PERFORMANCE TEST REPORT

SERIES 3252 HP
CURTAIN WALL SYSTEM

CCLW JOB #20-6612

OCTOBER 16, 2020

DATE OF FORMAL TESTING

AUGUST 13, 2020

TESTED FOR AND INSTALLED BY

C.R. LAURENCE, INC.
2503 E. VERNON AVENUE
VERNON, CA 90058

TEST LOCATION

CONSTRUCTION CONSULTING LABORATORY WEST
4751 WEST STATE STREET, SUITE B
ONTARIO, CA 91762

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MOCK UP DESCRIPTION

The scope of the performance mock up test specimen was a two plus (2+) story field assembled wall mockup consisting of two (2) 13′ floor spans; three (3) modules in width and seven (7) 1″ insulated glass lites high. The materials were fabricated, furnished and installed by C. R. Laurence Co. (CRL) The overall size of the performance mockup was 15′-2″ wide by 31′- 8″ high.

The mockup materials were installed per mock up drawings sheets (1 through 15) and installation instructions sheets (1 through 33).

For a complete description including sealant, anchorage, weeps, and framing details, see "as-built" drawings at the conclusion of this report. This report is not complete unless these drawings marked in red and stamped by this laboratory are included.

TEST LOADS Structural loads were tested at **30 psf**, **35 psf** and **40 psf** Positive and Negative design loads.

All references to positive pressures are considered inward acting and negative is outward acting. All observations are as viewed from the interior unless noted.

The mock up was tested in accordance with each current applicable AAMA or ASTM standard.

WITNESSED BY - all or partial)

Roman Aguiniga	C. R. Laurence Co. Inc.
Bladimir Ochoa	C. R. Laurence Co. Inc.
Naoufel Mourchid	C. R. Laurence Co. Inc.
Roman Jimenez	C. R. Laurence Co. Inc.
Jack W. Jackson	Construction Consulting Laboratory West
Chad C. Jackson	Construction Consulting Laboratory West

TEST EQUIPMENT

The specimen was installed into a test chamber with floor beams constructed of structural shapes and it was covered with steel and plywood bulkheads, accessible through a bulkhead door.

Air infiltration was measured with a Meriam laminar flow element (LFE-4) and a Dwyer "smart" manometer (DM-11).

The pressure differentials between the exterior and interior of the chamber were created by a positive and negative blower system.

Pressure differentials were measured with a Dwyer electronic manometer (DM-6).

Water was applied from a vertical spray rack mounted 24″ from the specimen. The rack was equipped with swirl-type nozzles spaced two (2) feet on center, vertically and horizontally, which delivered a minimum of five (5) gallons of water per hour per square foot of wall frontal area.

Structural deflections were measured with numerous dial indicator gages with follow-up hands.

Dynamic winds were generated by a Curtis Wright 3350 radial aircraft engine with a three (3) blade propeller, 14'-5" diameter, which formulates typical and atypical wind conditions.

PRE-TESTING: **AUGUST 12, 2020**

After proper cure of seals and chamber, the mock up specimen was pre-tested for the following:

a) Preload to 50% positive structural load (15.0 psf)
b) Gross air infiltration measured at 6.24 psf = 60.0 cfm
Tare measured 50.0 cfm for a net air in/exfiltration of 10.0 cfm. Total net leakage shall not exceed 28.8 cfm total. Pass
c) Static water at 15 psf pressure differential. Pass, there was no uncontrolled leakage noted.

No further repairs or modifications were made to the mock up.

FORMAL TESTING: **AUGUST 13, 2020**

At 9:00 AM the weather conditions were: calm winds, partly cloudy skies, 85° F with RH at 26%.

PRELOAD per ASTM E 330-14

To set the specimen for testing, a positive pressure differential of **15.0 psf**, 50% of design load, was applied to the specimen, held for ten (10) seconds and released. There was no indication of or visible signs of any failure.

AIR IN/EXFILTRATION per ASTM E 283-19

The specimen was subjected to a positive and negative static pressure differential of **6.24 psf.** The gross air infiltration and exfiltration were measured and compared to the pre-test results.

