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

OFFICE USE ONLY
APPLICATION #: OPM-0450-13

OSHPD Preapproval of Manufacturer's Certification (OPM)

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

Manufacturer Information

Manufacturer: Germfree Laboratories, Inc.

Manufacturer's Technical Representative: Ronald Lavicott

Mailing Address: 4 Sunshine Blvd. Ormond Beach, FL 32174

Telephone: 386-265-4343 Email: rlavicott@germfree.com

Product Information

Product Name: Horizontal Laminar Airflow Workstation

Product Type: ISO 5 / Class 100 Horizontal Laminar Flow Hood

Product Model Number: BZ-3, BZ-4, BZ-6

General Description: ISO 5 / Class 100 Horizontal Laminar Flow Hood designed for the handling of materials in a sterile working environment.

Applicant Information

Applicant Company Name: Sun Structural Engineering, Inc.

Contact Person: Changhua Sun

Mailing Address: 2091 Las Palmas Dr. Suite D Carlsbad, CA. 92011

Telephone: (760)438-1188 Email: sunengineering@sbcglobal.net

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: _____ Date: 9-20-2017

Title: President Company Name: Sun Structural Engineering, Inc.

Registered Design Professional Preparing Engineering Recommendations

Company Name: Sun Structural Engineering, Inc.

Name: Changhua Sun California License Number: S4609

Mailing Address: 2091 Las Palmas Dr. Suite D Carlsbad, CA. 92011

Telephone: (760)438-1188 Email: sunengineering@sbcglobal.net

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):

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

Signature: Date: 09-28-2018

Print Name: Jeffrey Kikumoto

Title: SSE

Condition of Approval (if applicable):

OFFICE STATEWIDE HEALTH PLANNING AND DEVELOPMENT

PRE-APPROVAL MANUFACTURER'S CERTIFICATION

OPM - 0450 - 13

THIS PRE-APPROVAL CONFORMS TO THE 2016 CALIFORNIA BUILDING CODE

MANUFACTURER: GERMFREE LABORATORIES

EQUIPMENT TYPE: HORIZONTAL LAMINAR AIRFLOW WORKSTATION; BZ3, BZ4 & BZ6 MODELS

GENERAL NOTES

1. THIS OSHPD PRE APPROVAL OF MANUFCTURER'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. THE DOCUMENT MAY ONLY BE USED WITH THE EXPRESS WRITTEN CONSENT OF THE MANUFACTURER LISTED ABOVE FOR A SPECIFIC PROJECT SITE AND INSTALLATION LOCATION. THE DOCUMENT IS INVALID WITHOUT SUCH CONSENT.
3. DESIGN CRITERIA AND LIMITATIONS:
   - A. $S_{DS} \leq 1.5$ AND $1.5 < S_{DS} \leq 2.5$
   - B. $a_p = 1.0$
   - C. $R_p = 2.5$
   - D. $I_p = 1.5$
   - E. $z/h = 0$, FOR CONCRETE SLAB ON GRADE
     $z/h \leq 1.0$, FOR SLAB ABOVE GRADE
   - F. $\Omega_o = 2.0$, PER 2016 CBC 1616A.1.23 FOR CONCRETE ANCHORAGE
4. ALL ANCHOR FORCES SHOWN ON THIS DOCUMENT ARE STRENGTH LEVEL LOADS AND MAY BE USED FOR STRENGTH DESIGN.
5. THIS PRE APPROVAL COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF EQUIPMENT TO THE STRUCTURE (CONCRETE SLAB OR CONCRETE TOPPING OVER METAL DECK WITH CONCRETE COMRESSIVE STRENGTH, $f'_c \geq 3000$ PSI, PER NOTE 3E)
6. SHEET METAL SCREWS (SMS) SHALL BE 18-8 STAINLESS STEEL SCREWS, ASTM A593D ($F_y = 40$ KSI $F_u = 80$ KSI).

RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD

1. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2016 CBC AND WITH THE DETAILS, MATERIAL AND GAGE OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN ON THE PREAPPROVAL DOCUMENTS.
2. VERIFY THAT THE PROJECT SPECIFIC VALUES OF S_{DS} AND z/h FOUND ON THE PREAPPROVAL DOCUMENTS ARE NOT EXCEEDED.
3. VERIFY THAT THE CONCRETE SLAB TO WHICH THE EQUIPMENT IS ANCHORED MEETS THE REQUIREMENTS OF THE APPLICABLE POST-INSTALLED ANCHOR ICC-ES EVALUATION REPORT.
4. VERIFY THAT THE POST-INSTALLED ANCHORS COMPLY WITH THE MINIMUM SPACING AND EDGE DISTANCE REQUIREMENTS DEFINED IN THE PREAPPROVAL DOCUMENT.
5. VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE ADEQUATE DISTANCE FROM THE UNIT ATTACHMENTS AND CHECK FOR INTERACTION WHERE OTHER ANCHORS ARE WITHIN 18" OR 6 x h_{ef} FROM THE UNIT ANCHORS.
6. PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN ADDITION TO ALL OTHER LOADS. VERIFY THE ADEQUACY OF THE STRUCTURE THAT SUPPORTS THE EQUIPMENT FOR THE LOADS IMPOSED ON THEM BY THE EQUIPMENT IN ADDITION TO ALL OTHER LOADS.

