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

OSHPD Preapproval of Manufacturer’s Certification (OPM)

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

Manufacturer Information

Manufacturer: LOGIQUIP, LLC
Manufacturer’s Technical Representative: Mark Roberts
Mailing Address: 1456 S 35th Street, Galesburg, MI 49053
Telephone: 616-706-0429  Email: Mark.roberts@logiquip.net

Product Information

Product Name: Steel Storage Cabinets
Product Type: Medical Storage Shelves
Product Model Number: A, B, C, D, E, F, G, H, I
General Description: Floor and Wall supported Cabinets

Applicant Information

Applicant Company Name: LOGIQUIP, LLC
Contact Person: Mark Roberts
Mailing Address: 1456 S 35th Street, Galesburg, MI 49053
Telephone: 616-706-0429  Email: Mark.roberts@logiquip.net

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2019.

Signature of Applicant: __________________________  Date: 4/4/2019
Title: Product Development Manager  Company Name: LOGIQUIP, LLC
Registered Design Professional Preparing Engineering Recommendations

Company Name:  CYS Structural Engineers, Inc.
Name:  Dieter T. Siebald  California License Number:  S4346
Mailing Address:  2495 Natomas Park Drive, Suite 650
Telephone:  916-920-2020  Email:  dieters@cyseng.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, 2019 (CBSC 2019) 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 2019 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 2019 & ALL PRE-2019 CODE BASED PROJECTS

Signature:  Haeseong Lim  Date:  5/6/2020
Print Name:  Haeseong Lim
Title:  Senior Structural Engineer
Condition of Approval (if applicable):  

05/06/2020  OPM-0532-19: Reviewed for Code Compliance by Haeseong Lim  2 of 17
# TABLE OF CONTENTS

## OPM-0532-19

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL NOTES</td>
<td>2</td>
</tr>
<tr>
<td>ABBREVIATIONS</td>
<td>6</td>
</tr>
<tr>
<td>DESIGN CRITERIA &amp; LOAD COMBINATIONS</td>
<td>7</td>
</tr>
<tr>
<td>CABINET WEIGHTS</td>
<td>8</td>
</tr>
<tr>
<td>CABINET PLAN &amp; ELEVATIONS</td>
<td>9</td>
</tr>
<tr>
<td>ATTACHMENT TO STUD WALLS</td>
<td>10</td>
</tr>
<tr>
<td>ATTACHMENT TO CONCRETE OR CMU WALLS</td>
<td>12</td>
</tr>
<tr>
<td>ATTACHMENT DETAIL TO CONCRETE FILL OVER METAL DECK (CASE 1)</td>
<td>14</td>
</tr>
<tr>
<td>ATTACHMENT DETAIL TO CONCRETE SLAB ON GRADE (CASE 2)</td>
<td>15</td>
</tr>
</tbody>
</table>

**NOTES:**

1. THESE DRAWINGS ARE PREPARED FOR LOGQUIP, LLC, GALESBURG, MICHIGAN.

2. THE CONTRACTOR AND INSPECTOR OF RECORD SHALL OBTAIN A COPY OF THIS PRE-APPROVAL FROM THE OFFICE OF STATEWIDE HEALTH PLANNING & DEVELOPMENT (OSHPD) PRE-APPROVAL PROGRAMS WEBSITE.

3. THIS PRE-APPROVAL COVERS THE SUPPORTS AND ATTACHMENTS OF THE EQUIPMENT TO THE SUPPORTING STRUCTURE. THE EQUIPMENT IS SUPPLIED BY THE MANUFACTURER. THE EXPANSION ANCHORS, SCREWS & BACKING PLATES SHOWN IN THIS OPM SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
GENERAL NOTES:

1. THIS OSHPD PRE-APPROVAL OF MANUFACTURER’S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2019.

2. IT IS THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD FOR A SITE SPECIFIC PROJECT TO VERIFY:

A. THE ADEQUACY OF THE NEW OR (E) STRUCTURE TO RESIST THE FORCES & WT SPECIFIED FOR EA EQUIP IN ADDITION TO ALL OTHER LOADS, PROVIDE & DESIGN SUPPLEMENTARY MEMBERS AS REQ.

B. THAT THE FLR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS.

C. THAT THE FLR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY NEW OR (E) ANCHORS. THE SPCG SHOWN IN THE INSTALLATION TORQUE TABLE 1 ON PG 3 IS THE Req MIN SPCG OF THE 1/4" DIA SCREW ANCHORS. THE Req SPCG FROM ANCHORS OF OTHER DIAMETERS & EMBEDMENTS MAY VARY & SHALL BE EVALUATED BY THE SEOR.