ALLOWABLE

Total air infiltration shall not exceed **28.8 cfm** net total based on the following:
Air infiltration not to exceed **0.06 cfm** per sq. ft. of fixed wall area. (480.4 s/f) = 28.8 cfm

RESULTS **Specimen passed.**

Gross air infiltration measured **62 cfm**; tare measured **52 cfm** = **10.0 cfm** net leakage.
The gross air exfiltration was measured and was the same = **10.0 cfm** net leakage.
Resultant air leakage rate = 0.02 cfm per s/f.

CYCLIC WATER PENETRATION TEST per ASTM E 547-00 (2016)

Water was applied to the exterior face of the total specimen, at a rate of five (5) gallons per hour per square foot of wall frontal area, in such a way as to completely cover the exterior face of the specimen. At the same time, a positive differential static pressure of **15.0 psf** (2.88″ WC) was applied to the face of the specimen. The application of pressure was maintained for a period of five (5) minutes, reduced to zero and repeated for four (4) cycles with water applied continuously for twenty three (23) minutes. Observers viewed the interior of the specimen during testing.

ALLOWABLE

No “uncontrolled” water penetration as defined by AAMA 501 and ASTM E331.
“Uncontrolled” water penetration is water beyond a vertical plane, parallel to the plane of the glass, intersecting the innermost projection of the test specimen, not including interior trim and hardware, under the specified conditions of air pressure difference across the specimen.

RESULTS

Specimen passed. There was no uncontrolled water penetration noted.

STATIC WATER PENETRATION TEST per ASTM E 331-00 (2016)

Water was applied to the exterior face of the total specimen, at a rate of five (5) gallons per hour per square foot of wall frontal area, in such a way as to completely cover the exterior face of the specimen. At the same time, a positive differential static pressure of **15.0 psf** (2.88″ WC) was applied to the face of the specimen. The application of pressure and water was maintained for a period of fifteen (15) minutes, with observers viewing the interior of the specimen.

ALLOWABLE

There shall be no uncontrolled water penetration, same as the previous water test above.

RESULTS

Specimen passed. There was no uncontrolled water penetration noted.

DYNAMIC WATER PENETRATION TEST per AAMA 501.1-17

The specimen was subjected to a dynamic wind load pressure, equivalent of **15.0 psf**, (76.5 mph wind speed). At the same time water was applied at a rate of five (5) gallons per hour per square foot of wall frontal area for a duration of fifteen (15) minutes with observers viewing the interior.

ALLOWABLE

There shall be no uncontrolled water penetration, same as the previous water tests above.

RESULTS

Specimen passed. There was no uncontrolled water penetration noted.

UNIFORM STRUCTURAL DEFLECTION TEST @ DESIGN - ASTM E 330-14

The test specimen was subjected to a 50% positive design load of **15.0 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were set. The test specimen was subjected to a 100% positive design load of **30.0 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were read and recorded.
The blower system was reversed. The test specimen was subjected to a negative 50% design load of **15.0 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were set. The test specimen was subjected to a negative 100% design load of **30.0 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were read and recorded.

Loads were applied in a similar manner for positive & negative design loads of **35.0 psf** & **40.0 psf**.

ALLOWABLE

Deflection normal to plane of the wall shall not exceed **L/175**. At connection points of framing members to anchors, anchor deflection in any direction shall not exceed **1/8″** (0.12″) and permanent set shall not exceed **1/16″** (0.06″) after load is removed.

RESULTS

Specimen passed.

All measured spans complied with specified criteria. See elevation drawing 2.01, sheet 2 of 15 for dial indicator locations. There were no failures, no noise and no glass breakage. See Charts **#1** through **#3** below for deflection and permanent set results at the different design pressures (reference bold number - **xx**/xx for **deflection**).

CHART 1 OF 6 **TEST PRESSURE = 30.0 PSF POS / NEG**

DIAL IND.	MEMBER / D'TL	REF.	POSITION	POSITIVE		NEGATIVE		ALLOW L/175	SPAN
				GROSS	NET	GROSS	NET		
1	VERT. MULLION	9/307	BOTTOM	**04**/00	**04**/00	**00**/00	**00**/00	**12**/06	ANCH
2	VERT. MULLION	9/307 (1&3)	MID SPAN	**33**/00	**31**/00	**30**/00	**29**/01	**89**	156″
3	VERT. MULLION	9/307	TOP	**00**/00	**00**/00	**03**/01	**03**/01	**12**/06	ANCH
4	HORIZ. MULLION	2/301	MID SPAN	**10**/01	**06**/01	**07**/01	**07**/01	**33**	57.5″
5	1″ INSUL. GLASS		CENTER	**23**/03	**23**/03	**22**/01	**22**/01	**–**	52.5″

