BUILDING ENERGY ANALYSIS REPORT

PROJECT:

HCC Bldg C
1200 Arrowhead Avenue
Livermore, Ca 94551

Project Designer:

B.R.Govinda Rao S.E.
864 Bandol Way
San Ramon, CA 94382
925-833-9784

Report Prepared by:

Mangalore Suresh P.E.
Title 24 Online
531 Natalino Circle
Sacramento, CA 95835
510-793-2658

Job Number:

Date:

9/2/2010

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

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CERTIFICATE OF COMPLIANCE (Part 1 of 4) OLTG-1C

Project Name	Date
HCC Bldg C	9/2/2010
Project Address	**Total Illuminated Area**
1200 Arrowhead Avenue Livermore, Ca 94551	108,030

GENERAL INFORMATION

Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration

Documentation Author's Declaration Statement

I certify that this Certificate of Compliance documentation is accurate and complete.

Name: Mangalore Suresh P.E.	Signature:
Company: Title 24 Online	Date: 9/2/2010
Address: 531 Natalino Circle	CEA # / CEPE #
City/State/Zip: Sacramento, CA 95835	Phone: 510-793-2658

Principal Lighting Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professional Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name: Satish Pamidi P.E.	Signature
Company: Ajmani & Pamidi Inc	Phone: 415-305-9344
Address: 101 California Street Suite 2025	License # E–10472
City/State/Zip: San Francisco, CA 94111	Date 05/25/10

Principal Lighting Designer's Declaration

☑ I certify that this Certificate of Compliance documentation is accurate and complete, and accounts for all outdoor lighting power, including building mounted, pole mounted, as well as all other lighting designed for the site, and that Additional Lighting Power Allowances for Specific Applications or Additional Lighting Power Allowances for Ordinance Requirements have not been counted more than one time for the same area, in accordance with Section 147 of the Standards.

Outdoor Lighting Mandatory Measures
Indicate location on building plans of Mandatory Measures Note Block: _____

LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheets is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms; please refer to the Nonresidential Manual published by the California Energy Commission.

☑	OLTG-1C	Certificate of Compliance. All 4 pages required on plans for all submittals.
☑	OLTG-2C	(Pages 1 of 3) Lighting Wattage Allowances for General Hardscape, Sales Frontage, or Ornamental Lighting. Optional on plans.
☑	OLTG-2C	(Pages 2 of 3) Lighting Wattage Allowance for Per Application or Per Area. Optional on plans.
☐	OLTG-2C	(Pages 3 of 3) Additional Lighting Power Allowance for Ordinance Requirements. Optional on plans.

CERTIFICATE OF COMPLIANCE (Part 2 of 4) OLTG-1C

Project Name	Date
HCC Bldg C	9/2/2010

COMPLIANCE FIXTURE / LIGHTING CONTROL SCHEDULE and FIELD INSPECTION CHECKLIST

INSTALLATION CERTIFICATE, OLTG-1INST (Retain a copy and verify form is completed and signed.) **Field Inspection** ☐

CERTIFICATE OF ACCEPTANCE, OLTG-2A (Retain a copy and verify form is completed and signed.) **Field Inspection** ☐

Luminaire Schedule

A	B	C	D	E	F	G	H	I
Name or Item Tag	Luminaire Description[1] See footnote below (i.e.: 1 lamp pole-top shoe-box 400 watt metal halide)	Cutoff Designation	Installed Watts: Watts per Luminaire	Special Features	How wattage was determined: Default from NA 8	How wattage was determined: According to §130 (D or E)	Number of Luminaire	Installed Watts (D X G)	Field Inspector[2]: Pass
L9	*Wall Mounted Compact Fluorescent Down Light*		54.0	☐	☑	☐	1	54	☐
LS2	*Twin Head Pole Mounted Metal Halide Luminaire*		594.0	☐	☑	☐	10	5,940	☐
LS1	*Single Head Pole Mounted Metal Halide Luminaire*		297.0	☐	☑	☐	3	891	☐
L8	*Surface Mounted Compact Fluorescent Down Light*		54.0	☐	☑	☐	1	54	☐
L4	*6" Aperture Compact Fluorescent Down Light*		54.0	☐	☑	☐	1	54	☐
				☐	☐	☐			☐
				☐	☐	☐			☐
				☐	☐	☐			☐
				☐	☐	☐			☐

Enter total into OLTG-1C; Page 4 of 4: Row H; Total Installed Watts: 6,993

1. Type of luminaire (i.e.: post top, wall pack, surface, shoe box); for non-incandescent luminaires, indicate nominal lamp wattage and lamp type (i.e.: fluorescent, incandescent, HID); ballast type (i.e.: electronic or magnetic); number of lamps and number of ballasts per luminaire. For incandescent luminaires, the luminaire wattage listed in column D shall be the maximum relamping rated wattage on a permanent factory-installed label on the luminaire, NOT the wattage of the lamp (bulb) used, in accordance with Section 130(d or e).
2. If Fail than describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

EXEMPT LUMINAIRES **Field Inspection** ☐

Name or Symbol	Description of exempt luminaires in accordance with §147

MANDATORY CONTROLS **Field Inspection** ☐

#	Description	Location	#	Description	Location

SPECIAL FEATURES INSPECTION CHECKLIST (See Page 2 of 4 of OLTG-1C)

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

Filed Inspector Notes or Discrepancies:

CERTIFICATE OF COMPLIANCE (Part 3 of 4) OLTG-1C

Project Name	Date
HCC Bldg C	9/2/2010

A. OUTDOOR LIGHTING ZONE

OUTDOOR LIGHTING ZONE: ☐ OLZ 1 ☐ OLZ 2 ☑ OLZ 3 ☐ OLZ 4

Is the Outdoor Lighting Zone: ☑ Default in accordance with §10-114, or ☐ Amended by JHA

Complete the information below if the default Outdoor Lighting Zone has been amended by the local jurisdiction having authority (JHA):

☐ The site is a government designated park, recreational area, wildlife preserve, or portion thereof, and has been designated as LZ2 or LZ3, in accordance with Table 10-114-A, because the site is contained within such a zone.

☐ The local jurisdiction having authority has officially adopted a change to the State Default Lighting Zone and has notified the Energy Commission by providing the materials required in §10-114(d) to the Executive Director.

☐ The adopted change is posted on the Energy Commission website.

B. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Are additional lighting power allowances for ordinance in Table 147-C used? ☐ Yes ☑ No

Complete the information below if additional lighting power allowances for ordinance requirements are used:

☐ The local jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.

☐ The local jurisdiction having authority which adopted specific outdoor light levels and has notified the Commission by providing the following materials required §10-114(f) to the Executive Director.

C. ACCEPTANCE FORMS

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, **OLTG-2A**. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. **Forms can be grouped by type of Luminaire controlled.**

Enforcement Agency:

Systems Acceptance. Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements.
The **OLTG-2A** form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the **OLTG-2A** for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

Certificate of Acceptance

Equipment Requiring Testing	Luminaires Controlled: Description	Luminaires Controlled: Qty. of Like Controls	Luminaires Controlled: Location	OLTG-2A[1]: Outdoor Lighting Acceptance Tests

1. Insert: **OMS** for Outdoor Motion Sensor; **OLSC** for Outdoor Lighting Shutoff Controls; **OP** for Outdoor Photocontrol; **ATS** for Astronomical Time Switch; and, **STS** for Standard (non-astronomical) Time Switch acceptance.

CERTIFICATE OF COMPLIANCE (Part 4 of 4) OLTG-1C

Project Name	Date
HCC Bldg C	9/2/2010

ALLOWED AND INSTALLED OUTDOOR LIGHTING POWER

		Lighting Wattage Power Allowance
A	Lighting power allowance for general hardscape (from OLTG-2C Page 1 of 3)	12,546
B	Specific application lighting wattage allowance per unit length (from OLTG-2C Page 1 of 3)	0
C	Specific application lighting wattage allowance for ornamental lighting (from OLTG-2C Page 1 of 3)	0
D	Specific application lighting wattage allowance per application (from OLTG-2C Page 2 of 3)	0
E	Specific application lighting wattage allowance per area (from OLTG-2C Page 2 of 3)	123
F	Specific application lighting wattage allowance for ordinance requirements (from OLTG-2C Page 3 of 3)	0
G	Total Allowed Wattage = Sum of rows A through F:	12,669
H	Total installed watts (from Compliance Fixture Schedule, (from OLTG-2C Page 1 of 3)	6,993
Complies if wattage in row H is less than or equal to the wattages in row G		☑ Yes ☐ No

OUTDOOR LIGHTING WORKSHEET (Part 1 of 3) OLTG-2C

Project Name	Date
HCC Bldg C	9/2/2010

A. LIGHTING POWER ALLOWANCE FOR GENERAL HARDSCAPE

AREA WATTAGE ALLOWANCE (AWA)			LINEAR WATTAGE ALLOWANCE (LWA)			INITIAL WATTAGE ALLOWANCE	TOTAL GENERAL HARDSCAPE LIGHTING ALLOWANCE
A	B	C	D	E	F	G	H
Illuminated Hardscape Area	AWA Per Square Foot	AWA (A X B)	Perimeter Length of General Hardscape	LWA Per Linear Foot	LWA (D X E)	IWA (Watts)	C + F + G
106,000	0.092	9,752	2,200	0.920	2,024	770	12,546

Enter total into OLTG-1C; Page 4 of 4; Row A; Lighting Power Allowance for General Hardscape: 12,546

☑ Yes AWA, LWA, and IWA from Table 147-A was used as appropriate for the Outdoor Lighting Zone

B. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER UNIT LENGTH (Available only for sales frontage)

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Linear Foot of Frontage	Sales Frontage Allowance for OLZ (Watts per LF)	Wattage Allowance (B X C)	Name or Symbol	Luminaire Type	Lumin QTY	Watts Per Luminaire	Design Watts (G X H)	Allowed Watts Minimum of D or I

Enter total into OLTG-1C; Page 4 of 4; Row B; Specific Application Lighting Wattage Allowance Per Unit Length: 0

C. SPECIFIC APPLICATION WATTAGE ALLOWANCE FOR ORNAMENTAL LIGHTING

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Square feet of Harscape	Ornamental Lighting Allowance for OLZ (Watts per ft²)	Wattage Allowance (B X C)	Name or Symbol	Luminaire Type	Lumin QTY	Watts Per Luminaire	Design Watts (G X H)	Allowed Watts Minimum of D or I

Enter total into OLTG-1C; Page 4 of 4; Row C; Specific Application Wattage for Ornamental Lighting: 0

OUTDOOR LIGHTING WORKSHEET (Part 2 of 3) OLTG-2C

Project Name	Date
HCC Bldg C	9/2/2010

D. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER APPLICATION

DETERMINE WATTAGE ALLOWANCE				DESIGN WATTS					ALLOWANCE
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Number of Applications	Specific Application Allowance (watts)	Wattage Allowance (B X C)	Luminaire Symbol	Luminaire Type	Lumin QTY	Watts Per Luminaire	Design Watts (G X H)	Allowed Watts Minimum of D or I

Enter total into OLTG-1C; Page 4 of 4; Row D; Specific Application Wattage Allowance Per Application: 0

E. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER AREA

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Illuminated Area of Application	Specific Application Allowance (watts per ft²)	Wattage Allowance (B X C)	Code for Luminaire Type	Luminaire Type	Lumin QTY	Watts Per Luminaire	Design Watts (G X H)	Allowed Watts Minimum of D or I
Building Facade-South Wall	1,860	0.350	651	L9	*Wall Mounted Compact Fluorescent Do*	1	54.0	54	54
East Side Canopy	85	0.408	35	L8	*Surface Mounted Compact Fluorescent*	1	54.0	54	35
West Side Canopy	85	0.408	35	L4	*6" Aperture Compact Fluorescent Down*	1	54.0	54	35

Enter total into OLTG-1C; Page 4 of 4; Row E; Specific Application Lighting Wattage Allowance Per Area: 123

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–07–10	HCCC

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE, LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APInc5P.com 09003

TITLE 24
COMPLIANCE FORMS

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY: KS/LA
PROJECT:
ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER SATISH S. PAMIDI No. E10472 Exp. 12/31/10 ELECTRICAL STATE OF CALIFORNIA

T24.1
B D

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

HCC Bldg. C
1232 Arrowhead Ave.
Livermore, CA. 94551

Project Designer:

B.R.Govinda Rao S.E.
864 Bandol Way
San Ramon, CA 94382
925-833-9784

Report Prepared by:

Mangalore Suresh P.E.
Title 24 Online
531 Natalino Circle
Sacramento, ca 95835
510-793-2658

Job Number:

Bld. C

Date:

7/19/2010

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PERFORMANCE CERTIFICATE OF COMPLIANCE (Part 1 of 3) PERF-1C

Project Name			Date
HCC Bldg. C			7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**
1232 Arrowhead Ave. Livermore	CA Climate Zone 12	7,800	n/a

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room ☐ Relocatable - indicate ☐ specific climate zone ☐ all climates

Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to a Building using the performance compliance approach.

