



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

APPLICATION FOR HCAI PREAPPROVAL OF
MANUFACTURER'S CERTIFICATION (OPM)

OFFICE USE ONLY

APPLICATION #: OPM-0694

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: ☒ New ☐ Renewal/Update

Manufacturer Information

Manufacturer: Skytron

Manufacturer's Technical Representative: Bob Vreeland

Mailing Address: 5085 Corporate Exchange Blvd SE., Grand Rapids, MI 49512

Telephone: (616) 656-1189 Email: bvreeland@skytron.us

Product Information

Product Name: Lumos Series (Non-Motorized) Surgical Lights

Product Type: Light Fixture

Product Model Number: L5-27,L5TV-27,L5-35,L5TV-35,L5-43,L5TV-43,L5-51,L5TV-51,L55-35/27,L55TV-35/27,L55-43/35,L55TV-43/35,L55-51/43,L55TV-51/43,L555-43/35/27,L555TV-43/35/27,L555-51/43/35,L555TV-51/43/35

General Description: Surgical Lights

Applicant Information

Applicant Company Name: Critical Structures, Inc.

Contact Person: Eric Stovner

Mailing Address: 1350 Coronado Ave., Long Beach, CA 90804

Telephone: (310) 530-3050 Email: estovner@critical-structures.com

Title: Principal

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY





DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

Registered Design Professional Preparing Engineering Recommendations

Company Name: CRITICAL STRUCTURES

Name: Eric Stovner

California License Number: S4204

Mailing Address: 1350 Coronado Ave., Long Beach, CA 90804

Telephone: (310) 530-3050

Email: estovner@critical-structures.com

HCAI Special Seismic Certification Preapproval (OSP)

☐ Special Seismic Certification is preapproved under OSP

OSP Number: _____

Certification Method

Testing in accordance with: ☐ ICC-ES AC156 ☐ FM 1950-16

☐ Other(s) (Please Specify): _____

*Use of criteria other than those adopted by the California Building Standards Code, 2022 (CBSC 2022) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC 2022 may be used when approved by HCAI prior to testing.

☒ Analysis

☐ Experience Data

☐ Combination of Testing, Analysis, and/or Experience Data (Please Specify): _____

HCAI Approval

Date: 4/9/2024

Name: William Staehlin

Title: Senior Structural Engineer

Condition of Approval (if applicable): _____

"A healthier California where all receive equitable, affordable, and quality health care"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY



HCAI OPM-0694

MANUFACTURER: SKYTRON

EQUIPMENT TYPE: CEILING MOUNTED BOOM AND SURGICAL LIGHTS (NON-MOTORIZED)

OPM-0694 SKYTRON LUMOS SERIES GENERAL NOTES:

1. THIS HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2022. THE DESIGN FORCES FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2022 AND ASCE 7-16 FOR STRUCTURES IN SEISMIC DESIGN CATEGORY B, C, D, E & F. STRUCTURES IN SEISMIC DESIGN CATEGORY A ARE EXEMPT FROM THE REQUIREMENTS OF THIS REPORT.
2. SEISMIC CRITERIA USED: $S_{DS} = 2.2$, $I_p = 1.5$, $a_p = 1.0$, $R_p = 1.5$ (OTHER MECHANICAL AND ELECTRICAL COMPONENTS) $z/h \leq 1.0$, $E_h = 2.62$, AND $E_v = 0.44$.
3. SUPPORT AND ATTACHMENT FORCES ARE DETERMINED USING CBC 2022 SECTION 1617A.1.23 & ASCE 7-16 CHAPTER 13 "SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS". AN OVERSTRENGTH FACTOR $\Omega_o = 1.5$ IS USED FOR CONCRETE MATERIALS PER CBC 2022 SECTION 1617A.1.23 & ASCE 7-16 TABLE 13.6-1. LOADS SHOWN ARE STRENGTH DESIGN LOADS.
4. THE PRE-APPROVAL IS FOR THE SEISMIC SUPPORTS AND ATTACHMENTS FOR THE UNIT TO THE STRUCTURE. IT DOES NOT ADDRESS OTHER LOADS
5. STEEL MATERIALS: ANGLES AND PLATE ASTM A36, SKYTRON "SURGICAL LIGHT FIXTURE/MOUNTING FLANGE" PLATE FCD 450, SKYTRON "ADAPTER" PLATE ASTM A36, WELDING ELECTRODES 70 KSI TENSILE STRENGTH, THREADED ROD ASTM A193 Gr.B7, PLATE BOLTS SAE GRADE 5, BRACE BOLTS ARE ASTM A307, NUTS ASTM A194 Gr.2H, AND WASHERS ASTM F436.
6. CONCRETE SLABS:
 - 6.a. FOR ELEVATED SOLID CONCRETE SLABS: $5\frac{1}{2}$ " THICKNESS OF NORMAL WEIGHT CONCRETE WITH 3,000 PSI MINIMUM STRENGTH.
 - 6.b. METAL DECK: 3" DEEP COMPOSITE STEEL DECK, 20 GAGE MINIMUM, $4\frac{1}{2}$ " MINIMUM BOTTOM FLUTE WIDTH AND FLUTE SPACING IS 12", WITH $2\frac{1}{2}$ " SAND LIGHT WEIGHT CONCRETE COVER AT 3,000 PSI MINIMUM STRENGTH.
7. POST-INSTALLED CONCRETE ANCHORS.
 - 7.a. ATTACHMENT IS TO BE MADE WITH THE ANCHORS LISTED BELOW AND INSTALLED AS DESCRIBED IN THE CORRESPONDING ICC REPORT.

