



Envelope Compliance Certificate

90.1 (2004) Standard

Section 1: Project Information

Project Type: **New Construction**

Project Title : STARC West Residential Community Home

Construction Site:
1705 Viola Street
Mandeville, LA

Owner/Agent:

Designer/Contractor:

Dammon Engineering, Inc.
554 Old Spanish Trail
Slidell, LA 70458
985-649-5832
dammoneng@bellsouth.net

Section 2: General Information

Building Location (for weather data): **Mandeville, Louisiana**
Climate Zone: **2a**
Building Type for Envelope Requirements: **Residential**
Vertical Glazing / Wall Area Pct.: **9%**

<u>Building Type</u>	<u>Floor Area</u>
Multifamily	5100

Section 3: Requirements Checklist

Envelope PASSES: Design 24% 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: Metal Building, Standing Seam	5100	30.0	30.0	0.020	0.065
Exterior Wall 1: Wood-Framed, 16" o.c.	2350	19.0	19.0	0.028	0.089
Window 1: Metal Frame:Double Pane with Low-E, Tinted, Fixed, SHGC 0.05, PF 2.00	221	---	---	1.000	1.220
Door 1: Insulated Metal, Swinging	120	---	---	1.000	0.700

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

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 (2004) Standard requirements in COMcheck Version 3.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title

Signature

Date



Interior Lighting and Power Compliance Certificate

90.1 (2004) Standard

Section 1: Project Information

Project Type: **New Construction**

Project Title : STARC West Residential Community Home

Construction Site:
1705 Viola Street
Mandeville, LA

Owner/Agent:

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Section 2: Interior Lighting and Power Calculation

A	B Floor Area	C Allowed Watts / ft2	D Allowed Watts
Multifamily	5100	0.7	3570
Total Allowed Watts =			3570

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)
Multifamily (5100 sq.ft.)				
Linear Fluorescent 1: 48" T8 28W (Super T8) / Electronic	4	33	50	1650
Incandescent 1: Incandescent 100W	1	12	45	540
Total Proposed Watts =				2190

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
3570	2190	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.



Exterior Lighting Compliance Certificate

90.1 (2004) Standard

Section 1: Project Information

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Project Title : STARC West Residential Community Home

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Mandeville, LA

Owner/Agent:

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Section 2: Exterior Lighting Area/Surface Power Calculation

A Exterior Area/Surface	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B x C)	F Proposed Watts
walkway (Walkway < 10 feet wide)	50 ft of walkway length	1	Yes	50	45
				Total Tradable Watts* =	45
				Total Allowed Watts =	50
				Total Allowed Supplemental Watts** =	3

* Wattage tradeoffs are only allowed between tradable areas/surfaces.

** A supplemental allowance equal to 5% of total allowed wattage may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior 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)	
walkway (Walkway < 10 feet wide 50 ft of walkway length): Tradable Wattage					
Incandescent 1: Incandescent 50W	1	3	15	45	
				Total Tradable Proposed Watts =	45

Section 4: Requirements Checklist

Lighting Wattage:

1. Within each non-tradable area/surface, total proposed watts must be less than or equal to total allowed watts. Across all tradable areas/surfaces, total proposed watts must be less than or equal to total allowed watts.

Compliance: Passes.

Controls, Switching, and Wiring:

2. All exemption claims are associated with fixtures that have a control device independent of the control of the nonexempt lighting.
3. All lighting fixtures are controlled by a photosensor or astronomical time switch that is capable of automatically turning off the fixture when sufficient daylight is available or the lighting is not required.

Exceptions:

- Covered vehicle entrance/exit areas requiring lighting for safety, security and eye adaptation.

Exterior Lighting Efficacy:

- 4. All exterior building grounds luminaires that operate at greater than 100W have minimum efficacy of 60 lumen/watt.

Exceptions:

- Lighting that has been claimed as exempt and is identified as such in Section 3 table above.
- Lighting that is specifically designated as required by a health or life safety statute, ordinance, or regulation.
- Emergency lighting that is automatically off during normal building operation.
- Lighting that is controlled by motion sensor.

Exterior Lighting PASSES: Design 14% better than code.