The documentation author hereby certifies that the documentation is accurate and complete

Documentation Author			
Name	Mangalore Suresh P.E.	Signature	MSuresh
Company	Title 24 Online	Date	7/19/2010
Address	531 Natalino Circle	Phone	510-793-2658
City/State/Zip	Sacramento, ca 95835		

The Principal Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the energy efficiency requirements contained in sections 110, 116 through 118, and 140 through 149 of Title 24, Part 6. Please check one:

ENV.	LTG.	MECH.	
☒	☒	☒	I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer, mechanical engineer, electrical engineer, or I am a licensed architect.
☐	☐	☐	I affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code by section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.
☐	☐	☐	I affirm that I am eligible under Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538 and 6737.1.

Principal Envelope Designer			
Name	B.R.Govinda Rao S.E.	Signature	
Company	B.R.Govinda Rao S.E.	Date	
Address	864 Bandol Way	License #	
City/State/Zip	San Ramon, CA 94382	Phone	925-833-9784

Principal Mechanical Designer			
Name	Kuppe Srinivas P.E.	Signature	
Company	Ajmani & Pamidi Inc.	Date	05/25/10
Address	101 California Street Suite 2025	License #	M–18346
City/State/Zip	San Francisco, CA. 94111	Phone	415-305-9344

Principal Lighting Designer			
Name	Satish Pamidi P.E.	Signature	
Company	Ajmani & Pamidi Inc.	Date	05/25/10
Address	101 California Street Suite 2025	License #	E–10472
City/State/Zip	San Francisco, CA. 94111	Phone	415-305-9344

INSTRUCTIONS TO APPLICANT COMPLIANCE & WORKSHEETS (check box if worksheets are included)

☑ ENV-1C	Certificate of Compliance. Required on plans.	☑ MECH-1C	Certificate of Compliance. Required on plans.
☑ LTG-1C	Certificate of Compliance. Required on plans.	☑ MECH-2C	Air/Water Side/Service Hot Water & Pool Requirements.
☑ LTG-2C	Lighting Controls Credit Worksheet.	☑ MECH-3C	Mechanical Ventilation and Reheat.
☐ LTG-3C	Indoor Lighting Power Allowance.	☑ MECH-5C	Mechanical Equipment Details.

PERFORMANCE CERTIFICATE OF COMPLIANCE (Part 2 of 3) PERF-1C

Project Name	Date
HCC Bldg. C	7/19/2010

ANNUAL TDV ENERGY USE SUMMARY (kBtu/sqft-yr)

Energy Component	Standard Design	Proposed Design	Compliance Margin
Space Heating	7.73	3.92	3.81
Space Cooling	59.91	42.59	17.32
Indoor Fans	24.58	25.35	-0.78
Heat Rejection	0.00	0.00	0.00
Pumps & Misc.	0.00	0.00	0.00
Domestic Hot Water	8.03	5.85	2.18
Lighting	54.82	44.60	10.21
Receptacle	54.80	54.80	0.00
Process	0.00	0.00	0.00
Process Lighting	0.00	0.00	0.00
TOTALS	209.87	177.12	32.74
Percent better than Standard		15.6 %	(15.6 % excluding process)

BUILDING COMPLIES

GENERAL INFORMATION

Building Orientation	(E) 90 deg	Conditioned Floor Area	7,800	sqft.
Number of Stories	1	Unconditioned Floor Area	0	sqft.
Number of Systems	6	Conditioned Footprint Area	7,800	sqft.
Number of Zones	9	Natural Gas Available On Site	Yes	

	Orientation	Gross Area		Glazing Area		Glazing Ratio
Front Elevation	(E)	558	sqft.	84	sqft.	15.1 %
Left Elevation	(S)	1,172	sqft.	240	sqft.	20.5 %
Rear Elevation	(W)	648	sqft.	54	sqft.	8.3 %
Right Elevation	(N)	1,080	sqft.	232	sqft.	21.5 %
Total		3,458	sqft.	610	sqft.	17.6 %
Roof		7,800	sqft.	0	sqft.	0.0 %

	Standard		Proposed	
Lighting Power Density	0.876	W/sqft.	0.713	W/sqft.
Prescriptive Envelope TDV Energy	156,038		109,807	

Remarks:

PERFORMANCE CERTIFICATE OF COMPLIANCE (Part 3 of 3) PERF-1C

Project Name	Date
HCC Bldg. C	7/19/2010

ZONE INFORMATION

System Name	Zone Name	Occupancy Type	Floor Area (sqft.)	Inst. LPD (W/sf)[1]	Ctrl. Credits (W/sf)[2]	Allowed LPD Area (W/sf)[3]	Allowed LPD Tailored (W/sf)[4]	Proc. Loads (W/sf)
AC-C-1	Zone -1	Office > 250 sqft	1,456	0.742				
	Zone- 1A	Corridor/Restroom/Support	630	0.619	0.155			
AC-C-2	Zone-2	Library, Reading Area	1,476	0.732	0.110			
AC-C-3	Zone-3	Corridor/Restroom/Support	1,160	0.621				
AC-C-4	Zone-4	Office > 250 sqft	814	0.663				
	Zone- 4A	Corridor/Restroom/Support	360	0.333	0.083			
AC-C-5	Zone- 5	Comp Bldg Office	560	0.643				
	Zone -5A	Corridor/Restroom/Support	784	1.378				
AC-C-6	Zone-6	Convention/Conference/Mee	560	0.857				

Notes: 1. See LTG-1C (items marked with asterisk, see LTG-1-C by others) 2. See LTG-2C 3. See LTG-3C (by others) 4. See LTG-4C Items above require special documentation

EXCEPTIONAL CONDITIONS COMPLIANCE CHECKLIST

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justifications, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

The Zone Zone -1 has a North/East/South Display Perimeter Credit of 52 ft.

The Zone Zone-2 has a North/East/South Display Perimeter Credit of 52 ft.

The Zone Zone-3 has a North/East/South Display Perimeter Credit of 40 ft.

The Zone Zone-3 has a North/East/South Display Perimeter Credit of 40 ft.

The Zone Zone- 5 has a North/East/South Display Perimeter Credit of 52 ft.

The Zone Zone-6 has a North/East/South Display Perimeter Credit of 40 ft.

The HVAC System Trane YHC-036-E A Premium Efficiency 0.32 BHP Supply Fan Motor has been specified.

The Roof R-38 Roof Attic Reflectance = 0.30, Emittance = 0.75 shall be rated and labeled by the Cool Roof Rating Council in accordance with Section 10-1

The exceptional features listed in this performance approach application have specifically been reviewed. Adequate written justification and documentation for their use have been provided by the applicant.

Authorized Signature or Stamp _____

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 3) ENV-1C

Project Name			Date
HCC Bldg. C			7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**
1232 Arrowhead Ave. Livermore	12	7,800	n/a

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room ☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☑ Conditioned Spaces ☐ Unconditioned Spaces

☐ Skylight Area for Large Enclosed Space ≥ 8000 ft² (If checked include the ENV-4C with submittal)

Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration

Approach of Compliance: ☐ Component ☑ Overall Envelope ☐ Unconditioned (file affidavit)

Front Orientation: N, E, S, W or in Degrees: 90 deg

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS | **INSULATION**

Tag/ID[1]	Assembly Type[2]	Area (ft²)	Orientation N, E, S, W	U-Factor	Cavity R-Value	Exterior R-Value	Exterior Furring[3]	Interior R-Value	Interior Furring[3]	Joint Appendix 4	Condition Status[4]	Pass	Fail[5]
1	Wall	301	(N)	0.069	R-21					4.3.1-A6	New	☐	☐
2	Roof	1,456	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
3	Slab	1,456	(N)	0.730	None					4.4.7-A1	New	☐	☐
4	Wall	64	(E)	0.069	R-21					4.3.1-A6	New	☐	☐
5	Slab	630	(N)	0.730	None					4.4.7-A1	New	☐	☐
6	Roof	630	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
7	Wall	356	(S)	0.069	R-21					4.3.1-A6	New	☐	☐
8	Roof	1,476	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
												☐	☐
												☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. A fail does not meet compliance.

FENESTRATION SURFACE DETAILS

Tag/ID[1]	Fenestration Type[2]	Area (ft²)	Orientation N, E, S, W	Max U-Factor	U-Factor Source[3]	Max (R)SHGC	SHGC Source[3]	Overhang	Conditions Status[4]	Pass	Fail[5]
1	Window	232	(N)	0.330	NFRC	0.190	NFRC	☐	New	☐	☐
2	Window	84	(E)	0.330	NFRC	0.190	NFRC	☐	New	☐	☐
3	Window	120	(S)	0.330	NFRC	0.190	NFRC	☑	New	☐	☐
4	Window	48	(S)	0.330	NFRC	0.190	NFRC	☑	New	☐	☐
5	Window	48	(S)	0.330	NFRC	0.190	NFRC	☑	New	☐	☐
6	Window	24	(S)	0.330	NFRC	0.190	NFRC	☑	New	☐	☐
7	Window	54	(W)	0.330	NFRC	0.190	NFRC	☐	New	☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 3) ENV-1C

Project Name			Date
HCC Bldg. C			7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**
1232 Arrowhead Ave. Livermore	12	7,800	n/a

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room ☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☑ Conditioned Spaces ☐ Unconditioned Spaces

☐ Skylight Area for Large Enclosed Space ≥ 8000 ft² (If checked include the ENV-4C with submittal)

Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration

Approach of Compliance: ☐ Component ☑ Overall Envelope ☐ Unconditioned (file affidavit)

Front Orientation: N, E, S, W or in Degrees: 90 deg

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS | **INSULATION**

Tag/ID[1]	Assembly Type[2]	Area (ft²)	Orientation N, E, S, W	U-Factor	Cavity R-Value	Exterior R-Value	Exterior Furring[3]	Interior R-Value	Interior Furring[3]	Joint Appendix 4	Condition Status[4]	Pass	Fail[5]
9	Slab	1,476	(N)	0.730	None					4.4.7-A1	New	☐	☐
10	Wall	205	(E)	0.069	R-21					4.3.1-A6	New	☐	☐
11	Wall	176	(S)	0.069	R-21					4.3.1-A6	New	☐	☐
12	Roof	580	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
13	Slab	580	(N)	0.730	None					4.4.7-A1	New	☐	☐
14	Wall	166	(N)	0.069	R-21					4.3.1-A6	New	☐	☐
15	Wall	205	(E)	0.069	R-21					4.3.1-A6	New	☐	☐
16	Roof	580	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
												☐	☐
												☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. A fail does not meet compliance.