ANCHOR DIAMETER	ANCHOR TYPE	ICC REPORT No.	CONCRETE TYPE	MIN. f'_c (PSI)	EFFECTIVE EMBED. (IN.)	INSTALLATION/TORQUE TEST (FT.-LBS.)
$5/8$ "	HILTI KWIK BOLT TZ2	4266	NORMAL WEIGHT / SAND LIGHTWEIGHT	3,000	2.75	40

- 7.b. TESTING AND SPECIAL INSPECTION OF EXPANSION ANCHORS SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY EMPLOYED BY THE FACILITY OWNER PER CBC 1704A & 1910A.5 AND CAC 7-149. ALL REPORTS SHALL BE SENT TO THE INSPECTOR OF RECORD, OWNER, AND THE ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE. AT LEAST 50% OF THE ANCHORS SHALL BE TESTED BY EITHER TORQUE BASED OR DIRECT PULL TENSION. IF ANY ANCHOR FAILS, TEST UNTIL TWENTY (20) CONSECUTIVE ANCHORS INSTALLED BY THE SAME TRADE PASS, THEN RESUME THE INITIAL TEST FREQUENCY.
 - 7.c. ACCEPTANCE CRITERIA:
TORQUE BASED: ANCHORS TESTED WITH A CALIBRATED TORQUE WRENCH SHALL ATTAIN THE SPECIFIED TORQUE WITHIN 1/2 TURN OF THE NUT.
8. LUMOS SURGICAL LIGHTS THAT ARE PART OF THIS OPM ARE ATTACHED TO THE SKYTRON "SURGICAL LIGHT FIXTURE/MOUNTING FLANGE" PLATE.



HCAI OPM-0694

**SKYTRON LUMOS
SURGICAL LIGHTS
STANDARD SERIES**

SHEET 1 OF 11



REVISIONS DATE

DATE: 03-28-2024

PROJECT: 23-602

ENGINEER: RO

DRAFTER: MC

4/9/2024

OPM-0694: Reviewed for Code Compliance by William Staehlin

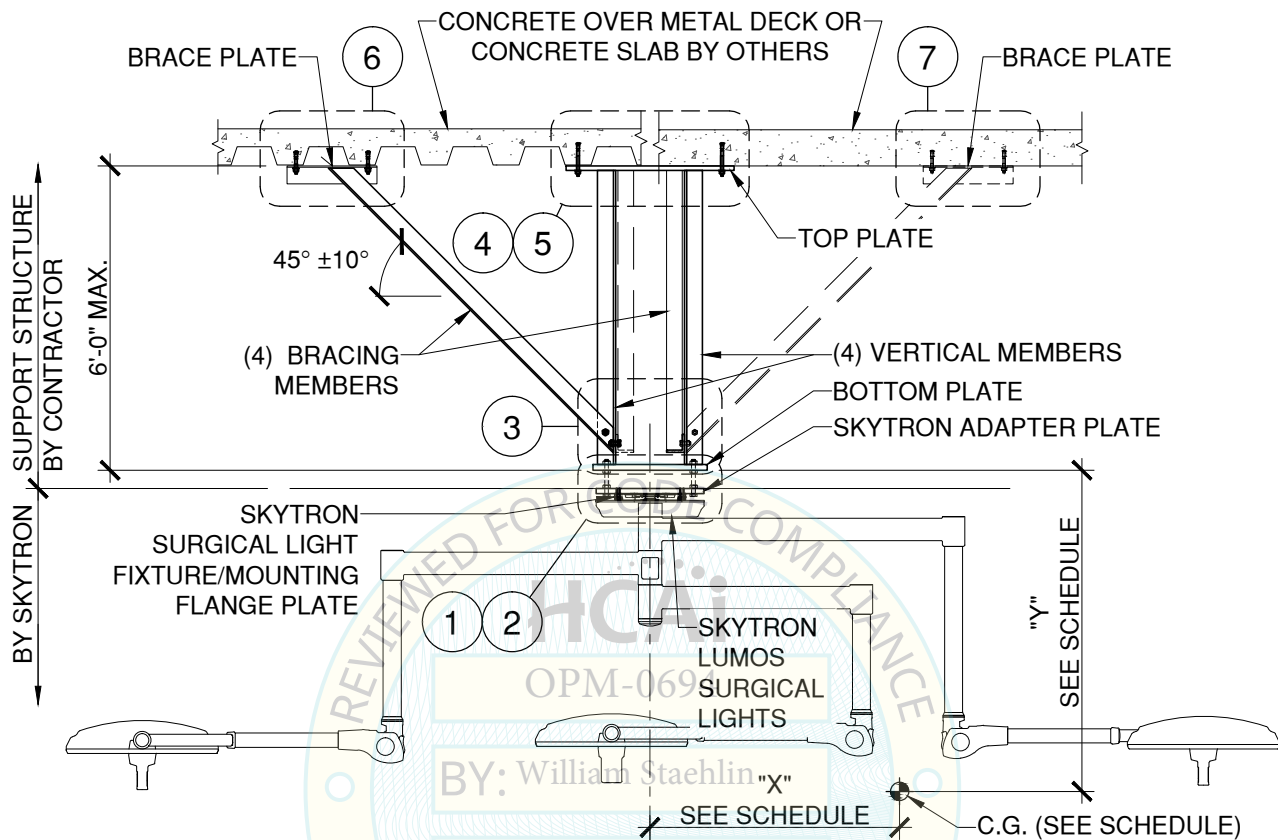
OPM-0694 SKYTRON LUMOS SERIES ATTACHMENT NOTES:

