR PLAS BOARD,1/2IN | No | 0.4533 | 0.0417 | 0.0920 | 50.00 | 0.2000 | ☐ |
| 151 | Matl151 | CONC HW, DRD, 140LB, 4IN | No | 0.4403 | 0.3333 | 0.7570 | 140.00 | 0.2000 | ☐ |
| 178 | Matl178 | CARPET W/RUBBER PAD | Yes | 1.2300 | | | | | ☐ |
| 105 | Matl105 | CONC BLK HW, 8IN, HOLLOW | No | 1.1002 | 0.6667 | 0.6060 | 69.00 | 0.2000 | ☐ |
| 86 | Matl86 | BRICK, COMMON, 4IN | No | 0.8012 | 0.3333 | 0.4160 | 120.00 | 0.2000 | ☐ |
| 269 | Matl269 | .75" ISO BTWN24" oc | No | 2.2321 | 0.0625 | 0.0280 | 4.19 | 0.3000 | ☐ |
| 23 | Matl23 | 6 in. Insulation | No | 20.0000 | 0.5000 | 0.0250 | 5.70 | 0.2000 | ☐ |
| 248 | Matl248 | ROOF GRAVEL OR SLAG1/2IN | No | 0.0500 | 0.0417 | 0.8340 | 55.00 | 0.4000 | ☐ |

# Constructs Used

| No | Name | Simple Construct | Massless Construct | Conductance [Btu/h.sf.F] | Heat Cap [Btu/sf.F] | Density [lb/cf] | RValue [h.sf.F/Btu] | |
|---|---|---|---|---|---|---|---|---|
| 1004 | Concrete floor, carpet and rubber pad | No | No | 0.60 | 9.33 | 140.00 | 1.7 | ☐ |

| Layer | Material No. | Material | Thickness [ft] | Framing Factor | |
|---|---|---|---|---|---|
| 1 | 151 | CONC HW, DRD, 140LB, 4IN | 0.3333 | 0.000 | ☐ |
| 2 | 178 | CARPET W/RUBBER PAD | | 0.000 | ☐ |

| No | Name | Simple Construct | Massless Construct | Conductance [Btu/h.sf.F] | Heat Cap [Btu/sf.F] | Density [lb/cf] | RValue [h.sf.F/Btu] | |
|---|---|---|---|---|---|---|---|---|
| 1013 | 4" Brick /8"CMU/3/4"ISO BTWN24" oc/.5" Gyp | No | No | 0.22 | 17.70 | 80.01 | 4.6 | ☐ |

| Layer | Material No. | Material | Thickness [ft] | Framing Factor | |
|---|---|---|---|---|---|
| 1 | 86 | BRICK, COMMON, 4IN | 0.3333 | 0.000 | ☐ |
| 2 | 105 | CONC BLK HW, 8IN, HOLLOW | 0.6667 | 0.000 | ☐ |
| 3 | 269 | .75" ISO BTWN24" oc | 0.0625 | 0.000 | ☐ |
| 4 | 187 | GYP OR PLAS BOARD,1/2IN | 0.0417 | 0.000 | ☐ |

| No | Name | Simple Construct | Massless Construct | Conductance [Btu/h.sf.F] | Heat Cap [Btu/sf.F] | Density [lb/cf] | RValue [h.sf.F/Btu] | |
|---|---|---|---|---|---|---|---|---|
| 1023 | Solid core flush | Yes | No | 0.70 | 0.75 | 16.00 | 1.4 | ☐ |

| No | Name | Simple Construct | Massless Construct | Conductance [Btu/h.sf.F] | Heat Cap [Btu/sf.F] | Density [lb/cf] | RValue [h.sf.F/Btu] | |
|---|---|---|---|---|---|---|---|---|
| 1045 | Built-up Gravel/2" ISO/Mtl Deck | No | No | 0.05 | 1.49 | 9.50 | 20.1 | ☐ |

| Layer | Material No. | Material | Thickness [ft] | Framing Factor | |
|---|---|---|---|---|---|
| 1 | 248 | ROOF GRAVEL OR SLAG1/2IN | 0.0417 | 0.000 | ☐ |
| 2 | 23 | 6 in. Insulation | 0.5000 | 0.000 | ☐ |