CHART 2 OF 6 **TEST PRESSURE = 35.0 PSF POS / NEG**

DIAL IND.	MEMBER / D'TL	REF.	POSITION	POSITIVE		NEGATIVE		ALLOW L/175	SPAN
				GROSS	NET	GROSS	NET		
1	VERT. MULLION	9/307	BOTTOM	**04**/00	**04**/00	**01**/00	**01**/00	**12**/06	ANCH
2	VERT. MULLION	9/307 (1&3)	MID SPAN	**37**/00	**35**/00	**35**/02	**33**/01	**89**	156″
3	VERT. MULLION	9/307	TOP	**00**/00	**00**/00	**03**/01	**03**/01	**12**/06	ANCH
4	HORIZ. MULLION	2/301	MID SPAN	**12**/01	**08**/01	**10**/01	**09**/01	**33**	57.5″
5	1″ INSUL. GLASS		CENTER	**26**/01	**26**/01	**25**/01	**22**/01	**–**	52.5″

CHART 3 OF 6 **TEST PRESSURE = 40.0 PSF POS / NEG**

DIAL IND.	MEMBER / D'TL	REF.	POSITION	POSITIVE		NEGATIVE		ALLOW L/175	SPAN
				GROSS	NET	GROSS	NET		
1	VERT. MULLION	9/307	BOTTOM	**04**/00	**04**/00	**01**/00	**01**/00	**12**/06	ANCH
2	VERT. MULLION	9/307 (1&3)	MID SPAN	**40**/01	**38**/01	**38**/02	**36**/01	**89**	156″
3	VERT. MULLION	9/307	TOP	**00**/00	**00**/00	**03**/01	**03**/01	**12**/06	ANCH
4	HORIZ. MULLION	2/301	MID SPAN	**14**/01	**10**/01	**12**/01	**10**/01	**33**	57.5″
5	1″ INSUL. GLASS		CENTER	**28**/01	**28**/01	**27**/01	**27**/01	**–**	52.5″

READINGS ARE IN HUNDRETHS OF INCH DEFL. LIMIT = L/175
READINGS ARE **DEFLECTION**/PERMANENT SET

REPEAT AIR IN/EXFILTRATION per ASTM E 283-19 *(wet)*

Air infiltration and exfiltration were measured using a similar procedure and the same allowable criteria as previous air tests. Allowed net leakage of **28.8 cfm**.

RESULTS

Specimen passed.

The gross infiltration measured **59.0 cfm**. The gross exfiltration measured **60.0 cfm**. Not a significant change from original readings.

REPEAT STATIC WATER PENETRATION TEST per ASTM E 331-00 (2016)

Same procedure and allowable criteria as previous static water test **15.0 psf** (2.88″ WC).

RESULTS **Specimen passed.** There was no uncontrolled water penetration noted.

VERTICAL LIVE LOAD FLOOR DEFLECTION per AAMA 501.7-17

The second level floor framing of the specimen was displaced upward **1/4"** held for ten (10) seconds, returned to zero, then displaced downward **1/4"** held for ten (10) seconds, then returned to zero. This was repeated two additional times for a total of three (3) two-stroke cycles.

ALLOWED

Observations of behavior, flex at anchors and racking of framing will be recorded. There shall be no glass breakage, anchor failure or structural damage. The wall shall remain weatherproof and pass subsequent water tests.

RESULTS

Specimen passed.

There was no glass breakage, no anchor failure and no indication of structural damage or deterioration. There was no gasket disengagement or sealant failure noted. The wall specimen returned to its nominal original position after all cycles were completed.

REPEAT AIR IN/EXFILTRATION per ASTM E 283-19 *(wet)*

Air infiltration and exfiltration were measured using a similar procedure and the same allowable criteria as previous air tests. Allowed net leakage of **28.8 cfm**.

RESULTS

Specimen passed.

The gross infiltration measured **61.0 cfm**. The gross exfiltration measured **61.0 cfm**. Not a significant change from original readings.

REPEAT STATIC WATER PENETRATION TEST per ASTM E 331-00 (2016)

Same procedure and allowable criteria as previous static water test **15.0 psf** (2.88″ WC).