1. THIS HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2022. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2022.
2. BRACE ARM INCLINATION MAY VARY FROM 35° TO 55° FROM HORIZONTAL.
3. PERIODIC SPECIAL INSPECTION PER CBC 2022 SECTION 1705A AND TABLE 1705A.3 INCLUDING VERIFICATION OF ANCHOR TYPE, ANCHOR DIMENSIONS, CONCRETE TYPE, CONCRETE COMPRESSIVE STRENGTH, ANCHOR SPACING, EDGE DISTANCES, CONCRETE MEMBER THICKNESS, TIGHTENING TORQUE, HOLE DIMENSIONS, ANCHOR EMBEDMENT AND ADHERENCE TO THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. IN ADDITION, FOLLOW THE PROVISIONS OF THE 2022 CALIFORNIA BUILDING CODE SECTION 1910A.5 BY CONFIRMING THE INSTALLATION TORQUE SPECIFIED BY THE MANUFACTURER. TESTING IS NOT TO OCCUR UNTIL A MINIMUM OF 24 HOURS HAS ELAPSED AFTER THE INSTALLATION OF THE SUBJECT ANCHORS. TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR. TEST 50% OF THE ANCHORS FOR EACH PIECE OF EQUIPMENT. USING A CALIBRATED TORQUE WRENCH VERIFY THE INSTALLATION TORQUE IS OBTAINED WITHIN $\frac{1}{2}$ TURN OF THE NUT. REPORT OF TEST RESULTS ARE TO BE SUBMITTED TO THE ENFORCEMENT AGENCY. THE S.E.O.R. SHALL PROVIDE REMEDIAL ANCHORAGE DETAILS IN THE EVENT THAT AN ANCHOR FAILS TO MEET THE TEST REQUIREMENTS.
4. WELDS ARE TO BE VISUALLY INSPECTED BY A QUALIFIED WELDING INSPECTOR.
5. STRENGTH DESIGN WAS USED FOR ANCHOR FORCE CALCULATIONS INCLUDING Ω_o PER ACI 318-19 WHERE REQUIRED FOR ATTACHMENT TO CONCRETE.
6. EXERCISE DUE CARE WHEN DRILLING POST-INSTALLED ANCHORS TO AVOID DAMAGING CONCRETE REINFORCEMENT OR TENDONS. SCAN THE AREA WITH A NON-DESTRUCTIVE METHOD PRIOR TO CUTTING.
7. PROVIDE STANDARD NUTS FOR ALL RODS AND BOLTS. PROVIDE FULL THREAD ENGAGEMENT (MINIMUM OF 3 THREADS BEYOND NUTS) OF RODS.

RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD OF THE BUILDING:

1. CONFIRM THE MATERIAL PROPERTIES AND THICKNESS OF THE CONCRETE SLAB TO WHICH THE EQUIPMENT IS ATTACHED MEETS OR EXCEEDS THE MINIMUM REQUIREMENTS OF THIS OPM.
2. PROVIDE A PLAN FOR INSPECTION OF SUPPORTS AND ATTACHMENTS AND VERIFY ITS IMPLEMENTATION.
3. CONFIRM THE SPECIFIED MINIMUM CONCRETE EDGE DISTANCES ARE MAINTAINED BASED ON THE ACTUAL EQUIPMENT LOCATION. VERIFY THAT EXISTING OR NEW ANCHORS ARE AN ADEQUATE DISTANCE FROM THIS UNIT'S ATTACHMENT.
4. VERIFY THAT THE EXISTING STRUCTURE IS ADEQUATE FOR THE IMPOSED DEAD, LATERAL, AND TENSION FORCES SHOWN IN ADDITION TO ALL OTHER LOADS.
5. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH CBC 2022 AND WITH DETAILS IN THIS OPM INCLUDING MATERIALS AND DIMENSIONS OF THE SUPPORT ATTACHMENTS TO STRUCTURE.
6. VERIFY THAT THE PROJECT SPECIFIC S_{DS} AND z/h VALUES RESULT IN SEISMIC FORCES (E_h AND E_v) THAT DO NOT EXCEED THE VALUES SHOWN IN THESE DETAILS.