FENESTRATION SURFACE DETAILS

Tag/ID[1]	Fenestration Type[2]	Area (ft²)	Orientation N, E, S, W	Max U-Factor	U-Factor Source[3]	Max (R)SHGC	SHGC Source[3]	Overhang	Conditions Status[4]	Pass	Fail[5]
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 3) ENV-1C

Project Name			Date
HCC Bldg. C			7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**
1232 Arrowhead Ave. Livermore	12	7,800	n/a

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room ☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☑ Conditioned Spaces ☐ Unconditioned Spaces

☐ Skylight Area for Large Enclosed Space ≥ 8000 ft² (If checked include the ENV-4C with submittal)

Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration

Approach of Compliance: ☐ Component ☑ Overall Envelope ☐ Unconditioned (file affidavit)

Front Orientation: N, E, S, W or in Degrees: 90 deg

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS | **INSULATION**

Tag/ID[1]	Assembly Type[2]	Area (ft²)	Orientation N, E, S, W	U-Factor	Cavity R-Value	Exterior R-Value	Exterior Furring[3]	Interior R-Value	Interior Furring[3]	Joint Appendix 4	Condition Status[4]	Pass	Fail[5]
17	Slab	580	(N)	0.730	None					4.4.7-A1	New	☐	☐
18	Wall	238	(S)	0.069	R-21					4.3.1-A6	New	☐	☐
19	Roof	814	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
20	Slab	814	(N)	0.730	None					4.4.7-A1	New	☐	☐
21	Slab	360	(N)	0.730	None					4.4.7-A1	New	☐	☐
22	Roof	360	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
23	Wall	49	(W)	0.069	R-21					4.3.1-A6	New	☐	☐
24	Wall	156	(N)	0.069	R-21					4.3.1-A6	New	☐	☐
												☐	☐
												☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. A fail does not meet compliance.

FENESTRATION SURFACE DETAILS

Tag/ID[1]	Fenestration Type[2]	Area (ft²)	Orientation N, E, S, W	Max U-Factor	U-Factor Source[3]	Max (R)SHGC	SHGC Source[3]	Overhang	Conditions Status[4]	Pass	Fail[5]
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

REVISIONS		BY
A	05–24–10	HCCC
B	08–02–10	BPC
C	HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D	09–22–10	BPC
E	10–07–10	HCCC

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE, LIVERMORE, CA 94551

Om Namo Narayanaya Om Namah Shivaya

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APinc5P.com 09003

TITLE 24
COMPLIANCE FORMS
BUILDING - C

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY: KS/LA

PROJECT:
ARROWHEAD

T24.1B
B

REGISTERED PROFESSIONAL ENGINEER KUPPE S. SRINIVAS No. M18346 Exp. 9/30/12 MECHANICAL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER SATISH S. PAMIDI No. E10472 Exp. 12/31/10 ELECTRICAL STATE OF CALIFORNIA

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 3) ENV-1C

Project Name				Date
HCC Bldg. C				7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**	
1232 Arrowhead Ave. Livermore	12	7,800	n/a	

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room
☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☑ Conditioned Spaces ☐ Unconditioned Spaces
☐ Skylight Area for Large Enclosed Space ≥ 8000 ft² (If checked include the ENV-4C with submittal)
Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration
Approach of Compliance: ☐ Component ☑ Overall Envelope ☐ Unconditioned (file affidavit)
Front Orientation: N, E, S, W or in Degrees: 90 deg

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS / INSULATION

Tag/ID[1]	Assembly Type[2]	Area (ft²)	Orientation N, E, S, W	U-Factor	Cavity R-Value	Exterior R-Value	Exterior Furring[3]	Interior R-Value	Interior Furring[3]	Joint Appendix 4	Condition Status[4]	Pass	Fail[5]
25	Wall	260	(W)	0.069	R-21					4.3.1-A6	New	☐	☐
26	Roof	560	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
27	Slab	560	(N)	0.730	None					4.4.7-A1	New	☐	☐
28	Wall	110	(N)	0.069	R-21					4.3.1-A6	New	☐	☐
29	Roof	392	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
30	Slab	392	(N)	0.730	None					4.4.7-A1	New	☐	☐
31	Wall	115	(N)	0.069	R-21					4.3.1-A6	New	☐	☐
32	Roof	392	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
												☐	☐
												☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. A fail does not meet compliance.

FENESTRATION SURFACE DETAILS

Tag/ID[1]	Fenestration Type[2]	Area (ft²)	Orientation N, E, S, W	Max U-Factor	U-Factor Source[3]	Max (R)SHGC	SHGC Source[3]	Overhang	Conditions Status[4]	Pass	Fail[6]
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 3) ENV-1C

Project Name				Date
HCC Bldg. C				7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**	
1232 Arrowhead Ave. Livermore	12	7,800	n/a	

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room
☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☑ Conditioned Spaces ☐ Unconditioned Spaces
☐ Skylight Area for Large Enclosed Space ≥ 8000 ft² (If checked include the ENV-4C with submittal)
Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration
Approach of Compliance: ☐ Component ☑ Overall Envelope ☐ Unconditioned (file affidavit)
Front Orientation: N, E, S, W or in Degrees: 90 deg

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS / INSULATION

Tag/ID[1]	Assembly Type[2]	Area (ft²)	Orientation N, E, S, W	U-Factor	Cavity R-Value	Exterior R-Value	Exterior Furring[3]	Interior R-Value	Interior Furring[3]	Joint Appendix 4	Condition Status[4]	Pass	Fail[5]
33	Slab	392	(N)	0.730	None					4.4.7-A1	New	☐	☐
34	Wall	162	(S)	0.069	R-21					4.3.1-A6	New	☐	☐
35	Roof	560	(N)	0.025	R-38					4.2.1-A21	New	☐	☐
36	Wall	285	(W)	0.069	R-21					4.3.1-A6	New	☐	☐
37	Slab	560	(N)	0.730	None					4.4.7-A1	New	☐	☐
												☐	☐
												☐	☐
												☐	☐
												☐	☐
												☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. A fail does not meet compliance.

FENESTRATION SURFACE DETAILS

Tag/ID[1]	Fenestration Type[2]	Area (ft²)	Orientation N, E, S, W	Max U-Factor	U-Factor Source[3]	Max (R)SHGC	SHGC Source[3]	Overhang	Conditions Status[4]	Pass	Fail[6]
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐
								☐		☐	☐

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 2 of 3) ENV-1C

Project Name: HCC Bldg. C — Date: 7/19/2010

ROOFING PRODUCT (COOL ROOFS)

(Note if the roofing product is not CRRC certified, this compliance approach cannot be used). Go to Overall Envelope Approach or Performance Approach.

CHECK APPLICABLE BOX BELOW IF EXEMPT FROM THE ROOFING PRODUCT "COOL ROOF" REQUIREMENTS:	Pass	Fail[1]	N/A
☐ Roofing compliance not required in Climate Zones 1 and16 with a Low-Sloped. 2:12 pitch or less.	☐	☐	☐
☐ Roofing compliance not required in Climate Zone 1 with a Steep-Sloped with less than 5 lb/ft². Greater than 2:12 pitch.	☐	☐	☐
☐ Low-sloped Wood framed roofs in Climate Zones 3 and 5 are exempted, solar reflectance and thermal emittance or SRI that have a U-factor of 0.039 or lower. See Opaque Surface Details roof assembly, Column H of ENV-2C.	☐	☐	☐
☐ Low-sloped Metal building roofs in Climate Zone 3 and 5 are exempted, solar relectance and thermal emittance or SRI that have a U-factor of 0.048 or lower. See Opaque Surface Details roof assembly below, Column H of ENV-2C.	☐	☐	☐
☐ The roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are exempted. Solar reflectance and thermal emittance or SRI, see spreadsheet calculator at www.energy.ca.gov/title24/	☐	☐	☐
☐ Roof constructions that have thermal mass over the roof membrane with a weight of at least 25 lb/ft² are exempt from the Cool Roof criteria below.	☐	☐	☐
☐ High-rise residential buildings and hotels and motels with low-sloped roofs in Climate Zones 1 through 9, 12 and 16 are exempted from the low-sloped roofing criteria.	☐	☐	☐

1. If Fail then describe on this page of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CRRC Product ID Number[1]	Roof Slope ≤ 2:12	Roof Slope > 2:12	Product Weight < 5lb/ft²	Product Weight ≥ 5lb/ft²	Product Type[2]	Aged Solar Reflectance[3]		Thermal Emittance	SRI[5]	Pass	Fail[6]
R-38 Roof Attic	☑	☐	☑	☐		☐[4]	0.30	0.75		☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐

1. The CRRC Product ID Number can be obtained from the Cool Roof Rating Council's Rated Product Directory at www.coolroofs.org/products/search.php
2. Indicate the type of product is being used for the roof top, i.e. single-ply roof, asphalt roof, metal roof, etc.
3. If the Aged Reflectance is not available in the Cool Roof Rating Council's Rated Product Directory then use the Initial Reflectance value from the same directory and use the equation $(0.2+0.7(\rho_{initial} - 0.2)$ to obtain a calculated aged value. Where ρ is the Initial Solar Reflectance from the Cool Roof Rating Council's Rated Product Directory.
4. Check box if the Aged Reflectance is a calculated value using the equation above.
5. The SRI value needs to be calculated from a spreadsheet calculator at http://www.energy.ca.gov/title24/
6. If Fail then describe on this page of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

To apply **Liquid Field Applied Coatings**, the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements listed in §118(i)4. Select the applicable coating:

☐ Aluminum-Pigmented Asphalt Roof Coating ☐ Cement-Based Roof Coating ☐ Other ____________

Discrepancies:

CERTIFICATE OF COMPLIANCE AND FIELD INSPECTION ENERGY CHECKLIST (Part 3 of 3) ENV-1C

Project Name: HCC Bldg. C — Date: 7/19/2010

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for Envelope Fenestrations system. The designer is required to check the acceptance tests and list all the fenestration products that require an acceptance test. If all the site-built fenestration of a certain type requires a test, list the different fenestration products and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Enforcement Agency:

Systems Acceptance. Before Occupancy Permit is granted for a newly constructed building or space or whenever new fenestration is installed in the building or space shall be certified as meeting the Acceptance Requirements.
The ENV-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the ENV-2A for each different fenestration product line must be provided to the owner of the building for their records.

Test Description: Fenestration Products Name or ID Requiring Testing or Verification	Area of like Products	ENV-2A Building Envelope Acceptance Test	Test Performed By:
PPG SOLARBAN 80 XL	610	☑	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
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		☐	
		☐	
		☐	
		☐	
		☐	

CERTIFICATE OF COMPLIANCE (Part 1 of 3) LTG-1C

Project Name: HCC Bldg. C — Date: 7/19/2010

INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

Installation Certificate, LTG-1- INST (Retain a copy and verify form is completed and signed.) — **Field Inspector** ☐
Certificate of Acceptance, LTG-2A (Retain a copy and verify form is completed and signed.) — **Field Inspector** ☐

A separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces Installed Lighting Power listed on this Lighting Schedule is only for:

☑ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**
☑ The actual indoor lighting power listed below includes all installed permanent and portable lighting systems in accordance with §146(a).
☑ Only for offices: Up to the first 0.2 watts per square foot of portable lighting shall not be required to be included in the calculation of actual indoor lighting power density in accordance with the Exception to §146(a). All portable lighting in excess of 0.2 watts per square foot is totaled below.