ENGINEERING
SUN Structural Engineering, Inc.
Consulting Structural Engineers

GERMFREE LABORATORIES
HORIZONTAL LAMINAR AIRFLOW WORKSTATION
BZ3, BZ4 AND BZ6

DATE: 09/14/2017	SHEET NO. 1 OF 8

2091 Las Palmas Dr. Suite D, Carlsbad, CA. 92011 TEL: 760-438-1188 www.sunse-inc.com

POST-INSTALLED ANCHOR NOTES

1. POST-INSTALLED ANCHORS FOR ATTACHING THE EQUIPMENT TO SUPPORT STRUCTURE HILTI KWIK BOLT TZ STAINLESS STEEL (ICC-ES ESR-1917: REISSUED MAY 2017) AND SHALL COMPLY WITH THE FOLLOWING:

ANCHOR DIAMETER	CONCRETE TYPE	CONCRETE TYPE	MIN. EMBED. h_{ef}	MIN. SPACING	MIN. EDGE DIST.	MIN. CONC. THICKCNESS	TORQUE TEST
1/2"	SAND LIGHT WT. OR NORMAL WT. (fc'=3000 PSI MIN.)	SLAB-ON-GRADE OR ELEVATED SLAB	2"	6"	12"	4"	40 FT-LB

ANCHOR DIAMETER	CONCRETE TYPE	SLAB TYPE	MIN. EMBED. h_{ef}	MIN. SPACING	MIN. EDGE DIST.	MIN. CONC. THICKCNESS	TORQUE TEST
1/2"	SAND LIGHT WT. OR NORMAL WT. (fc'=3000 PSI MIN.)	SLAB-ON-METAL DECK	2"	12"	12"	$3\frac{1}{4}$"	40 FT-LB

TESTING OF POST-INSTALLED ANCHORS

2. TESTING OF EXPANSION ANCHOR BOLTS SHALL BE PER 2016 CBC, 1910A.5; TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO OSHPD,
   i) AFTER AT LEAST 24 HOURS HAVE ELAPSED SINCE INSTALLATION, TORQUE TEST AT LEAST 50% OF THE ANCHOR BOLTS.
   ii) ACCEPTANCE CRITERIA:
      - TORQUE TEST: THE APPLICABLE TORQUE MUST BE ACHIEVED WITHIN THER 1/2 TURN OF THE NUT FOR WEDGE TYPE.
   iii) IF ANY ANCHOR FAILS, TEST ALL ANCHORS.
3. AVOID DAMAGING EXISTING STEEL REINFORCEMENT IN CONCRETE SLAB WHEN INSTALLING CONCRETE EXPANSION ANCHORS.
4. PROVIDE FOR FULL THREAD ENGAGEMENT OF NUT & WASHER.

BOLTS THROUGH CONCRETE ON METAL DECK

5. BOLTS SHALL BE TORQUED BY 3/4" TURN OF NUTDS AFTER SNUG TIGHT CONDITION IS ACHIEVED: SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING CONNECTED ELEMENTS INTO FIRM CONTACT.
6. HOLES DRILLED IN CONCRETE SLAB SHALL BE 1/16" LARGER THAN BOLT SIZE.
7. THROUGH-BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING (THROUGH-BOLTS WITH STEEL-TO-STEEL CONNECTION IN TENSION DO NOT REQUIRE TENSION TESTING) IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS.

WELDED STUDS

8. AFTER CABINET HEIGHT IS ADJUSTED TO THE DESIRED LEVEL, WELDED STUD NUT SHALL BE TIGHTENED TO 60 FT-LB TORQUE.

ATTACHMENT MATERIALS

9. ALL BENT STAINLESS STEEL PLATES & ANGLES: ASTM A240, TYPE 304, F_y = 34 KSI F_u = 85 KSI
10. ALL STRUCTURAL TUBES: ASTM A554, TYPE 304, F_y = 34 KSI F_u = 85 KSI
11. BOLTS: ASTM F593D, TYPE 304, F_y = 40 KSI F_u = 80 KSI
12. WELDED STUDS: ASTM F593A, TYPE 304, F_y = 90 KSI F_u = 115 KSI
13. HARDENED PLAIN WASHER PLATES: ASTM A240 TYPE 304, F_y = 34 KSI F_u = 85 KSI

ALL MEMBERS TO BE STAINLESS STEEL

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GERMFREE LABORATORIES
HORIZONTAL LAMINAR AIRFLOW WORKSTATION
BZ3, BZ4 AND BZ6

