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

OFFICE USE ONLY
APPLICATION #: OPM-0465-13

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: ☒ New ☐ Renewal ☐ Update to Pre-CBC 2013 OPA Number: _____

Manufacturer Information

Manufacturer: Steris

Manufacturer's Technical Representative: LeCoq, Sylvain

Mailing Address: 116 Avenue De Magudas, Le Haillan 33185 France

Telephone: +33(0)5 56939494/LS (0)2 38848540 Email: Sylvain_LeCoq@steris.com

Product Information

Product Name: HarmonyCare Booms

Product Type: Surgical equipment columns and supply heads

Product Model Number: See OPM for model numbers Single Mount FA, SC, Tandem Mount FA, SC – FA, SC, FA, SC – M Series Lights, FA, SC – G Series Lights, Tandem Mount FA, SC – G Series Lights, Tandem Mount FA, SC FA, SC – Hexalux Light, Triple Mount FA, SC FA, SC – Hexalux Light

General Description: HarmonyCare Surgical Booms (equipment columns and supply heads) offer multiple options including single, tandem and triple drops. Maximum weight capacity is provided with easy of movement and precision Placement with electromechanical brakes and robust bearings.

Applicant Information

Applicant Company Name: ISAT Seismic Bracing

Contact Person: William V Joerger

Mailing Address: 1020 Crews Road, Suite Q, Matthews NC 28105

Telephone: 510-714-0216 Email: wvjoerger@isatsb.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant: WVJoerger Date: 31 January, 2018

Title: Principal Structural Engineer Company Name: ISAT Seismic Bracing

OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

Registered Design Professional Preparing Engineering Recommendations

Company Name: ISAT Seismic Bracing

Name: William V Joerger California License Number: SE4545

Mailing Address: 1020 Crews Road, Suite Q, Matthews NC 28105

Telephone: 510-714-0216 Email: wvjoerger@isatsb.com

OSHPD Special Seismic Certification Preapproval (OSP)

☐ Special Seismic Certification is preapproved under OSP-
(Separate application for OSP is required)

☐ Special Seismic Certification is not preapproved

Certification Method(s)

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

☐ Other* (Please Specify):

*Use of criteria other than those adopted by the California Building Standards Code, 2016 (CBSC 2016) 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 2016 may be used when approved by OSHPD prior to testing.

☒ Analysis

☐ Experience Data

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

List of Attachments Supporting the Manufacturer's Certification

☐ Test Report ☒ Drawings ☒ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Manufacturer's certified drawings

OFFICE USE ONLY – OSHPD APPROVAL VALID FOR CBC 2016 & ALL PRE-2016 CODE BASED PROJECTS

Signature: Date: 07-06-2018

Print Name: Jeffrey Kikumoto

Title: SSE

Condition of Approval (if applicable):

TOTAL SUPPORT

Innovation • Engineering • BIM • Fabrication

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Submittal Documents

OSHPD OPM-0465-13

INSTALLATION DRAWINGS

HARMONYCARE BOOMS FOR EQUIPMENT AND LIGHTS

STERIS

ISAT
1020 Crews Road Suite Q
Matthews, N.C. 28105
704-841-4080

05 Jul 18

FILE NO.: CLT-0118-003 *"Empowered by Experience"* REV 2

TOTAL SUPPORT
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OSHPD OPM-0465-13

DRAWING INDEX

DRAWING INDEX

OSHPD OPM-0465-13

MANUFACTURE: STERIS

EQUIPMENT TYPE: CEILING MOUNTED BOOMS

FOR EQUIPMENT AND SURGICAL LIGHTS (NON-MOTORIZED)

GENERAL NOTES:

1. THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2016. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2016.
2. SEISMIC CRITERIA USED: S_{DS} = 2.5 I_P = 1.5 ap = 1.0 Rp = 1.5 z/h ≤ 1.0 FpH = 3.00 AND FpV = 0.50.
3. SUPPORT AND ATTACHMENT FORCES ARE DETERMINED USING ASCE 7-10 CHAPTER 13 "SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS". AN OVERSTRENGTH FACTOR Ω_0 = 1.5 IS USED FOR CONCRETE MATERIALS PER ASCE 7-10 SUPPLEMENT 1 TABLE 13.6-1. LOADS SHOWN ARE STRENGTH DESIGN LOADS PER CBC 2016 SECTION 1605A.2.
4. THIS PREAPPROVAL COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF THE EQUIPMENT TO THE STRUCTURE.
5. STEEL MATERIALS: ANGLES AND PLATE ASTM A36, ROUND HSS ASTM A500 GRADE B (FY = 42 KSI), RECTANGULAR HSS ASTM A500 GRADE B (FY = 46 KSI), WELDING ELECTROIDS E70XX. ALL THREAD ROD ASTM A36, NUTS ASTM A563, WASHERS ASTM F436. BOLTS SUPPLIED BY STERIS ARE ASTM A193 GD B7.
6. CONCRETE SLABS:
   a. FOR ELEVATED SOLID CONCRETE SLABS: 6" THICKNESS OF NORMAL WEIGHT CONCRETE WITH 4000 PSI MINIMUM STRENGTH.
   b. METAL DECK: 3" DEEP COMPOSITE STEEL DECK, 20 GAGE MINIMUM, 4 1/2 INCH MINIMUM BOTTOM FLUTE WIDTH AND FLUTE SPACING IS 12", WITH 3 1/4 INCH SAND LIGHT WEIGHT CONCRETE CONCRETE COVER AT 4000 PSI MINIMUM STRENGTH.
7. POST-INSTALLED CONCRETE ANCHORS: HILTI KWIK BOLT TZ (ESR-1917) 5/8" DIAMETER x 4 3/4" MIN. HOLE DEPTH (4" EFFECTIVE EMBEDMENT) AND 60 FT-LBS INSTALLATION TORQUE; 12" EDGE DISTANCE. ANCHOR SPACING IS SHOWN ON THE DRAWINGS INCLUDED IN THIS OPM.
8. EXERCISE DUE CARE WHEN DRILLING POST-INSTALLED ANCHORS TO AVOID DAMAGING CONCRETE REINFORCEMENT OR TENDONS.

OPM-0465-13 STERIS HARMONYCARE BOOM GENERAL NOTES

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM V. JOERGER
S 4545
05 Jul 18

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DATE: 02/05/18	
REVISED BY: WVJ	
DATE: 07/05/18	
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SCALE N.T.S.	**PAGE** GEN NOTES

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OSHPD OPM-0465-13

MANUFACTURE: STERIS

EQUIPMENT TYPE: CEILING MOUNTED BOOMS

FOR EQUIPMENT AND SURGICAL LIGHTS (NON-MOTORIZED)

ATTACHMENT NOTES:

1. THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2016. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2016.
2. BRACE ARM INCLINATION MAY VARY FROM 30° TO 60° FROM HORIZONTAL.
3. PERIODIC SPECIAL INSPECTION PER CBC 2013 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 2016 CALIFONIA BUILDING CODE SECTION 1910A.5.4 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 1/2 TURN OF THE NUT. REPORT OF TEST RESULTS ARE TO BE SUBMITTED TO THE ENGORCEMENT AGENGY AND OSHPD. THE SEOR SHALL POVIDE 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 PER ACI 318-14 WHERE REQUIRED FOR ATTACHMENT TO CONCRETE.
6. PROVIDE FULL THREAD ENGAGEMENT OF NUT AND WASHER.

RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD

1. CONFIRM THE MATERIAL PROPERTIES AND THICKNESS OF THE CONCRETE SLAB TO WHICH THE EQUIPMENT IS ATTACHED MEETS THE 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 EXISITNG STRUCTURE IS ADEQUATE FOR THE IMPOSED DEAD, LATERAL AND TENSION FORCES SHOWN IN ADDTION TO ALL OTHER LOADS.
5. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH CBC 2013 AND WITH THE OPM-0465-13 DETAILS INCLUDING MATERIALS AND DIMENSIONS OF THE SUPPORT WHERE THE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN.
6. VERIFY THAT THE PROJECT SPECIFIC S_{DS} AND z/h VALUES RESULT IN SEISMIC FORCES (Eh AND Ev) DO NOT EXCEED THE VALUES SHOWN IN THESE DETAILS.