A	B	C	D	E		F	G	H	
	Luminaire (Type, Lamps, Ballasts)	Installed Watts		How wattage Was determined				Field Inspector[2]	
None or Item Tag	Complete Luminaire Description[1] (i.e, 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballasts)	Special Features	Watts per Luminaire	CEC Default From NA8	According To §130 (d or e)	Number of Luminaires	Installed Watts (C X F)	Pass	Fail
L1	2'X4' Recessed Fluorescent Fixture W/F028T5	☐	60.0	☑	☐	69	4,140	☐	☐
L2	2'X2' Recessed Fluorescent Fixture W/F014T5	☐	30.0	☑	☐	8	240	☐	☐
L3	6" Recessed CFL W/1-26DTT	☐	30.0	☑	☐	43	1,290	☐	☐
L7	2-T5 Lamp Fluorescent Strip	☐	60.0	☑	☐	3	180	☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
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		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
		☐		☐	☐			☐	☐
					Installed Watts Page Total:		5,850		
	Building total number of pages:				Installed Watts Building Total (Sum of all pages) Enter into LTG-1C Page 4 of 4		5,850		

1. Wattage shall be determined according to Section 130 (d and e). Wattage shall be rating of light fixture, not rating of bulb.
2 . If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CERTIFICATE OF COMPLIANCE (Part 2 of 3) LTG-1C

Project Name: HCC Bldg. C — Date: 7/19/2010

INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

Fill in controls for all spaces: a) area controls, b) multi-level controls, c) manual daylighting controls for daylit areas > 250 ft², automatic daylighting controls for daylit areas > 2,500 ft², d) shut-off controls, e) display lighting controls, f) tailored lighting controls – general lighting controlled separately from display, ornamental and display case lighting and g) demand responsive automatic controls for retail stores > 50,000 ft², in accordance with Section 131.

MANDATORY LIGHTING CONTROLS – FIELD INSPECTION ENERGY CHECKLIST

Type/ Description	Number of Units	Location in Building	Special Features	Field Inspector Pass	Field Inspector Fail
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

SPECIAL FEATURES INSPECTION CHECKLIST (See Page 2 of 4 of LTG-1C)

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

Field Inspector's Notes or Discrepancies:

CERTIFICATE OF COMPLIANCE (Part 3 of 3) LTG-1C

Project Name: HCC Bldg. C — Date: 7/19/2010

CONDITIONED AND UNCONDITIONED SPACE LIGHTING MUST NOT BE COMBINED FOR COMPLIANCE

Indoor Lighting Power for Conditioned Spaces		Watts	Indoor Lighting Power for Unconditioned Spaces		Watts
Installed Lighting (from Conditioned LTG-1C, Page 2)		5,850	**Installed** Lighting (from Unconditioned LTG-1C, Page 2)		0
Lighting Control Credit Conditioned Spaces (from LTG-2C)	-	290	Lighting Control Credit Unconditioned Spaces (from LTG-2C)	-	0
Adjusted **Installed** Lighting Power	=	5,561	Adjusted **Installed** Lighting Power	=	0
Complies if **Installed ≤ Allowed**		↕	Complies if **Installed ≤ Allowed**		↕
Allowed Lighting Power Conditioned Spaces (from LTG-3C or PERF-1)		5,561	**Allowed** Lighting Power Unconditioned Spaces (from LTG-3C)		0

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, **LTG-2A**. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. **Forms can be grouped by type of Luminaire controlled.**

Enforcement Agency:

Systems Acceptance. Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements.
The **LTG-2A** form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the **LTG-2A** for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

Controls for Credits				LTG-2A
Equipment Requiring Testing	Description	Number of Luminaire controls	Location	Controls and Sensors and Automatic Daylighting Controls Acceptance
Occ Sensor - Hallway	2'X2' Recessed Fluorescent Fixture V	4	Corridor # 2/Vestibule	☑
Occ Sensor - Hallway	6" Recessed CFL W/1-26DTT	9	Corridor # 2/Vestibule	☑
Occ Sensor - Library	2'X4' Recessed Fluorescent Fixture V	18	Library	☑
Occ Sensor - Hallway	2'X2' Recessed Fluorescent Fixture V	4	Corridor # 1	☑
				☐
				☐
				☐
				☐
				☐
				☐
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				☐
				☐
				☐
				☐

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 4) MECH-1C

Project Name				Date
HCC Bldg. C				7/19/2010
Project Address	**Climate Zone**	**Total Cond. Floor Area**	**Addition Floor Area**	
1232 Arrowhead Ave. Livermore	12	7,800	n/a	

GENERAL INFORMATION

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room
☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☑ Conditioned Spaces ☐ Unconditioned Spaces (affidavit)
Phase of Construction: ☑ New Construction ☐ Addition ☐ Alteration
Approach of Compliance: ☐ Component ☐ Overall Envelope TDV Energy ☐ Unconditioned (file affidavit)
Front Orientation: N, E, S, W or in Degrees: 90 deg

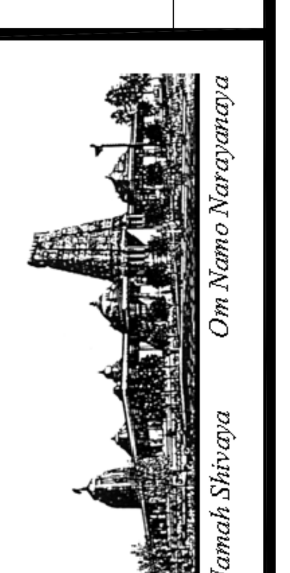
HVAC SYSTEM DETAILS

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST — Meets Criteria or Requirements: Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	DHW Heater	☐	☐
Equipment Type[3]:	Gas Fired DHW Boiler	☐	☐
Number of Systems	1	☐	☐
Max Allowed Heating Capacity[1]	185,000 Btu/hr	☐	☐
Minimum Heating Efficiency[1]	0.85 EF	☐	☐
Max Allowed Cooling Capacity[1]	n/a	☐	☐
Cooling Efficiency[1]	n/a	☐	☐
Duct Location/ R-Value	n/a	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	n/a	☐	☐
Economizer	n/a	☐	☐
Thermostat	n/a	☐	☐
Fan Control	n/a	☐	☐

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST — Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	AC-C-1	☐	☐
Equipment Type[3]:	Split DX	☐	☐
Number of Systems	1	☐	☐
Max Allowed Heating Capacity[1]	48,000 Btu/hr	☐	☐
Minimum Heating Efficiency[1]	81% AFUE	☐	☐
Max Allowed Cooling Capacity[1]	49,450 Btu/hr	☐	☐
Cooling Efficiency[1]	15.0 SEER / 12.8 EER	☐	☐
Duct Location/ R-Value	R-8.0	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	No	☐	☐
Economizer	No Economizer	☐	☐
Thermostat	Setback Required	☐	☐
Fan Control	Constant Volume	☐	☐

1. If the Actual installed equipment performance efficiency and capacity is less than the Proposed (from the energy compliance submittal or from the building plans) the responsible party shall resubmit energy compliance to include the new changes.
2. For additional detailed discrepancy use Page 2 of the Inspection Checklist Form. Compliance fails if a Fail box is checked.
3. Indicate Equipment Type: Gas (Pkg or, Split), VAV, HP (Pkg or split), Hydronic, PTAC, or other.

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–07–10	HCCC



NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APincSF.com 09021

TITLE 24
COMPLIANCE FORMS
BUILDING - C

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY: KS/LA
PROJECT: ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER — KUPPE G. SRINIVAS — No. M18346 — Exp. 9/30/12 — MECHANICAL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — SATISH S. PAMIDI — No. E10472 — Exp. 12/31/10 — ELECTRICAL — STATE OF CALIFORNIA

T24.2B
B

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 4) MECH-1C

Project Name *HCC Bldg. C*			Date *7/19/2010*
Project Address *1232 Arrowhead Ave. Livermore*	Climate Zone *12*	Total Cond. Floor Area *7,800*	Addition Floor Area *n/a*

GENERAL INFORMATION

Building Type: ☒ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room
☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☒ Conditioned Spaces ☐ Unconditioned Spaces (affidavit)
Phase of Construction: ☒ New Construction ☐ Addition ☐ Alteration
Approach of Compliance: ☐ Component ☐ Overall Envelope TDV Energy ☐ Unconditioned (file affidavit)
Front Orientation: N, E, S, W or in Degrees: *90 deg*

HVAC SYSTEM DETAILS

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST Meets Criteria or Requirements Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	*AC-C-2*	☐	☐
Equipment Type[3]:	*Split DX*	☐	☐
Number of Systems	*1*	☐	☐
Max Allowed Heating Capacity[1]	*48,000 Btu/hr*	☐	☐
Minimum Heating Efficiency[1]	*81% AFUE*	☐	☐
Max Allowed Cooling Capacity[1]	*49,450 Btu/hr*	☐	☐
Cooling Efficiency[1]	*15.0 SEER / 12.8 EER*	☐	☐
Duct Location/ R-Value	*R-8.0*	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	*No*	☐	☐
Economizer	*No Economizer*	☐	☐
Thermostat	*Setback Required*	☐	☐
Fan Control	*Constant Volume*	☐	☐

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	*AC-C-3*	☐	☐
Equipment Type[3]:	*Packaged DX*	☐	☐
Number of Systems	*1*	☐	☐
Max Allowed Heating Capacity[1]	*48,000 Btu/hr*	☐	☐
Minimum Heating Efficiency[1]	*80% AFUE*	☐	☐
Max Allowed Cooling Capacity[1]	*37,150 Btu/hr*	☐	☐
Cooling Efficiency[1]	*15.0 SEER / 12.7 EER*	☐	☐
Duct Location/ R-Value	*R-8.0*	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	*No*	☐	☐
Economizer	*No Economizer*	☐	☐
Thermostat	*Setback Required*	☐	☐
Fan Control	*Constant Volume*	☐	☐

1. If the Actual installed equipment performance efficiency and capacity is less than the Proposed (from the energy compliance submittal or from the building plans) the responsible party shall resubmit energy compliance to include the new changes.
2. For additional detailed discrepancy use Page 2 of the Inspection Checklist Form. Compliance fails if a Fail box is checked.
3. Indicate Equipment Type: Gas (Pkg or, Split), VAV, HP (Pkg or split), Hydronic, PTAC, or other.

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 4) MECH-1C

Project Name *HCC Bldg. C*			Date *7/19/2010*
Project Address *1232 Arrowhead Ave. Livermore*	Climate Zone *12*	Total Cond. Floor Area *7,800*	Addition Floor Area *n/a*

GENERAL INFORMATION

Building Type: ☒ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room
☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☒ Conditioned Spaces ☐ Unconditioned Spaces (affidavit)
Phase of Construction: ☒ New Construction ☐ Addition ☐ Alteration
Approach of Compliance: ☐ Component ☐ Overall Envelope TDV Energy ☐ Unconditioned (file affidavit)
Front Orientation: N, E, S, W or in Degrees: *90 deg*

HVAC SYSTEM DETAILS

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST Meets Criteria or Requirements Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	*AC-C-4*	☐	☐
Equipment Type[3]:	*Packaged DX*	☐	☐
Number of Systems	*1*	☐	☐
Max Allowed Heating Capacity[1]	*48,000 Btu/hr*	☐	☐
Minimum Heating Efficiency[1]	*80% AFUE*	☐	☐
Max Allowed Cooling Capacity[1]	*37,150 Btu/hr*	☐	☐
Cooling Efficiency[1]	*15.0 SEER / 12.7 EER*	☐	☐
Duct Location/ R-Value	*R-8.0*	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	*No*	☐	☐
Economizer	*No Economizer*	☐	☐
Thermostat	*Setback Required*	☐	☐
Fan Control	*Constant Volume*	☐	☐

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	*AC-C-5*	☐	☐
Equipment Type[3]:	*Packaged DX*	☐	☐
Number of Systems	*1*	☐	☐
Max Allowed Heating Capacity[1]	*48,000 Btu/hr*	☐	☐
Minimum Heating Efficiency[1]	*80% AFUE*	☐	☐
Max Allowed Cooling Capacity[1]	*37,150 Btu/hr*	☐	☐
Cooling Efficiency[1]	*15.0 SEER / 12.7 EER*	☐	☐
Duct Location/ R-Value	*R-8.0*	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	*No*	☐	☐
Economizer	*No Economizer*	☐	☐
Thermostat	*Setback Required*	☐	☐
Fan Control	*Constant Volume*	☐	☐

1. If the Actual installed equipment performance efficiency and capacity is less than the Proposed (from the energy compliance submittal or from the building plans) the responsible party shall resubmit energy compliance to include the new changes.
2. For additional detailed discrepancy use Page 2 of the Inspection Checklist Form. Compliance fails if a Fail box is checked.
3. Indicate Equipment Type: Gas (Pkg or, Split), VAV, HP (Pkg or split), Hydronic, PTAC, or other.