RESULTS

Specimen passed. There was no uncontrolled water penetration noted.

HORIZONTAL INTERSTORY DRIFT – ELASTIC Δs - per AAMA 501.4-18

The intermediate level floor framing was made to move in a lateral direction, parallel to the main face of the specimen. The framing was racked in a lateral direction for **1 9/16″** (1.56″); held for a minimum of ten (10) seconds, returned to zero, then racked in the opposite lateral direction for **1 9/16″** (1.56″); held for a minimum of ten (10) seconds and then returned to zero. This was repeated two times for a total of three (3) two-stroke cycles.

The floor framing was then made to move in a perpendicular direction (in and out) to the same dimensions of **1 9/16″** (1.56″) in a similar manner for three (3) two-stroke cycles.

ALLOWED

Observations of behavior, flex at anchors and racking of framing will be recorded. No failure or distortion of any kind shall be allowed, including but not limited to glass breakage, sealant failure, trim disengagement, glass shifting out of glazing pocket or disengagement of gaskets. The wall shall remain weatherproof after testing completed.

RESULTS

Specimen passed.

There was no glass breakage, no anchor failure and no indication of structural damage or deterioration. There was no gasket disengagement or sealant failure noted. The wall framing returned to its nominal original position after all cycles were completed.

There were no failures of anchors or gross damage to other components and no glass breakage. The specimen passed subsequent air and water testing.

REPEAT AIR IN/EXFILTRATION per ASTM E 283-19 *(wet)*

Air infiltration and exfiltration were measured using a similar procedure and the same allowable criteria as previous air tests. Allowed net leakage of **28.8 cfm**.

RESULTS

Specimen passed.

The gross infiltration measured **60.0 cfm**. The gross exfiltration measured **61.0 cfm**. Not a significant change from original readings.

REPEAT STATIC WATER PENETRATION TEST per ASTM E 331-00 (2016)

Same procedure and allowable criteria as previous static water test **15.0 psf** (2.88″ WC).

RESULTS

Specimen passed. There was no uncontrolled water penetration noted.

UNIFORM STRUCTURAL PROOF LOAD TEST @ 150 % DESIGN - ASTM E 330-14

The test specimen was subjected to a 75% positive design load of **22.5 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were set. The test specimen was subjected to a 150% positive design load of **45.0 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were read and recorded.

The blower system was reversed. The test specimen was subjected to a negative 75% design load of **22.5 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were set. The test specimen was subjected to a negative 150% design load of **45.0 psf**. The pressure was held for ten (10) seconds and released. Deflection gages were read and recorded.

Loads were applied in a similar manner for positive & negative proof loads of **52.5 psf** & **60.0 psf**.

ALLOWABLE

The net permanent deflections of framing members must not exceed **L/500** of span. No failure or gross permanent distortion of framing members, anchors or connections, or any other portion of system.

RESULTS

Specimen passed.

All measured spans complied with specified criteria. See elevation drawing 2.01, sheet 2 of 15 for dial indicator locations. There were no failures, no noise and no glass breakage. See Charts **#4** through **#6** below for deflection and permanent set results (reference bold number - xx/**xx** for **permanent set**).

CHART 4 OF 6 **TEST PRESSURE = 45.0 PSF POS / NEG**

DIAL IND.	MEMBER / D'TL	REF.	POSITION	POSITIVE		NEGATIVE		ALLOW L/500	SPAN
				GROSS	NET	GROSS	NET		
1	VERT. MULLION 9/307		BOTTOM	03/**01**	03/**01**	04/**01**	04/**01**	12/**06**	ANCH
2	VERT. MULLION 9/307	(1&3)	MID SPAN	54/**00**	52/**01**	45/**02**	42/**01**	**31**	156″
3	VERT. MULLION 9/307		TOP	01/**01**	01/**01**	02/**01**	02/**01**	12/**06**	ANCH
4	HORIZ. MULLION 2/301		MID SPAN	18/**02**	14/**01**	14/**02**	10/**01**	**12**	57.5″
5	1″ INSUL. GLASS		CENTER	33/**01**	33/**01**	32/**01**	32/**01**	**–**	52.5″