D. THAT THE WALL SCREW ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY NEW OR (E) ANCHORS. THE SPCG SHOWN IN TABLE 2 ON PG 4 IS THE Req MIN SPCG OF THE 1/2" DIA SCREW ANCHOR THE Req SPCG FROM ANCHORS OF OTHER DIAM & EMBEDMENTS MAY VARY & SHALL BE EVALUATED BY SEOR.

E. THAT THE INSTALLATION IS IN CONFORMANCE W/ THE CBC 2019 & W/ THE DETAILS SHOWN IN THIS PRE-APPROVAL.

F. THAT THE ACTUAL EQUIP’S WT, CENTER OF GRAVITY (CG) LOCATION, ANCHOR LOCATIONS, ANCHOR DETAILS, & THE MATERIAL & GA OF THE EQUIP WHERE ATTACHMENTS ARE MADE, AGREE W/ THE INFO SHOWN ON THE PRE-APPROVAL DOCUMENTS.

G. THAT THE PROJECT SPECIFIC VALUES OF S_DS & z/h RESULT IN SEISMIC FORCES THAT DO NOT EXCEED THE VALUES PROVIDED IN THE DESIGN CRITERIA.

H. THAT THE CONC SLAB TO WHICH THE EQUIP IS ANCHORED SHALL MEET THE REQUIREMENTS OF THE APPLICABLE ICC REPORT & THIS OPM.

3A. SCREW ANCHORS IN CONC FLRS: ANCHORS INSTALLED IN NORMAL WEIGHT OR SAND-LIGHTWEIGHT CONCRETE SHALL BE HILTI KWIK HUS-EZ SCREW ANCHORS COMPLYING WITH ESR-3027 REVISED JANUARY 2020.

B. INSTALLATION: INSTALL THE ANCHORS IN ACCORDANCE W/ THE REQUIREMENTS GIVEN IN THE ICC EVALUATION REPORT FOR THE SPECIFIC ANCHOR & THE PARAMETERS GIVEN IN TABLE 1 ON PG 3.

C. JOB TESTING: THERE IS NO TENSION ON THE FLR ANCHORS. TENSION TESTING IS NOT REQ.

D. AVOID DAMAGING (E) STL REINF IN CONC SLAB WHEN INSTALLING CONC ANCHORS.

---

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

Job No: 18025
Date: 05-01-2020
Page: 2 of 15
STEEL STORAGE CABINETS

GENERAL NOTES CONTINUED:

CONC EDGE

![Diagram of a conc edge]

FIGURE 1
FOR USE W/ TABLE 1

**TABLE 1: FLR ANCHOR INSTALLATION REQUIREMENTS**

<table>
<thead>
<tr>
<th>CONDITION OF FLR ANCHORAGE</th>
<th>ANCHOR DIA (INCH) da</th>
<th>INSTALLATION EMBED (INCH) hnom</th>
<th>EFFECTIVE EMBED (INCH) hef</th>
<th>MIN HOLE DEPTH (INCH) ho</th>
<th>MIN CONC THK (INCH) hmin</th>
<th>MIN CONC EDGE DISTANCE (INCH)</th>
<th>MIN AB SPCC (INCH)</th>
<th>INSTALLATION TORQUE (FT-LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASES 1 &amp; 2</td>
<td>1/4</td>
<td>1-1/2</td>
<td>1.18</td>
<td>2</td>
<td>3-1/4</td>
<td>1-1/2</td>
<td>1/2</td>
<td>18</td>
</tr>
</tbody>
</table>


C. JOB TESTING: FOR VERIFYING SATISFACTORY INSTALLATION WORKMANSHIP, PERFORM JOB SITE TENSION TESTS IN ACCORDANCE W/ THE TENSION TEST VALUES PROVIDED IN THIS DOCUMENT. TEST 50% OF THE INSTALLED ANCHORS. THE TENSION TEST LOAD MAY BE APPLIED BY THE HYDRAULIC RAM METHOD SUCH THAT THE TENSION IN THE ANCHORS IS EFFECTIVELY MEASURED. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE SPECIAL INSPECTOR. REPORT OF TEST RESULTS SHALL BE SUBMITTED TO THE INSPECTOR OF RECORD, OWNER & ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE. IF ANY ANCHOR FAILS THE TEST, TEST ALL ANCHORS. THE TEST SHALL BE PERFORMED 24 HOURS OR MORE AFTER INSTALLATION. TESTING MAY BE DONE PRIOR TO EQUIP INSTALLATION. ALSO REFER TO CBC 1910A.5 “TESTS FOR POST–INSTALLED ANCHORS IN CONCRETE”.