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 1 of 4) MECH-1C

Project Name *HCC Bldg. C*			Date *7/19/2010*
Project Address *1232 Arrowhead Ave. Livermore*	Climate Zone *12*	Total Cond. Floor Area *7,800*	Addition Floor Area *n/a*

GENERAL INFORMATION

Building Type: ☒ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel Guest Room
☐ Schools (Public School) ☐ Relocatable Public School Bldg. ☒ Conditioned Spaces ☐ Unconditioned Spaces (affidavit)
Phase of Construction: ☒ New Construction ☐ Addition ☐ Alteration
Approach of Compliance: ☐ Component ☐ Overall Envelope TDV Energy ☐ Unconditioned (file affidavit)
Front Orientation: N, E, S, W or in Degrees: *90 deg*

HVAC SYSTEM DETAILS

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST Meets Criteria or Requirements Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)	*AC-C-6*	☐	☐
Equipment Type[3]:	*Packaged DX*	☐	☐
Number of Systems	*1*	☐	☐
Max Allowed Heating Capacity[1]	*48,000 Btu/hr*	☐	☐
Minimum Heating Efficiency[1]	*80% AFUE*	☐	☐
Max Allowed Cooling Capacity[1]	*37,150 Btu/hr*	☐	☐
Cooling Efficiency[1]	*15.0 SEER / 12.7 EER*	☐	☐
Duct Location/ R-Value	*R-8.0*	☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**	*No*	☐	☐
Economizer	*No Economizer*	☐	☐
Thermostat	*Setback Required*	☐	☐
Fan Control	*Constant Volume*	☐	☐

Equipment[2]	Inspection Criteria	FIELD INSPECTION ENERGY CHECKLIST Pass	Fail – Describe Reason[2]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		☐	☐
Equipment Type[3]:		☐	☐
Number of Systems		☐	☐
Max Allowed Heating Capacity[1]		☐	☐
Minimum Heating Efficiency[1]		☐	☐
Max Allowed Cooling Capacity[1]		☐	☐
Cooling Efficiency[1]		☐	☐
Duct Location/ R-Value		☐	☐
When duct testing is required, submit **MECH-4A** & **MECH-4-HERS**		☐	☐
Economizer		☐	☐
Thermostat		☐	☐
Fan Control		☐	☐

1. If the Actual installed equipment performance efficiency and capacity is less than the Proposed (from the energy compliance submittal or from the building plans) the responsible party shall resubmit energy compliance to include the new changes.
2. For additional detailed discrepancy use Page 2 of the Inspection Checklist Form. Compliance fails if a Fail box is checked.
3. Indicate Equipment Type: Gas (Pkg or, Split), VAV, HP (Pkg or split), Hydronic, PTAC, or other.

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 2 of 4) MECH-1C

Project Name *HCC Bldg. C*	Date *7/19/2010*

Discrepancies:

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 3 of 4) MECH-1C

Project Name *HCC Bldg. C*	Date *7/19/2010*

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for mechanical systems. The designer is required to check the applicable boxes by all acceptance tests that apply and listed all equipment that requires an acceptance test. If all equipment of a certain type requires a test, list the equipment description and the number of systems. The NA number designates the Section in the Appendix of the Nonresidential Reference Appendices Manual that describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Building Departments:

Systems Acceptance: Before occupancy permit is granted for a newly constructed building or space, or a new space-conditioning system serving a building or space is operated for normal use, all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance.
Systems Acceptance: Before occupancy permit is granted. All newly installed HVAC equipment must be tested using the Acceptance Requirements.

The MECH-1C form is not considered a completed form and is not to be accepted by the building department unless the correct boxes are checked. The equipment requiring testing, person performing the test (Example: HVAC installer, TAB contractor, controls contractor, PE in charge of project) and what Acceptance test must be conducted. The following checked-off forms are required for **ALL** newly installed equipment. In addition a Certificate of Acceptance forms shall be submitted to the building department that certifies plans, specifications, installation, certificates, and operating and maintenance information meet the requirements of §10-103(b) and Title-24 Part 6. The building inspector must receive the properly filled out and signed forms before the building can receive final occupancy.

TEST DESCRIPTION		MECH-2A	MECH-3A	MECH-4A	MECH-5A	MECH-6A	MECH-7A	MECH-8A	MECH-9A	MECH-10A	MECH-11A
Equipment Requiring Testing or Verification	Qty.	Outdoor Ventilation For VAV & CAV	Constant Volume & Single-Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Control Ventilation DCV	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
Trane YHC-048-E3	*2*	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Trane YHC-036-E	*4*	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 4 of 4) MECH-1C

Project Name *HCC Bldg. C*	Date *7/19/2010*

TEST DESCRIPTION		MECH-12A	MECH-13A	MECH-14A	MECH-15A	
Equipment Requiring Testing	Qty.	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Test Performed By:
Trane YHC-048-E3	*2*	☐	☐	☐	☐	
Trane YHC-036-E	*4*	☐	☐	☐	☐	
		☐	☐	☐	☐	
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		☐	☐	☐	☐	

LIGHTING CONTROLS CREDIT WORKSHEET (Part 1 of 2) LTG-2C

Project Name *HCC Bldg. C*	Date *7/19/2010*

POWER ADJUSTMENT FACTORS (PAF) FOR NON-DAYLIGHT CONTROLS

A Separate PAF Worksheet Must Be Filled Out for Conditioned and Unconditioned Spaces. Control Credits listed on this schedule are only for:
☑ **CONDITIONED SPACES** ☐ **UNCONDITIONED SPACES**

A	**B**	**C**	**D**	**E**	**F**	**G**
Room # Zone ID Areas	Lighting Control Description[1]	Plan Reference	Room Area (ft²)	Watts of Control Lighting	Power Adjustments Factor[2]	Control Credit Watts (E x F)
Corridor # 2/Vestibu	*Occ Sensor - Hallway*	*L2*	*630*	*120*	*0.25*	*30*
Corridor # 2/Vestibu	*Occ Sensor - Hallway*	*L3*	*630*	*270*	*0.25*	*68*
Library	*Occ Sensor - Library*	*L1*	*1,476*	*1,080*	*0.15*	*162*
Corridor # 1	*Occ Sensor - Hallway*	*L2*	*360*	*120*	*0.25*	*30*
					PAGE TOTAL	*290*

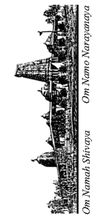
Note: Conditioned and Unconditioned Space shall be separately totaled	Building total of non-daylight control credit watts for all pages of LTG-2C Page 1 of 2	
	Enter building total of all daylight controls credit watts from LTG-2C Page 2 of 2	*0*
	BUILDING TOTAL OF ALL CONTROL CREDIT WATTS (FOR BOTH NON-DAYLIGHT AND DAYLIGHT CONTROL CREDITS) Enter in LTG-1C; Page 4: Lighting Control Credit as appropriate for CONDITIONED or UNCONDITIONED Spaces	*290*

1. Description shall be consistent with Type of Control defined in Table 146-C
2. Power Adjustment Factor taken from Table 146-C

KUPPE G. SRINIVAS
No. M18346
Exp. 9/30/12
MECHANICAL

SATISH S. PAMIDI
No. E10472
Exp. 12/31/10
ELECTRICAL

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–07–10	HCCC



NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APincSF.com 09021

TITLE 24
COMPLIANCE FORMS
BUILDING - C

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY: KS/LA
PROJECT:
ARROWHEAD

T24.3B
B

AIR SYSTEM REQUIREMENTS (Part 1 of 2) MECH-2C

Project Name	Date
HCC Bldg. C	7/19/2010

	Indicate Air Systems Type (Central, Single Zone, Package, VAV, or etc...)			
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		AC-C-1	AC-C-2	AC-C-3
Number of Systems		1	1	1
	Indicate Page Reference on Plans or Schedule and indicate the applicable exception(s)			
MANDATORY MEASURES	**T-24 Sections**			
Heating Equipment Efficiency	112(a)	81% AFUE	81% AFUE	80% AFUE
Cooling Equipment Efficiency	112(a)	15.0 SEER / 12.8 EER	15.0 SEER / 12.8 EER	15.0 SEER / 12.7 EER
HVAC Heat Pump Thermostat	112(b), 112(c)	n/a	n/a	n/a
Furnace Controls/Thermostat	112(c), 115(a)	n/a	n/a	n/a
Natural Ventilation	121(b)	Yes	Yes	Yes
Mechanical Ventilation	121(b)	218 cfm	221 cfm	174 cfm
VAV Minimum Position Control	121(c)	No	No	No
Demand Control Ventilation	121(c)	No	No	No
Time Control	122(e)	Programmable Switch	Programmable Switch	Programmable Switch
Setback and Setup Control	122(e)	Setback Required	Setback Required	Setback Required
Outdoor Damper Control	122(f)	Auto	Auto	Auto
Isolation Zones	122(g)	n/a	n/a	n/a
Pipe Insulation	123			
Duct Insulation	124	R-8.0	R-8.0	R-8.0
PRESCRIPTIVE MEASURES				
Calculated Design Heating Load	144(a & b)	n/a	n/a	n/a
Proposed Heating Capacity	144(a & b)	48,000 Btu/hr	48,000 Btu/hr	48,000 Btu/hr
Calculated Design Cooling Load	144(a & b)	n/a	n/a	n/a
Proposed Cooling Capacity	144(a & b)	41,759 Btu/hr	40,695 Btu/hr	25,754 Btu/hr
Fan Control	144(c)	Constant Volume	Constant Volume	Constant Volume
DP Sensor Location	144(c)			
Supply Pressure Reset (DDC only)	144(c)	Yes	Yes	Yes
Simultaneous Heat/Cool	144(d)	No	No	No
Economizer	144(e)	No Economizer	No Economizer	No Economizer
Heat Air Supply Reset	144(f)	Constant Temp	Constant Temp	Constant Temp
Cool Air Supply Reset	144(f)	Constant Temp	Constant Temp	Constant Temp
Electric Resistance Heating[1]	144(g)			
Air Cooled Chiller Limitation	144(i)			
Duct Leakage Sealing. If Yes, a MECH-4-A must be submitted	144(k)	No	No	No

1. Total installed capacity (MBtu/hr) of all electric heat on this project exclusive of electric auxiliary heat for heat pumps. If electric heat is used explain which exception(s) to §144(g) apply.