CHART 5 OF 6 **TEST PRESSURE = 52.5 PSF POS / NEG**

DIAL IND.	MEMBER / D'TL	REF.	POSITION	POSITIVE		NEGATIVE		ALLOW L/500	SPAN
				GROSS	NET	GROSS	NET		
1	VERT. MULLION 9/307		BOTTOM	07/**01**	07/**01**	05/**01**	05/**01**	12/**06**	ANCH
2	VERT. MULLION 9/307	(1&3)	MID SPAN	58/**00**	54/**01**	53/**03**	50/**02**	**31**	156″
3	VERT. MULLION 9/307		TOP	01/**01**	01/**01**	02/**01**	02/**01**	12/**06**	ANCH
4	HORIZ. MULLION 2/301		MID SPAN	20/**02**	14/**01**	17/**03**	12/**02**	**12**	57.5″
5	1″ INSUL. GLASS		CENTER	39/**01**	39/**01**	38/**00**	38/**00**	**–**	52.5″

CHART 6 OF 6 **TEST PRESSURE = 60.0 PSF POS / NEG**

DIAL IND.	MEMBER / D'TL	REF.	POSITION	POSITIVE		NEGATIVE		ALLOW L/500	SPAN
				GROSS	NET	GROSS	NET		
1	VERT. MULLION 9/307		BOTTOM	07/**01**	03/**01**	06/**01**	04/**01**	12/**06**	ANCH
2	VERT. MULLION 9/307	(1&3)	MID SPAN	64/**00**	60/**-01**	60/**03**	56/**02**	**31**	156″
3	VERT. MULLION 9/307		TOP	01/**01**	01/**01**	02/**01**	02/**01**	12/**06**	ANCH
4	HORIZ. MULLION 2/301		MID SPAN	23/**03**	16/**02**	20/**03**	14/**02**	**12**	57.5″
5	1″ INSUL. GLASS		CENTER	47/**01**	47/**01**	44/**01**	44/**01**	**–**	52.5″

READINGS ARE IN HUNDRETHS OF INCH PERM. SET LIMIT = L/500
READINGS ARE DEFLECTION/**PERMANENT SET**

REPEAT HORIZONTAL INTERSTORY DRIFT – INELASTIC - per AAMA 501.4-18

The intermediate level floor framing was made to move in a lateral direction, parallel to the main face of the specimen and perpendicular (in and out) in the same manner as previous horizontal drift testing. The framing was racked **± 2 3/8″** (2.34″) in four (4) directions.

ALLOWED

Observations of behavior, flex at anchors and racking of framing will be recorded. No failure or distortion of any kind shall be allowed, including but not limited to glass breakage, sealant failure, trim disengagement, glass shifting out of glazing pocket or disengagement of gaskets.

RESULTS

Specimen passed.

There was no glass breakage, no anchor failure and no indication of structural damage or deterioration. There was no gasket disengagement or sealant failure noted. The wall framing returned to its nominal original position after all cycles were completed.

REPEAT AIR IN/EXFILTRATION per ASTM E 283-19 *(wet)*

Air infiltration and exfiltration were measured using a similar procedure and the same allowable criteria as previous air tests. Allowed net leakage of **28.8 cfm**.

RESULTS

Specimen passed.

The gross infiltration measured **61.0 cfm**. The gross exfiltration measured **62.0 cfm**. Not a significant change from original readings.

REPEAT HORIZONTAL INTERSTORY DRIFT – INELASTIC - ΔM per AAMA 501.4-18

The intermediate level floor framing was made to move in a lateral direction, parallel to the main face of the specimen and perpendicular (in and out) in the same manner as previous horizontal drift testing. The framing was racked **± 3 7/8″** (3.9″) in four (4) directions.

ALLOWED

Observations of behavior, flex at anchors and racking of framing was recorded.
No catastrophic failure is allowed and no materials may fall from the wall specimen.

RESULTS

Specimen passed.

There was an interior glass lite that broke at one (1) IG glass pane, but glass did not fall from the opening or wall. There were no anchor failures and no indication of structural damage or deterioration. There was only slight gasket disengagement and no sealant failures were noted. The wall framing returned to its nominal original position after all cycles were completed.

COMMENTS

As built mock-up drawings, sheets 1 through 15, and installation instructions (sheets 1 through 33) furnished by C.R. Laurence Co. are reviewed and stamped by the laboratory and are attached to this report and are a part of this report.