Section 5: Compliance Statement

Compliance Statement: The proposed exterior 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 (2004) Standard requirements in COMcheck Version 3.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title

Signature

Date



Mechanical Compliance Certificate

90.1 (2004) Standard

Section 1: Project Information

Project Type: **New Construction**

Project Title : STARC West Residential Community Home

Construction Site:
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Mandeville, LA

Owner/Agent:

Designer/Contractor:

Dammon Engineering, Inc.
554 Old Spanish Trail
Slidell, LA 70458
985-649-5832
dammoneng@bellsouth.net

Section 2: General Information

Building Location (for weather data):

Mandeville, Louisiana

Climate Zone:

2a

Section 3: Mechanical Systems List

Quantity System Type & Description

- | | |
|---|--|
| 1 | HVAC System 1 (Single Zone) :
Heating: 1 each - Central Furnace, Electric, Capacity = 17 kBtu/h
Cooling: 1 each - Split System, Capacity = 72 kBtu/h, Efficiency = 15.00 EER, Air-Cooled Condenser |
|---|--|

Section 4: Requirements Checklist

Requirements Specific To: HVAC System 1 :

- 1. Equipment minimum efficiency: Split System: 10.3 EER
- 2. Newly purchased equipment meets the efficiency requirements

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

- 1. Load calculations per ASHRAE Fundamentals
- 2. Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup
 - Exception: Continuously operating zones
- 3. 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.
- 4. 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.
- 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. Automatic ventilation controls (e.g., CO2 controls) or exhaust air heat recovery present for high design occupancy areas (>100 person/1000 ft2) with >3,000 cfm outside air capacities
- 10. Duct, plenum, and piping insulation surfaces suitably protected from weather, moisture, or likely damage
- 11. 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
- 12. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings
 - Exception: Gravity dampers acceptable in buildings <3 stories
 - Exception: Gravity dampers acceptable in systems with outside or exhaust air flow rates less than 300 cfm where dampers are interlocked with fan
- 13. R-6 for supply air ducts located outside the building, in ventilated attics and in unvented attic above insulated ceiling
 R-3.5 for supply air ducts in unvented attic with roof insulation, 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
- 14. 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.
- 15. 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.
- 16. 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.
- 17. 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 (2004) Standard requirements in COMcheck Version 3.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

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



Mechanical Requirements Description

90.1 (2004) Standard

The following list provides more detailed descriptions of the requirements in Section 4 of the Mechanical Compliance Certificate.

Requirements Specific To: HVAC System 1 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2004 Standard and must meet the following minimum efficiency: Split System: 10.3 EER
2. The specified equipment is covered by Federal minimum efficiency requirements. New equipment of this type can be assumed to meet or exceed ASHRAE 90.1-2004 Standard requirements for equipment efficiency.

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

1. Design heating and cooling loads for the building must be determined using procedures in the ASHRAE Handbook of Fundamentals or an approved equivalent calculation procedure.
2. The system or zone control must be a programmable thermostat or other automatic control meeting the following criteria:
 - a) capable of setting back temperature to 55°F during heating and setting up to 85°F during cooling,
 - b) capable of automatically setting back or shutting down systems during unoccupied hours using 7 different day schedules,
 - c) have an accessible 2-hour occupant override,
 - d) have a battery back-up capable of maintaining programmed settings for at least 10 hours without power.
 - Exception: A setback or shutoff control is not required on thermostats that control systems serving areas that operate continuously.
3. All pipes serving space-conditioning systems must be insulated as follows:
 - Hot water piping for heating systems:
 - 1 in. for pipes \leq 1 1/2-in. nominal diameter,
 - 2 in. for pipes $>$ 1 1/2-in. nominal diameter.
 - Chilled water, refrigerant, and brine piping systems:
 - 1 in. insulation for pipes \leq 1 1/2-in. nominal diameter,
 - 1 1/2 in. insulation for pipes $>$ 1 1/2-in. nominal diameter.
 - Steam piping:
 - 1 1/2 in. insulation for pipes \leq 1 1/2-in. nominal diameter,
 - 3 in. insulation for pipes $>$ 1 1/2-in. nominal diameter.
 - Exception: Factory-installed piping within HVAC equipment.
 - Exception: Piping that conveys fluids having a design operating temperature range between 60°F and 105°F.
 - Exception: Piping that conveys fluids that have not been heated or cooled through the use of nonrenewable energy.
 - Exception: Runout piping not exceeding 4 ft in length between shutoff valve and coil and 1 in. in diameter between the control valve and HVAC coil.
 - Exception: Pipe unions in heating systems.
4. Thermostats controlling both heating and cooling must be capable of maintaining a 5°F deadband (a range of temperature where no heating or cooling is provided).
 - Exception: Deadband capability is not required if the thermostat does not have automatic changeover capability 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.
5. Where zone heating and cooling are controlled by separate zone thermostats, means (such as limit switches, mechanical stops, or, for DDC systems, software programming) must be provided to prevent simultaneous heating and cooling to the zone.
6. Stair and elevator shaft vents must be equipped with motorized dampers capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems. All gravity outdoor air supply and exhaust hoods, vents, and ventilators must be equipped with motorized dampers that will automatically shut when the spaces served are not in use.
 - Exception: Ventilation systems serving unconditioned spaces.
 - Exception: Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height above grade.
7. Where a zone is served by a system(s) with both humidification and dehumidification capability, means (such as limit switches, mechanical stops, or software programming) must be provided to prevent simultaneous operation of humidification and dehumidification equipment.