D. AVOID DAMAGING (E) STL REINF IN CONC SLAB & WALL WHEN INSTALLING CONC ANCHORS.

E. FAILURE/ACCEPTANCE CRITERIA: THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:

- HYDRAULIC RAM METHOD: APPLY & HOLD TEST LOAD FOR A MIN OF 15 SECONDS. THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD WHERE WASHERS ARE USED.

**SHEET TITLE: GENERAL NOTES**

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

Job No: 18025
Date: 05-01-2020
Page: 3 of 15
STEEL STORAGE CABINETS

GENERAL NOTES CONTINUED:

INSTALLATION IN THIS AREA IS NOT PERMITTED

MORTAR JOINT

NO INSTALLATION WITHIN 1-1/4" OF HEAD JT

MIN EDGE DISTANCE, TYP

8" CRITICAL EDGE DISTANCE, TYP

INSTALLATION IN THIS AREA FOR FULL TENSION CAPACITY & REDUCED SHEAR TOWARDS EDGE CAPACITY. FOR INSTALLATION IN CRITICAL ZONE, SEE ESR-3056, FIGURE 3

FIGURE 2
FOR USE W/ TABLE 2

FIGURE 3
FOR USE W/ TABLE 2

TABLE 2: WALL SCREW ANCHOR INSTALLATION REQUIREMENTS

<table>
<thead>
<tr>
<th>WALL TYPE</th>
<th>ANCHOR DIA (INCH) da</th>
<th>INSTALLATION EMBED (INCH) hnom</th>
<th>EFFECTIVE EMBED (INCH) hef</th>
<th>MIN HOLE DEPTH (INCH) ho</th>
<th>MIN WALL THK (INCH) hmin</th>
<th>MIN CONC EDGE DISTANCE (INCH)</th>
<th>MIN AB SPCC (INCH)</th>
<th>TEST TENSION (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCRETE</td>
<td>½</td>
<td>3</td>
<td>2.16</td>
<td>3½</td>
<td>4½</td>
<td>6</td>
<td>4</td>
<td>1800</td>
</tr>
<tr>
<td>CMU</td>
<td>½</td>
<td>4½</td>
<td>4½</td>
<td>7½</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>910</td>
</tr>
</tbody>
</table>

5A. SCREW ANCHORS IN CMU WALLS: ANCHORS INSTALLED IN FULLY GROUTED CMU WALLS SHALL BE CARBON STEEL HILTI HUS-EZ SCREW ANCHORS COMPLYING WITH ESR-3056 REISSUED OCTOBER 2019.
B. SCREW ANCHORS DESIGNED TO ICC-ES AC106 ARE LIMITED TO ASD ONLY IN ACCORDANCE W/ AC106 1.2. HENCE, LRFD VALUES ARE NOT ACCEPTABLE. ASD VALUES CAN BE SHOWN PROVIDED, SEOR WILL VERIFY THAT:
   a. MASONRY IS UNCRACKED AS DEFINED IN ICC-ES AC106 SECTION 1.4.8; THE SEOR SHALL PROVIDE CALCULATIONS TO SHOW THAT THE MASONRY WALL WOULD NOT CRACK UNDER THE DESIGN EARTHQUAKE LOADS UNDER ALL SERVICE CONDITIONS; THE WALL HAS TO REMAIN ELASTIC.
   b. MASONRY IS FULLY GROUTED IN ACCORDANCE W/ ESR-3056 SECTION 3.2.
   c. CONDITIONS OF USE REQUIREMENTS IN ACCORDANCE W/ ESR-3056 SECTION 5.0 IS SATISFIED.
C. INSTALLATION: INSTALL THE SCREW ANCHORS IN ACCORDANCE W/ THE REQUIREMENTS GIVEN IN THE APPROVED ICC EVALUATION REPORT FOR THE SPECIFIC ANCHOR.
D. JOB TESTING: FOR VERIFYING SATISFACTORY INSTALLATION WORKMANSHIP, PERFORM JOB SITE TESTING FOR SCREW ANCHORS IN CMU SIMILAR TO THE CRITERIA NOTED IN SECTION 4.
E. AVOID DAMAGING (E) STL REINF IN CMU WALL WHEN INSTALLING ANCHORS.