CONSTRUCTION CONSULTING LABORATORY WEST
JACK W. JACKSON
PRESIDENT/MANAGER OF TESTING

FRANCIS PICKELL, SR.
PROFESSIONAL ENGINEER

TESTING SCHEDULE

TEST STANDARD	TEST	RESULT
ASTM E330–14	PRELOAD @ 50% DESIGN PRESSURE	
ASTM E283–19	AIR INFILTRATION/EXFILTRATION TEST @ 6.24psf (.30 kPa)	
ASTM E547–00	CYCLIC WATER TEST @ 15.0psf (0.72 kPa)	
ASTM E331–00	STATIC WATER TEST @ 15.0psf (0.72kPa)	
AAMA 501.1–17	DYNAMIC WATER PENETRATION TEST @ 15.0psf (0.72kPa)	
ASTM E330–14	UNIFORM STRUCTURAL TEST @ 50% & 100% OF DESIGN LOAD	
ASTM E283–19	AIR INFILTRATION/EXFILTRATION TEST @ 6.24psf (.30kPa)	
ASTM E331–00	STATIC WATER TEST @ 15.0psf (.72kPa)	
AAMA 501.7–17	VERTICAL INTERSTORY – 3 CYCLES – ±1/4"	
ASTM E283–19	AIR INFILTRATION/EXFILTRATION TEST @ 6.24psf (.30kPa)	
ASTM E331–00	STATIC WATER TEST @ 15.0psf (.72kPa)	
AAMA 501.4–18	HORIZONTAL INTERSTORY DRIFT(ELASTIC) – 3 CYCLES – ±1.56"	
ASTM E283–19	AIR INFILTRATION/EXFILTRATION TEST @ 6.24psf (.30kPa)	
ASTM E331–00	STATIC WATER TEST @ 15.0psf (.72kPa)	
ASTM E330–14	STRUCTURAL PROOF LOADING TEST @ 150% OF DESIGN LOAD	
AAMA 501.4–18	HORIZONTAL INTERSTORY DRIFT(INELAS.) – 3 CYCLES – ±2.34"	
ASTM E283–19	AIR INFILTRATION/EXFILTRATION TEST @ 6.24psf (.30kPa)	
AAMA 501.4–18	HORIZONTAL INTERSTORY DRIFT(Δ MAX) – 3 CYCLES – ±3.90"	

TEST LOADS

TEST STANDARD	POSITIVE (INWARD)	NEGATIVE (OUTWARD)
DESIGN LOAD	40 PSF	40 PSF
PROOF LOAD	60 PSF	60 PSF

PRODUCT SIZE

4.6165M (181¾") X 9.6647M (380½")

GLAZING SCHEDULE

TYPE	DESCRIPTION
1	VISION GLASS – 1" INSULATED GLASS: BOTH LITES FULLY TEMPERED ¼" CLEAR / ½" AIR SPACE / ¼" CLEAR
2	SPANDREL GLASS – 1" INSULATED GLASS: BOTH LITES FULLY TEMPERED ¼" CLEAR / ½" AIR SPACE / ¼" CLEAR

