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RESEARCH REPORT: RR 25251-T
(CSI #08620)

Expires: April 1, 2012
Issued Date: March 1, 2010
Code: 2008 LABC

GENERAL APPROVAL – Reevaluation/Technical Modification - Solatube Tubular Daylighting Device (TDD) Skylights

DETAILS

Solatube Tubular Daylighting Device (TDD) Skylights include:

- The Solatube Brighten Up® Series Models 160 DS, 290 DS daylighting systems.
- The Solatube SolaMaster® Series Models 330 DS-O, 330 DS-C, 750 DS-O and 750 DS-C daylighting systems. The "O" and "C" designation refers to Open (O) and Closed (C) ceiling configurations.

The TDD models by tube diameter size are:

- 10 inch diameter: 160 DS
- 14 inch diameter: 290 DS
- 21 inch diameter: 330 DS-O, 330 DS-C, 750 DS-O, 750 DS-C

These TDD models consist of three primary assemblies:

- the roof dome assembly
- reflective tube assembly
- diffuser assembly.

These assemblies are detailed in Figures 1, 2, and 3.

1. Roof Dome Assembly

Primary components of the dome assembly are the dome, dome ring or tube ring and flashing.

- 1.1. A single dome manufactured from impact resistant acrylic polymer is utilized on Models 160 DS, 290 DS, 330 DS and 750 DS. The acrylic material is classified as CC2 when tested in accordance with ASTM D635.

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- 1.2. A dome ring (160 DS & 290 DS) manufactured from impact resistant Acrylic polymer or tube ring (330 DS & 750 DS) manufactured from PVC, connects the inner reflective tube, inner dome and outer dome to the flashing. The acrylic and PVC material are classified as CC2 when tested in accordance with ASTM D635.
- 1.3. A powder coated steel dome edge protection band is utilized to protect the dome edge on installations on roof assemblies with fire classifications of A, B or C.
- 1.4. Powder coated metal flashings are self mounting and are available in pitched and flat configurations. For models 160 DS and 290 DS, the flat configuration is available in both 4 and 6 inch lengths. For models 330 DS and 750 DS, only flat configurations in 4, 8 and 11 inch lengths are available. A support flashing with integral curb cap is available for the 290 DS, 330 DS and 750 DS models. Also, a support flashing for non-corrugated metal roof is available for 330 DS and 750 DS

2. Reflective Tube Assembly

Reflective tubes and angle adapters have a high reflectance interior tube finish and are manufactured from .015" thick aluminum for 160 DS and 290 DS, and .018" for 330 DS and 750 DS. Two inch wide polymer/foil tape is utilized at all joints between tube sections and at vertical seams of each tube.

2.1. Daylight Dimmer Assembly

A switch operated, electrically driven Daylight Dimmer Assembly is available for installation above the bottom tube on 160 DS / 290 DS and above the round-to-square for 330 DS / 750 DS. The Dimmer Assembly is used to restrict natural light from entering the room. See Figure 5.

2.2. Light Kit Assembly

Switch operated, electric light kits are available for installation into the bottom tube for the 160 DS and 290 DS models only. The kits contain either an incandescent or fluorescent light bulb. See Figure 4.

3. Diffuser Assembly.

The Diffuser Assemblies are either single or dual glazed with acrylic or polycarbonate plastic diffusers classified as a CC2 plastic material when tested in accordance with ASTM D635. Diffusers have a flame spread index not exceeding 200 and a smoke development index not exceeding 450 when tested in accordance with ASTM E 84.

A dress (trim) ring is mounted over the assembly edge for aesthetic purposes

The ceiling ring is manufactured from injection molded impact resistant acrylic and is used to connect the reflective tubing and diffusers to the interior room ceiling.

The approval is subject to the following conditions:

1. Installation must comply with this report; the manufacturer's published installation instructions and 2008 Los Angeles Building Code Sections 2405 and 2610.
2. The maximum allowable loads are as described in Tables 1 and 2.