DATE: 09/14/2017

SHEET NO. 2 OF 8

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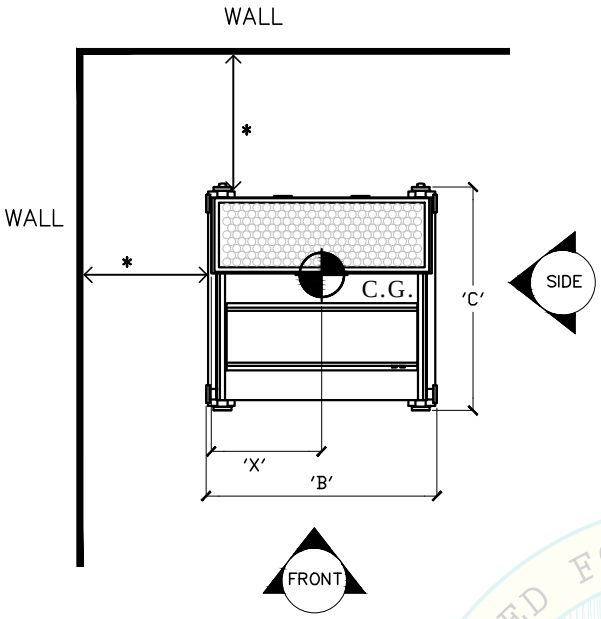
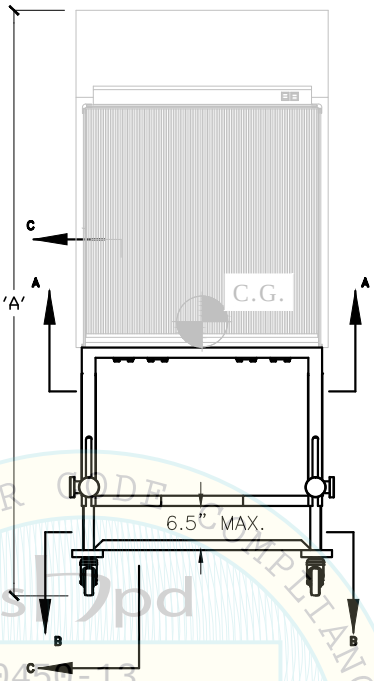
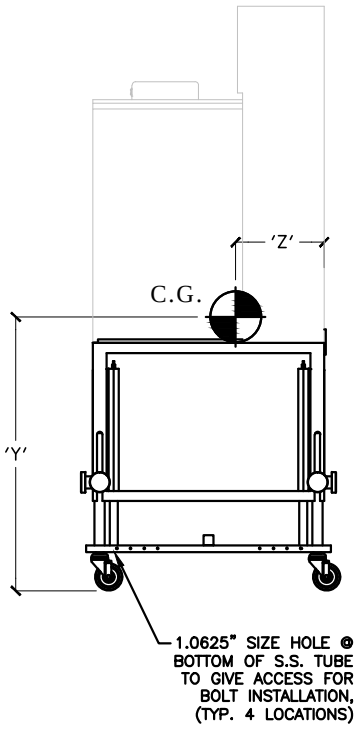
WORKSTATION DIMENSIONS AND SCHEDULES



PLAN VIEW



ELEVATION VIEW: FRONT



ELEVATION VIEW: SIDE

* VERIFY WITH THE OWNER THAT THERE IS SUFFICIENT CLEARANCE BETWEEN EQUIPMENT AND WALL TO ENSURE THAT STERILE COMPOUNDING ROOM CLEANING PROCEDURES CAN BE ADEQUATELY MAINTAINED, IN ACCORDANCE WITH REGULATIONS ESTABLISHED BY THE STATE OF CALIFORNIA BOARD OF PHARMACY AND USP REGULATIONS.

WORKSTATION TYPE	WORKSTATION DIMENSIONS AND CENTER OF GRAVITY						WORKSTATION WEIGHT
	A	B	C	X	Y	Z	
BZ3	85.875"	38.75"	37.5"	18.5"	40.25"	13.0"	452 LBS
BZ4	85.875"	50.75"	37.5"	24.5"	40.25"	13.0"	502 LBS
BZ6	85.875"	74.75"	37.5"	36.5"	40.25"	13.0"	648 LBS