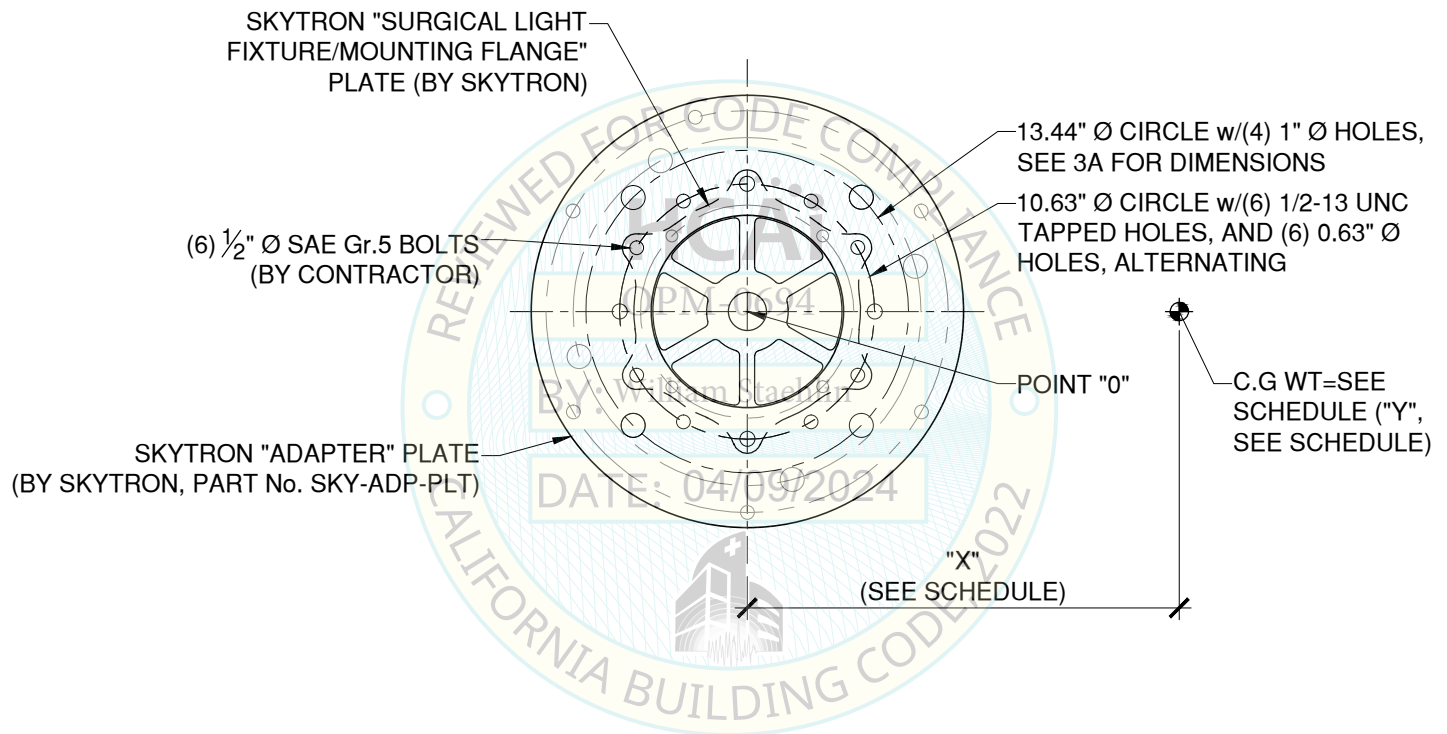


ELEVATION OF LUMOS SURGICAL LIGHTS WITH SUPPORT STRUCTURE

NOTES:

- FORCES ARE DETERMINED PER 2022 CALIFORNIA BUILDING CODE AND ASCE 7-16; STRENGTH DESIGN IS USED ($S_{DS} = 2.20$, $a_p = 1.0$, $I_p = 1.5$, $R_p = 1.5$, $\Omega_0 = 1.5$, $z_h/\leq 1$).
HORIZONTAL FORCE (E_h) = $2.62 W_p$