OPM-0465-13 STERIS HARMONYCARE BOOM ATTACHMENT NOTES

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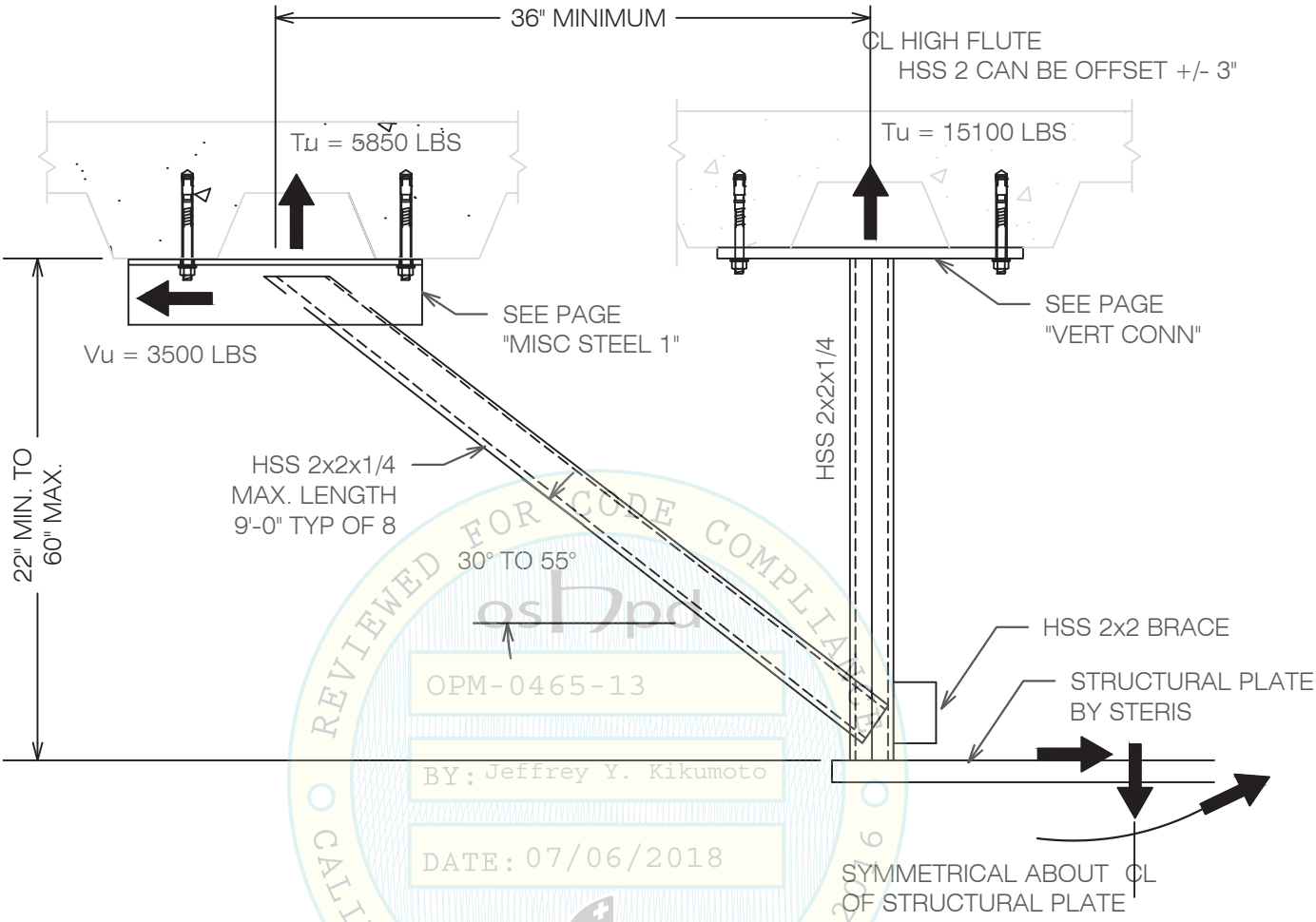

SECTION VIEW AT BRACE AND VERTICAL SUPPORT CONNECTION
INSTALLER IS TO PROVIDE ALL MATERIALS ABOVE THE STERIS STRUCTURAL PLATE

OPM-0465-13 STERIS HARMONYCARE BOOMS AT METAL DECK SLAB

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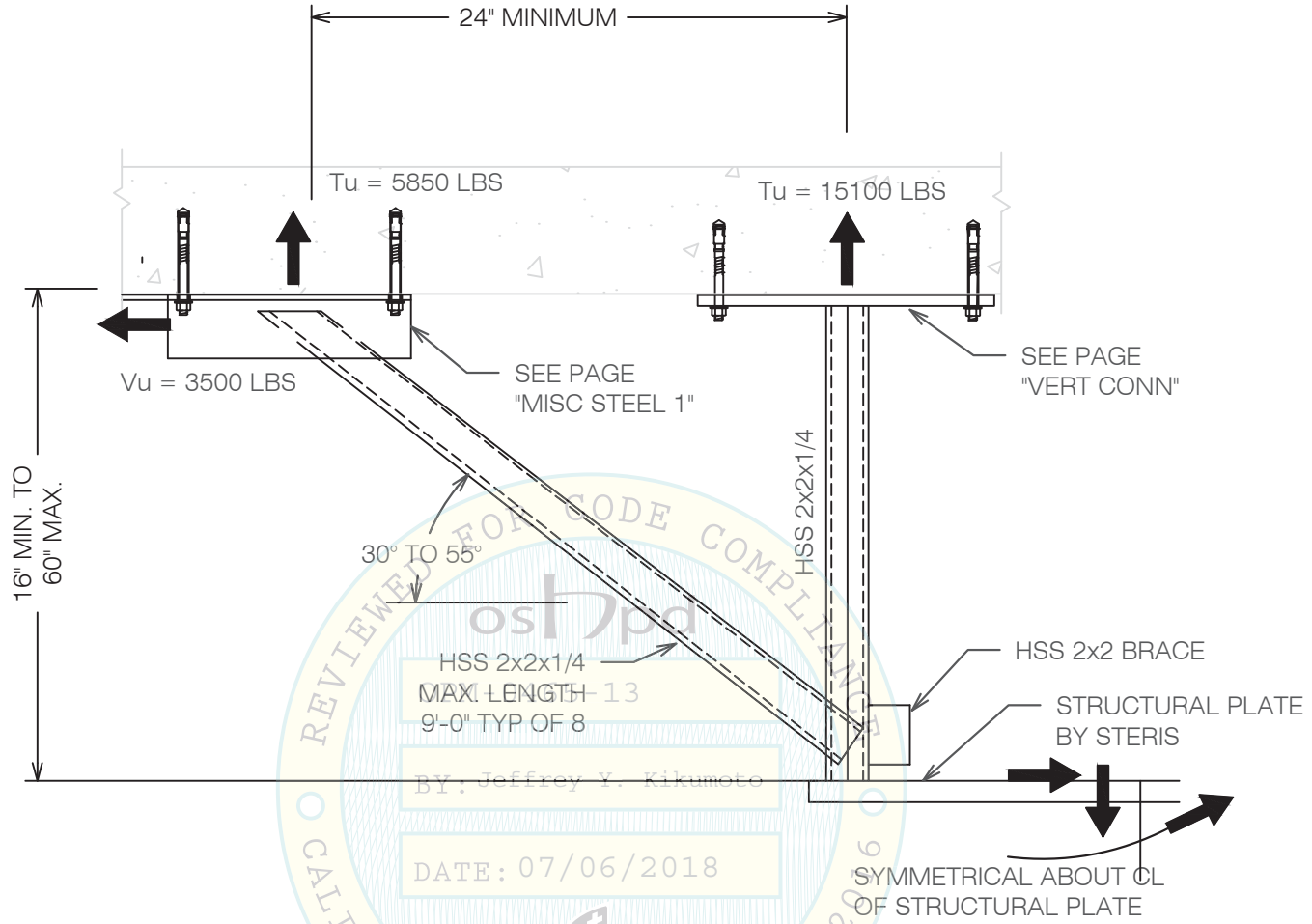

SECTION VIEW AT BRACE AND VERTICAL SUPPORT CONNECTION
INSTALLER IS TO PROVIDE ALL MATERIALS ABOVE THE STERIS STRUCTURAL PLATE