SHEET TITLE: GENERAL NOTES

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

Job No: 18025
Date: 05-01-2020
Page: 4 of 15

05/06/2020
OPM-0532-19: Reviewed for Code Compliance by Haeseong Lim

6 of 17
STEEL STORAGE CABINETS

GENERAL NOTES CONTINUED:

6. TWO (2) CASES OF FLR ANCHORAGE ARE SPECIFIED & PRESENTED IN THIS PRE-APPROVAL:

CASE 1: ANCHORAGE DETAILS LOCATED AT UPPER FLRS ABV THE BASE OF A BLDG (z/h<0.9), IT IS ASSUMED THAT THE FLRS ARE BUILT OF A MIN 3/4" NWC OR SLWC TOPPING OVER 20 GA MIN MTL DECK (f'c = 3000 PSI, MIN). MAY BE USED AT ANY GEOGRAPHICAL LOCATION IN THE STATE OF CALIFORNIA WHERE Sps IS LESS THAN OR EQ TO 2.15.

CASE 2: ANCHORAGE DETAILS LOCATED AT OR BLW THE BASE OF A BLDG (z/h=0). THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 4" NWC SLAB (f'c = 3000 PSI, MIN). MAY BE USED IN ANY GEOGRAPHICAL LOCATION IN THE STATE OF CALIFORNIA WHERE Sps IS LESS THAN OR EQ TO 2.15.
ABBREVIATIONS:

Ωb  SEISMIC OVERSTRENGTH FACTOR
Ω  AT
AB  ANCHOR BOLT
ABV  ABOVE
ASCE  AMERICAN SOCIETY OF
      CIVIL ENGINEERS
ASD  ALLOWABLE STRESS DESIGN
ASTM  AMERICAN SOCIETY FOR
       TESTING & MATERIALS
BLDG  BUILDING
Blew  BELOW
CBC  CALIFORNIA BUILDING CODE
CG  CENTER OF GRAVITY
CLE  CENTERLINE
CMU  CONCRETE MASONRY UNIT
CONC  CONCRETE
CONT  CONTINUOUS
DF  DOUG FIRD
DIA (d)  DIAMETER
DL  DEAD LOAD
(E)  EXISTING
EA  EACH
ELEV  ELEVATION
EQ  EQUAL
EQUIP  EQUIPMENT
ES  EACH SIDE
f’c  MINIMUM ULTIMATE COMPRITIVE STRENGTH
    OF CONCRETE
f’m  MINIMUM ULTIMATE COMPRITIVE STRENGTH
    OF MASONRY
FLG  FLANGE
FLR  FLOOR
FT (*)  FOOT/FEET
Fp  HORIZONTAL SEISMIC FORCE PER
    ASCE 7-16 SEISMIC FORCE REQUIREMENTS
  V  SHEAR
Fv  VERTICAL SEISMIC DESIGN FORCE PER
    ASCE 7-16 SECTION 12.4-4
  W/  WITH
FY  SPECIFIED MINIMUM YIELD
G  GAUGE
GR  GRADE
GWB  GYPSUM WALLBOARD
HORIZ  HORIZONTAL
HT  HEIGHT
ICC  INTERNATIONAL CODE COUNCIL
IN (*)  INCH
INFO  INFORMATION
JT  JOINT
KSI  KIPS PER SQUARE INCH
LBS  POUNDS
LL  LIVE LOAD
LRFD  LOAD AND RESISTANCE FACTOR DESIGN
MAX  MAXIMUM
MFR  MANUFACTURER
MIN  MINIMUM
MTL  METAL
NO. (#)  NUMBER OR POUNDS
NWC  NORMAL WEIGHT CONCRETE
OPM  OSHPD PRE-APPROVAL OF MANUFACTURER’S
      CERTIFICATION
OSHPD  OFFICE OF STATEWIDE HEALTH PLANNING
& DEVELOPMENT
PCF  POUNDS PER CUBIC FOOT
PERP  PERPENDICULAR
PG  PAGE
PSI  POUNDS PER SQUARE INCH
PSF  POUNDS PER SQUARE FOOT
REQ  REQUIRED
SEOR  STRUCTURAL ENGINEER OF RECORD
SLWC  SAND-LIGHTWEIGHT CONCRETE
SMS  SHEET METAL SCREW
SPCG  SPACING
STL  STEEL
Tu  ANCHORAGE TENSION REACTION DUE TO
    SEISMIC FORCE
TYP  TYPICAL
THK  THICKNESS
V  SHEAR
Vu  ANCHORAGE SHEAR REACTION
W  WITH
Wp  OPERATING WEIGHT
WS  WOOD SCREW
WT  WEIGHT