VERTICAL FORCE (E_v) = $0.44 W_p$
- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THIS PRE-APPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGN TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.

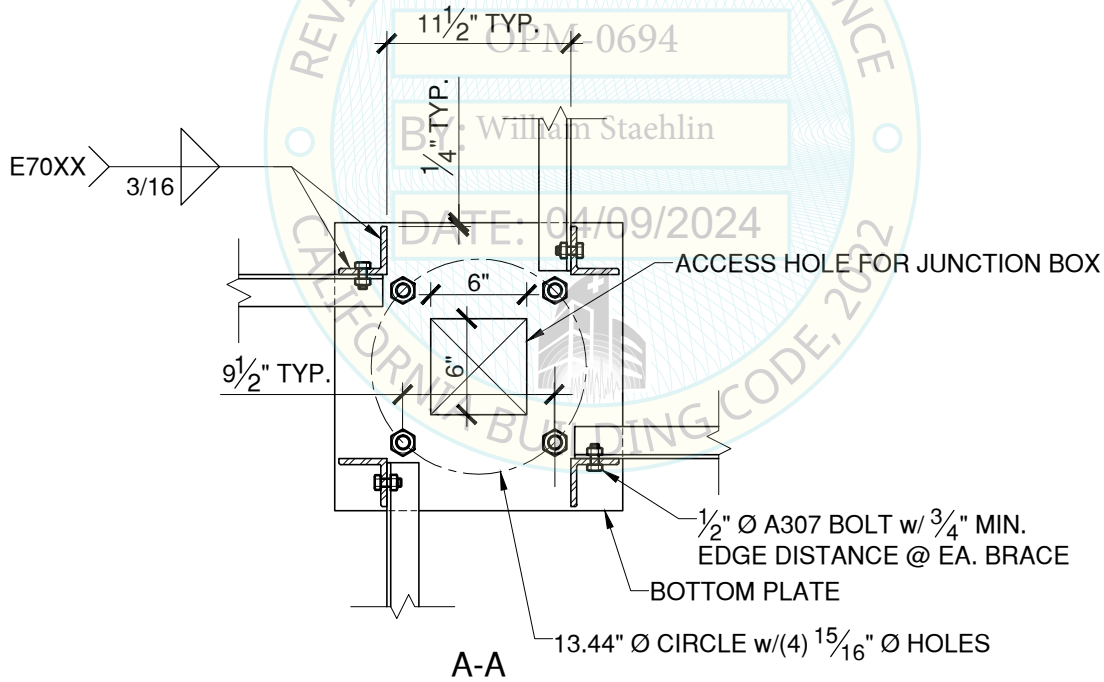
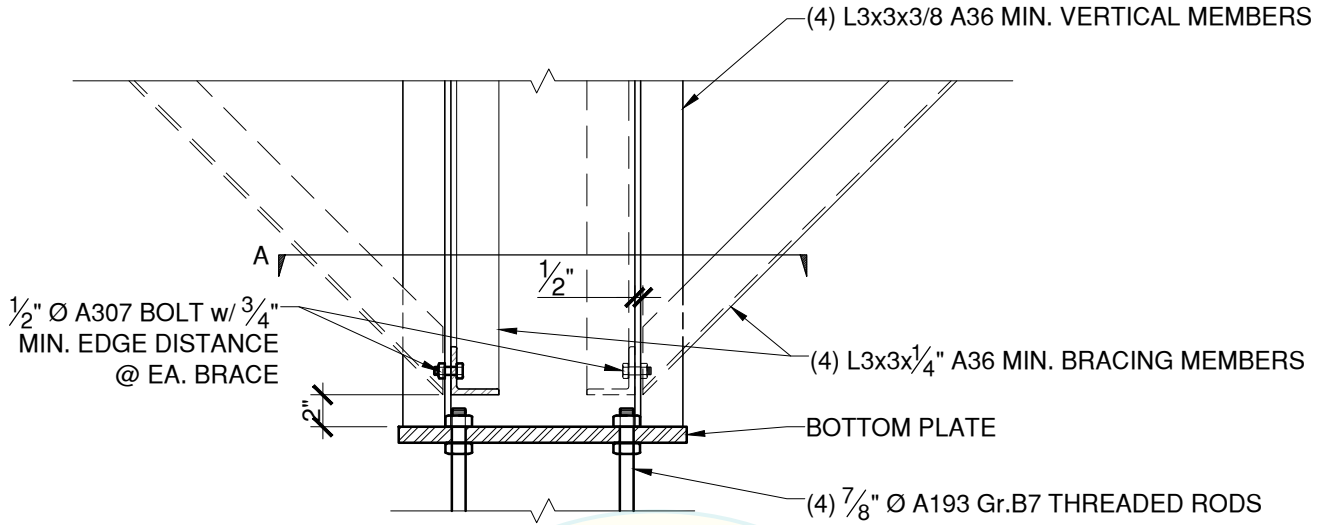
SUPPORT STRUCTURE BY CONTRACTOR



