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

OFFICE USE ONLY
APPLICATION #: OPM-0083-13

OSHPD Preapproval of Manufacturer's Certification (OPM)

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

Manufacturer Information

Manufacturer: Roche Diagnostics Corporation

Manufacturer's Technical Representative: Robert A. Jones

Mailing Address: 9115 Hague Road, Indianapolis, IN 46250-0457

Telephone: 317-521-3244 Email: robert.jones@roche.com

Product Information

Product Name: cobas p 701 Modular Pre-Analytic Series

Product Type: Medical Analyzer

Product Model Number: cobas p 701

General Description: Automatic Storage and Retrieval Modules for bar-coded primary and secondary tubes. The tubes are stored in and retrieved from an environmentally controlled refrigerated storage space. The main areas of application are clinical chemistry and immunochemistry.

Applicant Information

Applicant Company Name: Roche Diagnostics Corporation

Contact Person: Robert A. Jones

Mailing Address: 9115 Hague Road, Indianapolis, IN 46250-0457

Telephone: 317-521-3244 Email: robert.jones@roche.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant: Robert A Jones Date: 03/14/14

Title: Manager, Engineering Support Company Name: Roche Diagnostics Corporation

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, Sacramento, CA 95833

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 1950-10

☐ Other* (Please Specify):

*Use of criteria other than those adopted by the California Building Standards Code, 2013 (CBSC 2013) 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 2013 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):

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Signature: Date: October 24, 2014

Print Name: William Staehlin

Title: Senior Structural Engineer

Condition of Approval (if applicable):

SEISMIC SUPPORTS AND ATTACHMENTS
TABLE OF CONTENTS
OPM–0083–13

NOTES:

1. THESE DRAWINGS ARE PREPARED FOR ROCHE DIAGNOSTICS CORPORATION, INDIANAPOLIS, INDIANA.
2. THE CONTRACTOR AND INSPECTOR OF RECORD SHALL OBTAIN A COPY OF THIS PRE–APPROVAL FROM THE OSHPD PRE–APPROVAL PROGRAMS WEBSITE.
3. THIS PRE–APPROVAL COVERS THE SUPPORTS AND ATTACHMENTS OF THE UNIT TO THE SUPPORTING STRUCTURE. THE UNIT & ATTACHMENT HARDWARE ARE SUPPLIED BY ROCHE. THROUGH BOLTS & EXPANSION ANCHORS SHOWN ON PAGES 13–16 SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

REGISTERED PROFESSIONAL ENGINEER
DIETER T SIEBALD
No. S4346
STRUCTURAL
STATE OF CALIFORNIA

Sheet Title: TABLE OF CONTENTS

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833
TEL (916) 920-2020
www.cyseng.com

Job No:	13108
Date:	9/15/2014
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GENERAL NOTES:

1. THIS OSHPD PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2013. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2013.
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 EXISTING STRUCTURE TO RESIST THE FORCES AND WEIGHT SPECIFIED FOR EACH EQUIPMENT IN ADDITION TO ALL OTHER LOADS. PROVIDE AND DESIGN SUPPLEMENTARY MEMBERS AS REQUIRED.
   B. THAT THE FLOOR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS.
   C. THAT THE FLOOR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY NEW OR EXISTING ANCHORS. THE SPACING SHOWN IN THE TEST LOADS TABLE ON PAGE 3 IS THE REQUIRED MINIMUM SPACING OF THE ½" AND ⅝" DIAMETER ANCHOR BOLTS. THE REQUIRED SPACING FROM ANCHORS OF OTHER DIAMETERS AND EMBEDMENTS MAY VARY AND SHALL BE EVALUATED BY THE SEOR.
   D. THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CBC 2013 AND WITH THE DETAILS SHOWN IN THIS PRE-APPROVAL.
   E. THAT THE ACTUAL EQUIPMENT'S WEIGHT, CENTER OF GRAVITY (CG) LOCATION, ANCHOR LOCATIONS, ANCHOR DETAILS, AND THE MATERIAL AND GAGE OF THE EQUIPMENT WHERE ATTACHMENTS ARE MADE, AGREE WITH THE INFORMATION SHOWN ON THE PRE-APPROVAL DOCUMENTS.
3. EXPANSION ANCHORS INSTALLED IN NORMAL WEIGHT OR SAND-LIGHTWEIGHT CONCRETE SHALL BE CARBON STEEL HILTI KB-TZ EXPANSION ANCHORS COMPLYING WITH ESR-1917 REISSUED MAY 1, 2013.
   A. INSTALLATION: INSTALL THE EXPANSION ANCHORS IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN THE ICC EVALUATION REPORT FOR THE SPECIFIC ANCHOR AND THE PARAMETERS GIVEN IN THE TABLE ON PAGE 3.
   B. JOB TESTING: FOR VERIFYING SATISFACTORY INSTALLATION WORKMANSHIP, PERFORM JOB SITE TESTING IN ACCORDANCE WITH THE TEST LOAD VALUES GIVEN IN THE TABLE ON PAGE 3. TEST 50% OF THE INSTALLED ANCHORS. THE TENSION TEST LOAD MAY BE APPLIED BY ANY METHOD THAT WILL EFFECTIVELY MEASURE THE TENSION IN THE ANCHOR SUCH AS DIRECT PULL WITH A HYDRAULIC JACK OR CALIBRATED SPRING LOADING DEVICES. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE INSPECTOR OF RECORD. 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 EQUIPMENT INSTALLATION. ALSO REFER TO CBC 1913A.7 "FIELD TESTS FOR POST-INSTALLED ANCHORS IN CONCRETE".
   C. FAILURE/ACCEPTANCE CRITERIA: THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
      - HYDRAULIC RAM METHOD: APPLY AND HOLD TEST LOAD FOR A MINIMUM OF 15 SECONDS. THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD WHERE WASHERS ARE USED. FOR WEDGE TYPE ANCHORS, SUCH AS HILTI KB-TZ, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE.
      - TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS: WEDGE TYPE: ONE-HALF (½) TURN OF THE NUT.

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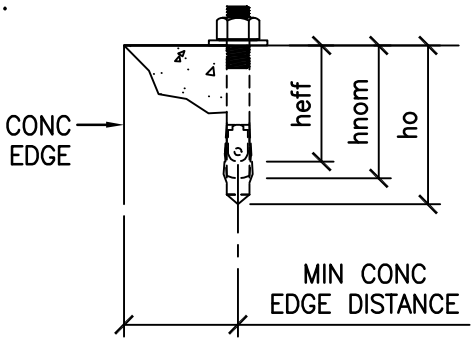
GENERAL NOTES CONTINUED:

3D. TEST VALUES: APPLY TEST LOADS TO ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE, SEE TABLE BELOW.



ANCHOR DIA (INCH)	INSTALLATION EMBED (INCH) hnom	EFFECTIVE EMBED (INCH) heff	HOLE DEPTH (INCH) ho	MIN CONC THICKNESS (INCH) h	MIN CONC EDGE DISTANCE (INCH)	MIN ANCHOR SPACING (INCH)	TEST LOAD		CONDITION OF ATTACHMENT
							TENSION LOAD (LBS)	TORQUE (FT–LBS)	
½	2⅜	2	2⅝	4	12	5⅞	1580	40	CASE 2,3A
½	2⅜	2	2⅝	4	12	11¾	1600	40	CASE 4
⅝	3⁹⁄₁₆	3⅛	3¾	5	12	5⅞	3130	60	CASE 3B
⅝	4⁷⁄₁₆	4	4¾	6	12	5⅞	4490	60	CASE 3C

4. BOLTS THROUGH CONC ON MTL DECK:
   A. BOLTS SHALL BE TORQUED BY ¾ TURN OF THE NUTS AFTER SNUG TIGHT (THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQ TO BRING THE CONNECTED PLIES INTO FIRM CONTACT) CONDITION IS ACHIEVED, UNO.
   B. THRU–BOLT HOLES SHALL BE ⅛" LARGER THAN BOLT SIZE (HOLE SIZE = BOLT SIZE + ⅛")
   C. THRU–BOLTS IN CONC SHALL RECEIVE SPECIAL INSPECTION & TESTING (THROUGH BOLTS W/ STL TO STL CONN IN TENSION DO NOT REQ TESTING) IN ACCORDANCE W/ REQUIREMENTS FOR POST–INSTALLED ANCHORS.