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SHEET NO. 3 OF 8

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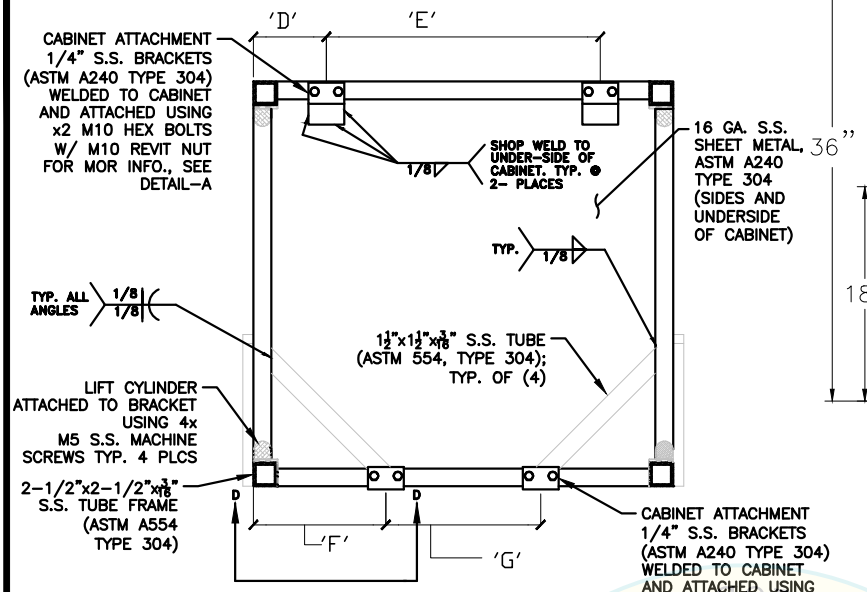
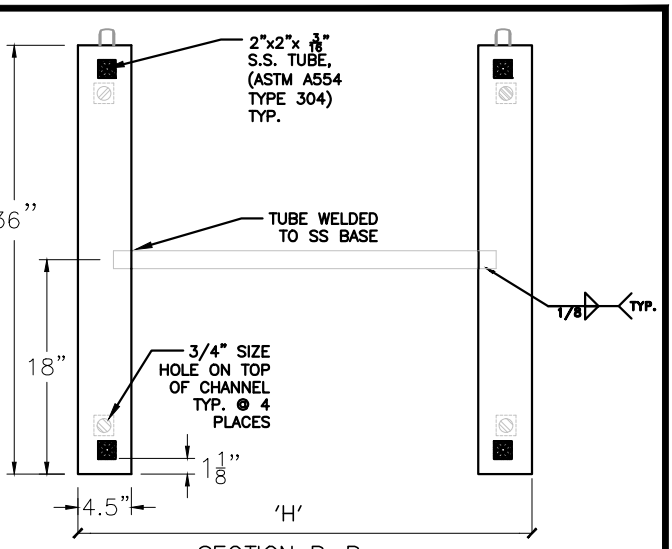
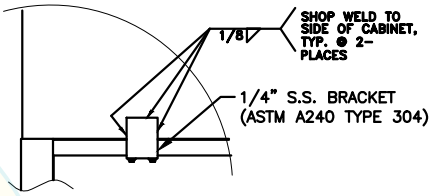
WORKSTATION DETAILS



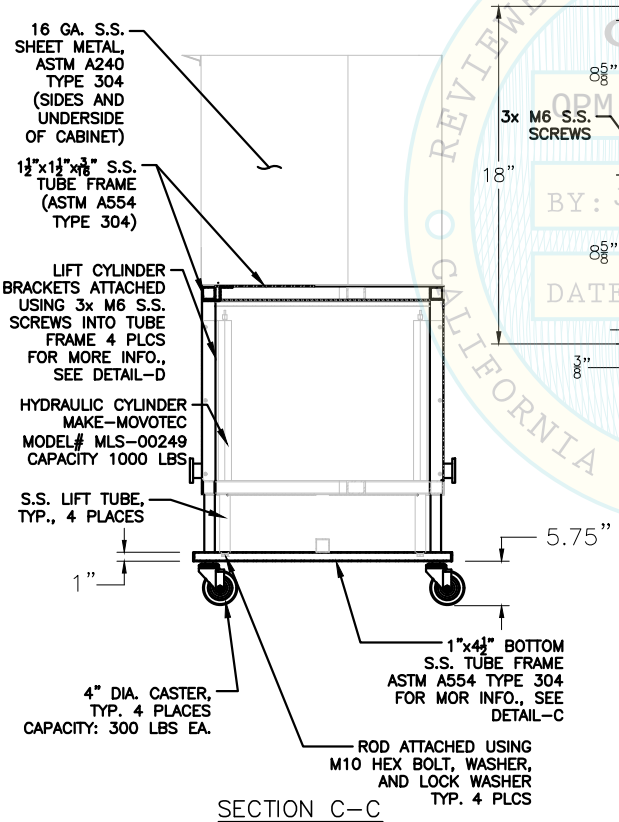
SECTION A-A



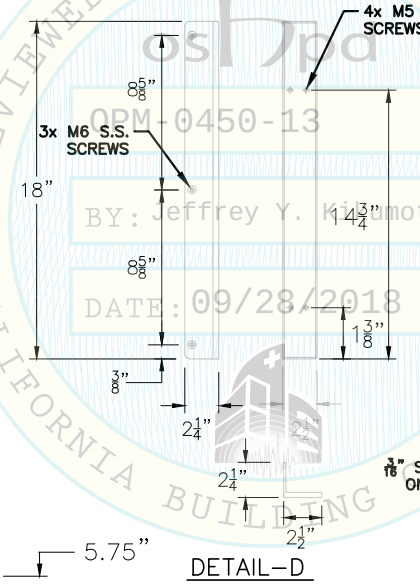
SECTION B-B



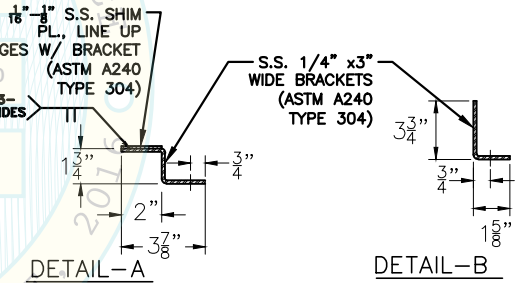
SECTION D-D



SECTION C-C

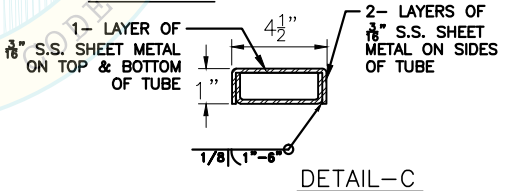


DETAIL-D



DETAIL-A

DETAIL-B



DETAIL-C

WORKSTATION TYPE	WORKSTATION DIMENSIONS				
	D	E	F	G	H
BZ3	6.125"	23.0"	11.125"	13.0"	37.125"
BZ4	6.125"	35.0"	11.125"	25.0"	49.125"
BZ6	6.125"	59.0"	11.125"	49.0"	73.125"