AIR SYSTEM REQUIREMENTS (Part 1 of 2) MECH-2C

Project Name	Date
HCC Bldg. C	7/19/2010

	Indicate Air Systems Type (Central, Single Zone, Package, VAV, or etc...)			
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		AC-C-4	AC-C-5	AC-C-6
Number of Systems		1	1	1
	Indicate Page Reference on Plans or Schedule and indicate the applicable exception(s)			
MANDATORY MEASURES	**T-24 Sections**			
Heating Equipment Efficiency	112(a)	80% AFUE	80% AFUE	80% AFUE
Cooling Equipment Efficiency	112(a)	15.0 SEER / 12.7 EER	15.0 SEER / 12.7 EER	15.0 SEER / 12.7 EER
HVAC Heat Pump Thermostat	112(b), 112(c)	n/a	n/a	n/a
Furnace Controls/Thermostat	112(c), 115(a)	n/a	n/a	n/a
Natural Ventilation	121(b)	Yes	Yes	Yes
Mechanical Ventilation	121(b)	176 cfm	202 cfm	84 cfm
VAV Minimum Position Control	121(c)	No	No	No
Demand Control Ventilation	121(c)	No	No	No
Time Control	122(e)	Programmable Switch	Programmable Switch	Programmable Switch
Setback and Setup Control	122(e)	Setback Required	Setback Required	Setback Required
Outdoor Damper Control	122(f)	Auto	Auto	Auto
Isolation Zones	122(g)	n/a	n/a	n/a
Pipe Insulation	123			
Duct Insulation	124	R-8.0	R-8.0	R-8.0
PRESCRIPTIVE MEASURES				
Calculated Design Heating Load	144(a & b)	n/a	n/a	n/a
Proposed Heating Capacity	144(a & b)	48,000 Btu/hr	48,000 Btu/hr	48,000 Btu/hr
Calculated Design Cooling Load	144(a & b)	n/a	n/a	n/a
Proposed Cooling Capacity	144(a & b)	25,635 Btu/hr	25,656 Btu/hr	25,915 Btu/hr
Fan Control	144(c)	Constant Volume	Constant Volume	Constant Volume
DP Sensor Location	144(c)			
Supply Pressure Reset (DDC only)	144(c)	Yes	Yes	Yes
Simultaneous Heat/Cool	144(d)	No	No	No
Economizer	144(e)	No Economizer	No Economizer	No Economizer
Heat Air Supply Reset	144(f)	Constant Temp	Constant Temp	Constant Temp
Cool Air Supply Reset	144(f)	Constant Temp	Constant Temp	Constant Temp
Electric Resistance Heating[1]	144(g)			
Air Cooled Chiller Limitation	144(i)			
Duct Leakage Sealing. If Yes, a MECH-4-A must be submitted	144(k)	No	No	No

1. Total installed capacity (MBtu/hr) of all electric heat on this project exclusive of electric auxiliary heat for heat pumps. If electric heat is used explain which exception(s) to §144(g) apply.

WATER SIDE SYSTEM REQUIREMENTS (Part 2 of 2) MECH-2C

Project Name	Date
HCC Bldg. C	7/19/2010

	WATER[2] SIDE SYSTEMS: Chillers, Towers, Boilers, Hydronic Loops			
Item or System Tags (i.e. AC-1, RTU-1, HP-1)[1]				
Number of Systems				
	Indicate Page Reference on Plans or Specification[2]			
MANDATORY MEASURES	**T-24 Sections**			
Equipment Efficiency	112(a)			
Pipe Insulation	123			
PRESCRIPTIVE MEASURES				
Cooling Tower Fan Controls	144(a & b)			
Cooling Tower Flow Controls	144(h)			
Variable Flow System Design	144(h)			
Chiller and Boiler Isolation	144(j)			
CHW and HHW Reset Controls	144(j)			
WLHP Isolation Valves	144(j)			
VSD on CHW, CW & WLHP Pumps>5HP	144(j)			
DP Sensor Location	144(j)			

1. The proposed equipment need to match the building plans schedule or specifications. If a requirement is not applicable, put “N/A” in the column next to applicable section.
2. For each chiller, cooling tower, boiler, and hydronic loop (or groups of similar equipment) fill in the reference to sheet number and/or specification section and paragraph number where the required features are documented. If a requirement is not applicable, put “N/A” in the column next to applicable section.

	Service Hot Water, Pool Heating			
Item or System Tags (i.e. WH-1, WHP, DHW, etc...)[1]		DHW Heater		
Number of Systems		1		
	Indicate Page Reference on Plans or Schedule[2]			
MANDATORY MEASURES	**T-24 Sections**			
SERVICE HOT WATER				
Certified Water Heater	111, 113(a)	Takagi T-K2		
Water Heater Efficiency	113(b)	0.85 EF		
Service Water Heating Installation	113(c)	Controls Req.		
Pipe Insulation	123	n/a		
POOL AND SPA				
Pool and Spa Efficiency and Control	114(a)	n/a		
Pool and Spa Installation	114(b)	n/a		
Pool Heater – No Pilot Light	115(c)	n/a		
Spa Heater – No Pilot Light	115(d)	n/a		
Pipe Insulation	123	Required		

1. The Proposed equipment needs to match the building plans schedule or specifications. If a requirement is not applicable, put “N/A” in the column next to applicable section.
2. For each water heater, pool heater and domestic water loop (or groups of similar equipment) fill in the reference to sheet number and/or specification section and paragraph number where the required features are documented. If a requirement is not applicable, put “N/A” in the column.

ENVELOPE MANDATORY MEASURES: NONRESIDENTIAL ENV-MM

Project Name	Date
HCC Bldg. C	7/19/2010

DESCRIPTION

Building Envelope Measures:

§118(a):	Installed insulating material shall have been certified by the manufacturer to comply with the California Quality Standards for insulating material, Title 20 Chapter 4, Article 3.
§118(c):	All Insulating Materials shall be installed in compliance with the flame spread rating and smoke density requirements of Sections 2602 and 707 of Title 24, Part 2.
§118(f):	The opaque portions of framed demising walls in nonresidential buildings shall have insulation with an installed R-value of no less than R-13 between framing members.
§117(a):	All Exterior Joints and openings in the building that are observable sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed.
§116(a) 1:	Manufactured fenestration products and exterior doors shall have air infiltration rates not exceeding 0.3 cfm/ft.² of window area, 0.3 cfm/ft.² of door area for residential doors, 0.3 cfm/ft.² of door area for nonresidential single doors (swinging and sliding), and 1.0 cfm/ft.² for nonresidential double doors (swinging).
§116(a) 2:	Fenestration U-factor shall be rated in accordance with NFRC 100, or the applicable default U-factor.
§116(a) 3:	Fenestration SHGC shall be rated in accordance with NFRC 200, or NFRC 100 for site-built fenestration, or the applicable default SHGC.
§116(b):	Site Constructed Doors, Windows and Skylights shall be caulked between the unit and the building, and shall be weatherstripped (except for unframed glass doors and fire doors).

MECHANICAL VENTILATION AND REHEAT MECH-3C

Project Name	Date
HCC Bldg. C	7/19/2010

MECHANICAL VENTILATION (§121(b)2)									REHEAT LIMITATION (§144(d))				
	AREA BASIS			OCCUPANCY BASIS					VAV MINIMUM				
A	B	C	D	E	F	G	H	I	J	K	L	M	N
Zone/System	Condition Area (ft^2)	CFM per ft^2	Min CFM By Area B X C	Number Of People	CFM per Person	Min CFM by Occupant E X F	REQ'D V.A. Max of D or G	Design Ventilation Air CFM	50% of Design Zone Supply CFM	B X 0.4 CFM / ft^2	Max. of Columns H, J, K, 300 CFM	Design Minimum Air Setpoint	Transfer Air
Zone -1	1,456	0.15	218	14.6	15.0	218	218	218					
Zone- 1A	630	0.15	95	1.9	0.0	0	95	0					95
AC-C-1						Total	313	218					
Zone-2	1,476	0.15	221	14.8	15.0	221	221	221					
AC-C-2						Total	221	221					
Zone-3	1,160	0.15	174	11.6	15.0	174	174	174					
AC-C-3						Total	174	174					
Zone-4	814	0.15	122	8.1	15.0	122	122	122					
Zone- 4A	360	0.15	54	3.6	15.0	54	54	54					
AC-C-4						Total	176	176					
Zone- 5	560	0.15	84	5.6	15.0	84	84	84					
Zone -5A	784	0.15	118	7.8	15.0	118	118	118					
AC-C-5						Total	202	202					
Zone-6	560	0.50	280	5.6	15.0	84	280	84					196
AC-C-6						Total	280	84					
			Totals						Column I Total Design Ventilation Air				

C	Minimum ventilation rate per Section §121, Table 121-A.
E	Based on fixed seat or the greater of the expected number of occupants and 50% of the CBC occupant load for egress purposes for spaces without fixed setting.
H	Required Ventilation Air (REQ'D V.A.) is the larger of the ventilation rates calculated on an AREA BASIS or OCCUPANCY BASIS (Column D or G).
I	Must be greater than or equal to H, or use Transfer Air (column N) to make up the difference.
J	Design fan supply CFM (Fan CFM) x 50%; or the design zone outdoor airflow rate per §121.
K	Condition area (ft^2) x 0.4 CFM / ft^2; or
L	Maximum of Columns H, J, K, or 300 CFM
M	This must be less than or equal to Column L and greater than or equal to the sum of Columns H plus N.
N	Transfer Air must be provided where the Required Ventilation Air (Column H) is greater than the Design Minimum Air (Column M). Where required, transfer air must be greater than or equal to the difference between the Required Ventilation Air (Column H) and the Design Minimum Air (Column M), Column H minus M.

MECHANICAL EQUIPMENT DETAILS (Part 1 of 2) MECH-5C

Project Name	Date
HCC Bldg. C	7/19/2010

CHILLER AND TOWER SUMMARY

					PUMPS				
Equipment Name	Type	Qty.	Efficiency	Tons	Qty.	GPM	BHP	Premium Eff. Motor	Pump Control
								☐	
								☐	
								☐	

DHW / BOILER SUMMARY

System Name	Type	Distribution	Qty.	Rated Input	Vol. (Gals).	Energy Factor or RE	Standby Loss or Pilot	Tank Ext. R-Value	Status
Takagi T-K2	Instant Gas	Kitchen Pipe Ins	1	185,000	0	0.85	n/a	n/a	New

MULTI-FAMILY CENTRAL WATER HEATING DETAILS

Hot Water Pump				Hot Water Piping Length (ft)			
Control	Qty.	HP	Type	In Plenum	Outside	Buried	Add ½” Insulation
							☐
							☐
							☐

CENTRAL SYSTEM RATINGS

			HEATING			COOLING		
System Name	Type	Qty.	Output	Aux. kW	Efficiency	Output	Efficiency	Status
Trane YHC-048-E3	Split DX	2	48,000	0.0	81% AFUE	49,450	15.0 SEER / 12.8 EER	New
Trane YHC-036-E	Packaged DX	4	48,000	0.0	80% AFUE	37,150	15.0 SEER / 12.7 EER	New

CENTRAL SYSTEM FAN SUMMARY

			SUPPLY FAN			RETURN FAN		
System Name	Fan Type	Economizer Type	CFM	BHP	Premium Eff. Motor	CFM	BHP	Premium Eff. Motor
Trane YHC-048-E3	Constant Volume	No Economizer	1,600	0.32	☐	none		☐
Trane YHC-036-E	Constant Volume	No Economizer	1,200	0.32	☑	none		☐
					☐			☐
					☐			☐
					☐			☐
					☐			☐
					☐			☐

MECHANICAL EQUIPMENT DETAILS (Part 2 of 2) MECH-5C

Project Name	Date
HCC Bldg. C	7/19/2010

ZONE SYSTEM SUMMARY

	SYSTEM					VAV		Fan					
Zone Name	System Name	Type	Qty.	Heating	Cooling	Min CFM Ratio	Reheat Coil	CFM	BHP	Premium Eff. Motor	Fan Cycles	ECM Motor	Outside Air
Zone-3	CAV Box/No Reheat	VAV Box	1	0		100 %	None			☐	☐	☐	
Zone-6	CAV Box/No Reheat	VAV Box	1	0		100 %	None			☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	
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										☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	
										☐	☐	☐	

