COM*check* Software Version 3.8.1

Envelope Compliance Certificate

90.1 (2007) Standard

Section 1: Project Information

Project Type: **New Construction**
Project Title : Concrete Shelter

Construction Site:
MAINE

Owner/Agent:
TN

Designer/Contractor:
Corey Mitchel
CellXion, LLC
5031 Hazel Jones Road
Bossier City, TN 71111
318-213-2900

Section 2: General Information

Building Location (for weather data): **Houlton, Maine**
Climate Zone: **7**
Building Type for Envelope Requirements: **Non-Residential**

Activity Type(s)	Floor Area
Common Space Types:Electrical/Mechanical	192

Section 3: Requirements Checklist

Envelope PASSES: Design 1% better than code.

Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Other Roof (b)	192	---	---	0.045	0.027
Exterior Wall 1: Other Mass Wall, Heat capacity 1.0 (b)	532	---	---	0.045	0.051
Door 1: Insulated Metal, Swinging	21	---	---	0.240	0.500
Floor 1: Slab-On-Grade:Unheated, Vertical 2 ft.	56	---	10.0	---	---

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) 'Other' components require supporting documentation for proposed U-factors.

Insulation:

- ❑ 1. Open-blown or poured loose-fill insulation has not been used in attic roof spaces with ceiling slope greater than 3 in 12.
- ❑ 2. Wherever vents occur, they are baffled to deflect incoming air above the insulation.
- ❑ 3. Recessed lights, equipment and ducts are not affecting insulation thickness.
- ❑ 4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
- ❑ 5. All exterior insulation is covered with protective material.
- ❑ 6. Cargo and loading dock doors are equipped with weather seals.

Fenestration and Doors:

- ❑ 7. Windows and skylights are labeled and certified by the manufacturer for U-factor and SHGC.
- ❑ 8. Fixed windows and skylights unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC.
- ❑ 9. Other unlabeled vertical fenestration, operable and fixed, that are unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC. No credit has been given for metal frames with thermal breaks, low-emissivity coatings, gas fillings, or insulating spacers.

Air Leakage and Component Certification:

- ❑ 10. All joints and penetrations are caulked, gasketed, weather-stripped, or otherwise sealed.
- ❑ 11. Windows, doors, and skylights certified as meeting leakage requirements.
- ❑ 12. Component R-values & U-factors labeled as certified.
- ❑ 13. 'Other' components have supporting documentation for proposed U-Factors.

Section 4: Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 90.1 (2007) Standard requirements in COM*check* Version 3.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

Corey Mitchel - Code Compliance Engineer		
Name - Title	Signature	Date

COM*check* Software Version 3.8.1

Interior Lighting and Power Compliance Certificate

90.1 (2007) Standard

Section 1: Project Information

Project Type: **New Construction**
Project Title : Concrete Shelter

Construction Site:
MAINE

Owner/Agent:
TN

Designer/Contractor:
Corey Mitchel
CellXion, LLC
5031 Hazel Jones Road
Bossier City, TN 71111
318-213-2900

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Common Space Types:Electrical/Mechanical	192	1.5	288
		Total Allowed Watts =	288

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Common Space Types:Electrical/Mechanical (192 sq.ft.)				
Linear Fluorescent 1: 48" T8 32W / Electronic	2	4	51	204
			Total Proposed Watts =	204

Section 4: Requirements Checklist

Lighting Wattage:

❑ 1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
288	204	YES

❑ 2. Exit signs 5 Watts or less per sign.

Controls, Switching, and Wiring:

❑ 3. Independent manual or occupancy sensing controls for each space (remote switch with indicator allowed for safety or security).

❑ 4. Occupant sensing control in class rooms, conference/meeting rooms, and employee lunch and break rooms.

Exceptions:

❑ Spaces with multi-scene control; shop classrooms, laboratory classrooms, and preschool through 12th grade classrooms.

❑ 5. Automatic shutoff control for lighting in >5000 sq.ft buildings by time-of-day device, occupant sensor, or other automatic control.

Exceptions:

❑ 24 hour operation lighting; patient care areas; where auto shutoff would endanger safety or security.

❑ 6. Master switch at entry to hotel/motel guest room.

❑ 7. Separate control device for display/accent lighting, case lighting, task lighting, nonvisual lighting, lighting for sale, and demonstration lighting.

❑ 8. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

Exceptions:

- ❑ Electronic high-frequency ballasts.
- ❑ Luminaires not on same switch.
- ❑ Recessed luminaires 10 ft. apart or surface/pendant not continuous.
- ❑ Luminaires on emergency circuits.

Voltage Drop:

❑ 9. Feeder conductors have been designed for a maximum voltage drop of 2 percent.

❑ 10. Branch circuit conductors have been designed for a maximum voltage drop of 3 percent.

Interior Lighting PASSES: Design 29% better than code.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 90.1 (2007) Standard requirements in COM*check* Version 3.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

Corey Mitchel - Code Compliance Engineer		
Name - Title	Signature	Date

Section 6: Post Construction Compliance Statement

Record Drawings and Operating and Maintenance Manuals:

❑ 1. Construction documents with record drawings and operating and maintenance manuals provided to the owner.