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HORIZONTAL LAMINAR AIRFLOW WORKSTATION
BZ3, BZ4 AND BZ6

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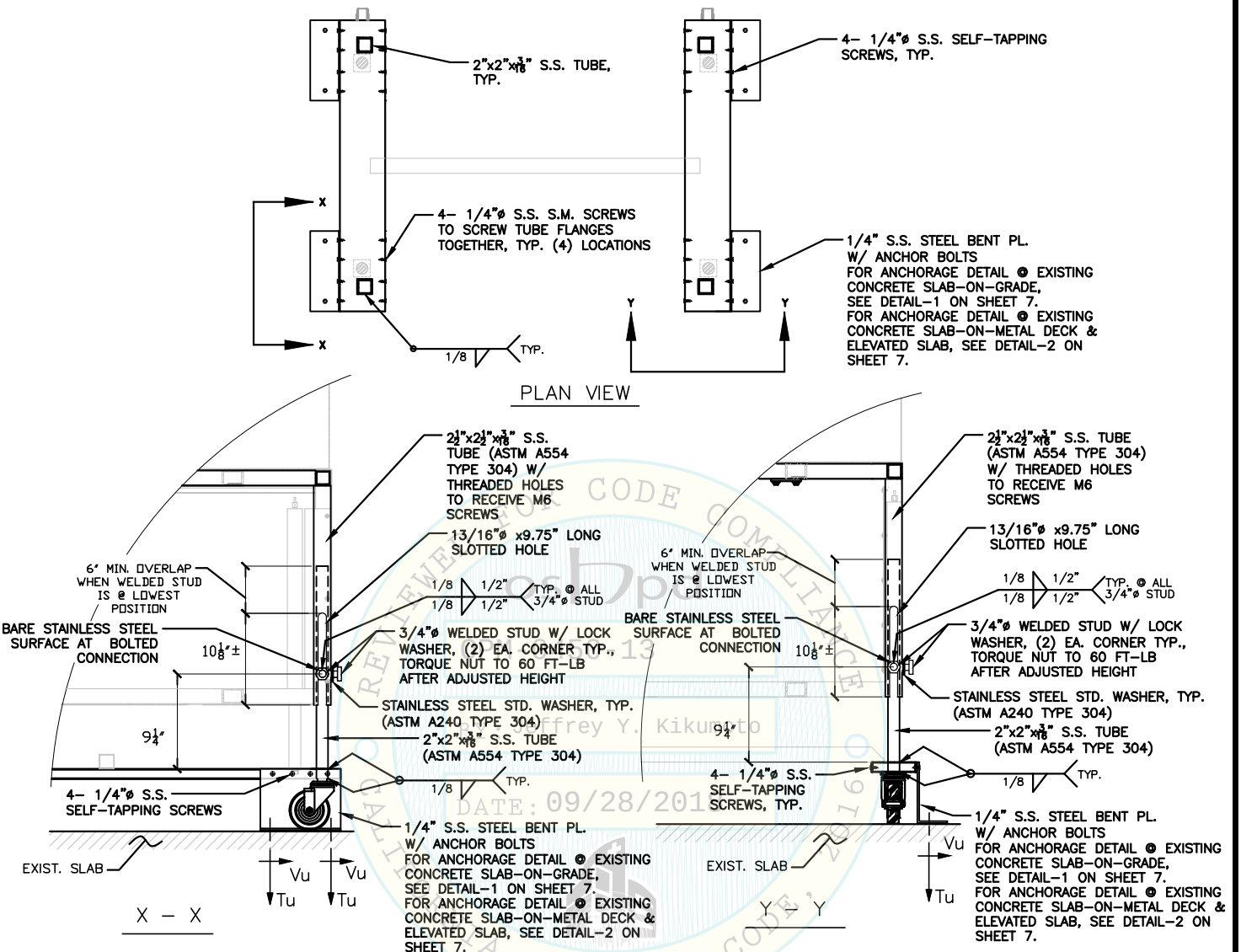
WORKSTATION SUPPORTS AND ATTACHMENTS FORCES AND DETAILS (FOR $S_{DS} \leq 1.5$)