OPM-0465-13 STERIS HARMONYCARE BOOMS AT SOLID CONCRETE SLAB

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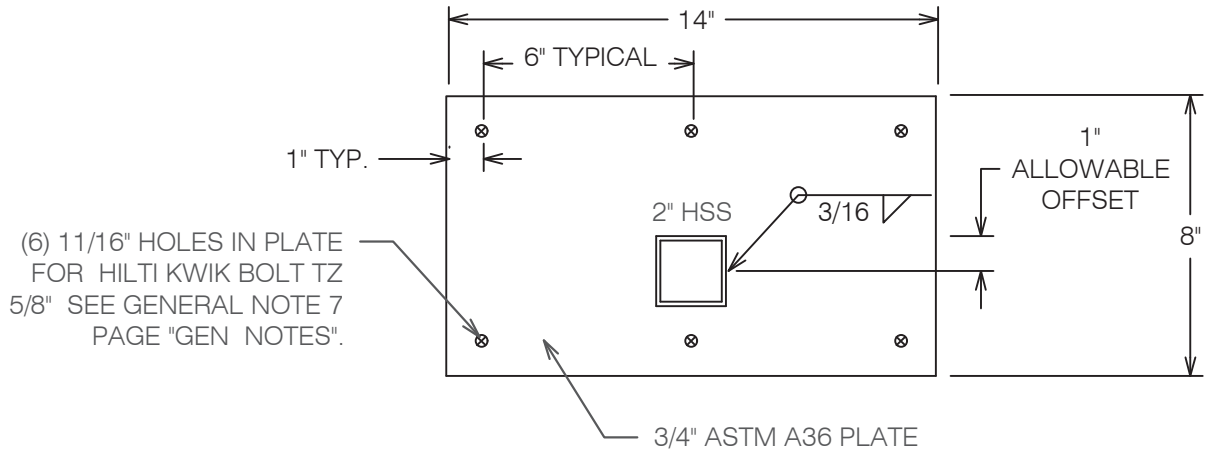

DETAIL FOR VERTICAL CONNECTION AT SOLID CONCRETE SLABS
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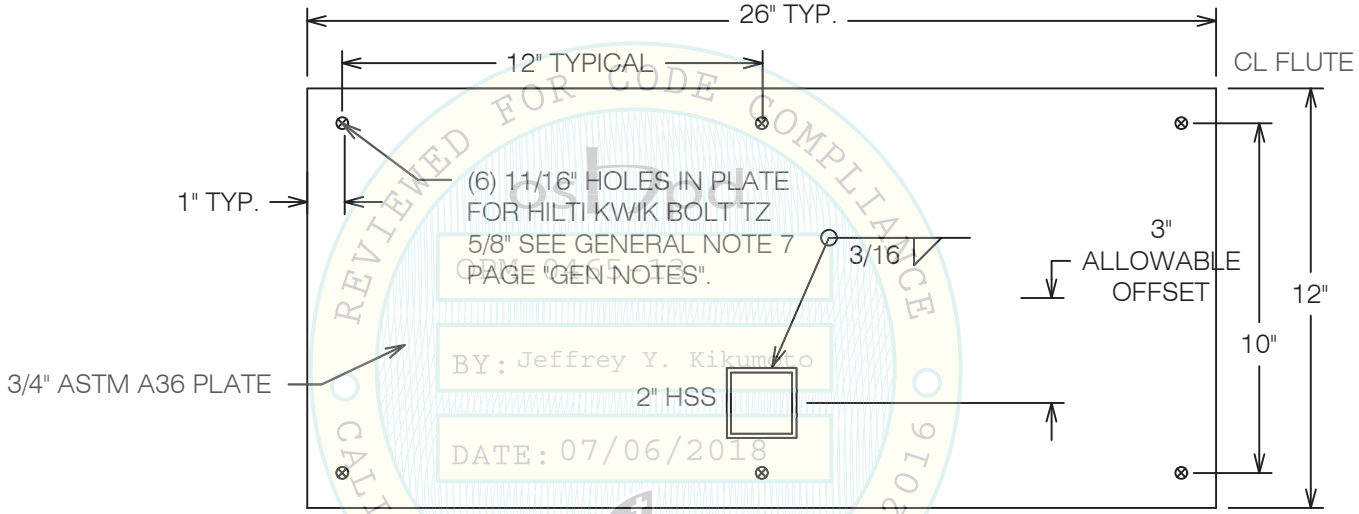

DETAIL FOR VERTICAL CONNECTION AT METAL DECK SLABS
HSS VERTICAL MAY BE LOCATED AT A 3" MAXIMUM OFFSET AS SHOWN

OPM-0465-13 STERIS HARMONYCARE BOOM VERTICAL CONNECTION DETAILS (4 REQUIRED)

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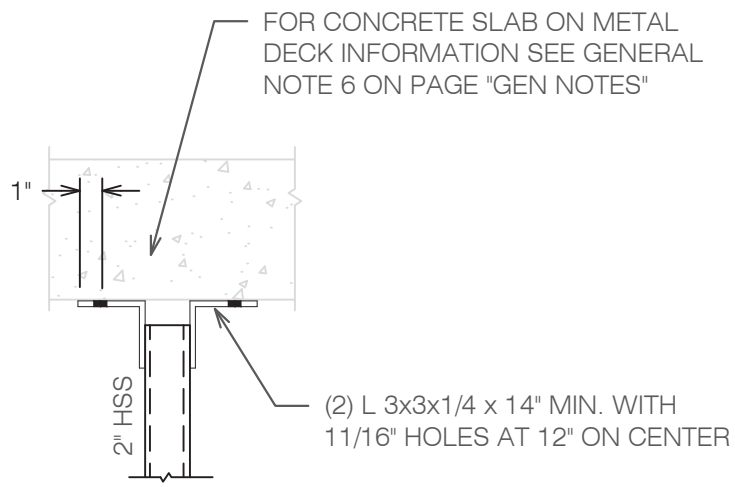
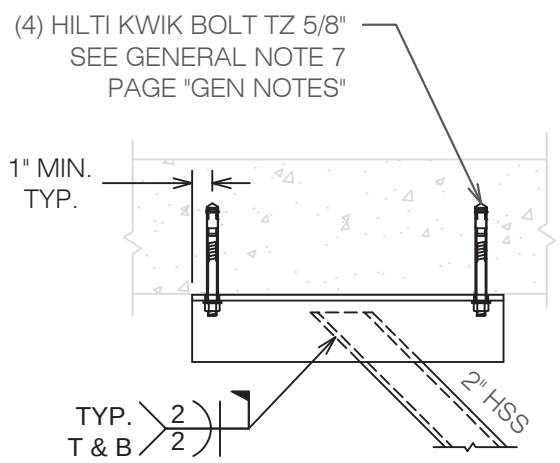
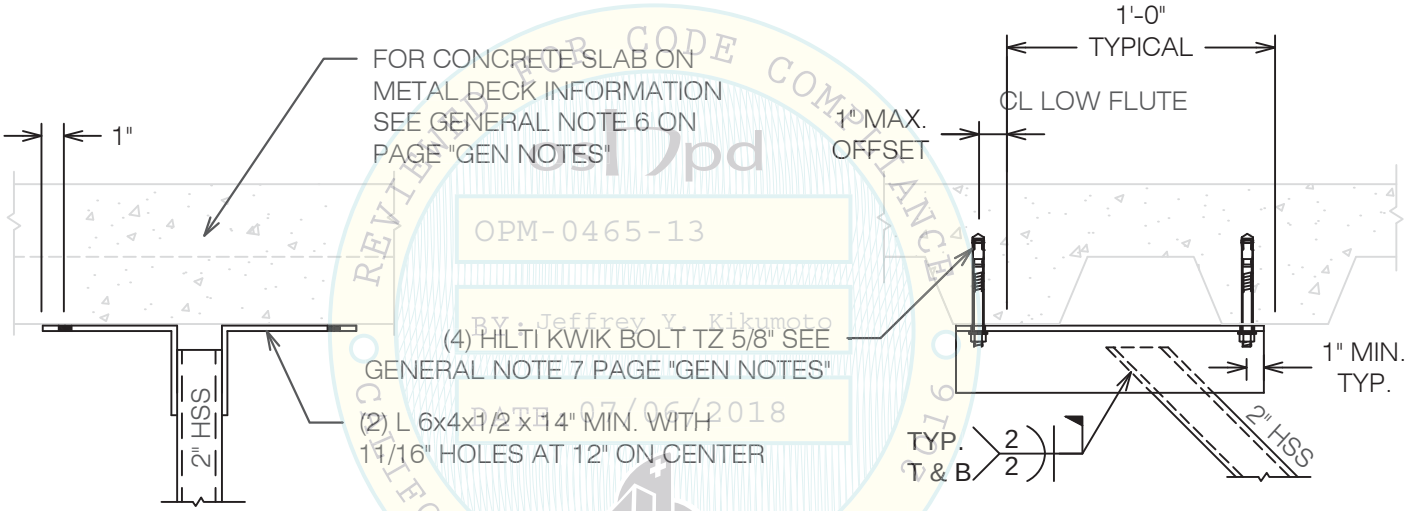




DETAIL FOR BRACE CONNECTION AT SOLID SLABS



DETAIL FOR BRACE CONNECTION FOR METAL DECK SLABS - BRACE PERPENDICULAR TO FLUTES

OPM-0465-13 STERIS HARMONYCARE BOOM MISC. STEEL FOR SOLID SLABS AND METAL DECK SLABS - BRACE CONNECTION PERPENDICULAR TO METAL DECK FLUTES