SHEET TITLE: ABBREVIATIONS
STEEL STORAGE CABINETS

DESIGN CRITERIA
SUPPORT & ATTACHMENT DESIGN IS PER 2019 CBC AT LRFD LEVEL FORCES. PERMANENT FLR SUPPORTED STORAGE CABINETS OVER 6 FT TALL, INCLUDING CONTENTS. PER TABLE 13.5-1 OF ASCE 7-16 SUPPLEMENT #1

\[ q_p = 1.0 \quad R_p = 2.5 \quad I_p = 1.5 \quad \Omega_0 = 2.0 \] (CONC ANCHORS PER 2019 CBC SECTION 1617A.1.23)

MAX \( W_p \) AS SHOWN IN TABLE ON PG 8.

FOR CASE 1 – UPPER FLRS ABV THE BASE, \( z/h \) \(<= 0.9
\[ S_{DS} = 2.15 \]
\[ F_p = \frac{0.4q_p S_{DS} W_p (1+2 \frac{z}{h})}{(R_p/I_p)} = 1.445 \ W_p \] ASCE 7-16 (13.3-1)
\[ F_p (\text{MAX}) = 1.6 \ S_{DS} \ I_p W_p = 5.16 \ W_p \] ASCE 7-16 (13.3-2)
\[ F_p (\text{MIN}) = 0.3 \ S_{DS} \ I_p W_p = 0.968 \ W_p \] ASCE 7-16 (13.3-3)
\[ E_v+F_v = \pm 0.2 \ S_{DS} \ W_p = 0.430 \ W_p \] ASCE 7-16 (12.4-4)

FOR CASE 2 – SLAB AT OR BLW BASE, \( z/h = 0 \)
\[ S_{DS} = 2.15 \]
\[ F_p = \frac{0.4q_p S_{DS} W_p (1+2 \frac{z}{h})}{(R_p/I_p)} = 0.516 \ W_p \] ASCE 7-16 (13.3-1)
\[ F_p (\text{MAX}) = 1.6 \ S_{DS} \ I_p W_p = 5.16 \ W_p \] ASCE 7-16 (13.3-2)
\[ F_p (\text{MIN}) = 0.3 \ S_{DS} \ I_p W_p = 0.968 \ W_p \] MIN MAX ASCE 7-16 (13.3-3)
\[ E_v+F_v = \pm 0.2 \ S_{DS} \ W_p = 0.430 \ W_p \] ASCE 7-16 (12.4-4)
\[ F_p = 0.96 \ W_p \] (DESIGN VALUE)

LOAD COMBINATIONS
\[ (1.2+0.2 \ S_{DS}) \ D+1.0E+L \] LRFD
\[ (1.0+0.14 \ S_{DS}) \ D+0.7E \] ASD
LOAD COMBINATIONS WERE RUN FOR 100% OF HORIZ FORCE IN ONE DIRECTION & 30% OF HORIZ FORCE IN THE PERP DIRECTION.

DATE: 05/06/2019

Registered Professional Engineer

No. 411091

STATE OF CALIFORNIA

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

L.V. Voith, PE - Steel Cabinets OPM-0532-19<br>05/06/2020 - 11:56pm
Logitech.com:dimmed:1 LTN20cb16
# STEEL STORAGE CABINETS

## CABINET WEIGHTS

The following table presents the operating WTs ($W_p$) in pounds for EA available cabinet unit size. The operating WT is the sum of max assembled unit WT of the cabinet plus content WT of 20 PCF (PER 2019 CBC, TABLE 1607A.1, NOTE p, "OTHER MEDIA").