ANCHORAGE VERTICAL (UPLIFT, Tu) AND HORIZONTAL (SHEAR, Vu) REACTIONS AT INTERFACE WITH CONCRETE SLAB (STRENGTH DESIGN)				
WORKSTATION TYPE	$z/h=0$, $S_{DS} \leq 1.5$		$z/h \leq 1.0$, $S_{DS} \leq 1.5$	
	Tu /BOLT (LBS)	Vu/BOLT (LBS)	Tu /BOLT (LBS)	Vu/BOLT (LBS)
BZ3	354	100	273	159
BZ4	374	110	288	176
BZ6	459	143	351	228

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BZ3, BZ4 AND BZ6

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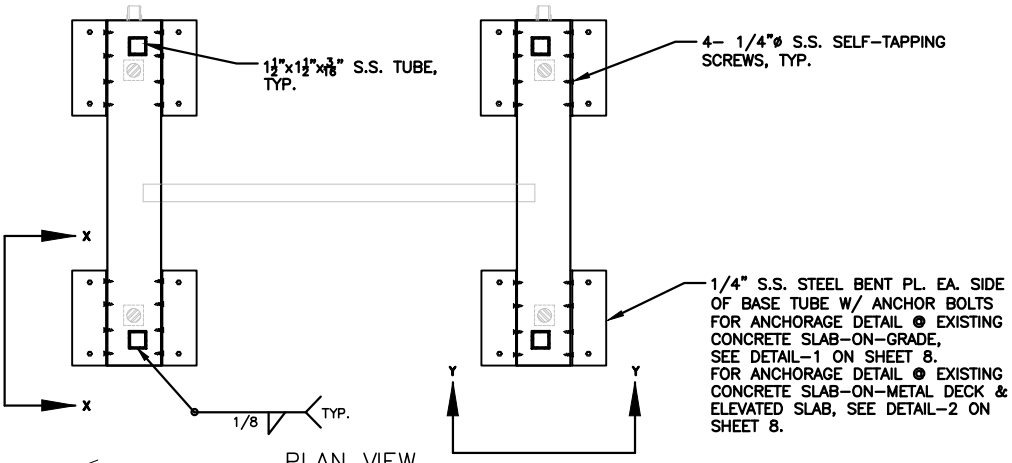
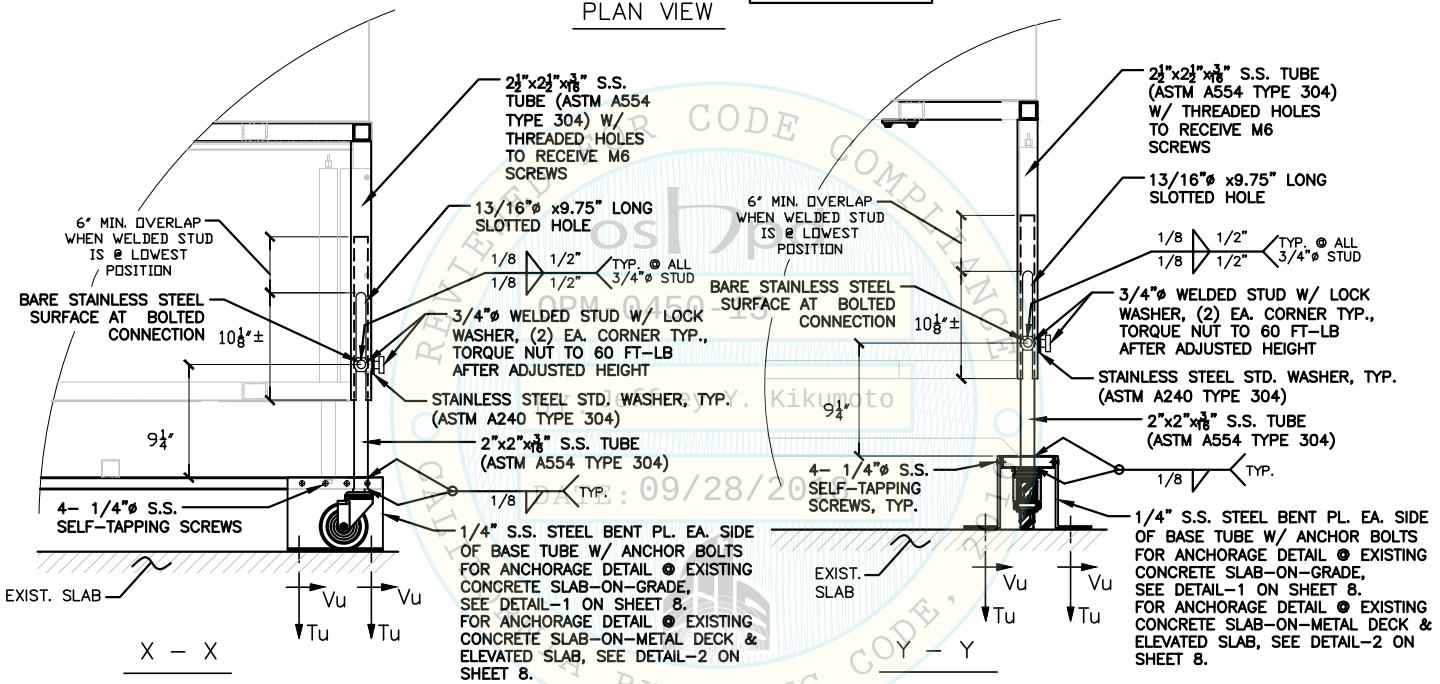
WORKSTATION SUPPORTS AND ATTACHMENTS FORCES AND DETAILS (FOR 1.5 < S_{DS} ≤2.5)