6W

STANDARD LOAD OUTPUTS

Company Name: 10-01-21
Block Load v1.0 

**********

Zone Name: CULVERS DINING

City Name : TAMPA *, FLORIDA Weight - Wall: 30
Latitude (deg): 28 (lb/sqft) Roof: 40
Elevation (ft): 35 Bldg: 30
Indoor -Summer: 74 F 50 RH Color - Wall: LIGHT
-Winter: 75 F Roof: LIGHT

| | TEMP | TOTAL TONS | RSH TONS | CFM |
|---|---|---|---|---|
| 1. JAN at 8 A.M. | 67.2 | 6.84 | 4.32 | 2,483 |
| 2. FEB at 9 A.M. | 71.2 | 7.75 | 4.73 | 2,717 |
| 3. APR at 10 A.M. | 78.6 | 9.29 | 5.04 | 2,896 |
| 4. MAY at 2 P.M. | 91.0 | 11.45 | 6.19 | 3,557 |
| 5. JUN at 5 P.M. | 92.0 | 12.84 | 6.96 | 3,997 |
| 6. AUG at 5 P.M. | 93.0 | 12.94 | 7.06 | 4,051 |
| 7. NOV at 11 A.M. | 77.6 | 9.49 | 5.44 | 3,123 |

Heating Load (Btuh)= 36,797 w/Infil.= 36,797 Airflow= 956 cfm

ORIENTATION OF BUILDING N S E W RF
TRANSMISSION FACTORS 0.20 0.20 0.20 0.20 0.05
Glass Fac.:1.13 Lights Fluorescent? Y Shade Fac.:0.65 Floors: 1
Length: 59 Width: 45 Height: 10 Vent Air Percent: 24

| | | | | | |
|---|---|---|---|---|---|
| Number of people | = | 133 | Sensible people load | = | 32,524 |
| Total lights | = | 3,717 | Lighting load | = | 15,858 |
| Other electrical | = | 1,328 | Other electrical | = | 4,531 |
| Area of N glass | = | 64 | North glass solar | = | 509 |
| Area of S glass | = | 78 | South glass solar | = | 507 |
| Area of E glass | = | 0 | East glass solar | = | 0 |
| Area of W glass | = | 114 | West glass solar | = | 11,679 |
| Total glass area | = | 256 | Total glass solar | = | 12,695 |
| | | | Total glass trans. | = | 5,496 |
| Area of N wall | = | 526 | N wall load | = | 2,104 |
| Area of S wall | = | 512 | S wall load | = | 2,422 |
| Area of E wall | = | 450 | E wall load | = | 1,862 |
| Area of W wall | = | 336 | W wall load | = | 2,450 |
| Total wall area | = | 1,824 | Total wall trans. | = | 8,839 |
| Area of roof | = | 2,655 | Roof load | = | 4,730 |
| Safety factor | = | 0% | Safety load | = | 0 |
| Supply fan hp | = | 0.58 | Fan heat gain (DT) | = | 1,778 |
| Ventilation cfm | = | 743 | Vent sensible load | = | 15,537 |
| | | | Vent latent load | = | 26,117 |
| | | | People latent load | = | 27,214 |
| Total cfm-std air= | | 4,051 | Total latent load | = | 53,331 |
| Room sensible | = | 84,675 | Room latent | = | 27,214 |

Plenum return exhaust credit = 0
--> GRAND TOTAL LOAD = 155,321 Btu/hr or 12.94 tons <--
Load run for # 6. AUG at 5 P.M.

| | | | | | |
|---|---|---|---|---|---|
| Area (sq ft) | = | 2,655 | Sq ft/ton | = | 205 |
| Total cfm-std air= | | 4,051 | Cfm/sq ft | = | 1.53 |