SKYTRON PLATES

2

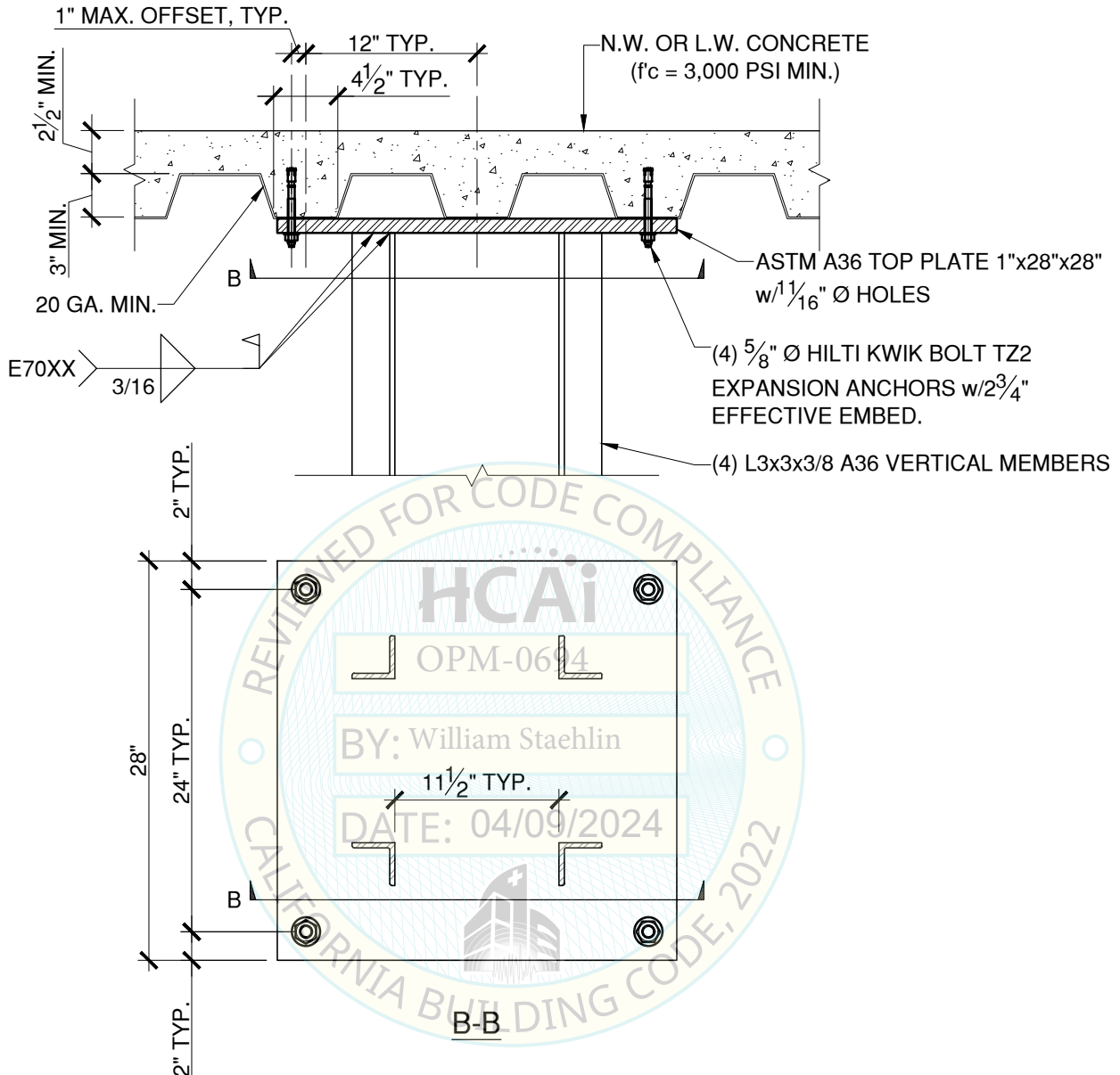
SUPPORT STRUCTURE BY CONTRACTOR



BOTTOM PLATE

3

SUPPORT STRUCTURE BY CONTRACTOR



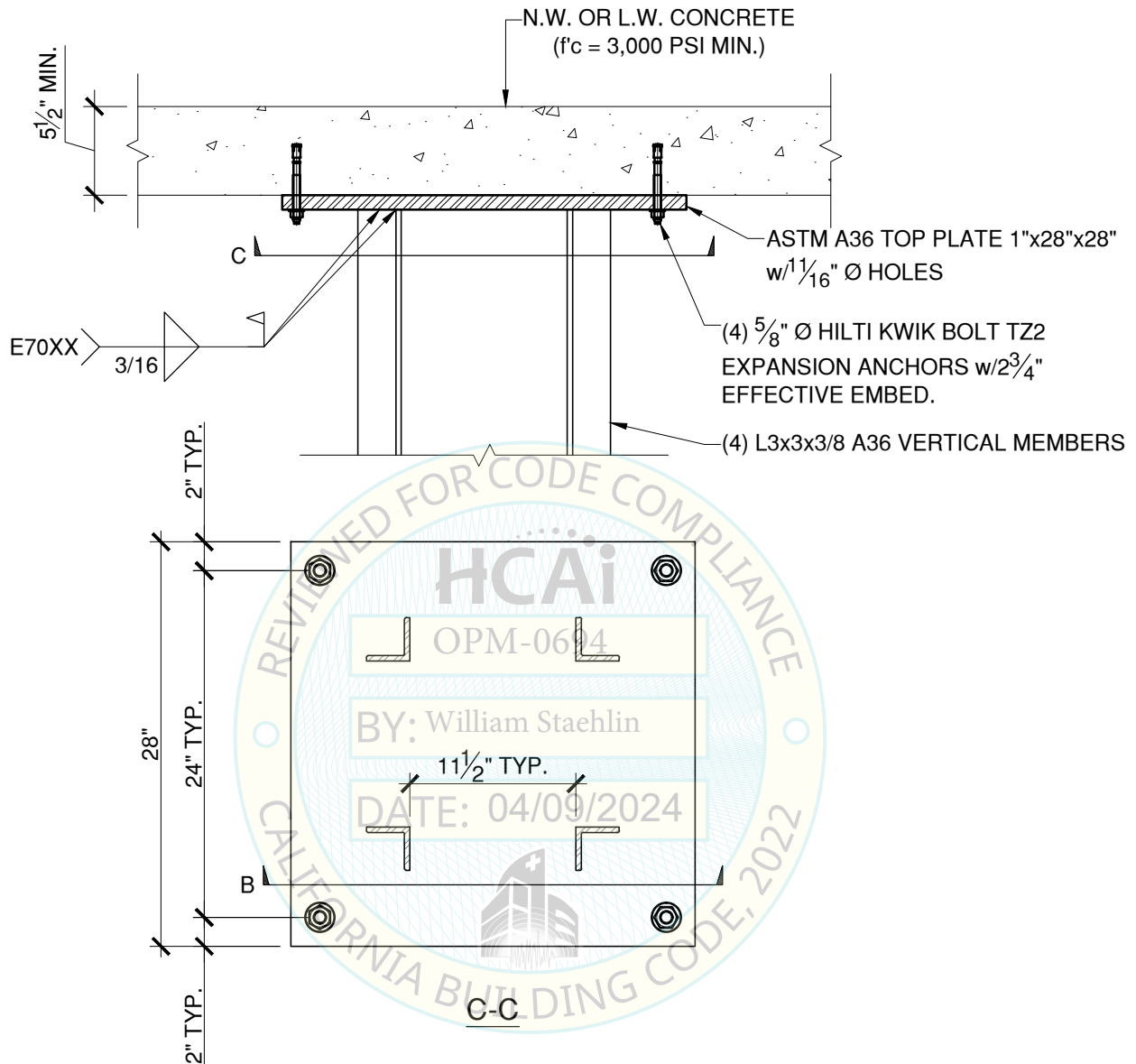
TOP PLATE @ CONCRETE OVER METAL DECK

4

NOTES:

1. $V_{ANCHOR} = 71 \text{ LBS.}$ & $T_{ANCHOR} = 1,658 \text{ LBS.}$ FORCES ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: $D_L = 1.2$, $F_{PV} = 0.44W_P$, $F_{PH} = 2.62W_P$, $\Omega_O = 1.5$. MAXIMUM LOAD EFFECT ARE USED FOR DESIGN.
2. STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGN TO SUPPORT FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.