TYPICAL GLASS SIZE

TYPE	GLASS SIZE	GLASS WEIGHT
1	58¼" X 52½"	138 LBS
2	58¼" X 52½"	138 LBS

* SETTING BLOCKS LOCATED 8" FROM END OF HORIZONTALS

BILL OF MATERIALS

PART DESCRIPTION	PART NO.	MATERIAL
VERTICAL MULLION	PT905	6063 T6 ALUMINUM
OPEN BACK HORIZONTAL	PT927	6063 T6 ALUMINUM
1" PERIMETER FILLER	PC931	6063 T5 ALUMINUM
POLYAMIDE PRESSURE BAR	TB927	6063 T5 ALUMINUM
SPLICE PLATE	SL945	6063 T5 ALUMINUM
HORIZONTAL COVER	CW950	6063 T5 ALUMINUM
SHEAR BLOCK	AP947	6063 T6 ALUMINUM
FACE CAP	PW901	6063 T5 ALUMINUM
¼" X 1" SETTING BLOCK	SB577	NEOPRENE, BLACK
INTERIOR SPONGE GASKET	NP420	SPONGE EPDM
EXTERIOR RIGID GASKET	NP927	DENSE EPDM
THERMO ISOLATOR	NP928	EPDM
EDGE BLOCK	AW901	SHORE 60±5 EPDM, BLACK
PRESSURE BAR SCREW	MS240	
1" END DAM	HD975	NYLON
T-ANCHORS	AP985	6063 T6 ALUMINUM
F-ANCHORS	AP975	6063 T6 ALUMINUM
MULLION END CAP	CP900	NYLON
SHEAR BLOCK SCREW	12X2HHDTEK	
SHEAR BLOCK SCREW	ST933	
6"X4"X⅛" X 5" LONG STEEL ANCHOR		STEEL
UNC 16–⅜"X2" HEX HEAD BOLT – G5 WITH PLAIN WASHERS & LOCK NUT		
UNC 13–½"X5" HEX HEAD BOLT – G5 WITH PLAIN WASHERS & LOCK NUT		
¼" FENDER WASHER	MF070	
0.63" THICK NYLATRON SLIP PAD	AP360	NYLON
6" X 3–5/8" X 1/4" TAPPING BAR		ALUM