### CABINET UNIT WEIGHT (LBS)

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>WIDTH W (IN)</th>
<th>LENGTH L (IN)</th>
<th>HEIGHT H (IN)</th>
<th>$H_{CG}$ (IN)</th>
<th>VOLUME $V$ (ft$^3$)</th>
<th>SELF WT DL (LBS)</th>
<th>CONTENT WT LL (LBS)</th>
<th>MAX $W_p$ (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) SST181880LG</td>
<td>18</td>
<td>18</td>
<td>84</td>
<td>37.3</td>
<td>16</td>
<td>230</td>
<td>315</td>
<td>545</td>
</tr>
<tr>
<td>(B) SST181880RG</td>
<td>18</td>
<td>18</td>
<td>84</td>
<td>37.3</td>
<td>16</td>
<td>230</td>
<td>315</td>
<td>545</td>
</tr>
<tr>
<td>(C) SST182480LG</td>
<td>18</td>
<td>24</td>
<td>84</td>
<td>38</td>
<td>21</td>
<td>262</td>
<td>420</td>
<td>682</td>
</tr>
<tr>
<td>(D) SST182480RG</td>
<td>18</td>
<td>24</td>
<td>84</td>
<td>38</td>
<td>21</td>
<td>262</td>
<td>420</td>
<td>682</td>
</tr>
<tr>
<td>(E) SST241880LG</td>
<td>24</td>
<td>18</td>
<td>84</td>
<td>42.7</td>
<td>21</td>
<td>242</td>
<td>420</td>
<td>662</td>
</tr>
<tr>
<td>(F) SST241880RG</td>
<td>24</td>
<td>18</td>
<td>84</td>
<td>42.7</td>
<td>21</td>
<td>242</td>
<td>420</td>
<td>662</td>
</tr>
<tr>
<td>(G) SST242480LG</td>
<td>24</td>
<td>24</td>
<td>84</td>
<td>42.8</td>
<td>28</td>
<td>278</td>
<td>560</td>
<td>838</td>
</tr>
<tr>
<td>(H) SST242480RG</td>
<td>24</td>
<td>24</td>
<td>84</td>
<td>42.8</td>
<td>28</td>
<td>278</td>
<td>560</td>
<td>838</td>
</tr>
<tr>
<td>(I) SST183080HG</td>
<td>18</td>
<td>30</td>
<td>84</td>
<td>38.9</td>
<td>26</td>
<td>312</td>
<td>525</td>
<td>837</td>
</tr>
<tr>
<td>(J) SST183680HG</td>
<td>18</td>
<td>36</td>
<td>84</td>
<td>37.3</td>
<td>32</td>
<td>362</td>
<td>630</td>
<td>992</td>
</tr>
<tr>
<td>(K) SST184280HG</td>
<td>18</td>
<td>42</td>
<td>84</td>
<td>37.7</td>
<td>37</td>
<td>394</td>
<td>735</td>
<td>1129</td>
</tr>
<tr>
<td>(L) SST184880HG</td>
<td>18</td>
<td>48</td>
<td>84</td>
<td>39.8</td>
<td>42</td>
<td>407</td>
<td>840</td>
<td>1247</td>
</tr>
<tr>
<td>(M) SST243080HG</td>
<td>24</td>
<td>30</td>
<td>84</td>
<td>42.9</td>
<td>35</td>
<td>332</td>
<td>700</td>
<td>1032</td>
</tr>
<tr>
<td>(N) SST243680HG</td>
<td>24</td>
<td>36</td>
<td>84</td>
<td>46.1</td>
<td>42</td>
<td>398</td>
<td>840</td>
<td>1238</td>
</tr>
<tr>
<td>(O) SST244280HG</td>
<td>24</td>
<td>42</td>
<td>84</td>
<td>43</td>
<td>49</td>
<td>404</td>
<td>980</td>
<td>1384</td>
</tr>
<tr>
<td>(P) SST244880HG</td>
<td>24</td>
<td>48</td>
<td>84</td>
<td>43</td>
<td>56</td>
<td>439</td>
<td>1120</td>
<td>1559</td>
</tr>
<tr>
<td>(Q) SST261980LG</td>
<td>26</td>
<td>19.5</td>
<td>84</td>
<td>42.8</td>
<td>25</td>
<td>254</td>
<td>493</td>
<td>747</td>
</tr>
<tr>
<td>(R) SST261980RG</td>
<td>26</td>
<td>19.5</td>
<td>84</td>
<td>42.8</td>
<td>25</td>
<td>254</td>
<td>493</td>
<td>747</td>
</tr>
<tr>
<td>(S) SST263680HG-1C</td>
<td>26</td>
<td>36</td>
<td>84</td>
<td>43</td>
<td>46</td>
<td>344</td>
<td>910</td>
<td>1254</td>
</tr>
<tr>
<td>(T) SST263680HG-2C</td>
<td>26</td>
<td>36</td>
<td>84</td>
<td>43.1</td>
<td>46</td>
<td>416</td>
<td>910</td>
<td>1326</td>
</tr>
</tbody>
</table>

(1) HEIGHT TO CENTER OF GRAVITY ($H_{CG}$) & MAX OPERATING WEIGHT ($MAX W_p$) govern design for each model shown.