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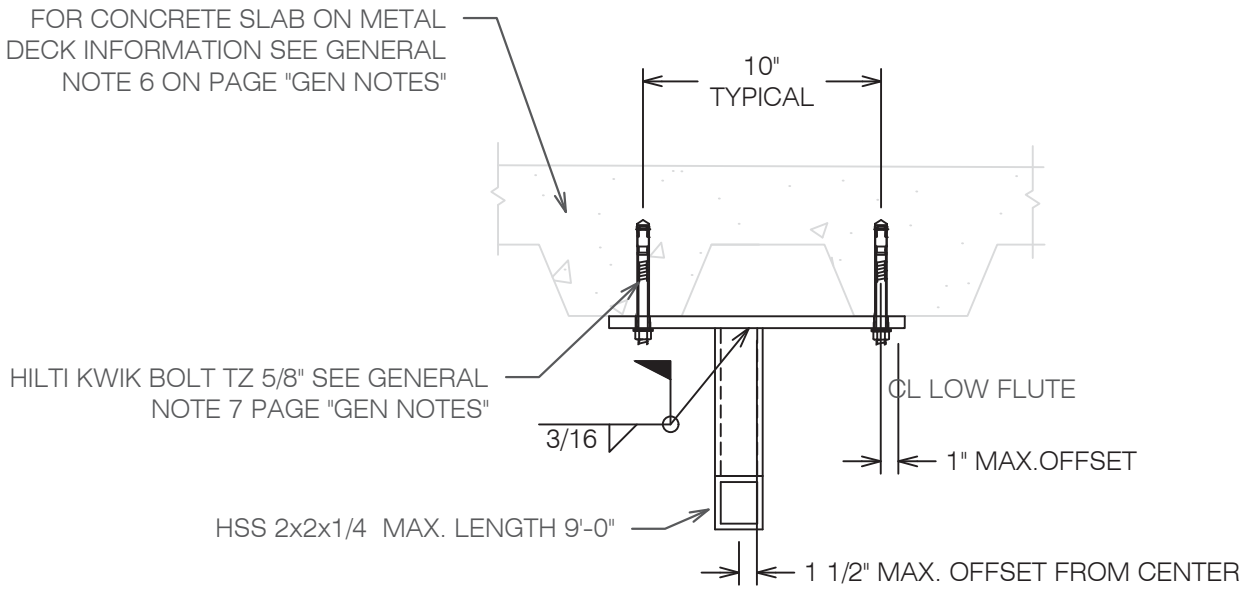
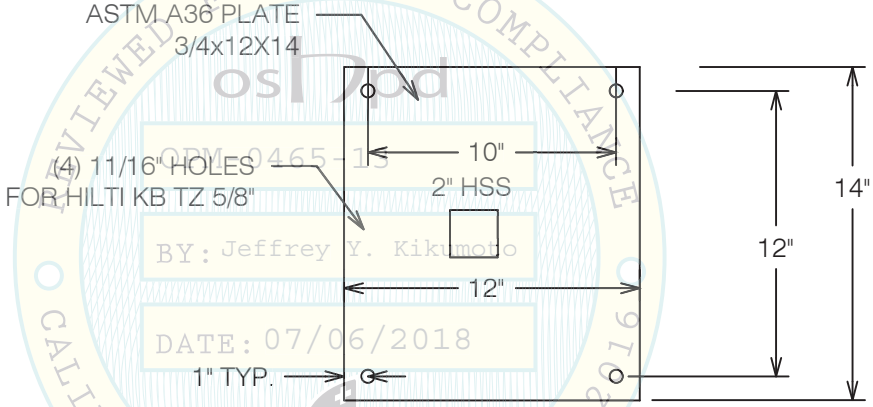


ELEVATION



PLAN DETAIL

OPM-0465-13 STERIS HARMONYCARE BOOM MISC. STEEL FOR METAL DECK SLABS - BRACE CONNECTION PARALLEL TO METAL DECK FLUTES

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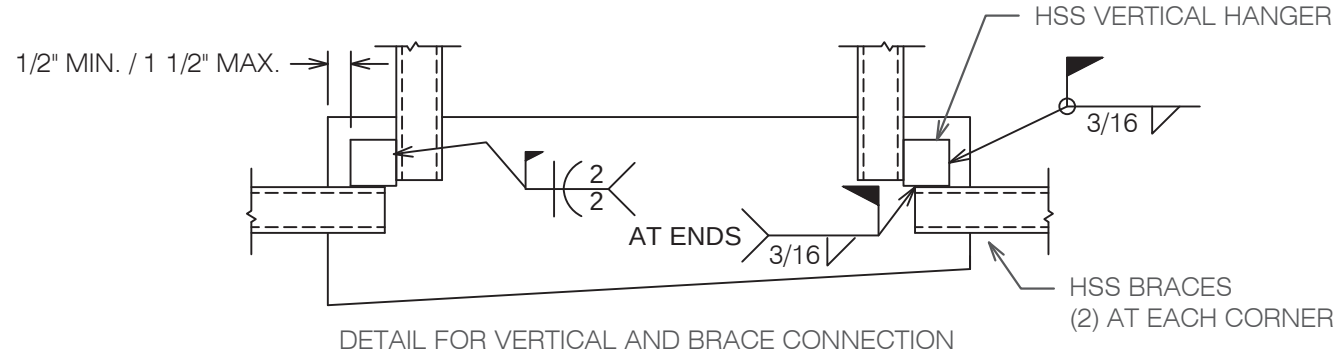
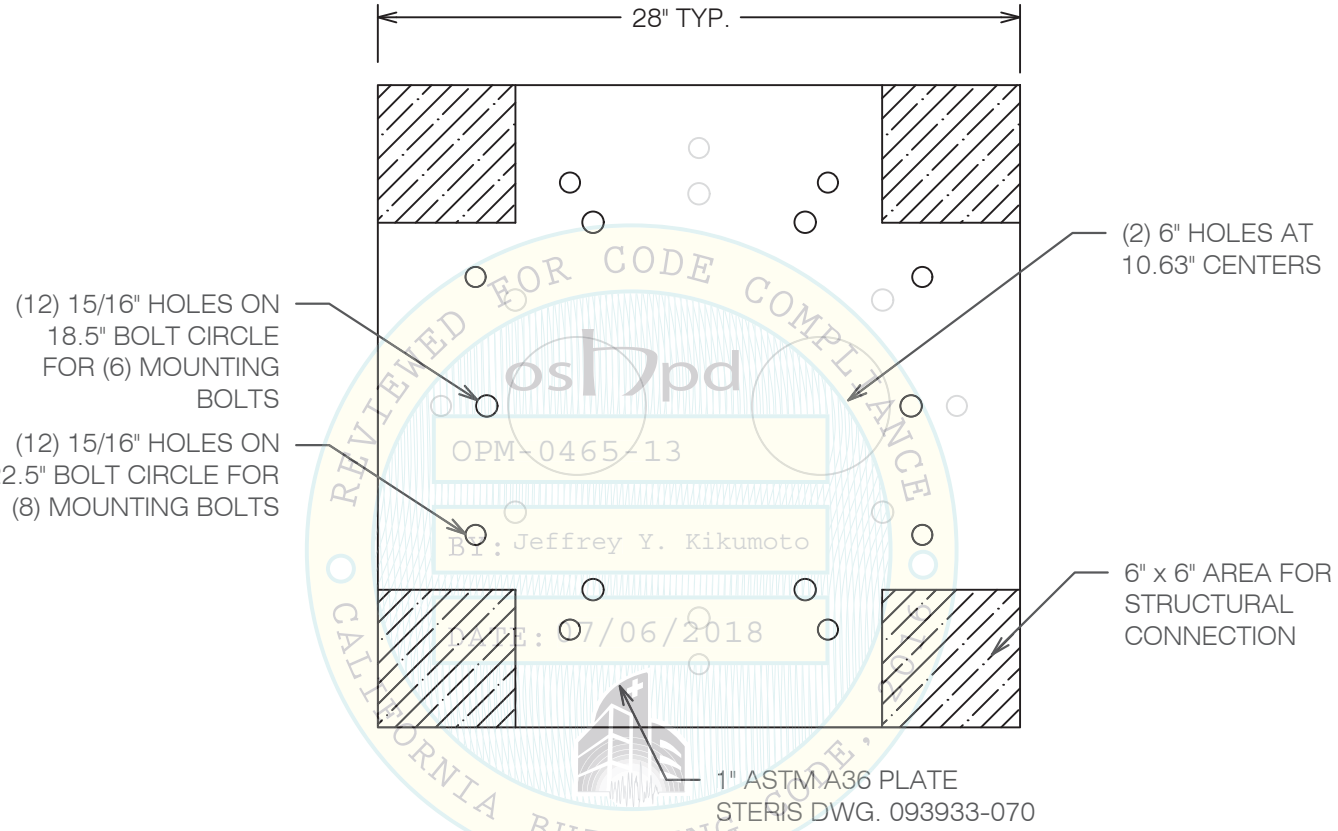