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Sheet Title: GENERAL NOTES (CONTINUED)

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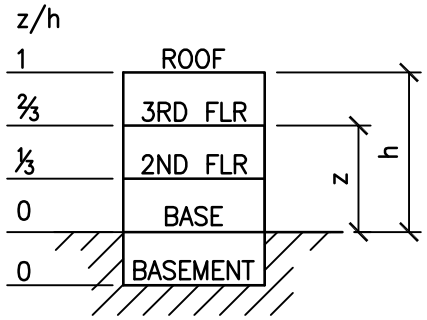
GENERAL NOTES CONTINUED:

5. SIX (6) CASES OF ATTACHMENT ARE SPECIFIED AND PRESENTED IN THIS PRE-APPROVAL:



BUILDING ELEVATION

CASE 1: ATTACHMENT DTL LOCATED AT UPPER FLRS ABV THE BASE OF A BLDG (z/h<=1.0), THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 3¼" SLWC TOPPING OVER MTL DECK (f'c = 3000 PSI, MIN).

CASE 2: ATTACHMENT DTL LOCATED AT UPPER FLRS ABV THE BASE OF A BLDG (z/h<=1.0), THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 4" NWC SUSPENDED SLAB OR TOPPING OVER MTL DECK (f'c = 3000 PSI, MIN).
FOR THIS CASE THE MAX S_{DS} IS LIMITED TO 1.60.

CASE 3A: ATTACHMENT DTL 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).

CASE 3B: ATTACHMENT DTL LOCATED AT OR BLW THE BASE OF THE BLDG (z/h=0). THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 5" NWC SLAB (f'c = 3000 PSI, MIN).

CASE 3C: ATTACHMENT DTL LOCATED AT OR BLW THE BASE OF THE BLDG (z/h=0). THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 6" NWC SLAB (f'c = 3000 PSI, MIN).

CASE 4: ATTACHMENT DTL LOCATED AT OR BLW THE BASE OF THE BLDG (z/h=0). THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 4" NWC SLAB (f'c = 3000 PSI, MIN). **FOR THIS CASE THE MAX S_{DS} IS LIMITED TO 1.60.**

6. THIS PRE-APPROVAL MAY BE USED AT ANY GEOGRAPHICAL LOCATION IN THE STATE OF CALIFORNIA. WHERE S_{DS} IS LESS THAN OR EQ TO 2.50, **EXCEPT FOR CASES 2 & 4 WHERE S_{DS} MUST BE LESS THAN OR EQ TO 1.60.**

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Sheet Title: GENERAL NOTES (CONTINUED)

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ABBREVIATIONS:

@	AT
AB	ANCHOR BOLT
ABV	ABOVE
ADJ	ADJACENT
ALT	ALTERNATE
ASD	ALLOWABLE STRENGTH DESIGN
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
BLDG	BUILDING
BLW	BELOW
BOTT	BOTTOM
BRCG	BRACING
BTW	BETWEEN
CBC	CALIFORNIA BUILDING CODE
CG	CENTER OF GRAVITY
CLSE	CALIFORNIA LICENSED STRUCTURAL ENGINEER
℄	CENTERLINE
CONC	CONCRETE
CONN	CONNECTION
COORD	COORDINATE
CRS	COLD ROLLED STEEL
DTL(S)	DETAIL(S)
DIA (ø)	DIAMETER
(E)	EXISTING CONDITION
EA	EACH
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EXTR	EXTERIOR
f'c	MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE
FLR	FLOOR
F_p	HORIZONTAL SEISMIC FORCE PER ASCE 7-10 SEISMIC FORCE REQUIREMENTS
F_v	VERTICAL SEISMIC FORCE PER ASCE 7-10 SEISMIC FORCE REQUIREMENTS
Fy	SPECIFIED YIELD STRENGTH OF REINFORCING OR SPECIFIED MINIMUM YIELD STRESS OF STEEL/ALUMIMUM
ICC	INTERNATIONAL CODE COUNCIL
IN (")	INCH
KSI	KIPS PER SQUARE INCH
L	LENGTH
LRFD	LOAD & RESISTANCE FACTOR DESIGN
LWC	LIGHTWEIGHT CONCRETE
MAX	MAXIMUM
MFR	MANUFACTURER
MIN	MINIMUM
MTL	METAL
NWC	NORMAL-WEIGHT CONCRETE
OPG	OPENING
OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING & DEVELOPMENT
PG(S)	PAGE(S)
PERP	PERPENDICULAR
PL	PLATE
PSI	POUNDS PER SQUARE INCH
R	RADIUS OF GYRATION
RDP	REGISTERED DESIGN PROFESSIONAL
REQ	REQUIRED
SEOR	STRUCTURAL ENGINEER OF RECORD
SIM	SIMILAR
SLWC	SAND LIGHTWEIGHT CONCRETE
SMS	SHEET METAL SCREWS
STD	STANDARD
STL	STEEL
T	TENSION REACTION
T&B	TOP & BOTTOM
THRD	THREAD OR THREADED
TYP	TYPICAL
UNO	UNLESS NOTES OTHERWISE
V	SHEAR REACTION
W_p	COMPONENT OPERATING WEIGHT
W/	WITH

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Sheet Title: ABBREVIATIONS

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DESIGN CRITERIA

ATTACHMENT DESIGN IS PER 2013 CBC AT LRFD LEVEL FORCES.

FLR MOUNTED MECHANICAL WET SIDE HVAC EQUIP PER ASCE 7-10 TABLE 13.6-1.

a_p = 1.0 R_p = 2.5 I_p = 1.5 Ω_o = 2.5 (CONC ANCHORS)