EXHAUST FAN SUMMARY

EXHAUST FAN					EXHAUST FAN					EXHAUST FAN				
Room Name	Qty.	CFM	BHP	Premium Eff. Motor	Room Name	Qty.	CFM	BHP	Premium Eff. Motor	Room Name	Qty.	CFM	BHP	Premium Eff. Motor
				☐					☐					☐
				☐					☐					☐
				☐					☐					☐
				☐					☐					☐

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–07–10	HCCC

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APincSF.com 09021

TITLE 24
COMPLIANCE FORMS
BUILDING - C

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY: KS/LA

PROJECT:
ARROWHEAD

KUPPE G. SRINIVAS
No. M18346
Exp. 9/30/12

T24.4B

B

ENVELOPE MANDATORY MEASURES: NONRESIDENTIAL — ENV-MM

Project Name: HCC Bldg. C | Date: 7/19/2010

DESCRIPTION

Building Envelope Measures:

§118(a):	Installed insulating material shall have been certified by the manufacturer to comply with the California Quality Standards for insulating material, Title 20 Chapter 4, Article 3.
§118(c):	All Insulating Materials shall be installed in compliance with the flame spread rating and smoke density requirements of Sections 2602 and 707 of Title 24, Part 2.
§118(f):	The opaque portions of framed demising walls in nonresidential buildings shall have insulation with an installed R-value of no less than R-13 between framing members.
§117(a):	All Exterior Joints and openings in the building that are observable sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed.
§116(a) 1:	Manufactured fenestration products and exterior doors shall have air infiltration rates not exceeding 0.3 cfm/ft.² of window area, 0.3 cfm/ft.² of door area for residential doors, 0.3 cfm/ft.² of door area for nonresidential single doors (swinging and sliding), and 1.0 cfm/ft.² for nonresidential double doors (swinging).
§116(a) 2:	Fenestration U-factor shall be rated in accordance with NFRC 100, or the applicable default U-factor.
§116(a) 3:	Fenestration SHGC shall be rated in accordance with NFRC 200, or NFRC 100 for site-built fenestration, or the applicable default SHGC.
§116(b):	Site Constructed Doors, Windows and Skylights shall be caulked between the unit and the building, and shall be weatherstripped (except for unframed glass doors and fire doors).

MECHANICAL MANDATORY MEASURES: NONRESIDENTIAL — MECH-MM

Project Name: HCC Bldg. C | Date: 7/19/2010

Equipment and System Efficiencies

§111:	Any appliance for which there is a California standard established in the Appliance Efficiency Regulations will comply with the applicable standard.
§115(a):	Fan type central furnaces shall not have a pilot light.
§123:	Piping, except that conveying fluids at temperatures between 60 and 105 degrees Fahrenheit, or within HVAC equipment, shall be insulated in accordance with Standards Section 123.
§124:	Air handling duct systems shall be installed and insulated in compliance with Sections 601, 602, 603, 604, and 605 of the CMC Standards.

Controls

§122(e):		Each space conditioning system shall be installed with one of the following:
	1A.	Each space conditioning system serving building types such as offices and manufacturing facilities (and all others not explicitly exempt from the requirements of Section 112 (d)) shall be installed with an automatic time switch with an accessible manual override that allows operation of the system during off-hours for up to 4 hours. The time switch shall be capable of programming different schedules for weekdays and weekends and have program backup capabilities that prevent the loss of the device's program and time setting for at least 10 hours if power is interrupted; or
	1B.	An occupancy sensor to control the operating period of the system; or
	1C.	A 4-hour timer that can be manually operated to control the operating period of the system.
	2.	Each space conditioning system shall be installed with controls that temporarily restart and temporarily operate the system as required to maintain a setback heating and/or a setup cooling thermostat setpoint.
§122(g):		Each space conditioning system serving multiple zones with a combined conditioned floor area more than 25,000 square feet shall be provided with isolation zones. Each zone: shall not exceed 25,000 square feet; shall be provided with isolation devices, such as valves or dampers that allow the supply of heating or cooling to be setback or shut off independently of other isolation areas; and shall be controlled by a time control device as described above.
§122(c):		Thermostats shall have numeric setpoints in degrees Fahrenheit (F) and adjustable setpoint stops accessible only to authorized personnel.
§122(b):		Heat pumps shall be installed with controls to prevent electric resistance supplementary heater operation when the heating load can be met by the heat pump alone
§122(a&b):		Each space conditioning system shall be controlled by an individual thermostat that responds to temperature within the zone. Where used to control heating, the control shall be adjustable down to 55 degrees F or lower. For cooling, the control shall be adjustable up to 85 degrees F or higher. Where used for both heating and cooling, the control shall be capable of providing a deadband of at least 5 degrees F within which the supply of heating and cooling is shut off or reduced to a minimum.

Ventilation

§121(e):	Controls shall be provided to allow outside air dampers or devices to be operated at the ventilation rates as specified on these plans.
§122(f):	All gravity ventilating systems shall be provided with automatic or readily accessible manually operated dampers in all openings to the outside, except for combustion air openings.
§121(f):	Ventilation System Acceptance. Before an occupancy permit is granted for a newly constructed building or space, or a new ventilating system serving a building or space is operated for normal use, all ventilation systems serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance

Service Water Heating Systems

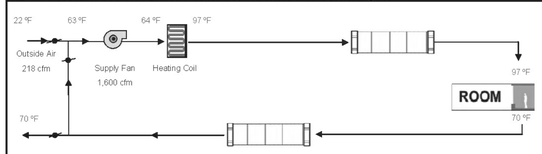
§113(c)		Installation
	3.	Temperature controls for public lavatories. The controls shall limit the outlet Temperature to 110° F.
	2.	Circulating service water-heating systems shall have a control capable of automatically turning off the circulating pump when hot water is not required.

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

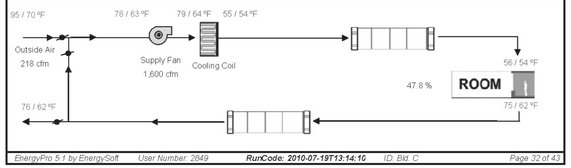
Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C1 | Floor Area: 2,086

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	48,000	Total Room Loads	1,124	22,716	3,292	595	16,730
Total Output (Btuh)	48,000	Return Vented Lighting		0			
Output (Btuh/sqft)	23.0	Return Air Ducts		1,136			836
Cooling System		Return Fan		0			0
Output per System	49,450	Ventilation	218	4,430	1,247	218	11,005
Total Output (Btuh)	49,450	Supply Fan		1,312			-1,312
Total Output (Tons)	4.1	Supply Air Ducts		1,136			836
Total Output (Btuh/sqft)	23.7						
Total Output (sqft/Ton)	506.2	TOTAL SYSTEM LOAD		30,729	4,539		28,096
Air System							
CFM per System	1,600	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	1,600	Trane YHC-048-E3		41,759	5,180		48,000
Airflow (cfm/sqft)	0.77						
Airflow (cfm/Ton)	388.3						
Outside Air (%)	13.7 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		41,759	5,180		48,000
Outside Air (cfm/sqft)	0.10						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Jul 2 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

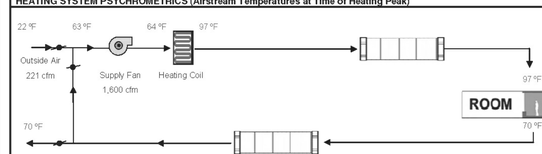


HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

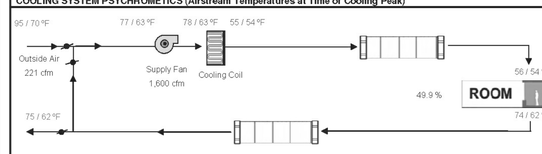
Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C2 | Floor Area: 1,476

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	48,000	Total Room Loads	994	19,428	3,041	411	11,609
Total Output (Btuh)	48,000	Return Vented Lighting		0			
Output (Btuh/sqft)	32.5	Return Air Ducts		971			580
Cooling System		Return Fan		0			0
Output per System	49,450	Ventilation	221	4,797	1,257	221	11,192
Total Output (Btuh)	49,450	Supply Fan		1,312			-1,312
Total Output (Tons)	4.1	Supply Air Ducts		971			580
Total Output (Btuh/sqft)	33.5						
Total Output (sqft/Ton)	358.2	TOTAL SYSTEM LOAD		27,481	4,297		22,649
Air System							
CFM per System	1,600	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	1,600	Trane YHC-048-E3		40,695	5,987		48,000
Airflow (cfm/sqft)	1.08						
Airflow (cfm/Ton)	388.3						
Outside Air (%)	13.8 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		40,695	5,987		48,000
Outside Air (cfm/sqft)	0.15						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Oct 2 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

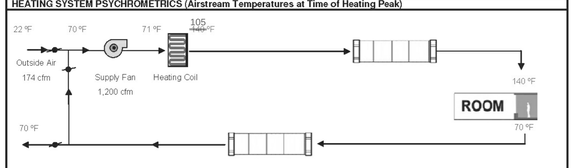


HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

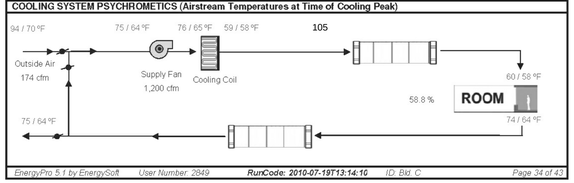
Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-3 | Floor Area: 1,160

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	48,000	Total Room Loads	950	14,538	2,390	163	11,986
Total Output (Btuh)	48,000	Return Vented Lighting		0			
Output (Btuh/sqft)	41.4	Return Air Ducts		727			599
Cooling System		Return Fan		0			0
Output per System	37,150	Ventilation	174	0	0	174	0
Total Output (Btuh)	37,150	Supply Fan		1,312			-1,312
Total Output (Tons)	3.1	Supply Air Ducts		727			599
Total Output (Btuh/sqft)	32.0						
Total Output (sqft/Ton)	374.7	TOTAL SYSTEM LOAD		17,304	2,390		11,872
Air System							
CFM per System	1,200	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	1,200	Trane YHC-036-E		25,754	10,252		48,000
Airflow (cfm/sqft)	1.03						
Airflow (cfm/Ton)	387.6						
Outside Air (%)	14.5 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		25,754	10,252		48,000
Outside Air (cfm/sqft)	0.15						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Jul 2 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

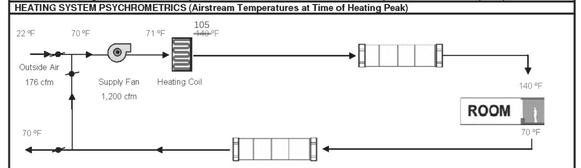


HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

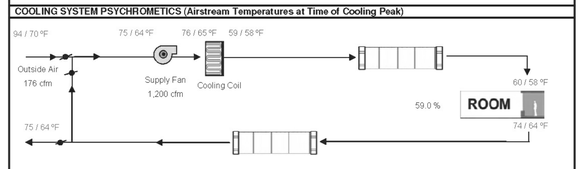
Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-4 | Floor Area: 1,174