PLAN VIEW



ANCHORAGE VERTICAL (UPLIFT, Tu) AND HORIZONTAL (SHEAR, Vu) REACTIONS AT INTERFACE WITH CONCRETE SLAB (STRENGTH DESIGN)				
WORKSTATION TYPE	z/h=0, 1.5< S_{DS} ≤ 2.5		z/h ≤1.0, 1.5 < S_{DS} ≤ 2.5	
	Tu /BOLT (LBS)	Vu/BOLT (LBS)	Tu /BOLT (LBS)	Vu/BOLT (LBS)
BZ3	332	83	263	132
BZ4	347	92	275	147
BZ6	719	119	333	190

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GERMFREE LABORATORIES
HORIZONTAL LAMINAR AIRFLOW WORKSTATION
BZ3, BZ4 AND BZ6

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SHEET NO. 6 OF 8

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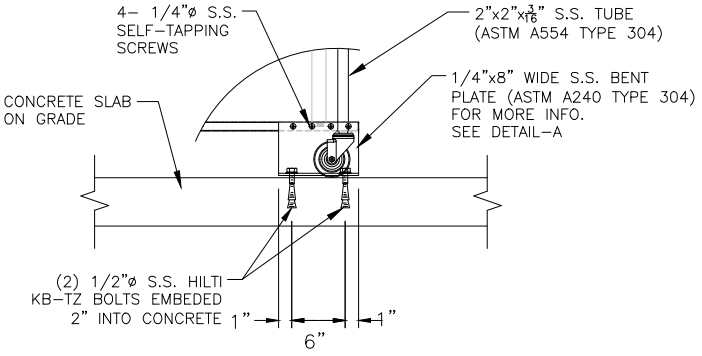
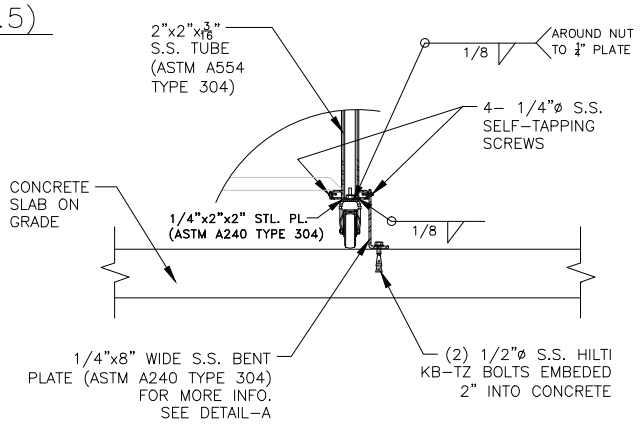
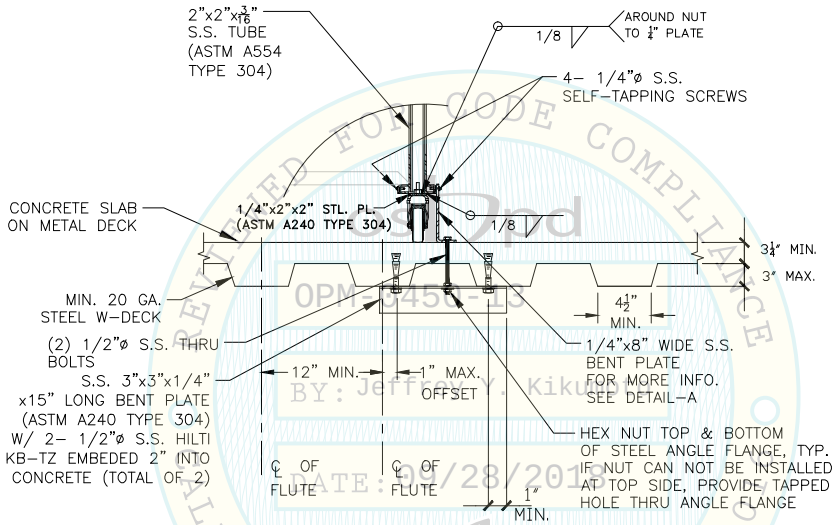
WORKSTATION ANCHORAGE DETAILS (FOR $S_{DS} \leq 1.5$)