W_P AS NOTED ON EQUIP DRAWING SHOWN ON PGS 7 & 10

FOR CASE 1 - UPPER FLRS ABV THE BASE, z/h <= 1.0
S_{DS} = 2.50 F_p = 1.800 W_p F_v = 0.50 W_p

FOR CASE 2 - UPPER FLRS ABV THE BASE, z/h <= 1.0
S_{DS} = 1.60 F_p = 1.152 W_p F_v = 0.32 W_p

FOR CASES 3A, 3B & 3C - SLAB AT OR BLW BASE, z/h = 0
S_{DS} = 2.50 F_p = 1.125 W_p F_v = 0.50 W_p

FOR CASE 4 - SLAB AT OR BLW BASE, z/h = 0
S_{DS} = 1.60 F_p = 0.720 W_p F_v = 0.32 W_p

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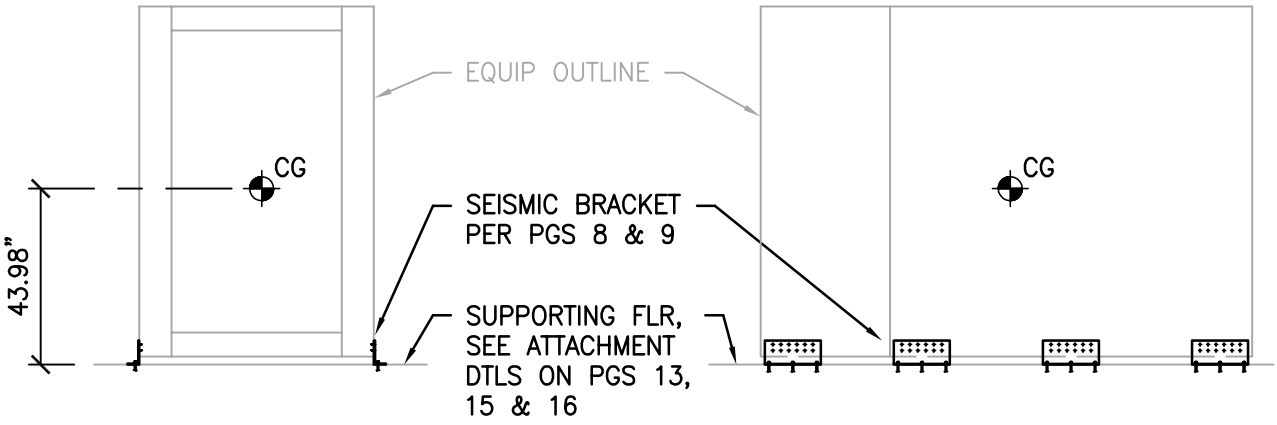
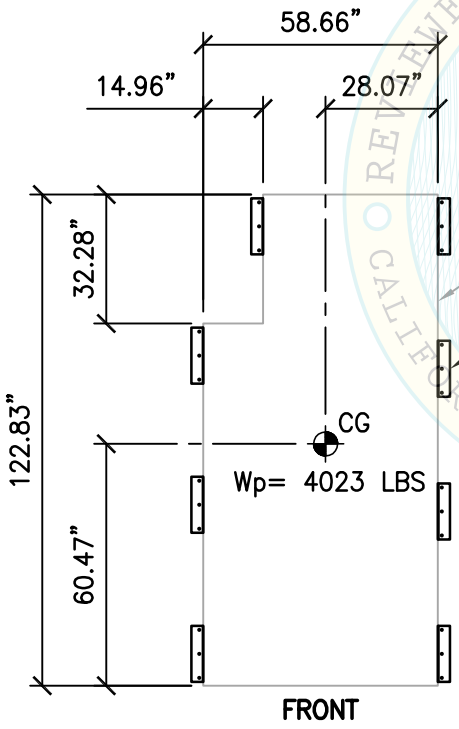
ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE



FRONT ELEV

LEFT SIDE ELEV



BASE PLAN

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STATE OF CALIFORNIA

Sheet Title: SAMPLE STORE
BASE PLAN & ELEVATIONS

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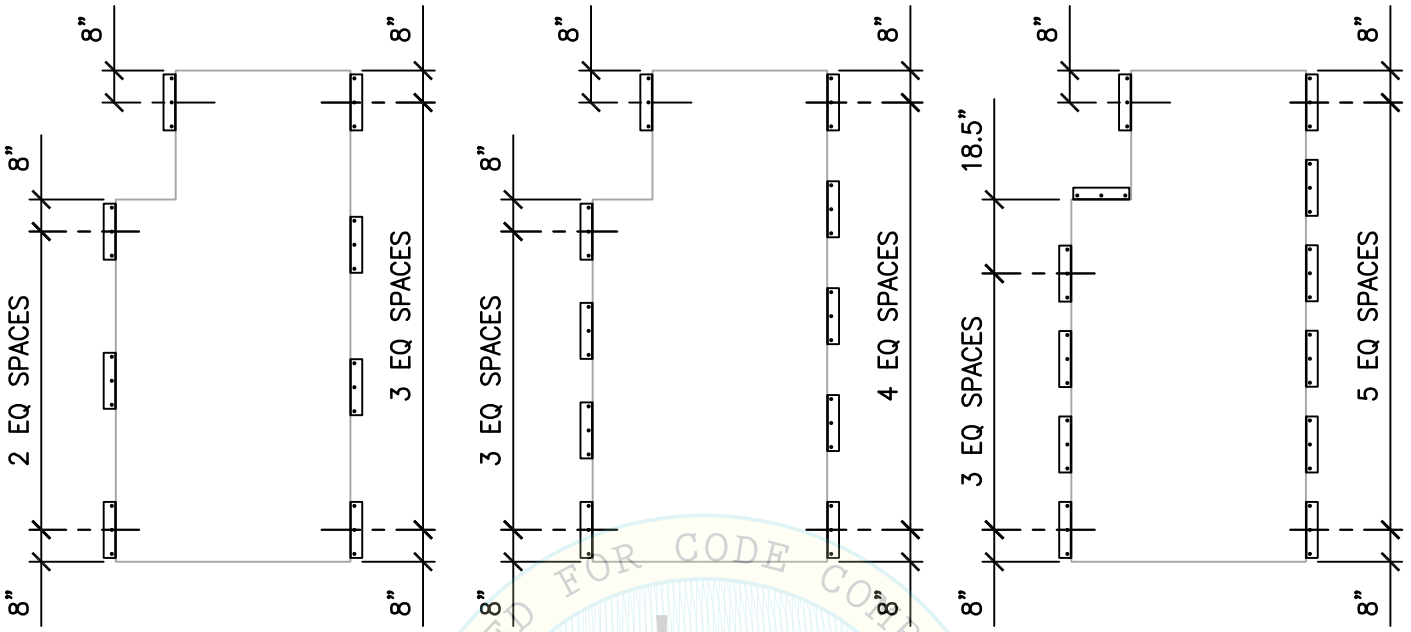
ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE



8 BRACKET LAYOUT 10 BRACKET LAYOUT 12 BRACKET LAYOUT

ATTACHMENT SCHEDULE

S_{DS}	CASE	SUPPORTING FLR	BRACKET LAYOUT	ANCHORS PER BRACKET
≤2.50	1	SLWC OVER MTL DECK	8	2– ½"ø THRU–BOLTS
	3A	4" SLAB ON GRADE	12	3– ½"ø x 2" EMBED
	3B	5" SLAB ON GRADE	10	2– ⅝"ø x 3⅛" EMBED
	3C	6" SLAB ON GRADE	8	2– ⅝"ø x 4" EMBED
≤1.60	2	NWC OVER MTL DECK	12	3– ½"ø x 2" EMBED
	4	4" SLAB ON GRADE	10	2– ½"ø x 2" EMBED

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Sheet Title: SAMPLE STORE: ATTACHMENT SCHEDULE & SEISMIC BRACKET LAYOUTS