---

**CYS STRUCTURAL ENGINEERS, INC.**

2495 NATOMAS PARK DRIVE, SUITE 650  
SACRAMENTO, CA 95833

**Job No:** 18025  
**Date:** 05-01-2020

**TEL** (916) 920-2020  
www.cyseng.com  
**Page:** 8 of 15
STEEL STORAGE CABINETS

LENGTH "L"

FASTENER SPCG

EQ    EQ

SUPPORTING WALL BY SEOR. SEE GENERAL NOTE 2

HIGH ATTACHMENT CL

16 GA SS304 CABINET,
TYP Fy = 50 KSI, MIN.
FOR MODEL #, SEE PG 8

LOW ATTACHMENT CL

\( \frac{3}{4}" \times 20 \frac{3}{8}" \) GRD 5 BOLTS @
7\% OC ON LEFT & RIGHT SIDES. SPACE 2" MIN FROM
FRONT/BACK OF EQUIP PER MFR, TYP

TYP CABINET FASTENERS

\( Wp \pm Fv \)

CG

SIDE ELEV

WIDTH "W"

EQ    EQ

SUPPORTING FLR

HT TO CG, HCG

HEIGHT "H"

78.00"

FRONT ELEV

LENGTH "L"

0.625" MIN

5.00" TYP

CONC AB
(TYP OF 4)

\( \pm 0.3Fp \)

CG

Fp

FRONT PLAN VIEW

WIDTH "W"

3.63" MIN

18 GA FLG PER MFR, TYP
(Fy = 33 KSI MIN)

EQUIP FRAME

NOTES:
1. FOR ATTACHMENT TO STUD WALLS, SEE PGS 10 & 11.
2. FOR ATTACHMENT TO CONC & CMU WALLS,
SEE PGS 12 & 13.
3. FOR ATTACHMENT TO CONC FLR, SEE PGS 14 & 15.
4. CABINET MUST BE ATTACHED TO WALL & FLR.

SHEET TITLE: CABINET PLAN & ELEVATIONS

CYS STRUCTURAL ENGINEERS, INC.

2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

Job No: 18025
Date: 05-01-2020
Page: 9 of 15

TEL (916) 920-2020
www.cyseng.com

05/06/2020
OPM-0532-19: Reviewed for Code Compliance by Haeseong Lim
11 of 17
STEEL STORAGE CABINETS

SUPPORTING STRUCTURE:
MIN 18 GA STL STUDS (Fy = 33 KSI)
OR DF #2 STUDS @ 16” OC
FIELD-DRILL HOLES THRU
CABINET FOR SCREW,
TYP ES OF CABINET

FIELD-DRILL HOLES
FOR SCREW
FIELD CUT CONT ¼”x6”
WAL Fy = 50 KSI MIN) SHALL
ENGAGE 3 STUDS MIN
CABINET

ATTACHMENT C

CONNECTION PATTERN
FOR CABINET LENGTH ≤ 32”

CONNECTION PATTERN
FOR CABINET LENGTH > 32”

SCREW INSTALL
VARIANCE

SEE PG. 11 FOR
SECTIONS A-A
& B-B

SUPPORTING STRUCTURE:
MIN 18 GA STL STUDS
(Fy = 33 KSI) OR DF #2
STUDS @ 16” OC

FIELD-DRILL HOLE
THRU CABINET
FOR SCREW, TYP AT HIGH &
LOW ATTACHMENT C ES OF CABINET
(8 TOTAL)

ATTACHMENT C

SHEET TITLE: ATTACHMENT TO STUD WALLS

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

Job No: 18025
Date: 05-01-2020
Page: 10 of 15

06/23/2020
OPM-0532-19: Reviewed for Code Compliance by Haeseong Lim
STEEL STORAGE CABINETS

NOTES:
1. CABINET NOT SHOWN FOR CLARITY.
2. PRE-DRILL HOLES FOR #12 WOOD SCREWS

NOTE:
GWB NOT SHOWN FOR CLARITY.