HEATING LOAD

| | | | | | |
|---|---|---|---|---|---|
| Ventilation load | = | 32,710 | Roof heating load | = | 5,310 |
| Glass heat load | = | 11,571 | Wall heating load | = | 14,592 |

**********

Zone Name: CULVERS KITCHEN

City Name : TAMPA *, FLORIDA Weight - Wall: 30
Latitude (deg): 28 (lb/sqft) Roof: 40
Elevation (ft): 35 Bldg: 30
Indoor -Summer: 74 F 50 RH Color - Wall: LIGHT
-Winter: 75 F Roof: LIGHT

| | TEMP | TOTAL TONS | RSH TONS | CFM |
|---|---|---|---|---|
| 1. JAN at 8 A.M. | 67.2 | 8.25 | 6.88 | 3,951 |
| 2. FEB at 9 A.M. | 71.2 | 8.88 | 7.04 | 4,041 |
| 3. APR at 10 A.M. | 78.6 | 10.44 | 7.32 | 4,202 |
| 4. MAY at 2 P.M. | 91.0 | 11.88 | 7.80 | 4,479 |
| 5. JUN at 5 P.M. | 92.0 | 12.77 | 8.09 | 4,643 |
| 6. AUG at 5 P.M. | 93.0 | 12.81 | 8.13 | 4,668 |
| 7. NOV at 11 A.M. | 77.6 | 10.17 | 7.32 | 4,202 |

Heating Load (Btuh)= 20,958 w/Infil.= 20,958 Airflow= 544 cfm

ORIENTATION OF BUILDING N S E W RF
TRANSMISSION FACTORS 0.16 0.16 0.16 0.16 0.05
Glass Fac.:0.45 Lights Fluorescent? Y Shade Fac.:0.47 Floors: 1
Length: 45 Width: 48 Height: 10 Vent Air Percent: 19

| | | | | | |
|---|---|---|---|---|---|
| Number of people | = | 18 | Sensible people load | = | 5,040 |
| Total lights | = | 3,456 | Lighting load | = | 14,744 |
| Other electrical | = | 19,440 | Other electrical | = | 66,349 |
| Area of N glass | = | 0 | North glass solar | = | 0 |
| Area of S glass | = | 0 | South glass solar | = | 0 |
| Area of E glass | = | 0 | East glass solar | = | 0 |
| Area of W glass | = | 0 | West glass solar | = | 0 |
| Total glass area | = | 0 | Total glass solar | = | 0 |
| | | | Total glass trans. | = | 0 |
| Area of N wall | = | 450 | N wall load | = | 1,440 |
| Area of S wall | = | 450 | S wall load | = | 1,703 |
| Area of E wall | = | 480 | E wall load | = | 1,589 |
| Area of W wall | = | 480 | W wall load | = | 2,800 |
| Total wall area | = | 1,860 | Total wall trans. | = | 7,533 |
| Area of roof | = | 2,160 | Roof load | = | 3,848 |
| Safety factor | = | 0% | Safety load | = | 0 |
| Supply fan hp | = | 0.67 | Fan heat gain (DT) | = | 2,049 |
| Ventilation cfm | = | 799 | Vent sensible load | = | 16,703 |
| | | | Vent latent load | = | 32,598 |
| | | | People latent load | = | 4,860 |
| Total cfm-std air= | | 4,668 | Total latent load | = | 37,458 |
| Room sensible | = | 97,553 | Room latent | = | 4,860 |

Plenum return exhaust credit = 0
--> GRAND TOTAL LOAD = 153,763 Btu/hr or 12.81 tons <--
Load run for # 6. AUG at 5 P.M.

| | | | | | |
|---|---|---|---|---|---|
| Area (sq ft) | = | 2,160 | Sq ft/ton | = | 169 |
| Total cfm-std air= | | 4,668 | Cfm/sq ft | = | 2.16 |

HEATING LOAD

| | | | | | |
|---|---|---|---|---|---|
| Ventilation load | = | 35,165 | Roof heating load | = | 4,320 |
| Glass heat load | = | 0 | Wall heating load | = | 11,904 |