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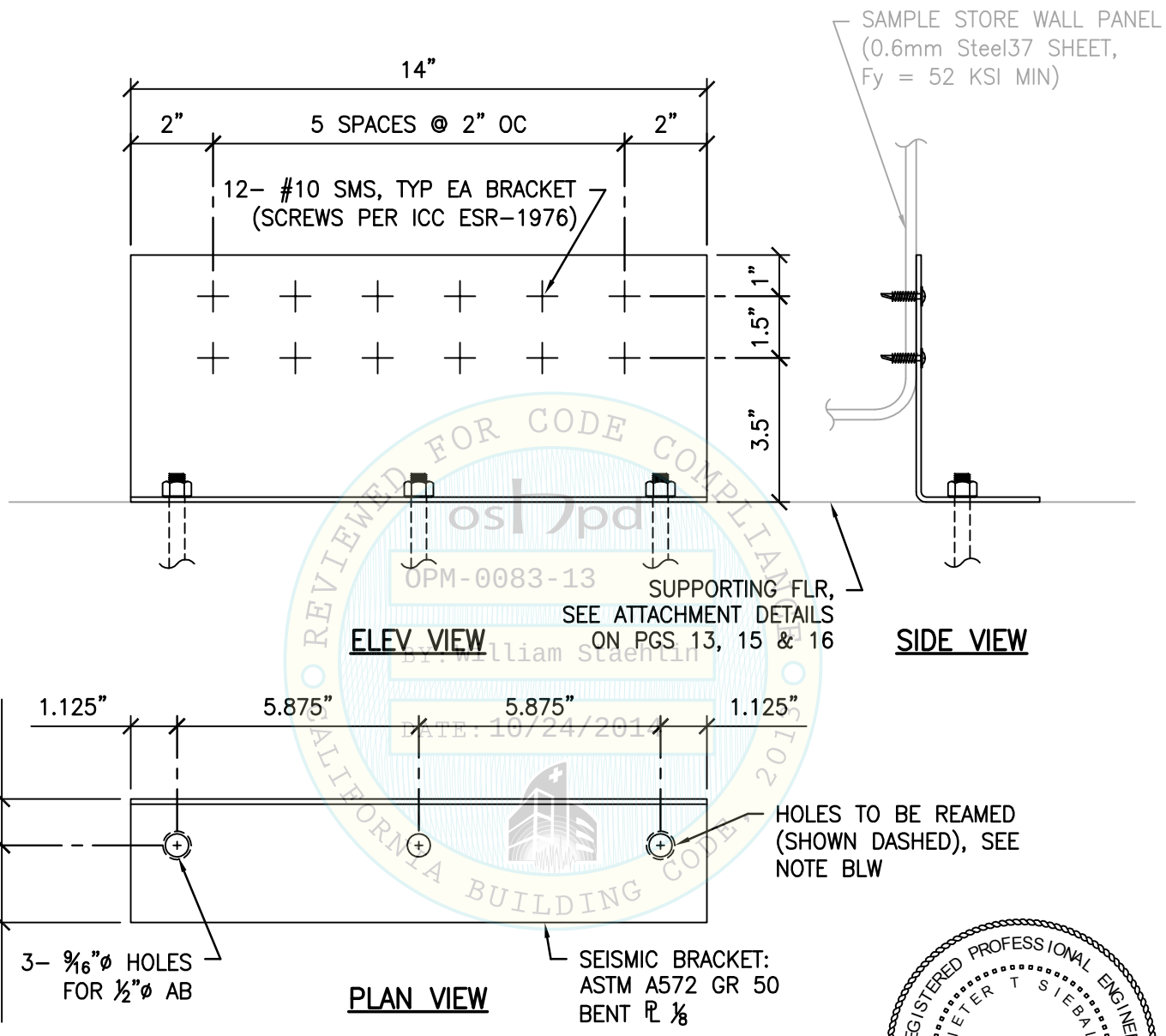
ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE



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STRUCTURAL
STATE OF CALIFORNIA

NOTE:
FOR CASES 3B & 3C, ATTACHMENT HOLES MUST BE REAMED OUT BY THE CONTRACTOR TO 1 1/16"ø TO ACCOMMODATE THE 5/8"ø ANCHORS. CONTRACTOR IS RESPONSIBLE FOR REPLACING BRACKET IF IT IS DAMAGED DURING REAMING.

Sheet Title: SAMPLE STORE
SEISMIC BRACKET DETAIL

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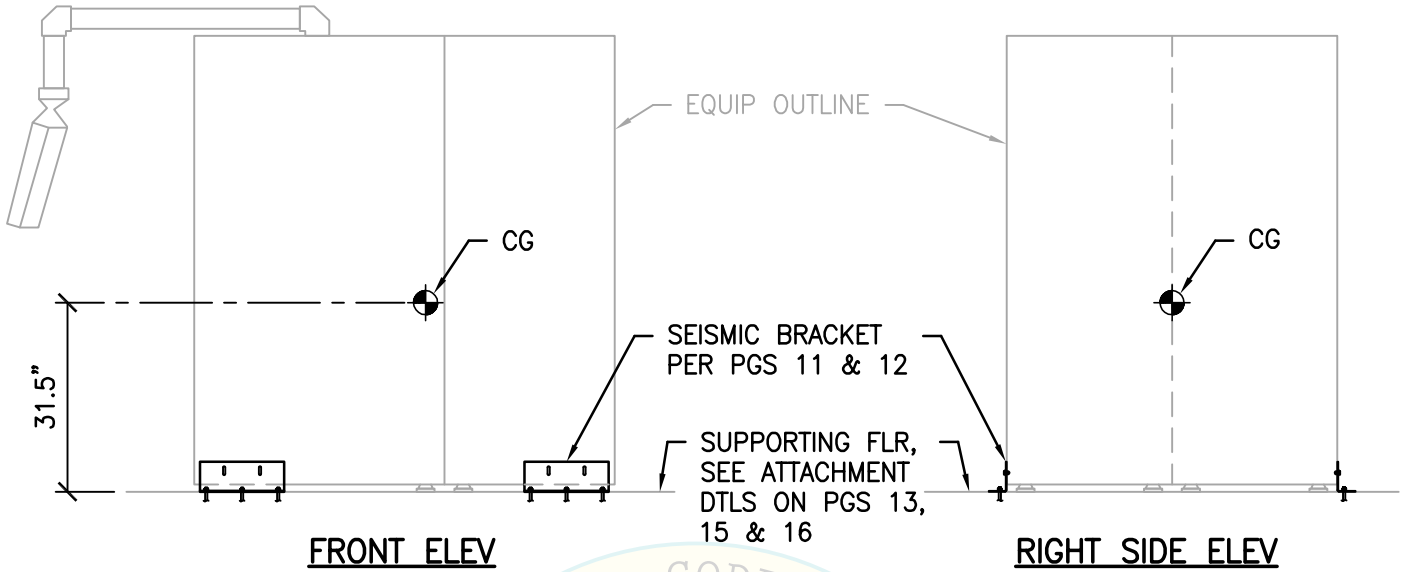
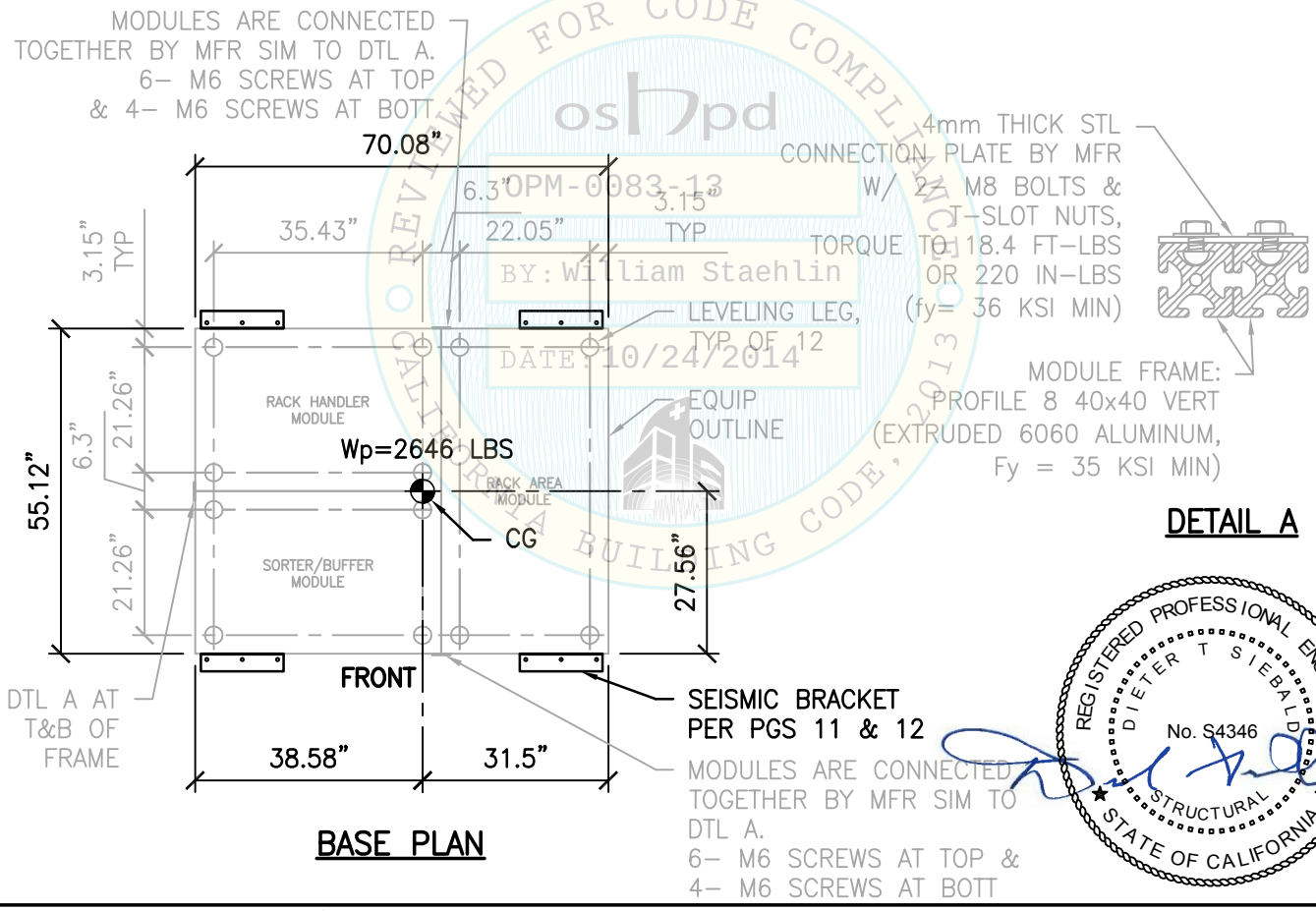
ROCHE DIAGNOSTICS CORPORATION