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3. Solatube Tubular Daylighting Devices are produced in Vista, California, under a quality control program with inspections by Keystone Certification, Inc. (AA-612).

DISCUSSION

The report is in compliance with 2008 Los Angeles Building Code.

The report is temporarily approved for one year pending the ASTM D635 testing to classify the type of plastic of Reflective Tube Assembly.

The technical modification is to change the reference from ICC-ES report ESR 2253 to this approval which is based on test and ICC Acceptance Criteria AC-16, dated February, 2008.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval will remain effective provided the Evaluation Report is maintained valid and unrevised with the issuing organization. Any revisions to the report must be submitted to this Department, with appropriate fee, for review in order to continue the approval of the revised report.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this Approval have been met in the project in which it is to be used.



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Attachment: Details (6 Pages)

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Table 1 – Maximum Allowable Design Loads and Applicable Codes

Model Series	Model No	Dia. (inch)	Dome Thickness (inch)	IBC	
				Wind Loads (psf) ^{1,2}	Snow Load (psf) ^{1,2,3}
Solatube Brighten-Up® Series	160 DS	10	0.125	+70 -60	+150
	290 DS	14	0.125		
Solatube SolaMaster® Series	330 DS-O	21	0.168	+70 -70	
	330 DS-C	21	0.168		
	750 DS-O	21	0.210		
	750 DS-C	21	0.210		

¹ Positive (+) loads are directed inward; negative (-) are directed outward.

² Values indicated are positive and negative design pressure ratings.

³ Allowable design loads for consideration of water penetration are limited to those values indicated under Wind Loads.

**Table 2
 Anchorage Descriptions for Recognized Wind Uplift Design Pressures**

Model #s	Anchorage	Substrate	Anchor Description and Quantity
160 DS 290 DS	Metal Flange to wood curb	SPF (S.G. ≥ .42) wood curb	Qty 8 #10 x 2" Screw
	Metal Flange to wood deck	5/8" Type 2 Plywood	Qty 8 #10 x 2" Screw
	Metal Flange to Metal Deck	22 gauge steel 33ksi Min Yield	Qty 8 #10 TEKS
330 DS-O ¹ 330 DS-C ¹ 750 DS-O 750 DS-O	Metal Flange to wood curb	SPF (S.G. ≥ .42) wood curb	Qty 16 #10 x 2" Screw
	Metal Flange to wood deck	5/8" Type 2 Plywood	Qty 16 #10 x 2" Screw
	Metal Flange to Metal Deck	22 gauge steel 33ksi Min Yield	Qty 16 #10 TEKS