SUPPORT STRUCTURE BY CONTRACTOR

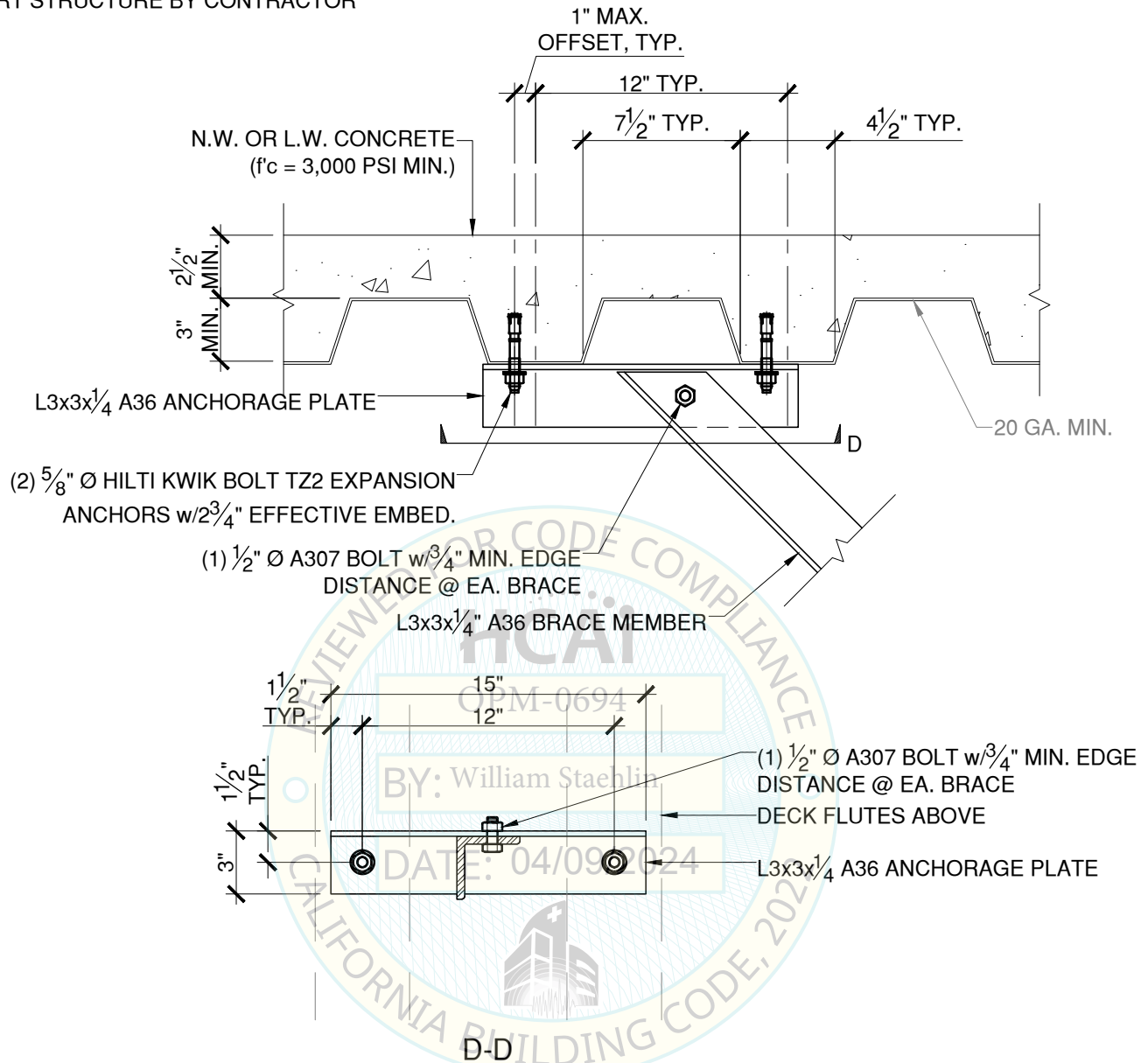
TOP PLATE @ CONCRETE SLAB

5

NOTES:

1. $V_{ANCHOR} = 71$ LBS. & $T_{ANCHOR} = 1,658$ LBS. FORCES ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: $D_L = 1.2$, $F_{PV} = 0.44W_P$, $F_{PH} = 2.62W_P$, $\Omega_O = 1.5$. MAXIMUM LOAD EFFECT ARE USED FOR DESIGN.
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SUPPORT STRUCTURE BY CONTRACTOR