cobas p 701 SAMPLE RETRIEVAL MODULE



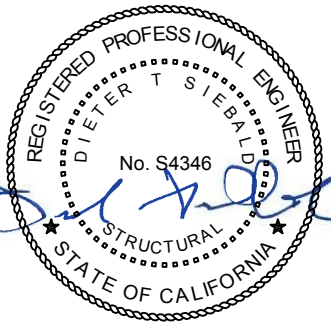
FRONT ELEV

RIGHT SIDE ELEV



DETAIL A

BASE PLAN



Sheet Title: HANDLING AREA
BASE PLAN & ELEVATIONS

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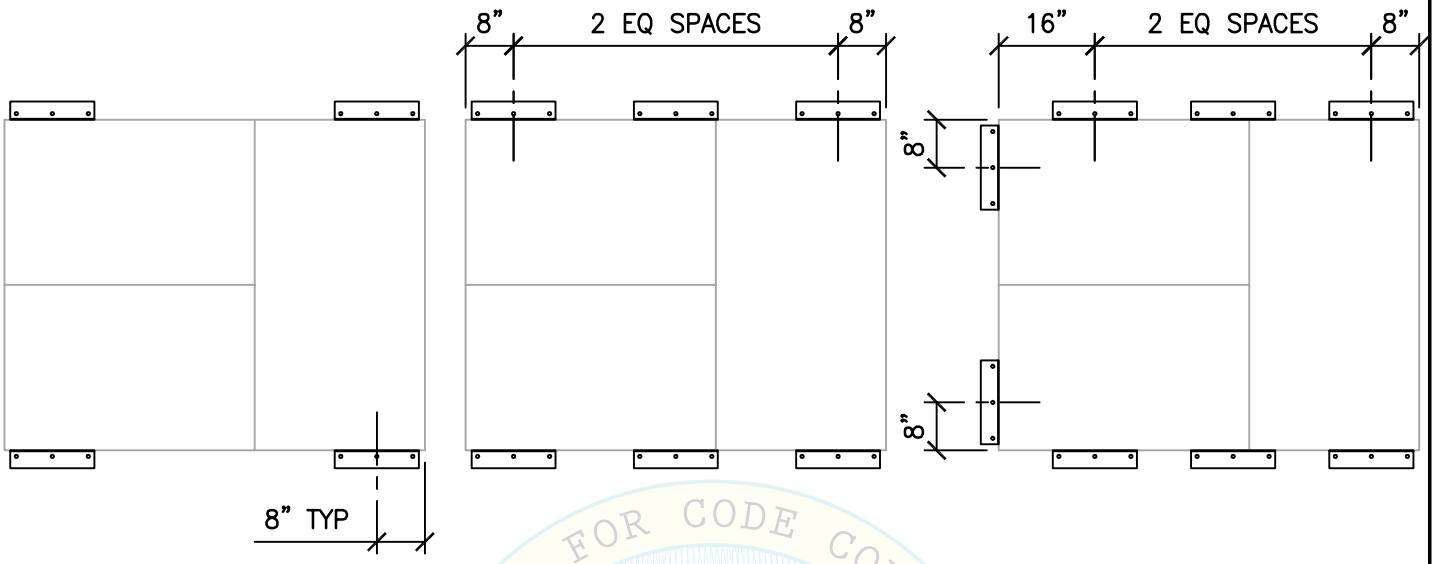
ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE



4 BRACKET LAYOUT 6 BRACKET LAYOUT 8 BRACKET LAYOUT

ATTACHMENT SCHEDULE				
S_{DS}	CASE	SUPPORTING FLR	BRACKET LAYOUT	ANCHORS PER BRACKET
≤2.50	1	SLWC OVER MTL DECK	4	2– ½"ø THRU–BOLTS
	3A	4" SLAB ON GRADE	8	3– ½"ø x 2" EMBED
	3B	5" SLAB ON GRADE	6	2– ⅝"ø x 3⅛" EMBED
	3C	6" SLAB ON GRADE	4	2– ⅝"ø x 4" EMBED
≤1.60	2	NWC OVER MTL DECK	8	3– ½"ø x 2" EMBED
	4	4" SLAB ON GRADE	6	2– ½"ø x 2" EMBED

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Sheet Title: HANDLING AREA: ATTACHMENT SCHEDULE & SEISMIC BRACKET LAYOUTS