DETAIL FOR VERTICAL AND BRACE CONNECTION



OPM-0465-13 STERIS HARMONYCARE BOOMS STRUCTURAL PLATE BY STERIS

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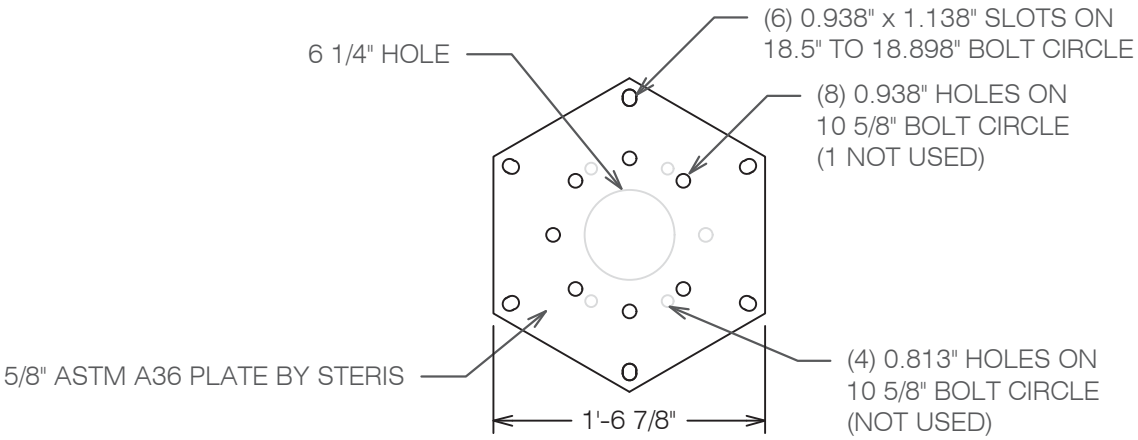
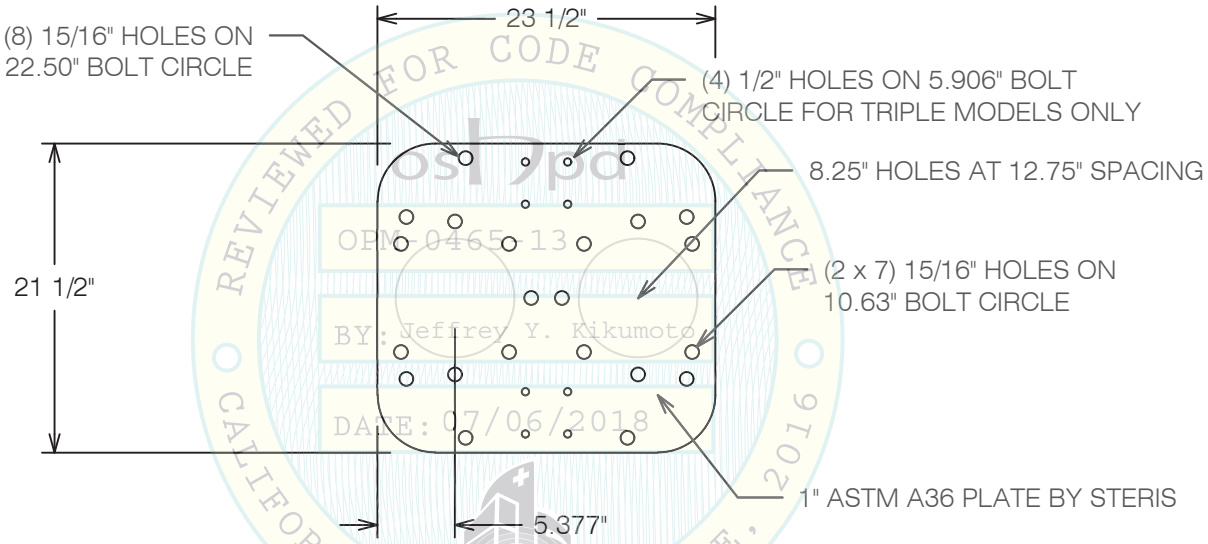


INTERMEDIATE PLATE FOR SINGLE CONFIGURATION (PART NO. 146685-044)



INTERMEDIATE PLATE FOR TANDEM AND TRIPLE CONFIGURATIONS (PART NO. 10019701)
ADDITIONAL HOLES IN PLATE ARE NOT USED FOR THESE CONFIGURATIONS

OPM-0465-13 STERIS HARMONYCARE BOOMS INTERMEDIATE PLATE DETAILS

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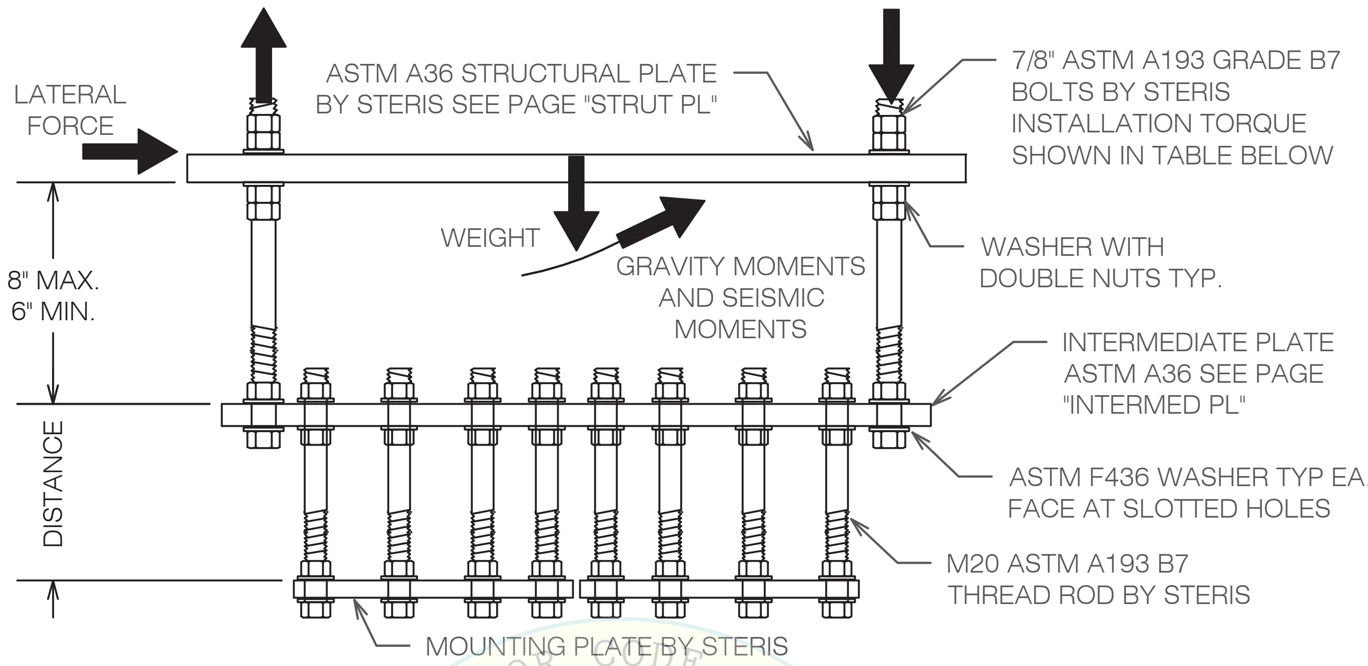

Equipment Data					Seismic Design Forces at Ultimate Loads [1]		
Model Series	Distance in.	Bolts at Structural Plate	Torque [2] ft.-lbs.	Weight at 1g lbs.	Vertical Force lbs.	Lateral Force lbs.	Moment ft.-lbs.
SINGLE FA,SC	6.00	(6) 7/8" ON 18.5" BC	320 / 530	1019	1,732	3,057	17,523
TANDEM FA,SC - FA,SC	6.35	(8) 7/8" ON 22.5" BC	320 / 530	1673	2,845	5,020	29,898
TANDEM FA,SC - M-SERIES LIGHT	6.35 (5.35 Light)	(8) 7/8" ON 22.5" BC	320 / 530	1089	2,742	4,839	27,526
TANDEM FA,SC - G-SERIES LIGHT	6.35 (5.35 Light)	(8) 7/8" ON 22.5" BC	320 / 530	1411	2,398	4,232	25,413
TANDEM FA,SC - G-SERIES HYBRID LIGHT	6.35 (5.35 Light)	(8) 7/8" ON 22.5" BC	320 / 530	1829	3,110	5,488	32,435
TANDEM FA,SC - HEXALUX LIGHT	6.35	(8) 7/8" ON 22.5" BC	320 / 530	1125	1,912	3,374	17,734
TRIPLE FA,SC - FA,SC - HEXALUX LIGHT	6.35	(8) 7/8" ON 22.5" BC	320 / 530	1764	2,998	5,291	33,286