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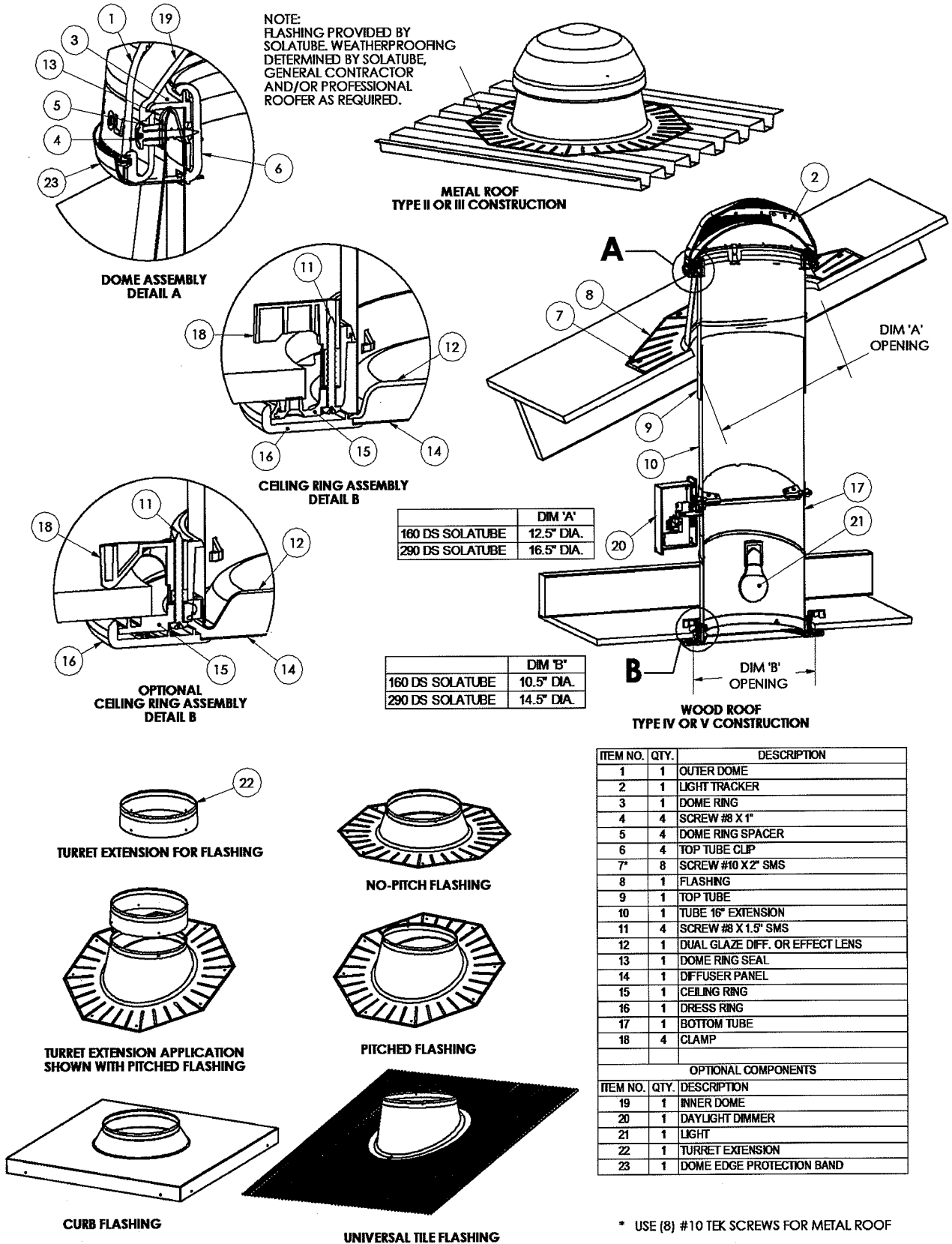