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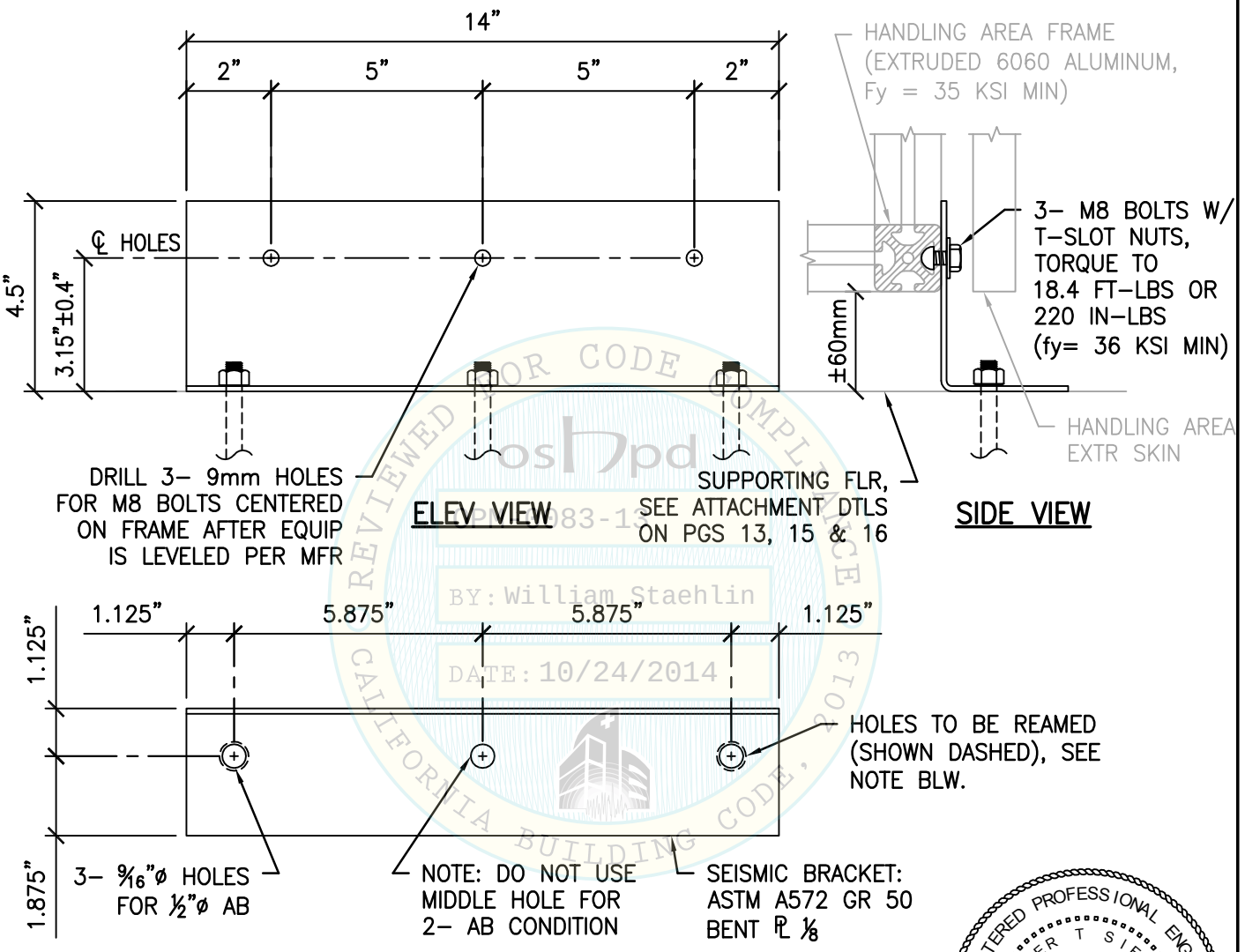

NOTE:
FOR CASE 3B & 3C ATTACHMENT HOLES MUST BE REAMED OUT BY THE CONTRACTOR TO 1 1⁄16"ø TO ACCOMMODATE THE 5⁄8"ø ANCHORS. CONTRACTOR IS RESPONSIBLE FOR REPLACING BRACKET IF IT IS DAMAGED DURING REAMING.

REGISTERED PROFESSIONAL ENGINEER
DIETER T SIEBALD
No. S4346
STRUCTURAL
STATE OF CALIFORNIA

Sheet Title: HANDLING AREA
SEISMIC BRACKET DETAIL

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833
TEL (916) 920-2020
www.cyseng.com

Job No:	13108
Date:	9/15/2014
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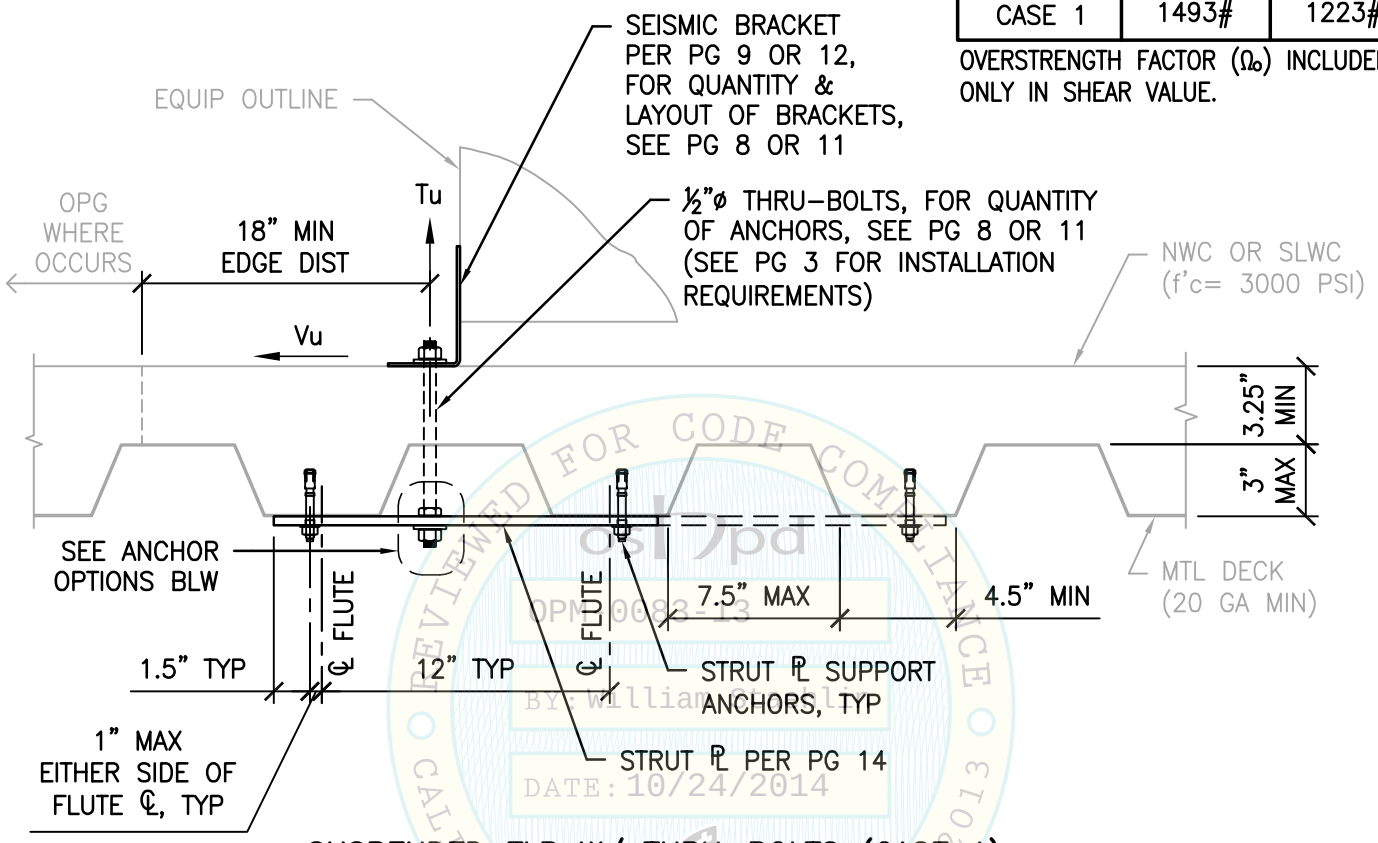
L:\Jobs13\13108 Roche – cobas p701 MPA Series OPM–0083–13\STRU\S1.dwg Time:Sep15,2014–12:20pm Login:camachom Dimscale:1 LTScale:6

ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE

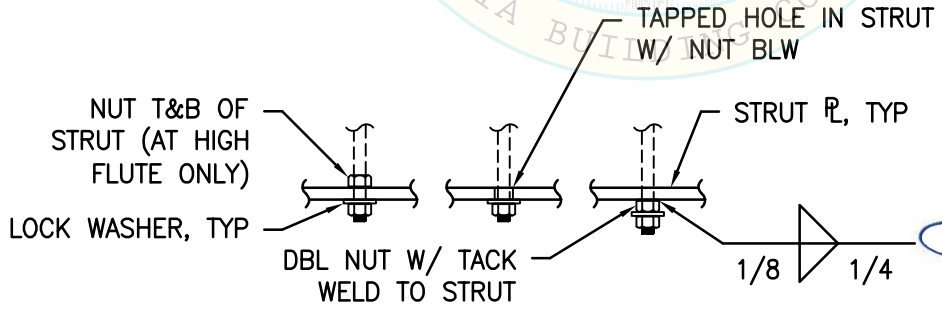
Roche

	MAX LRFD FORCES AT EA ANCHOR	
	T_u	$\Omega_o V_u$
CASE 1	1493#	1223#

OVERSTRENGTH FACTOR (Ω_o) INCLUDED ONLY IN SHEAR VALUE.