- Exception: Zones served by desiccant systems, used with direct evaporative cooling in series; Systems serving zones where specific humidity levels are required.
8. All freeze protection systems, including self-regulating heat tracing, must include automatic controls capable of shutting off the systems when outside air temperatures are above 40°F or when the conditions of the protected fluid will prevent freezing. Snow- and ice-melting systems must include automatic controls capable of shutting off the systems when the pavement temperature is above 50°F and no precipitation is falling, and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.
 9. Systems with design outside air capacities >3,000 cfm serving areas having an average design occupancy density exceeding 100 people per 1000 ft2 must include means to automatically reduce outside air intake below design rates when spaces are partially occupied. Ventilation controls must be in compliance with ASHRAE Standard 62 and local standards.
 10. Duct and pipe insulation exposed to weather must be suitable for outdoor service; e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material. Insulation covering chilled water piping, refrigerant suction piping, or cooling ducts located outside the conditioned space must include a vapor retardant located outside the insulation (unless the insulation is inherently vapor retardant), all penetrations and joints of which must be sealed.
 11. Duct Sealing Requirements:
 - 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
 12. Outdoor air supply and exhaust systems must have motorized dampers that automatically shut when the systems or spaces served are not in use. Dampers must be capable of automatically shutting off during preoccupancy building warm-up, cool-down, and setback, except when ventilation reduces energy costs (e.g., night purge) or when ventilation must be supplied to meet code requirements. Both outdoor air supply and exhaust air dampers must have a maximum leakage rate of 4 cfm/ft2 at 1.0 in. w.g. when tested in accordance with AMCA Standard 500.
 - Exception: Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height.
 - Exception: Systems with a design outside air intake or exhaust capacity of 300 cfm (140 L/s) or less.
 13. All supply and return ducts and plenum installed as part of an HVAC air distribution system must be thermally insulated:
 - R-6 for supply air ducts located outside the building, in ventilated attics and in unvented attic above insulated ceiling,
 - R-3.5 for supply air duct insulation in unvented attic with roof insulation, 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.
 14. Where humidistatic controls are provided, such controls must prevent reheating, mixing of hot and cold air streams, or other means of simultaneous heating and cooling of the same air stream.
 - 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.
 15. Individual fan systems with a design supply air capacity of 5000 cfm or greater and minimum outside air supply of 70% or greater of the supply air capacity must have an energy recovery system with at least a 50% effectiveness. If an air economizer is also required, heat recovery must be bypassed or controlled to permit air economizer operation.
 - 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.
 16. Individual kitchen exhaust hoods larger than 5000 cfm must be provided with make-up air sized for at least 50% of exhaust air volume that is uncooled and either unheated or heated to no more than 60°F
 - 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.
 17. 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 (auxiliary) 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 in accordance with Section 6.5.6.1, Exhaust Air Energy Recovery, without using any exception.