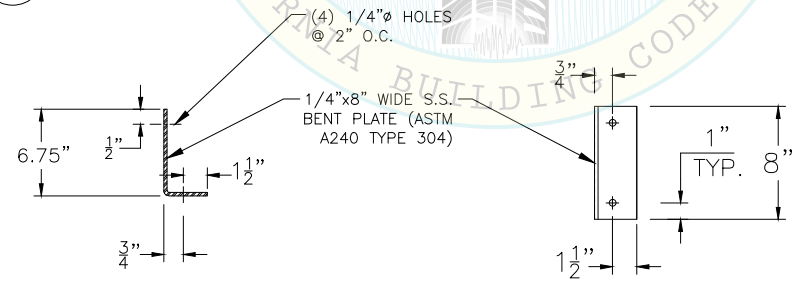




1 ANCHORAGE TO CONCRETE SLAB–ON–GRADE WITH 4" MIN. THICKNESS



2 ANCHORAGE TO CONCRETE SLAB ON METAL DECK



ELEVATION VIEW

PLAN VIEW

A STEEL BENT PLATE DETAIL

ENGINEERING

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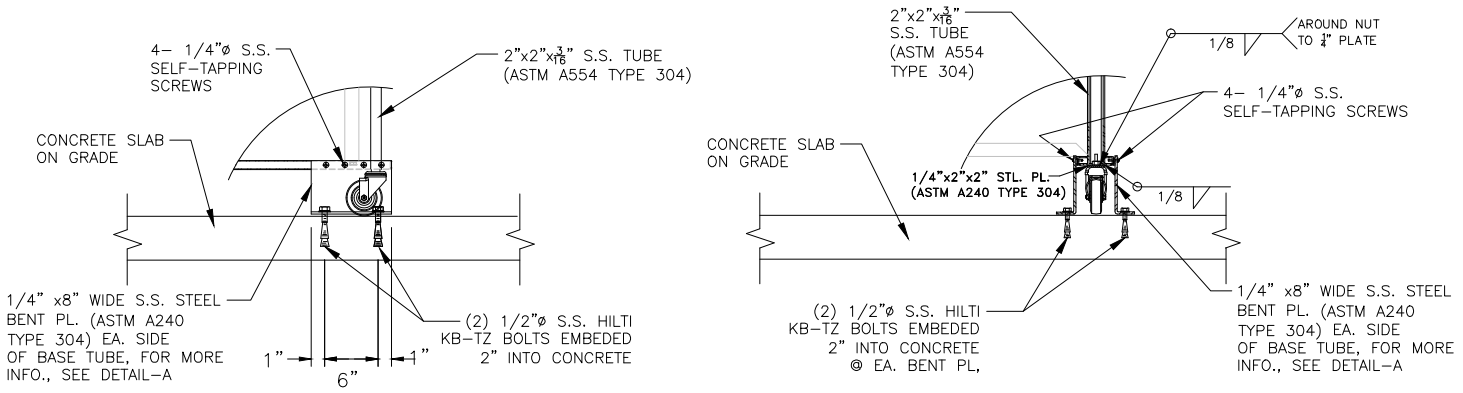
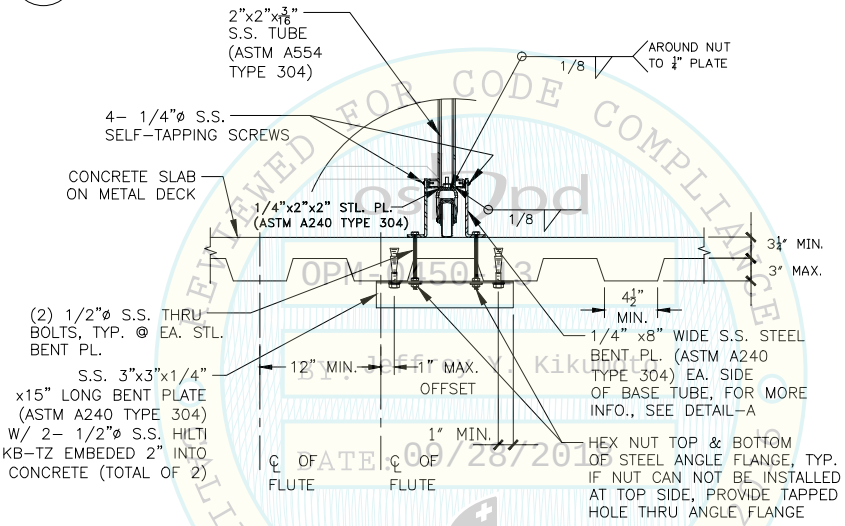
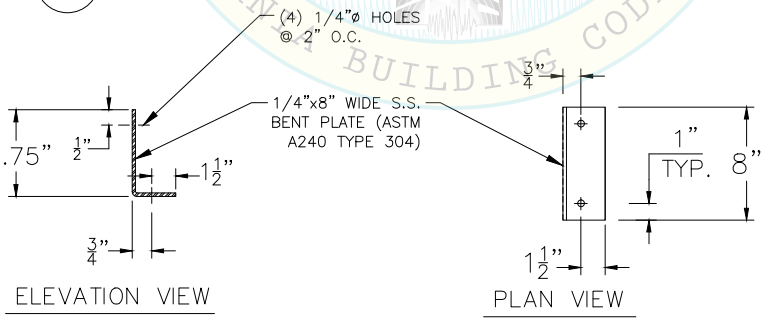
WORKSTATION ANCHORAGE DETAILS (FOR $1.5 < S_{DS} \leq 2.5$)



1 ANCHORAGE TO CONCRETE SLAB–ON–GRADE WITH 4" MIN. THICKNESS



2 ANCHORAGE TO CONCRETE SLAB ON METAL DECK



A STEEL BENT PLATE DETAIL

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