1. FORCES AND MOMENTS ARE AT THE STRUCTURAL PLATE. SEISMIC CRITERIA USED: $S_{DS} = 2.5$ $I_p = 1.5$ $a_p = 1.0$ $R_p = 1.5$ $z/h \le 1.0$ $F_pH = 3.00$ AND $F_pV = 0.50$.
2. LOWER TORQUE VALUE IS FOR LUBRICATED CONDITIONS. HIGHER TORQUE VALUE IS FOR DRY CONDITIONS.
3. MOUNTING PLATE BY STERIS IS TO BE AS FOLLOWS: SINGLE = 12.6" DIA. x 5/8" THICK ASTM 516 GRADE 70.
TANDEM = 12.6" DIA. x 5/8" THICK ASTM 516 GRADE 70 WITH 12.01" DIA x 1" THICK A-36 FOR M-SERIES LIGHTS AND 12.17" DIA. x 5/8" A-36 FOR G-SERIES LIGHTS AND G-SERIES HYBRID LIGHTS; 12.6" DIA x 0.472" ASTM 516 GRADE 70 FOR THE HEXALUX LIGHT
TRIPLE = (2) 12.6" DIA. X 5/8" THICK ASTM 516 GRADE 70 FOR BOOMS AND 5.51 SQUARE x 0.393" FOR HEXALUX LIGHT

OPM-0465-13 STERIS HARMONYCARE BOOM FORCES AND MOMENTS DIAGRAM

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WVJ 05 Jul 18

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N.T.S.	FORCE DIAG'M

OSHPD OPM-0465-13 DWG - 10

Single FA, SC Dwg 590102018		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
FA, SC	600 Low	834	1417	2501	8119	9530	3752	13380
FA, SC	600 Extended	886	1506	2658	9213	10742	3988	15198
FA, SC	900 Low	849	1443	2547	8901	10346	3820	14236
FA, SC	900 Extended	901	1532	2703	10020	11583	4055	16091
FA, SC	1200 Low	864	1469	2592	9704	11183	3888	15111
FA, SC	1200 Extended	916	1558	2749	10856	12453	4124	17016
FA, SC	600 x 600 Low	912	1551	2737	10799	12387	4105	16833
FA, SC	600 x 600 Extended	965	1640	2894	11916	13622	4341	18748
FA, SC	900 x 600 Low	927	1577	2782	11711	13333	4173	17818
FA, SC	900 x 600 Extended	980	1665	2939	12981	14720	4408	19899
FA, SC	900 x 900 Low	939	1597	2818	12535	14184	4228	18704
FA, SC	900 x 900 Extended	992	1686	2975	13828	15594	4463	20820
FA, SC	1200 x 600 Low	942	1602	2827	12643	14299	4241	18821
FA, SC	1200 x 600 Extended	995	1691	2984	13946	15720	4477	20952
FA, SC	1200 x 900 Low	954	1623	2863	13487	15170	4295	19727
FA, SC	1200 x 900 Extended	1007	1711	3020	14808	16609	4530	21886
FA, SC	1200 x 1200 Low	967	1643	2900	14350	16060	4350	20653
FA, SC	1200 x 1200 Extended	1019	1732	3057	15695	17523	4585	22847

1. WEIGHTS AND MOMENTS ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: DL = 1.2, FpV = 0.5 AND FpH = 3.0. MAXIMUM LOADING AFFECT IS USED FOR DESIGN.
2. VERTICAL AND LATERAL FORCES ARE IN POUNDS. STRUCTURAL PLATE MOMENT IS IN FOOT-POUNDS.
3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω_0 OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOMS
SINGLE FA,SC FORCES AND MOMENTS

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REGISTERED PROFESSIONAL ENGINEER WILLIAM V. JOERGER S 4545 05/06/18

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DATE: 07/05/18
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PAGE SINGLE FA, SC

OSHPD OPM-0465-13 DWG - 11

Tandem FA, SC Dwg 590102019		Seismic Design forces at Ultimate Loads [2]				Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Pl Moment	Conc. Lateral	Conc. Moment
FA, SC - FA,SC	600 Low / 600 Extended	1408	2393	4223	19556	6335	27520
FA, SC - FA,SC	900 Low / 900 Extended	1438	2445	4314	21206	6471	29258
FA, SC - FA,SC	1200 Low / 1200 Extended	1468	2496	4404	22905	6607	31047
FA, SC - FA,SC	600 x 600 Low / 600 x 600 Extended	1565	2660	4694	25253	7041	34464
FA, SC - FA,SC	900 x 600 Low / 900 x 600 Extended	1595	2711	4785	27290	7177	36588
FA, SC - FA,SC	900 x 900 Low / 900 x 900 Extended	1619	2753	4857	29009	7286	38387
FA, SC - FA,SC	1200 x 600 Low / 1200 x 600 Extended	1625	2763	4875	29249	7313	38634
FA, SC - FA,SC	1200 x 900 Low / 1200 x 900 Extended	1649	2803	4947	31002	7421	40465
FA, SC - FA,SC	1200 x 1200 Low / 1200 x 1200 Extended	1673	2845	5020	32801	7530	42343

1. WEIGHTS AND MOMENTS ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: DL = 1.2, FpV = 0.5 AND FpH = 3.0. MAXIMUM LOADING AFFECT IS USED FOR DESIGN.
2. VERTICAL AND LATERAL FORCES ARE IN POUNDS. STRUCTURAL PLATE MOMENT IS IN FOOT-POUNDS.
3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω_0 OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC - FA, SC FORCES AND MOMENTS

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REGISTERED PROFESSIONAL ENGINEER WILLIAM V. JOERGER S 4545 05 Jul 18

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OSHPD OPM-0465-13 DWG - 12

Tandem FA, SC with G-Series Lights Dwg 590102021		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
Single Spindle Option A	600 Extended	1073	1824	3219	1978	12718	4829	17795
Single Spindle Option A	900 Extended	1088	1850	3264	1978	13555	4896	18683
Single Spindle Option A	1200 Extended	1103	1876	3310	1978	14421	4965	19602
Single Spindle Option A	600 x 600 Extended	1152	1958	3455	1978	15706	5182	21444
Single Spindle Option A	900 x 600 Extended	1167	1983	3500	1978	16672	5249	22461
Single Spindle Option A	900 x 900 Extended	1179	2004	3536	1978	17543	5304	23378
Single Spindle Option A	1200 x 600 Extended	1182	2009	3545	1978	17668	5318	23508
Single Spindle Option A	1200 x 900 Extended	1194	2029	3581	1978	18554	5371	24438
Single Spindle Option A	1200 x 1200 Extended	1206	2050	3617	1978	19465	5426	25394
Single Hybrid	600 Extended	1097	1865	3291	2859	13653	4937	19104
Single Hybrid	900 Extended	1112	1891	3336	2859	14490	5004	19992
Single Hybrid	1200 Extended	1127	1916	3382	2859	15356	5073	20911
Single Hybrid	600 x 600 Extended	1176	1998	3527	2859	16641	5290	22753
Single Hybrid	900 x 600 Extended	1191	2024	3572	2859	17607	5358	23770
Single Hybrid	900 x 900 Extended	1203	2045	3608	2859	18478	5412	24687
Single Hybrid	1200 x 600 Extended	1206	2050	3617	2859	18603	5426	24817
Single Hybrid	1200 x 900 Extended	1218	2070	3653	2859	19489	5479	25747
Single Hybrid	1200 x 1200 Extended	1230	2091	3689	2859	20400	5534	26703
Dual Spindle Option A	600 Extended	1212	2061	3636	5285	16338	5455	22575
Dual Spindle Option A	900 Extended	1227	2086	3681	5285	17175	5522	23463
Dual Spindle Option A	1200 Extended	1242	2112	3727	5285	18041	5591	24382
Dual Spindle Option A	600 x 600 Extended	1291	2194	3872	5285	19326	5808	26224
Dual Spindle Option A	900 x 600 Extended	1306	2220	3917	5285	20292	5875	27241
Dual Spindle Option A	900 x 900 Extended	1318	2240	3953	5285	21163	5930	28158
Dual Spindle Option A	1200 x 600 Extended	1321	2245	3962	5285	21288	5944	28288
Dual Spindle Option A	1200 x 900 Extended	1333	2266	3998	5285	22174	5997	29218
Dual Spindle Option A	1200 x 1200 Extended	1345	2286	4035	5285	23085	6052	30174