FIGURE 1 - 160 DS & 290 DS SOLATUBE WITH DETAILS

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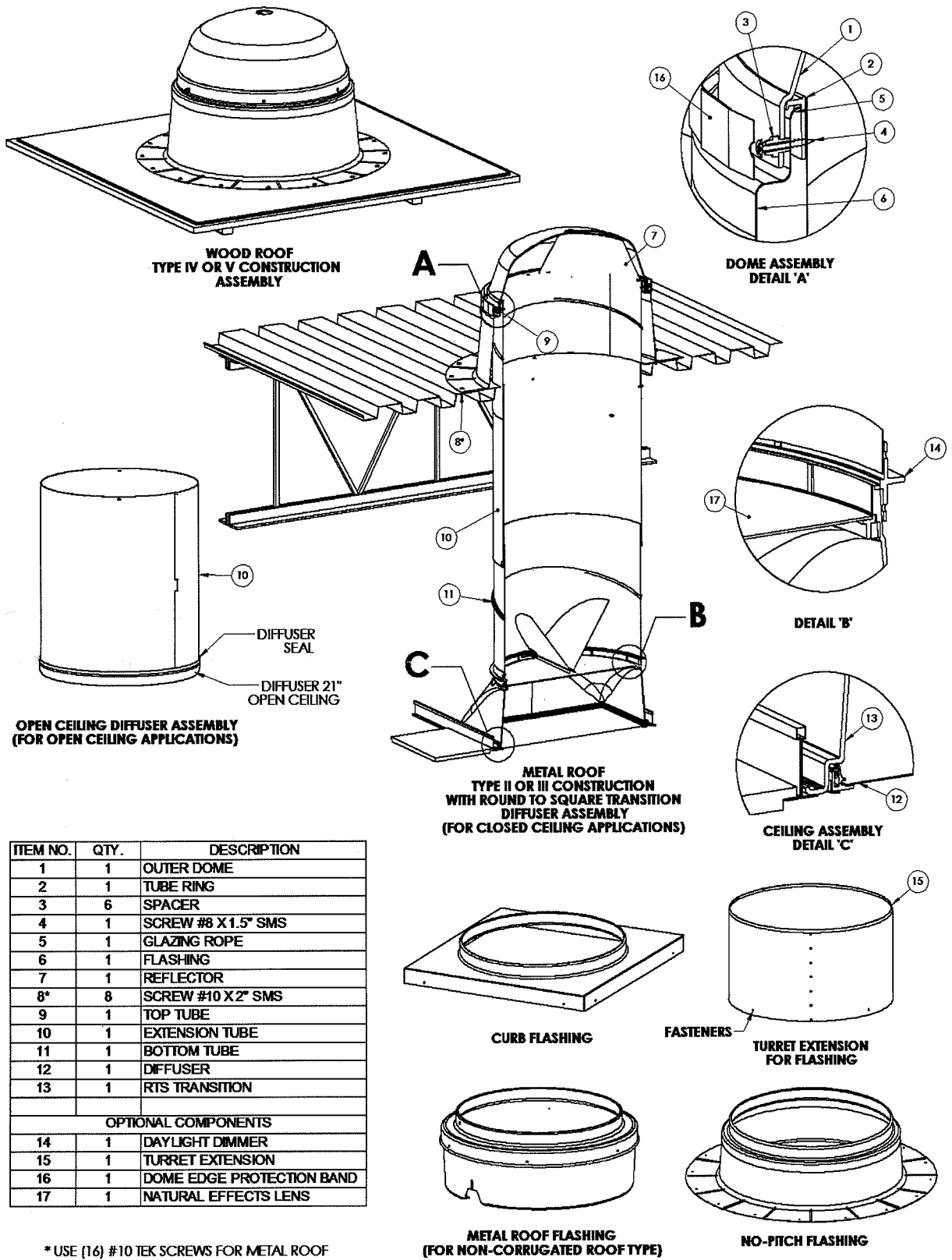