SECTION A--A
AT CABINET TO WALL

SECTION B--B
AT WALL TO WALL STUD

#12x3½" WS FOR DF STUD OR #14 SMS W/ 1" MIN GRIP LENGTH FOR MTL STUD, TYP

ADD 2-- #14 SMS AT MTL STUDS FOR MODELS G -- T ONLY

16 GA MIN WALL STUD FY= 50 KSI MIN

Sheet Title: Attachment to Stud Walls

CYS Structural Engineers, Inc.
2495 Natomas Park Drive, Suite 650
Sacramento, CA 95833

Tel: (916) 920-2020

Job No: 18025
Date: 05-01-2020
Page: 11 of 15
STEEL STORAGE CABINETS

<table>
<thead>
<tr>
<th>CASE 1</th>
<th>CASE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1123#</td>
<td>1102#</td>
</tr>
<tr>
<td>751#</td>
<td>804#</td>
</tr>
<tr>
<td>481#</td>
<td>403#</td>
</tr>
<tr>
<td>351#</td>
<td>352#</td>
</tr>
</tbody>
</table>

MAX FORCES AT EA SCREW (LBS)

<table>
<thead>
<tr>
<th>Conc Wall at LRFD</th>
<th>CMU Wall at ASD</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Omega_w T )</td>
<td>( \Omega_v T )</td>
</tr>
<tr>
<td>( \Omega_w V )</td>
<td>( \Omega_v V )</td>
</tr>
</tbody>
</table>

FORCES AT THE CONC WALL ARE FROM MODELS T & J RESPECTIVELY. FORCES AT CMU WALL ARE FROM MODEL Q.

\( \frac{3}{8} \)" HILTI KWIK HUS-EZ CARBON STL SCREW ANCHOR. SEE BLW FOR INSTALLATION REQUIREMENTS.

SUPPORTING STRUCTURE EITHER MIN.
6" THK CONC WALL (\( f'c = 3000 \text{ PSI MIN} \))
OR 8" FULLY GROUTED CMU WALL
(\( f'm = 1500 \text{ PSI MIN} \))

SECTION C-C
AT CABINET TO CONC OR CMU WALL

NOTES:
1. DO NOT CUT OR DAMAGE (E) REBAR.
2. IT IS THE RESPONSIBILITY OF THE SEOR TO VERIFY THAT THE CMU WALL REMAINS UNCRACKED. SEE GENERAL NOTE 2.
4. AT CONC WALL: INSTALL KWIK HUS-EZ W/SPECIAL INSPECTION IN ACCORDANCE W/ ICC ESR-3027 & GENERAL NOTES 3&4. TORQUE TO 45 FT-LBS.

SHEET TITLE: ATTACHMENT TO CONC OR CMU WALLS
STEEL STORAGE CABINETS

MAX LRFD FORCES AT
EA ANCHOR (LBS)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Omega_{T_1}$</td>
<td>$\Omega_{V_1}$</td>
</tr>
<tr>
<td>CASE 1</td>
<td>N/A</td>
</tr>
</tbody>
</table>

COLD JT OR SLAB EDGE WHERE OCCURS

1.50" MIN

5.00"

FLG PER MFR

CABINET PER MFR

NWC OR SLWC
($f'_c = (3000 \text{ PSI})$)

BY Haeseong Lim

MTL DECK (20 GA MIN)

$\frac{4}{16}$" HILTI KWIK HUS-EZ W/ 1.18" EFFECTIVE EMBED.
SEE PLAN ON PG 9 FOR LOCATIONS & PG 3 FOR ANCHOR INSTALLATION REQUIREMENTS

OSHPD

OPM-0532-19

CYS STRUCTURAL ENGINEERS, INC.

2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

TEL (916) 920-2020
www.cyseng.com

Job No: 18025
Date: 05-01-2020
Page: 14 of 15
STEEL STORAGE CABINETS

<table>
<thead>
<tr>
<th>MAX LRFD FORCES AT EA ANCHOR (LBS)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>( \omega_{Tu} )</td>
<td>( \omega_{Vu} )</td>
</tr>
<tr>
<td>CASE 2</td>
<td>328#</td>
</tr>
</tbody>
</table>

\[ \text{FLG PER MFR} \]
\[ \text{CABINET PER MFR} \]
\[ \text{NWC (f'c = 3000 PSI)} \]
\[ \text{4" MIN} \]

\[ \frac{1}{4}" \text{ HILTI KWIK HUS-EZ W/ 1.18" EFFECTIVE EMBED.} \]
\[ \text{SEE PLAN ON PG 9 FOR LOCATIONS & PG 3 FOR ANCHOR INSTALLATION REQUIREMENTS} \]

COLD JT OR SLAB EDGE, WHERE OCCURS

1.5" MIN EDGE DISTANCE

SHEET TITLE: ATTACHMENT DETAIL
TO CONCRETE SLAB ON GRADE (CASE 2)

CYS STRUCTURAL ENGINEERS, INC.

2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

TEL (916) 920-2020
www.cyseng.com

Job No: 18025
Date: 05-01-2020
Page: 15 of 15