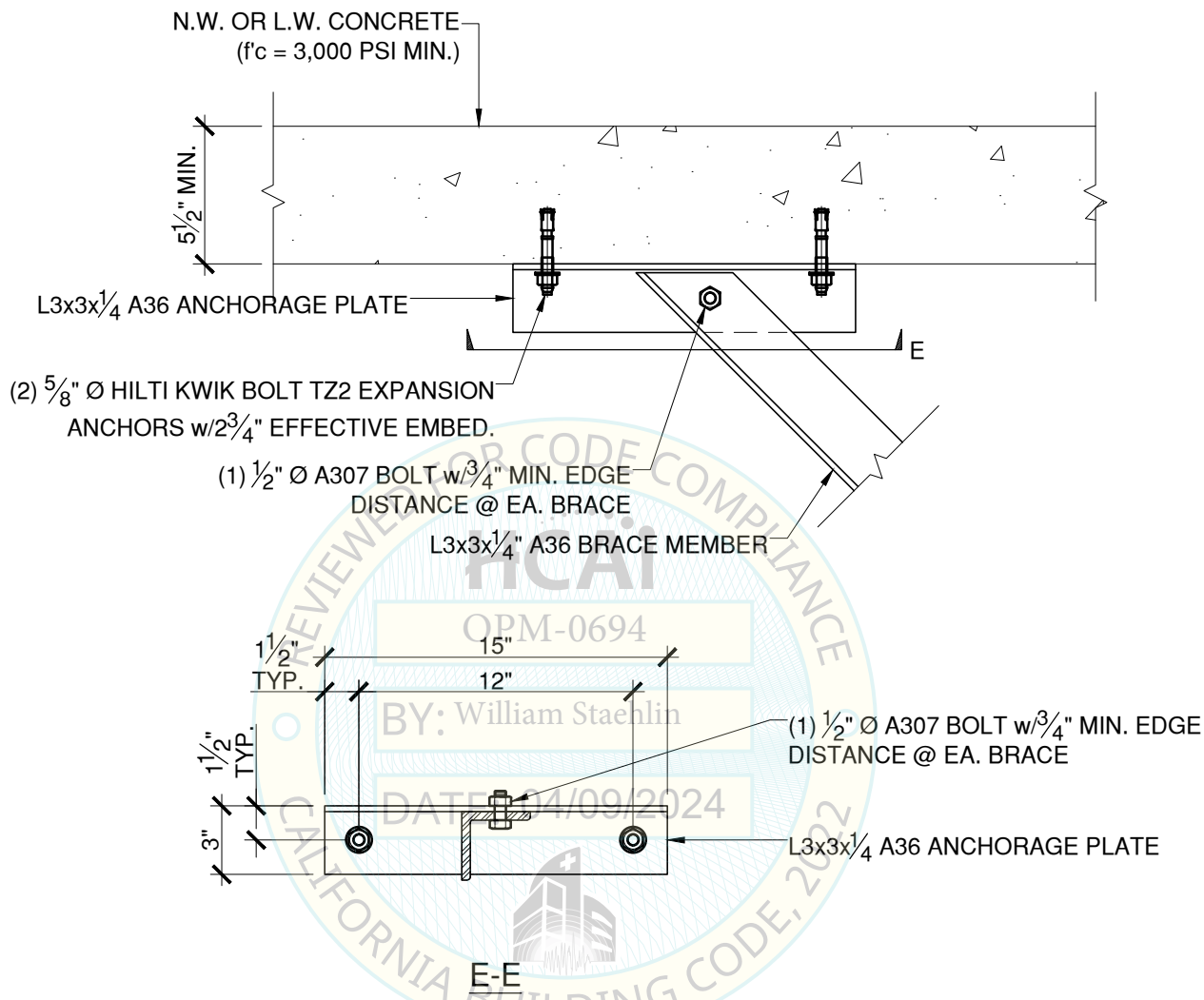
BRACE PLATE @ CONCRETE OVER METAL DECK

6

NOTES:

1. $V_{ANCHOR} = 515$ LBS. & $T_{ANCHOR} = 484$ LBS. FORCES ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: $D_L = 1.2$, $F_{PV} = 0.44W_P$, $F_{PH} = 2.62W_P$, $\Omega_O = 1.5$. MAXIMUM LOAD EFFECT ARE USED FOR DESIGN.
2. STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGN TO SUPPORT FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.

SUPPORT STRUCTURE BY CONTRACTOR



BRACE PLATE
@ CONCRETE SLAB

7

NOTES:

1. $V_{ANCHOR} = 515$ LBS. & $T_{ANCHOR} = 484$ LBS. FORCES ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: $D_L = 1.2$, $F_{PV} = 0.44W_P$, $F_{PH} = 2.62W_P$, $\Omega_O = 1.5$. MAXIMUM LOAD EFFECT ARE USED FOR DESIGN.
2. STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGN TO SUPPORT FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



HCAI OPM-0694

SHEET 10 OF 11

SKYTRON LUMOS
SURGICAL LIGHTS
STANDARD SERIES



REVISIONS	DATE
DATE: 03-28-2024	
PROJECT: 23-602	
ENGINEER: RO	
DRAFTER: MC	

4/9/2024


OPM-0694: Reviewed for Code Compliance by William Staehlin

12 of 13

SKYTRON LUMOS SERIES				
MODEL NO.	ARM 1 LENGTH (IN.)	ARM 2 LENGTH (IN.)	ARM 3 LENGTH (IN.)	CAMERA (Y/N)
SERIES L5				
L5-27	27	-	-	N
L5-35	35	-	-	N
L5-43	43	-	-	N
L5-51	51	-	-	N
L5TV-27	27	-	-	Y
L5TV-35	35	-	-	Y
L5TV-43	43	-	-	Y
L5TV-51	51	-	-	Y
SERIES L55				
L55-35/827	27	35	-	N
L55-43/35	35	43	-	N
L55-51/43	43	51	-	N
L55TV-35-27	27	35	-	Y
L55TV-43/35	35	43	-	Y
L55TV-51/43	43	51	-	Y
SERIES L555				
L555-43/35/27	27	35	43	N
L555-51/43/35	35	43	51	N
L555TV-43/35/27	27	35	43	Y
L555TV-51/43/35	35	43	51	Y



F 11



REGISTERED PROFESSIONAL ENGINEER
ERIC CHRISTIAN STOVNER
No. S 4204
STRUCTURAL
STATE OF CALIFORNIA

William Stovner

OPM-0694: Reviewed for Code Compliance by William Stash...