FIGURE 2 -330 DS SOLATUBE WITH DETAILS

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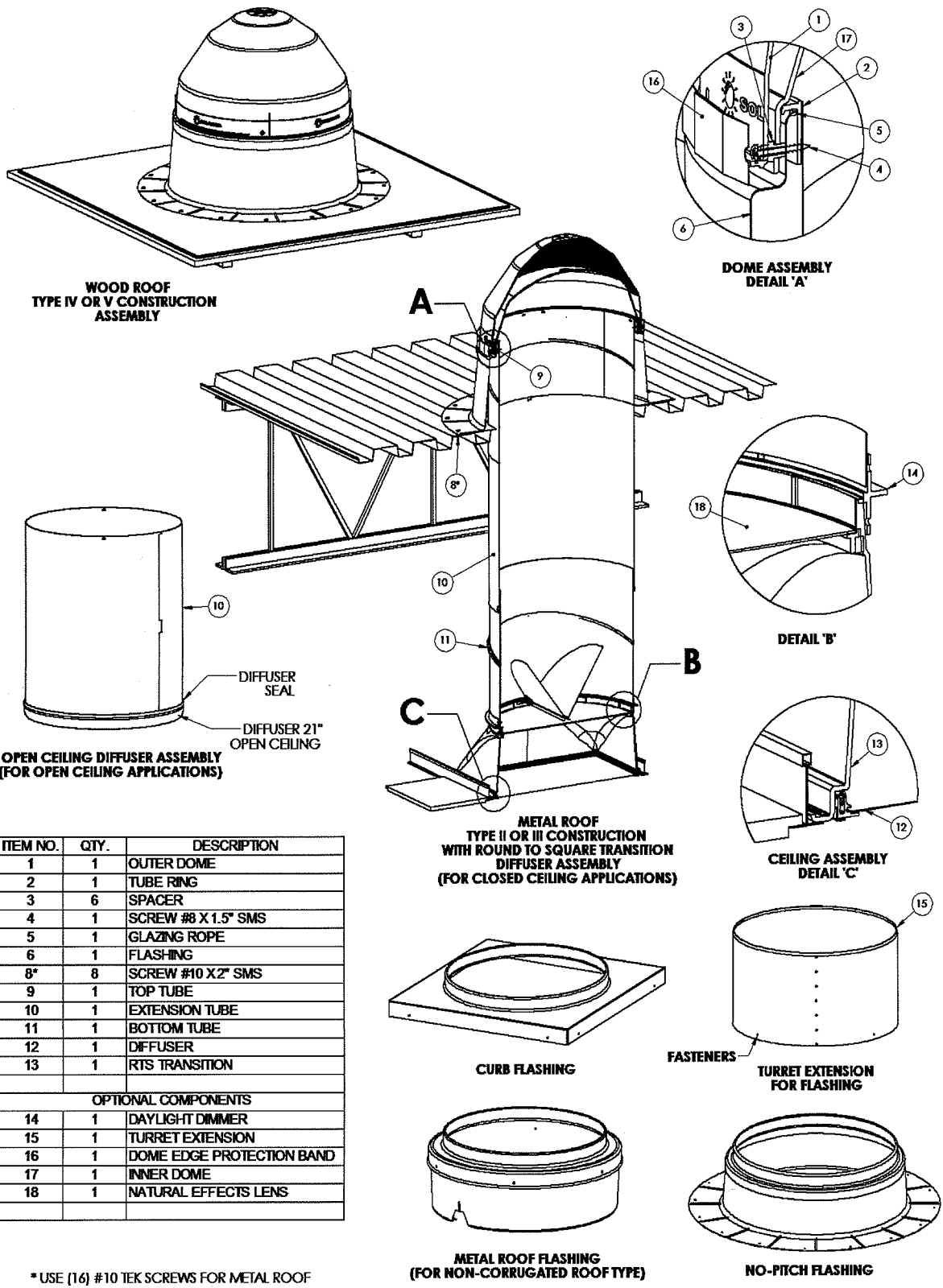
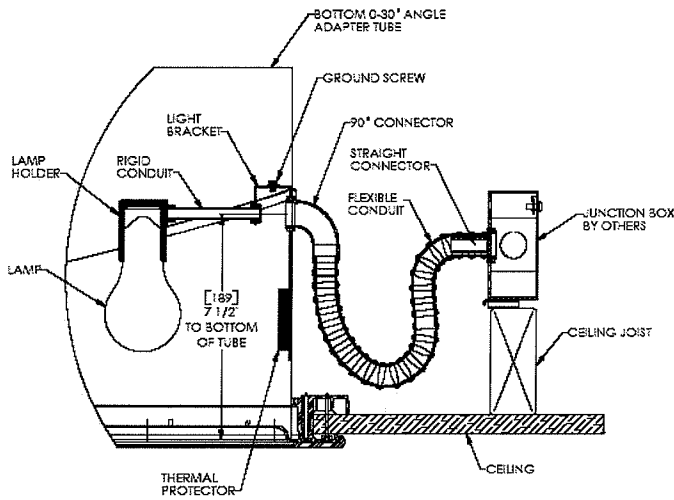
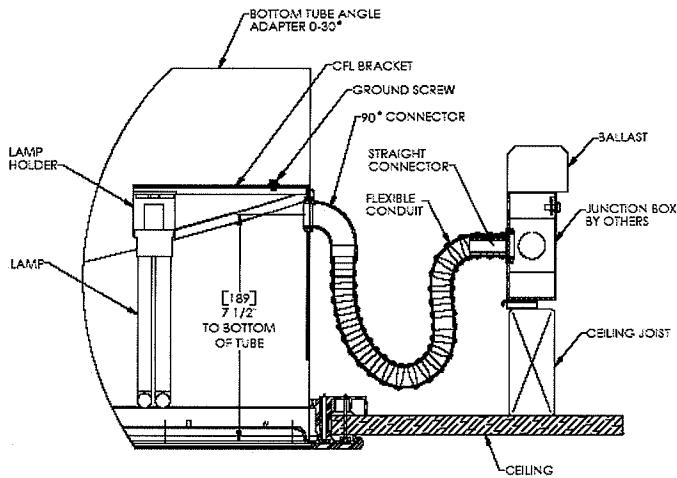
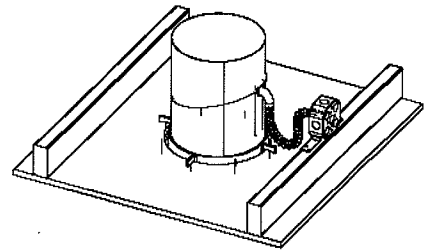