SUSPENDED FLR W/ THRU-BOLTS (CASE 1)



ANCHOR OPTIONS

REGISTERED PROFESSIONAL ENGINEER
DIETER T SIEBALD
No. S4346
STRUCTURAL
STATE OF CALIFORNIA

Sheet Title: ATTACHMENT DETAIL TO SUSPENDED FLOOR - CASE 1

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833
TEL (916) 920-2020
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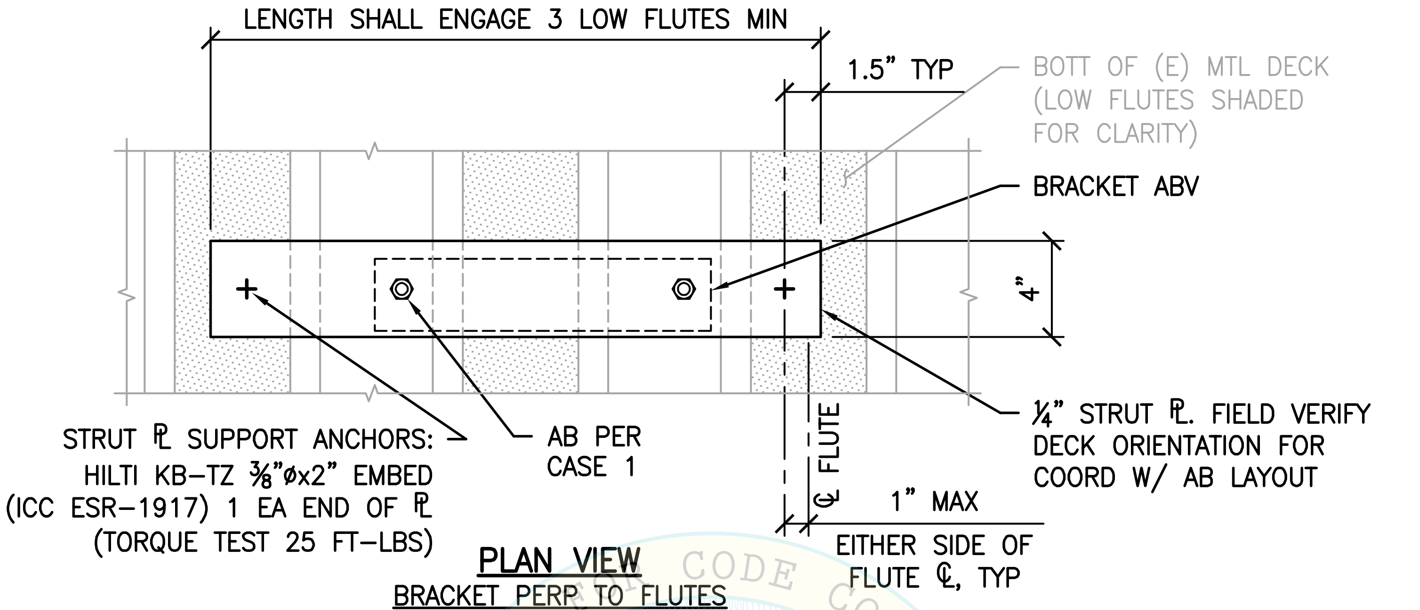
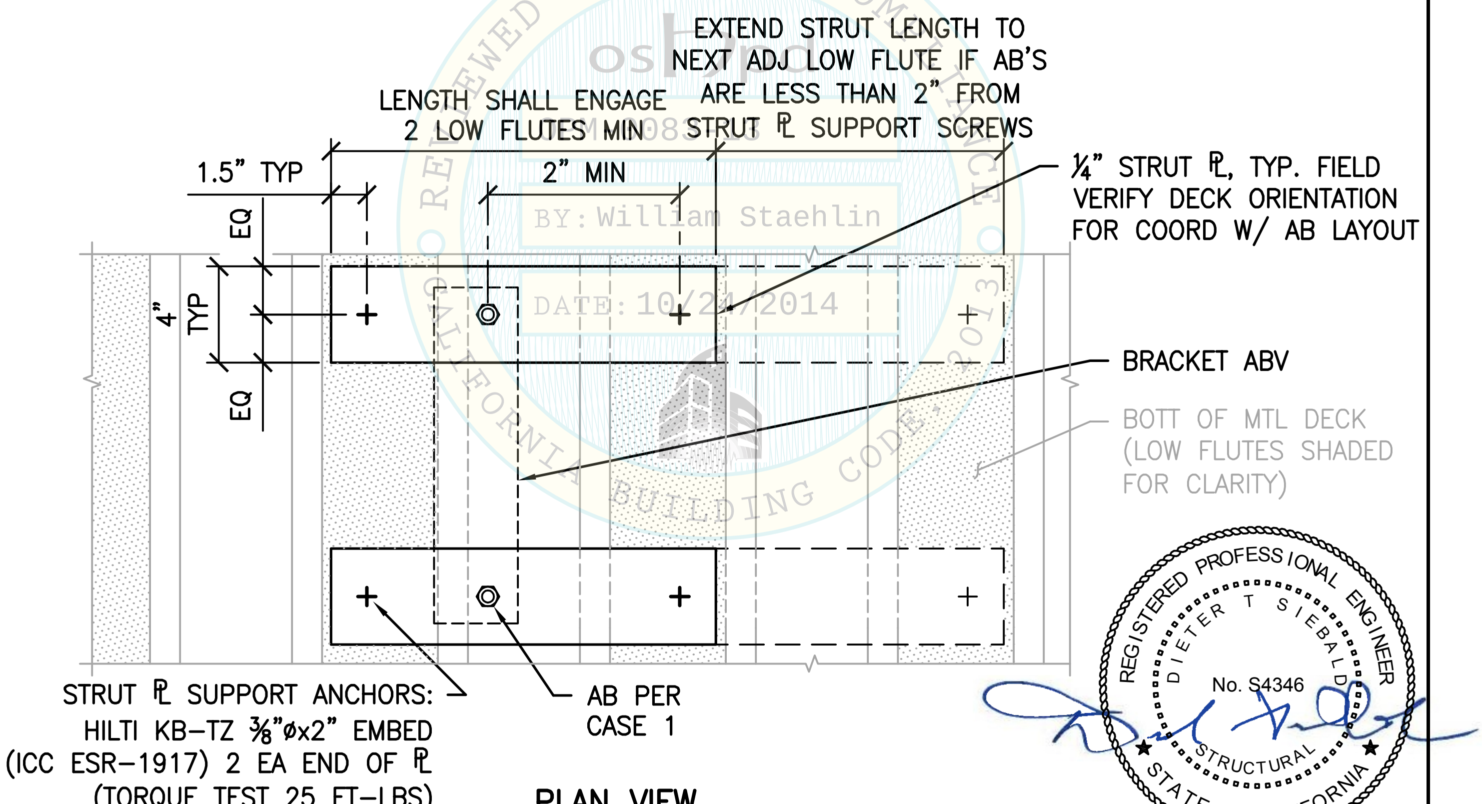
L:\Jobs13\13108 Roche - cobas p701 MPA Series OPM-0083-13\STRU\S1.dwg Time:Sep15,2014-12:20pm Login:camachom Dimscale:1 LTScale:6



PLAN VIEW
BRACKET PERP TO FLUTES



PLAN VIEW
BRACKET PARALLEL TO FLUTES

Sheet Title: TYPICAL STRUT DETAIL

CYS STRUCTURAL ENGINEERS, INC.
2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833
TEL (916) 920-2020
www.cyseng.com