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2. VERTICAL AND LATERAL FORCES ARE IN POUNDS. STRUCTURAL PLATE MOMENT IS IN FOOT-POUNDS.
3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω, OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC WITH G SERIES LIGHTS FORCES AND MOMENTS - PAGE 1

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM V. JOERGER
S 4545
05 Jul 18

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DATE: 07/05/18
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PAGE FA, SC + G P1

OSHPD OPM-0465-13 DWG - 13

Tandem FA, SC with G-Series Lights Dwg 590102021		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
Dual Hybrid	600 Extended	1186	2016	3558	5404	16398	5338	22778
Dual Hybrid	900 Extended	1201	2042	3603	5404	17235	5405	23667
Dual Hybrid	1200 Extended	1216	2068	3649	5404	18101	5474	24585
Dual Hybrid	600 x 600 Extended	1265	2150	3794	5404	19386	5691	26428
Dual Hybrid	900 x 600 Extended	1280	2175	3839	5404	20353	5758	27444
Dual Hybrid	900 x 900 Extended	1292	2196	3875	5404	21224	5813	28361
Dual Hybrid	1200 x 600 Extended	1295	2201	3884	5404	21349	5827	28492
Dual Hybrid	1200 x 900 Extended	1307	2221	3920	5404	22235	5880	29422
Dual Hybrid	1200 x 1200 Extended	1319	2242	3956	5404	23145	5935	30378
Quadruple Spindle Option A	600 Extended	1306	2220	3918	6261	17525	5877	24266
Quadruple Spindle Option A	900 Extended	1321	2246	3963	6261	18362	5945	25154
Quadruple Spindle Option A	1200 Extended	1336	2272	4009	6261	19228	6013	26073
Quadruple Spindle Option A	600 x 600 Extended	1385	2354	4154	6261	20513	6230	27916
Quadruple Spindle Option A	900 x 600 Extended	1399	2379	4198	6261	21479	6298	28932
Quadruple Spindle Option A	900 x 900 Extended	1412	2400	4235	6261	22351	6352	29849
Quadruple Spindle Option A	1200 x 600 Extended	1415	2405	4244	6261	22475	6366	29980
Quadruple Spindle Option A	1200 x 900 Extended	1427	2425	4280	6261	23361	6420	30910
Quadruple Spindle Option A	1200 x 1200 Extended	1439	2446	4316	6261	24272	6474	31866
Triple Spindle Option A	600 Extended	1278	2173	3834	7464	18665	5751	25634
Triple Spindle Option A	900 Extended	1293	2198	3879	7464	19503	5819	26522
Triple Spindle Option A	1200 Extended	1308	2224	3925	7464	20369	5887	27441
Triple Spindle Option A	600 x 600 Extended	1357	2306	4070	7464	21654	6104	29284
Triple Spindle Option A	900 x 600 Extended	1372	2332	4115	7464	22620	6172	30300
Triple Spindle Option A	900 x 900 Extended	1384	2352	4151	7464	23491	6226	31217
Triple Spindle Option A	1200 x 600 Extended	1387	2357	4160	7464	23616	6240	31348
Triple Spindle Option A	1200 x 900 Extended	1399	2378	4196	7464	24502	6294	32278
Triple Spindle Option A	1200 x 1200 Extended	1411	2398	4232	7464	25413	6348	33234

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4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC WITH G SERIES LIGHTS FORCES AND MOMENTS - PAGE 2

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Tandem FA, SC with G-Series Hybrid Lights Dwg 590102022		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
Harmony LC/vLED	600 Extended	1308	2223	3924	5570	16835	5886	23359
Harmony LC/vLED	900 Extended	1323	2249	3969	5570	17672	5953	24247
Harmony LC/vLED	1200 Extended	1338	2275	4014	5570	18538	6022	25166
Harmony LC/vLED	600 x 600 Extended	1386	2357	4159	5570	19823	6239	27008
Harmony LC/vLED	900 x 600 Extended	1401	2382	4204	5570	20789	6306	28025
Harmony LC/vLED	900 x 900 Extended	1413	2403	4240	5570	21661	6361	28942
Harmony LC/vLED	1200 x 600 Extended	1417	2408	4250	5570	21785	6375	29072
Harmony LC/vLED	1200 x 900 Extended	1428	2428	4285	5570	22671	6428	30002
Harmony LC/vLED	1200 x 1200 Extended	1441	2449	4322	5570	23582	6483	30958
Harmony LED585	600 Extended	1687	2868	5060	11333	23450	7591	32971
Harmony LED585	900 Extended	1702	2893	5105	11333	24287	7658	33859
Harmony LED585	1200 Extended	1717	2919	5151	11333	25154	7726	34778
Harmony LED585	600 x 600 Extended	1765	3001	5296	11333	26439	7944	36620
Harmony LED585	900 x 600 Extended	1780	3026	5341	11333	27405	8011	37637
Harmony LED585	900 x 900 Extended	1792	3047	5377	11333	28276	8066	38554
Harmony LED585	1200 x 600 Extended	1795	3052	5386	11333	28401	8080	38684
Harmony LED585	1200 x 900 Extended	1807	3072	5422	11333	29287	8133	39615
Harmony LED585	1200 x 1200 Extended	1819	3093	5458	11333	30198	8188	40571
Harmony LED785	600 Extended	1697	2884	5090	13548	25688	7635	35523
Harmony LED785	900 Extended	1712	2910	5135	13548	26525	7703	36411
Harmony LED785	1200 Extended	1727	2936	5181	13548	27392	7771	37330
Harmony LED785	600 x 600 Extended	1775	3018	5326	13548	28676	7988	39173
Harmony LED785	900 x 600 Extended	1790	3043	5370	13548	29643	8056	40189
Harmony LED785	900 x 900 Extended	1802	3064	5407	13548	30514	8110	41106
Harmony LED785	1200 x 600 Extended	1805	3069	5416	13548	30639	8124	41237
Harmony LED785	1200 x 900 Extended	1817	3089	5452	13548	31525	8178	42167
Harmony LED785	1200 x 1200 Extended	1829	3110	5488	13548	32435	8232	43123

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3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω_0 OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC WITH G SERIES HYBRID LIGHTS FORCES AND MOMENTS - PAGE 1

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Tandem FA, SC with G-Series Hybrid Lights Dwg 590102022		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
Harmony vLED DUAL HYBRID	600 Extended	1188	2020	3564	4535	15530	5346	21669
Harmony vLED DUAL HYBRID	900 Extended	1203	2045	3609	4535	16368	5414	22557
Harmony vLED DUAL HYBRID	1200 Extended	1218	2071	3655	4535	17234	5482	23476
Harmony vLED DUAL HYBRID	600 x 600 Extended	1266	2153	3799	4535	18519	5699	25318
Harmony vLED DUAL HYBRID	900 x 600 Extended	1281	2179	3844	4535	19485	5767	26335
Harmony vLED DUAL HYBRID	900 x 900 Extended	1294	2199	3881	4535	20356	5821	27252
Harmony vLED DUAL HYBRID	1200 x 600 Extended	1297	2204	3890	4535	20481	5835	27382
Harmony vLED DUAL HYBRID	1200 x 900 Extended	1309	2225	3926	4535	21367	5889	28312
Harmony vLED DUAL HYBRID	1200 x 1200 Extended	1321	2245	3962	4535	22278	5943	29268
Harmony LED385	600 Extended	990	1683	2970	597	11147	4455	15679
Harmony LED385	900 Extended	1005	1709	3015	597	11984	4523	16567
Harmony LED385	1200 Extended	1020	1735	3061	597	12850	4591	17486
Harmony LED385	600 x 600 Extended	1069	1817	3206	597	14135	4809	19329
Harmony LED385	900 x 600 Extended	1084	1842	3251	597	15101	4876	20345
Harmony LED385	900 x 900 Extended	1096	1863	3287	597	15972	4931	21262
Harmony LED385	1200 x 600 Extended	1099	1868	3296	597	16097	4944	21393
Harmony LED385	1200 x 900 Extended	1111	1888	3332	597	16983	4998	22323
Harmony LED385	1200 x 1200 Extended	1123	1909	3368	597	17894	5053	23279
Harmony LA300	600 Extended	2178	3702	6533	1699	12408	9799	17489
Harmony LA300	900 Extended	2193	3727	6578	1699	13246	9867	18377
Harmony LA300	1200 Extended	2208	3753	6623	1699	14112	9935	19296
Harmony LA300	600 x 600 Extended	2256	3835	6768	1699	15397	10152	21139
Harmony LA300	900 x 600 Extended	2271	3861	6813	1699	16363	10220	22155
Harmony LA300	900 x 900 Extended	2283	3881	6850	1699	17234	10274	23072
Harmony LA300	1200 x 600 Extended	2286	3887	6859	1699	17359	10288	23203
Harmony LA300	1200 x 900 Extended	2298	3907	6895	1699	18245	10342	24133
Harmony LA300	1200 x 1200 Extended	2310	3928	6931	1699	19156	10396	25089