Lighting Designer or Contractor Name	Signature	Date

COM*check* Software Version 3.8.1

Mechanical Compliance Certificate

90.1 (2007) Standard

Section 1: Project Information

Project Type: **New Construction**
Project Title : Concrete Shelter

Construction Site:
MAINE

Owner/Agent:
TN

Designer/Contractor:
Corey Mitchel
CellXion, LLC
5031 Hazel Jones Road
Bossier City, TN 71111
318-213-2900

Section 2: General Information

Building Location (for weather data): **Houlton, Maine**
Climate Zone: **7**

Section 3: Mechanical Systems List

Quantity	System Type & Description
2	HVAC System 1 (Single Zone) : Heating: 1 each - Other, Electric, Capacity = 17 kBtu/h Cooling: 1 each - Other, Capacity = 42 kBtu/h, Air-Cooled Condenser

Section 4: Requirements Checklist

Requirements Specific To: HVAC System 1 :

❑ 1. Hot gas bypass limited to 50% of total cooling capacity

Generic Requirements: Must be met by all systems to which the requirement is applicable:

❑ 1. Load calculations per ASHRAE Fundamentals

❑ 2. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in.
Chilled water/refrigerant/brine pipe insulation: 1 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in.
Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.

- ❑ Exception: Piping within HVAC equipment.
- ❑ Exception: Fluid temperatures between 60 and 105°F.
- ❑ Exception: Fluid not heated or cooled.
- ❑ Exception: Runouts <4 ft in length.
- ❑ Exception: Pipe unions in heating systems.

❑ 3. Thermostatic controls have 5°F deadband

- ❑ Exception: Thermostats requiring manual changeover between heating and cooling
- ❑ Exception: Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.

❑ 4. Demand control ventilation (DCV) present for high design occupancy areas (>40 person/1000 ft2 in spaces >500 ft2) and served by systems with any one of 1) an air-side economizer, 2) automatic modulating control of the outdoor air damper, or 3) a design outdoor airflow greater than 3000 cfm.

- ❑ Exception: Systems with heat recovery.
- ❑ Exception: Multiple-zone systems without DDC of individual zones communicating with a central control panel.
- ❑ Exception: Systems with a design outdoor airflow less than 1200 cfm.

❑ Exception: Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.

❑ 5. Where separate thermostats are used for heating and cooling, acceptable measures are used to prevent simultaneous heating and cooling

❑ 6. Stair and elevator shaft vents are equipped with motorized dampers

❑ Exception: Ventilation systems serving unconditioned spaces.

❑ Exception: Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height above grade.

❑ 7. Acceptable measures used to prevent simultaneous humidification and dehumidification

❑ Exception: Desiccant systems and systems for uses requiring specific humidity levels (approval required)

❑ 8. Automatic controls for freeze protection systems present

❑ 9. Duct, plenum, and piping insulation surfaces suitably protected from weather, moisture, or likely damage

❑ 10. Duct Sealing:
a) Pressure sensitive tape used as the primary sealant is certified to comply with UL-181A or UL-181B,
b) longitudinal and transverse seams for ducts in unconditioned spaces,
c) longitudinal and transverse seams and duct wall penetrations for ducts outside the building,
d) transverse seams on buried ducts

❑ 11. R-8 for supply air ducts located outside the building,
R-6 for supply air ducts in ventilated attics and in unvented attic above insulated ceiling,
R-1.9 for supply air ducts in unvented attic with roof insulation,
R-3.5 for supply air ducts in unconditioned and underground spaces
R-3.5 for return air ducts located outside the building, in ventilated attics and in unvented attic above insulated ceiling

❑ 12. Humidistat controls prevent reheating, recooling, and mixing of mechanically heated air with mechanically cooled air

❑ Exception: Capability to first reduce flow rate.

❑ Exception: Cooling capacity <80 kBtu/h and capability to unload cooling equipment.

❑ Exception: Cooling capacity <40 kBtu/h.

❑ Exception: Rigid humidity requirements.

❑ Exception: Site-recovered or site-solar energy sources or.

❑ Exception: Use of a desiccant systems.

❑ 13. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted

❑ Exception: Laboratory fume hood systems with a total exhaust rate of 15,000 cfm or less.

❑ Exception: Systems serving spaces that are not cooled and heated to <60°F.

❑ Exception: Systems with more than 60% of the outdoor heating energy is provided from site-recovered or site solar energy.

❑ Exception: Cooling systems in climates with a 1% cooling design wet-bulb temperature less than 64°F.

❑ 14. Kitchen hoods >5,000 cfm provided with 50% makeup air that is uncooled and heated to no more than 60°F unless specifically exempted

❑ Exception: Where hoods are used to exhaust ventilation air that would otherwise exfiltrate or be exhausted by other fan systems.

❑ Exception: Certified grease extractor hoods that require a face velocity no >60 fpm.

❑ 15. Buildings with fume hood systems having an exhaust rate > 15,000 cfm has at least one of the following features:
a) VAV hood exhaust and room supply systems capable of reducing exhaust and makeup air volume to 50% or less of design values.
b) Direct makeup air supply equal to at least 75% of the exhaust rate, heated no warmer than 2°F below room setpoint, cooled to no cooler than 3°F above room setpoint, no humidification added, and no simultaneous heating and cooling used for dehumidification control.
c) Heat recovery systems to precondition makeup air from fume hood exhaust.

Section 5: Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2007) Standard requirements in COM*check* Version 3.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

Corey Mitchel - Code Compliance Engineer		
Name - Title	Signature	Date

Section 6: Post Construction Compliance Statement

❑ HVAC record drawings of the actual installation and performance data for each equipment provided to the owner within 90 days after system acceptance.

❑ HVAC O&M documents for all mechanical equipment and system provided to the owner within 90 days after system acceptance.

❑ Written HVAC balancing report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name	Signature	Date