Job No:	13108
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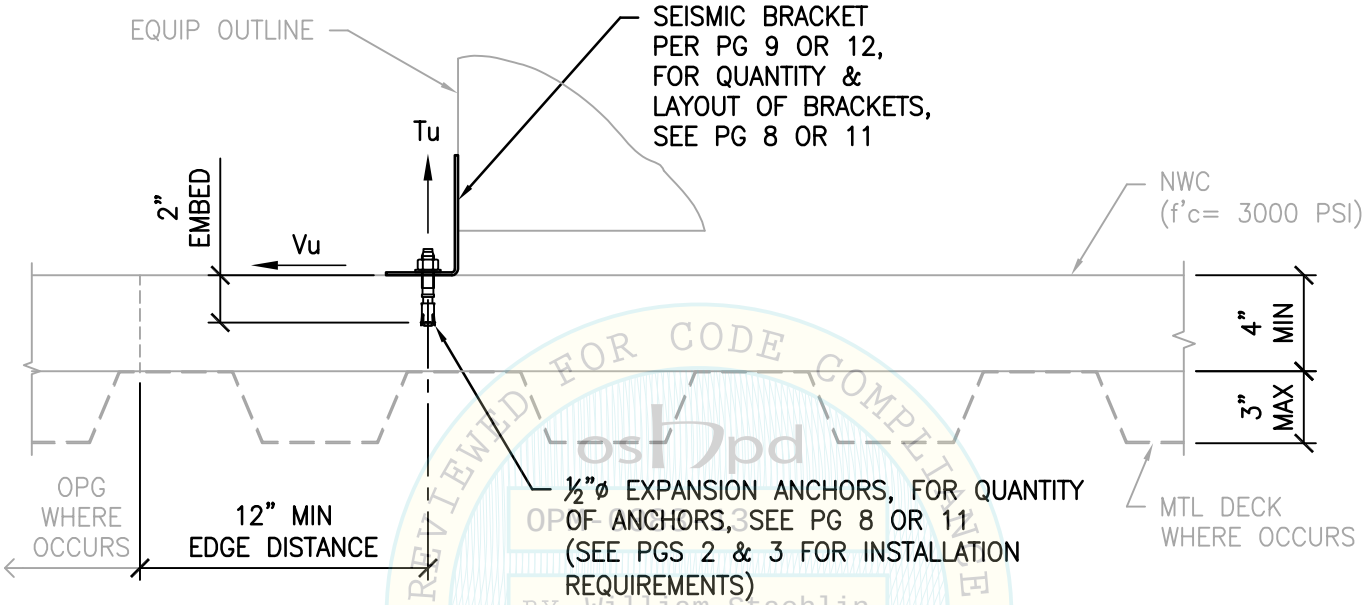
ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE

	MAX LRFD FORCES AT EA ANCHOR	
	$\Omega_o T_u$	$\Omega_o V_u$
CASE 2	1116#	342#

OVERSTRENGTH FACTOR (Ω_o) INCLUDED.



SUSPENDED FLR W/ EXPANSION ANCHORS (CASE 2)

REGISTERED PROFESSIONAL ENGINEER
DIETER T SIEBALD
No. S4346
STRUCTURAL
STATE OF CALIFORNIA

Sheet Title: ATTACHMENT DETAIL TO SUSPENDED FLOOR - CASE 2

CYS STRUCTURAL ENGINEERS, INC.
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Job No:	13108
Date:	9/15/2014
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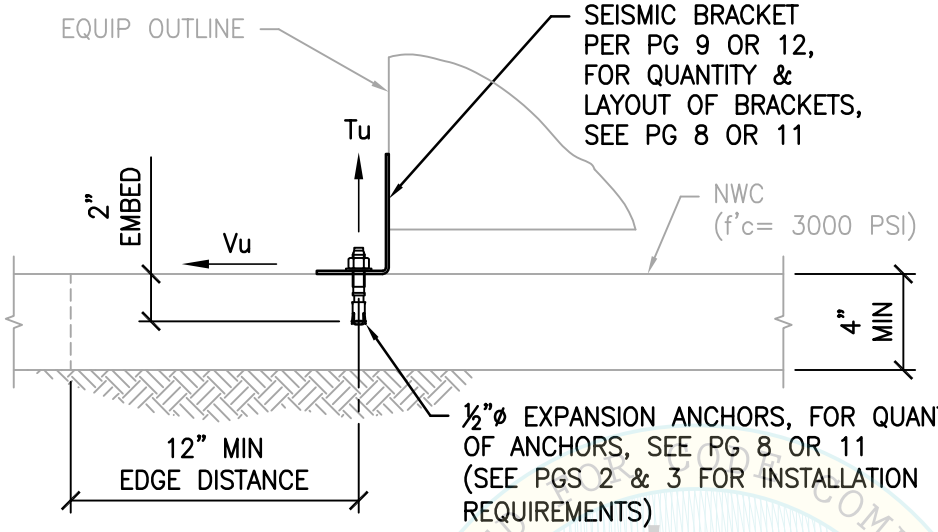
ROCHE DIAGNOSTICS CORPORATION
cobas p 701 SAMPLE RETRIEVAL MODULE

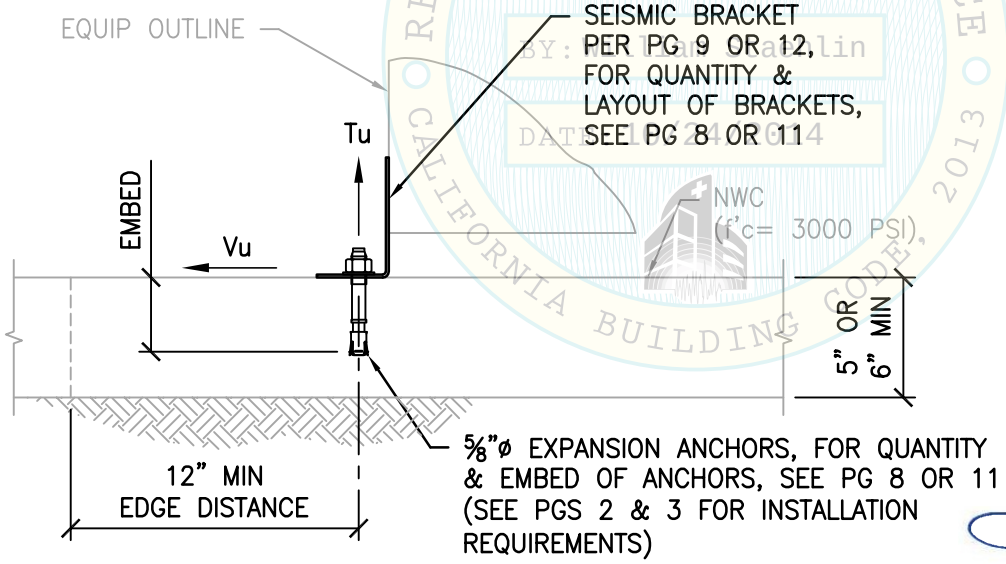
Roche

	MAX LRFD FORCES AT EA ANCHOR	
	$\Omega_o T_u$	$\Omega_o V_u$
CASE 3A	1120#	334#
CASE 3B	2020#	644#
CASE 3C	2407#	763#
CASE 4	1192#	412#

OVERSTRENGTH FACTOR (Ω_o) INCLUDED.



4" SLAB ON GRADE (CASES 3A & 4)



5" OR 6" SLAB ON GRADE (CASES 3B & 3C)

REGISTERED PROFESSIONAL ENGINEER
DIETER T SIEBALD
No. S4346
STRUCTURAL
STATE OF CALIFORNIA

Sheet Title: ATTACHMENT DETAIL TO SLAB ON GRADE - CASES 3 & 4

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