1. WEIGHTS AND MOMENTS ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: DL = 1.2, FpV = 0.5 AND FpH = 3.0. MAXIMUM LOADING AFFECT IS USED FOR DESIGN.
2. VERTICAL AND LATERAL FORCES ARE IN POUNDS. STRUCTURAL PLATE MOMENT IS IN FOOT-POUNDS.
3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω_0 OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC WITH G SERIES HYBRID LIGHTS FORCES AND MOMENTS - PAGE 2

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OSHPD OPM-0465-13 DWG - 16

Tandem FA, SC with Hexalux Lights Dwg 590102023		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
EXLCEIL Horizontal	600 Extended	992	1686	2976	349	11000	4463	15500
EXLCEIL Maximum Angle 45°	600 Extended	992	1686	2976	387	10994	4463	15494
EXLCEIL Horizontal	900 Extended	1007	1712	3021	349	11831	4531	16378
EXLCEIL Maximum Angle 45°	900 Extended	1007	1712	3021	387	11825	4531	16373
EXLCEIL Horizontal	1200 Extended	1022	1738	3066	349	12691	4599	17288
EXLCEIL Maximum Angle 45°	1200 Extended	1022	1738	3066	387	12686	4599	17283
EXLCEIL Horizontal	600 x 600 Extended	1070	1820	3211	349	13994	4816	19158
EXLCEIL Maximum Angle 45°	600 x 600 Extended	1070	1820	3211	387	13988	4816	19152
EXLCEIL Horizontal	900 x 600 Extended	1085	1845	3256	349	14954	4884	20166
EXLCEIL Maximum Angle 45°	900 x 600 Extended	1085	1845	3256	387	14949	4884	20160
EXLCEIL Horizontal	900 x 900 Extended	1097	1866	3292	349	15821	4938	21076
EXLCEIL Maximum Angle 45°	900 x 900 Extended	1097	1866	3292	387	15816	4938	21071
EXLCEIL Horizontal	1200 x 600 Extended	1101	1871	3302	349	15945	4952	21205
EXLCEIL Maximum Angle 45°	1200 x 600 Extended	1101	1871	3302	387	15939	4952	21199
EXLCEIL Horizontal	1200 x 900 Extended	1112	1891	3337	349	16827	5006	22129
EXLCEIL Maximum Angle 45°	1200 x 900 Extended	1112	1891	3337	387	16822	5006	22124
EXLCEIL Horizontal	1200 x 1200 Extended	1125	1912	3374	349	17734	5060	23080
EXLCEIL Maximum Angle 45°	1200 x 1200 Extended	1125	1912	3374	387	17729	5060	23074

1. WEIGHTS AND MOMENTS ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: DL = 1.2, FpV = 0.5 AND FpH = 3.0. MAXIMUM LOADING AFFECT IS USED FOR DESIGN.
2. VERTICAL AND LATERAL FORCES ARE IN POUNDS. STRUCTURAL PLATE MOMENT IS IN FOOT-POUNDS.
3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω_0 OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC WITH HEXALUX LIGHTS FORCES AND MOMENTS

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PAGE FA,SC+HELUX.

OSHPD OPM-0465-13 DWG - 17

Tandem FA, SC + M Series Light Dwg 590102020		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
FA, SC M-Series Light	600 Extended	956	2517	4441	9213	20745	6662	25267
FA, SC M-Series Light	900 Extended	971	2542	4486	10020	21586	6729	26161
FA, SC M-Series Light	1200 Extended	986	2568	4532	10856	22456	6797	27086
FA, SC M-Series Light	600 x 600 Extended	1034	2650	4676	11916	23625	7015	28818
FA, SC M-Series Light	900 x 600 Extended	1049	2675	4721	12981	24723	7082	29969
FA, SC M-Series Light	900 x 900 Extended	1062	2696	4758	13828	25597	7137	30890
FA, SC M-Series Light	1200 x 600 Extended	1065	2701	4767	13946	25723	7150	31022
FA, SC M-Series Light	1200 x 900 Extended	1077	2722	4803	14808	26612	7204	31956
FA, SC M-Series Light	1200 x 1200 Extended	1089	2742	4839	15695	27526	7259	32917

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OPM-0465-13 STERIS HARMONYCARE BOOM
TANDEM FA,SC WITH M SERIES LIGHTS FORCES AND MOMENTS

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A Division of Tomarco Contractor Specialties
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REGISTERED PROFESSIONAL ENGINEER WILLIAM V. JOERGER S 4545 05 Jul 18

DRAWN BY: WVJ	
DATE: 02/05/18	
REVISED BY: WVJ	
DATE: 07/05/18	
REV NO: 2	
SCALE N.T.S.	**PAGE** FA, SC + M

OSHPD OPM-0465-13 DWG - 18

Triple FA, SC - FA,SC with Hexalux Lights Dwg 590102024		Seismic Design forces at Ultimate Loads [2]					Concrete Anchorage [3]	
Model Numbers		Wt at 1 g	Vertical Force	Lateral Force	Struct Bolt	Struct Pl Moment	Conc. Lateral	Conc. Moment
EXLCEIL Horizontal	600 Low / 600 Extended	1498	2547	4495	8119	20004	6742	33115
EXLCEIL Maximum Angle 45°	600 Low / 600 Extended	1498	2547	4495	8119	20042	6742	33195
EXLCEIL Horizontal	900 Low / 900 Extended	1528	2598	4585	8901	21654	6878	35419
EXLCEIL Maximum Angle 45°	900 Low / 900 Extended	1528	2598	4585	8901	21692	6878	35499
EXLCEIL Horizontal	1200 Low / 1200 Extended	1559	2650	4676	9704	23353	7014	37793
EXLCEIL Maximum Angle 45°	1200 Low / 1200 Extended	1559	2650	4676	9704	23391	7014	37873
EXLCEIL Horizontal	600 x 600 Low / 600 x 600 Ext	1655	2814	4965	10799	25830	7448	41905
EXLCEIL Maximum Angle 45°	600 x 600 Low / 600 x 600 Ext	1655	2814	4965	10799	25868	7448	41985
EXLCEIL Horizontal	900 x 600 Low / 900 x 600 Ext	1685	2865	5056	11711	27738	7584	44559
EXLCEIL Maximum Angle 45°	900 x 600 Low / 900 x 600 Ext	1685	2865	5056	11711	27776	7584	44639
EXLCEIL Horizontal	900 x 900 Low / 900 x 900 Ext	1710	2906	5129	12535	29457	7693	46950
EXLCEIL Maximum Angle 45°	900 x 900 Low / 900 x 900 Ext	1710	2906	5129	12535	29495	7693	47030
EXLCEIL Horizontal	1200 x 600 Low / 1200 x 600 Ext	1716	2916	5147	12643	29697	7720	47282
EXLCEIL Maximum Angle 45°	1200 x 600 Low / 1200 x 600 Ext	1716	2916	5147	12643	29734	7720	47362
EXLCEIL Horizontal	1200 x 900 Low / 1200 x 900 Ext	1740	2957	5219	13487	31450	7828	49718
EXLCEIL Maximum Angle 45°	1200 x 900 Low / 1200 x 900 Ext	1740	2957	5219	13487	31492	7828	49803
EXLCEIL Horizontal	1200 x 1200 Low / 1200 x 1200 Ext	1764	2998	5291	14350	33249	7937	52216
EXLCEIL Maximum Angle 45°	1200 x 1200 Low / 1200 x 1200 Ext	1764	2998	5291	14350	33286	7937	52296

1. WEIGHTS AND MOMENTS ARE FACTORED LOADS USING STRENGTH DESIGN AND INCLUDE THE FOLLOWING FACTORS: DL = 1.2, FpV = 0.5 AND FpH = 3.0. MAXIMUM LOADING AFFECT IS USED FOR DESIGN.
2. VERTICAL AND LATERAL FORCES ARE IN POUNDS. STRUCTURAL PLATE MOMENT IS IN FOOT-POUNDS.
3. CONCRETE ANCHORAGE FORCES AND MOMENTS ARE IN POUNDS AND FOOT POUNDS AND INCLUDE Ω_0 OVERSTRENGTH FACTOR.
4. WORST CASE LOADING IS USED IN THE ATTACHMENT DESIGN.

OPM-0465-13 STERIS HARMONYCARE BOOM
TRIPLE FA,SC FA,SC WITH HEXALUX LIGHTS FORCES AND MOMENTS

International Seismic Application Technology
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