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	48,000	Total Room Loads	843	12,965	2,577	147	10,878
Total Output (Btuh)	48,000	Return Vented Lighting		0			
Output (Btuh/sqft)	40.9	Return Air Ducts		648			544
Cooling System		Return Fan		0			0
Output per System	37,150	Ventilation	176	0	0	176	0
Total Output (Btuh)	37,150	Supply Fan		1,312			-1,312
Total Output (Tons)	3.1	Supply Air Ducts		648			544
Total Output (Btuh/sqft)	31.6						
Total Output (sqft/Ton)	379.2	TOTAL SYSTEM LOAD		15,574	2,577		10,653
Air System							
CFM per System	1,200	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	1,200	Trane YHC-036-E		25,635	10,392		48,000
Airflow (cfm/sqft)	1.02						
Airflow (cfm/Ton)	387.6						
Outside Air (%)	14.7 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		25,635	10,392		48,000
Outside Air (cfm/sqft)	0.15						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Jul 4 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

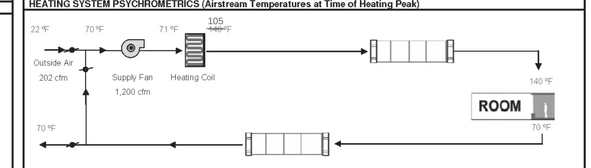


HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

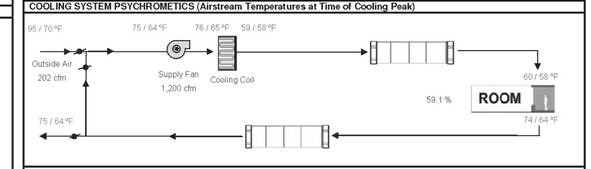
Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-5 | Floor Area: 1,344

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	48,000	Total Room Loads	1,191	18,056	2,769	155	11,407
Total Output (Btuh)	48,000	Return Vented Lighting		0			
Output (Btuh/sqft)	35.7	Return Air Ducts		903			570
Cooling System		Return Fan		0			0
Output per System	37,150	Ventilation	202	0	0	202	0
Total Output (Btuh)	37,150	Supply Fan		1,312			-1,312
Total Output (Tons)	3.1	Supply Air Ducts		903			570
Total Output (Btuh/sqft)	27.6						
Total Output (sqft/Ton)	434.1	TOTAL SYSTEM LOAD		21,174	2,769		11,235
Air System							
CFM per System	1,200	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	1,200	Trane YHC-036-E		25,656	10,242		48,000
Airflow (cfm/sqft)	0.89						
Airflow (cfm/Ton)	387.6						
Outside Air (%)	16.8 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		25,656	10,242		48,000
Outside Air (cfm/sqft)	0.15						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Jul 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

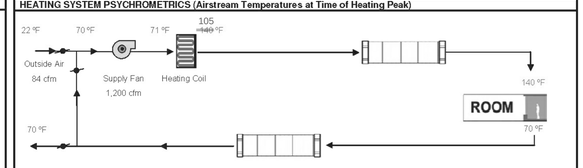


HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

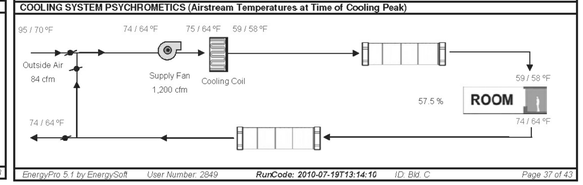
Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-6 | Floor Area: 560

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	48,000	Total Room Loads	489	7,624	1,154	80	5,896
Total Output (Btuh)	48,000	Return Vented Lighting		0			
Output (Btuh/sqft)	85.7	Return Air Ducts		381			295
Cooling System		Return Fan		0			0
Output per System	37,150	Ventilation	84	0	0	84	0
Total Output (Btuh)	37,150	Supply Fan		1,312			-1,312
Total Output (Tons)	3.1	Supply Air Ducts		381			295
Total Output (Btuh/sqft)	66.3						
Total Output (sqft/Ton)	180.9	TOTAL SYSTEM LOAD		9,698	1,154		5,174
Air System							
CFM per System	1,200	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	1,200	Trane YHC-036-E		25,915	9,661		48,000
Airflow (cfm/sqft)	2.14						
Airflow (cfm/Ton)	387.6						
Outside Air (%)	7.0 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		25,915	9,661		48,000
Outside Air (cfm/sqft)	0.15						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Jul 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–07–10	HCCC

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St., Suite 2025
San Francisco, California 94111
Ph (415) 543-8544 Fax (415) 543-0870
E-mail: Mail@APincSF.com 09021

TITLE 24
COMPLIANCE FORMS
BUILDING - C

DATE: 05/28/10
SCALE: AS NOTED
DRAWN BY: KS/LA
PROJECT: ARROWHEAD

T24.5B
B

RAJESH G. SRINIVAS — No. M18346 Exp. 9/30/12 — MECHANICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

105 105 105

ZONE LOAD SUMMARY

Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-1 | Floor Area: 2,086

ZONE LOAD SUMMARY

ZONE NAME	SYSTEM NAME	ZONAL SYSTEM Mult.	CFM	Sensible	Latent	Heating	OA CFM	COOLING PEAK Peak Hr	CFM	Sensible	Latent	HEATING PEAK CFM	Sensible
Zone -1		1.0					218	Jul 3 PM	920	22,753	4,372	403	22,452
Zone- 1A		1.0					0	Jul 2 PM	204	4,834	293	192	5,397
TOTALS			0	0	0	218		Jul 3 PM		27,518	4,665		27,849

(BLOCK LOAD)

ZONE LOAD SUMMARY

Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-2 | Floor Area: 1,476

ZONE LOAD SUMMARY

ZONE NAME	SYSTEM NAME	ZONAL SYSTEM Mult.	CFM	Sensible	Latent	Heating	OA CFM	COOLING PEAK Peak Hr	CFM	Sensible	Latent	HEATING PEAK CFM	Sensible
Zone-2		1.0					221	Aug 3 PM	938	23,264	4,432	411	22,881
TOTALS			0	0	0	221		Aug 3 PM		23,264	4,432		22,881

(BLOCK LOAD)

ZONE LOAD SUMMARY

Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-3 | Floor Area: 1,160

ZONE LOAD SUMMARY

ZONE NAME	SYSTEM NAME	ZONAL SYSTEM Mult.	CFM	Sensible	Latent	Heating	OA CFM	COOLING PEAK Peak Hr	CFM	Sensible	Latent	HEATING PEAK CFM	Sensible
Zone-3		1.0					174	Jul 2 PM	950	14,538	2,390	163	11,986
TOTALS			0	0	0	174		Jul 2 PM		14,538	2,390		11,986

(BLOCK LOAD)

ZONE LOAD SUMMARY

Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-4 | Floor Area: 1,174

ZONE LOAD SUMMARY

ZONE NAME	SYSTEM NAME	ZONAL SYSTEM Mult.	CFM	Sensible	Latent	Heating	OA CFM	COOLING PEAK Peak Hr	CFM	Sensible	Latent	HEATING PEAK CFM	Sensible
Zone-4		1.0					122	Oct 2 PM	629	9,662	1,677	92	6,765
Zone- 4A		1.0					54	Jul 5 PM	237	3,636	900	56	4,113
TOTALS			0	0	0	176		Jul 4 PM		12,965	2,577		10,878

(BLOCK LOAD)

ZONE LOAD SUMMARY

Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-5 | Floor Area: 1,344

ZONE LOAD SUMMARY

ZONE NAME	SYSTEM NAME	ZONAL SYSTEM Mult.	CFM	Sensible	Latent	Heating	OA CFM	COOLING PEAK Peak Hr	CFM	Sensible	Latent	HEATING PEAK CFM	Sensible
Zone- 5		1.0					84	Jul 3 PM	467	7,076	1,154	79	5,794
Zone -5A		1.0					118	Jul 2 PM	725	10,991	1,615	76	5,613
TOTALS			0	0	0	202		Jul 3 PM		18,056	2,769		11,407

(BLOCK LOAD)

ZONE LOAD SUMMARY

Project Name: HCC Bldg. C | Date: 7/19/2010
System Name: AC-C-6 | Floor Area: 560

ZONE LOAD SUMMARY

ZONE NAME	SYSTEM NAME	ZONAL SYSTEM Mult.	CFM	Sensible	Latent	Heating	OA CFM	COOLING PEAK Peak Hr	CFM	Sensible	Latent	HEATING PEAK CFM	Sensible
Zone-6		1.0					84	Jul 3 PM	489	7,624	1,154	80	5,896
TOTALS			0	0	0	84		Jul 3 PM		7,624	1,154		5,896

(BLOCK LOAD)

REVISIONS		BY
A	05-24-10	HCCC
B	08-02-10	BPC
C	HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D	09-22-10	BPC
E	10-07-10	HCCC

Om Namo Narayanaya
Om Namah Shivaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE, LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St., Suite 2020
San Francisco, California 94111
Ph (415) 543-8044 Fax (415) 543-0870
E-mail: Mail@AJPlusSF.com 09021

TITLE 24
COMPLIANCE FORMS
BUILDING - C

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY: KS/LA
PROJECT:
ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER
RUDOLF G. SKRIVAN
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

T24.6B
B

LIGHTING MANDATORY MEASURES: NONRESIDENTIAL — LTG-MM

Project Name	Date
HCC Bldg. C	5/17/2010

Indoor Lighting Measures:

§131(d):	**Shut-off Controls**
1.	For every floor, all interior lighting systems shall be equipped with a separate automatic control to shut off the lighting. This automatic control shall meet the requirements of Section 119 and may be an occupancy sensor, automatic time switch, or other device capable of automatically shutting off the lighting.
2.	Override for Building Lighting Shut-off: The automatic building shut-off system is provided with a manual, accessible override switch in sight of the lights. The area of override is not to exceed 5,000 square feet.
§119(h):	Automatic Control Devices Certified: All automatic control devices specified are certified, all alternate equipment shall be certified and installed as directed by the manufacturer.
§111:	Fluorescent Ballast and Luminaires Certified: All fluorescent fixtures specified for the project are certified and listed in the Directory. All installed fixtures shall be certified.
§131(a):	Individual Room/Area Controls: Each room and area in this building is equipped with a separate switch or occupancy sensor device for each area with floor-to-ceiling walls.
§131(b):	Uniform Reduction for Individual Rooms: All rooms and areas greater than 100 square feet and more than 0.8 watts per square foot of lighting load shall be controlled with bi-level switching for uniform reduction of lighting within the room.
§131(c):	Daylight Area Control: All rooms with windows and skylights that are greater than 250 square feet and that allow for the effective use of daylight in the area shall have 50% of the lamps in each daylit area controlled by a separate switch; or the effective use of daylight cannot be accomplished because the windows are continuously shaded by a building on the adjacent lot. Diagram of shading during different times of the year is included on plans.
§131(c):	Display Lighting. Display lighting shall be separately switched on circuits that are 20 amps or less.6.

Outdoor Lighting Measures:

§130(c)1:	Mandatory lighting power determination for medium base sockets without permanently installed ballasts
§132(a):	All permanently installed luminaires with lamps rated over 100 Watts either have a lamp efficacy of at least 60 lumens per Watt or are controlled by a motion sensor.
§132(b):	All Luminaires with lamps rated greater than 175 Watts in hardscape area, including parking lots, building entrances, canopies, and all outdoor sales areas meet the Cutoff Requirements.
§132(c)1:	All permanently installed outdoor lighting meets the control requirements listed.
§132(c):	Building facades, parking lots, garages, canopies, and outdoor sales areas meet the Multi-Level Lighting Requirements listed.

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–07–10	HCCC

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Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
501 Cambridge Ave., Suite 201
San Francisco, C., Building 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APmdSF.com 09021

TITLE 24
COMPLIANCE FORMS
BUILDING - C

REGISTERED PROFESSIONAL ENGINEER
SATISH S. PAMIDI
No. E10472
Exp. 12/31/10
ELECTRICAL
STATE OF CALIFORNIA

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY: KS/LA
PROJECT:
ARROWHEAD

T24.7B
B