FIGURE 3 - 750 DS SOLATUBE WITH DETAILS

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Incandescent Lamp Assembly



Compact Fluorescent Lamp Assembly

Notes:

1) Evaluation of these Light Fixtures for compliance to applicable electrical codes is not part of this report.

Figure 4 - Typical Solatube Light Kit Assemblies

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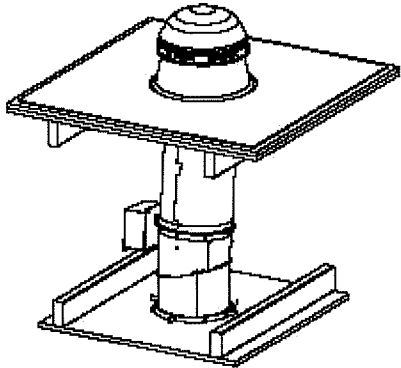
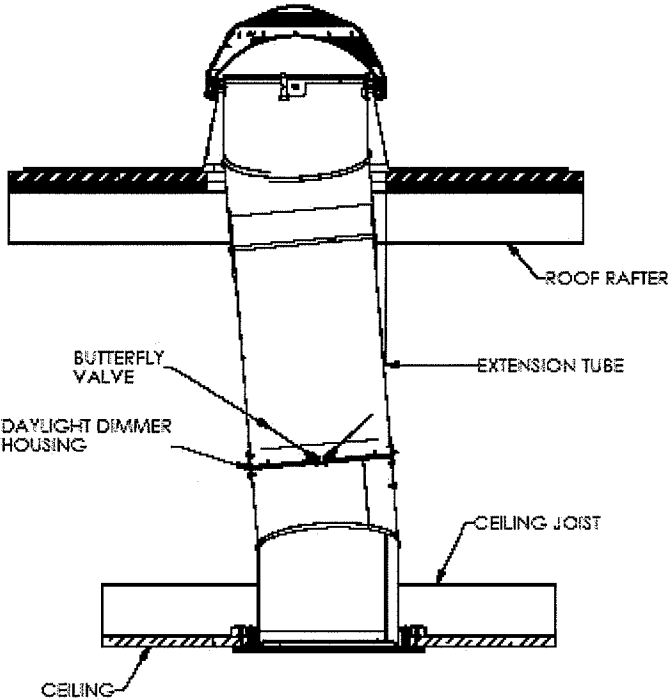


Figure 5 - Typical Solatube Daylight Dimmer Assembly