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CONSTRUCTION CONSULTING LABORATORY WEST

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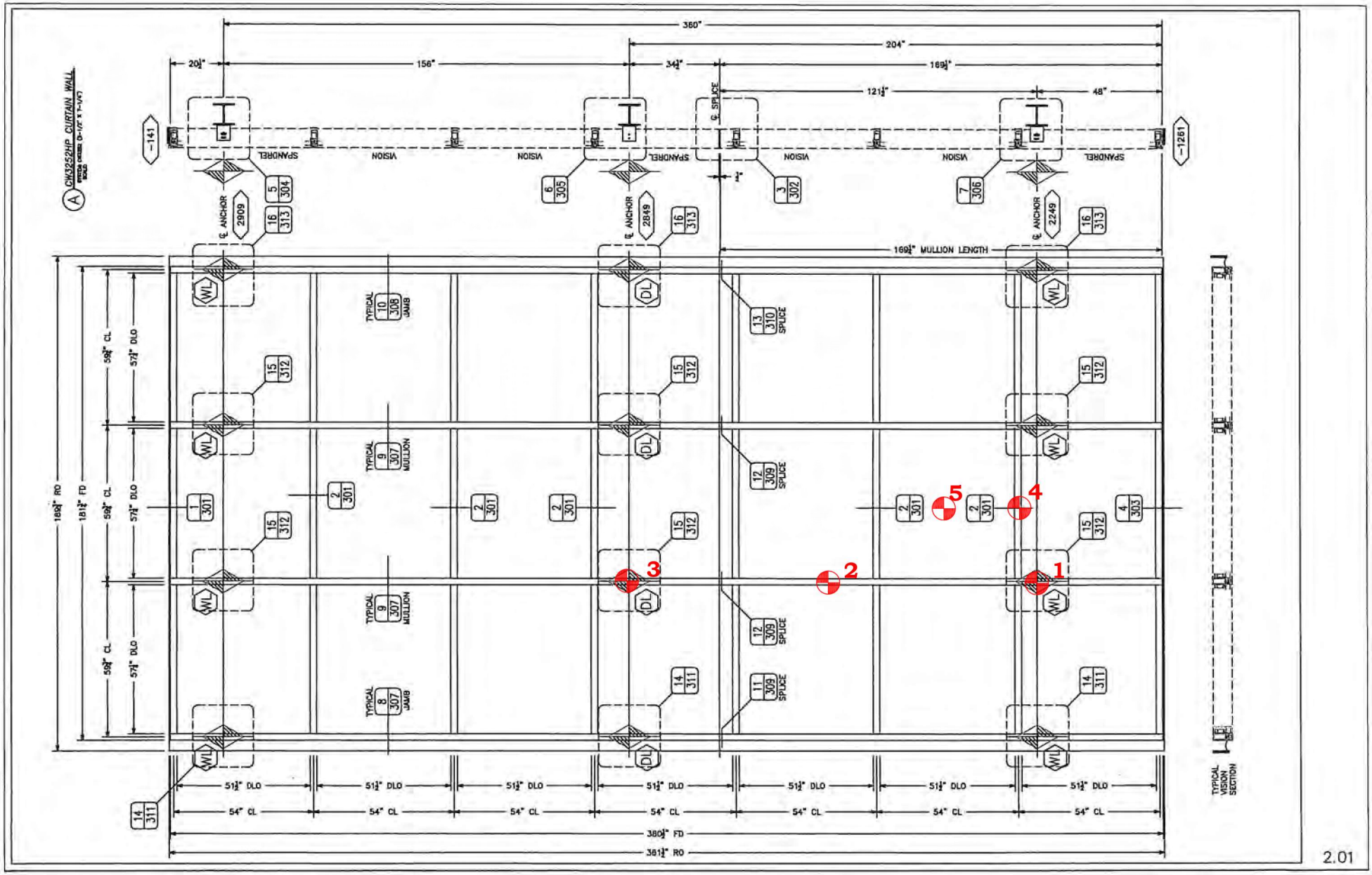
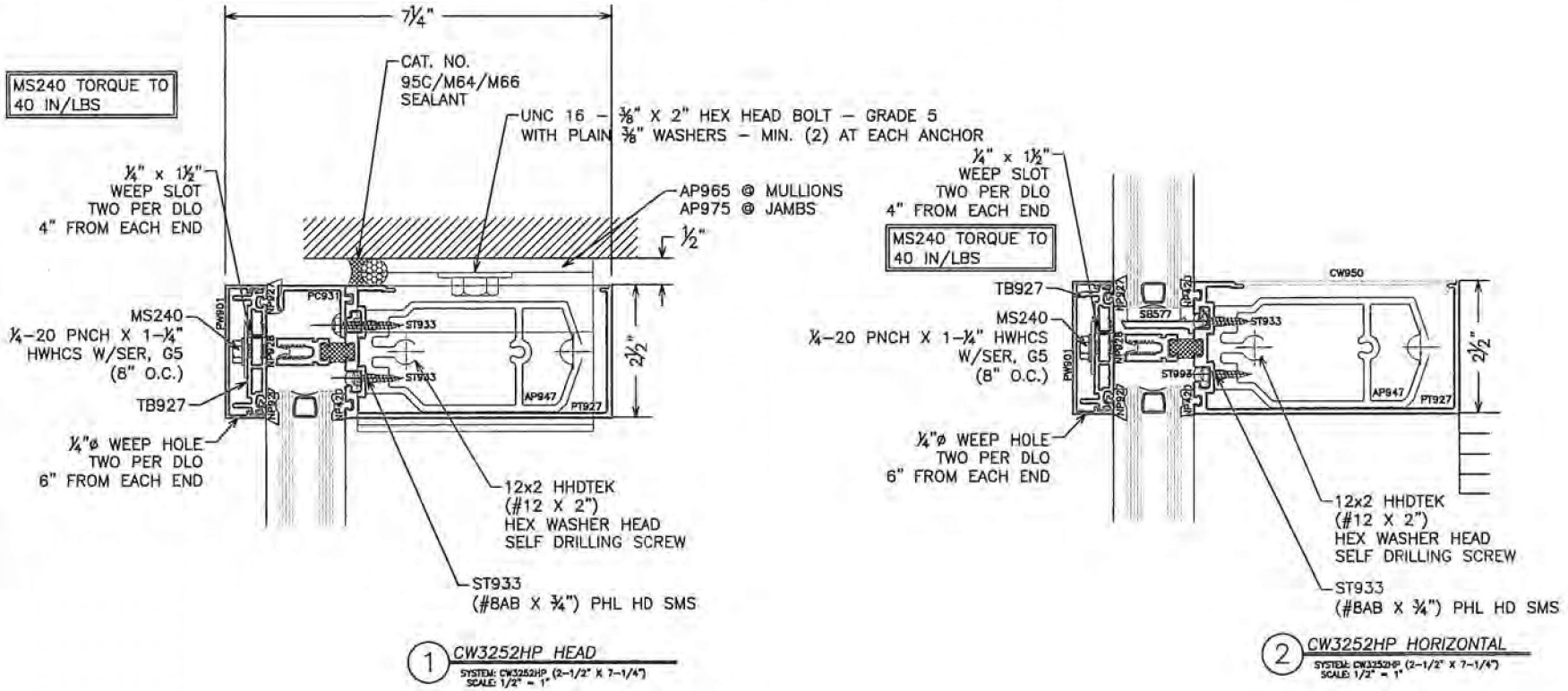
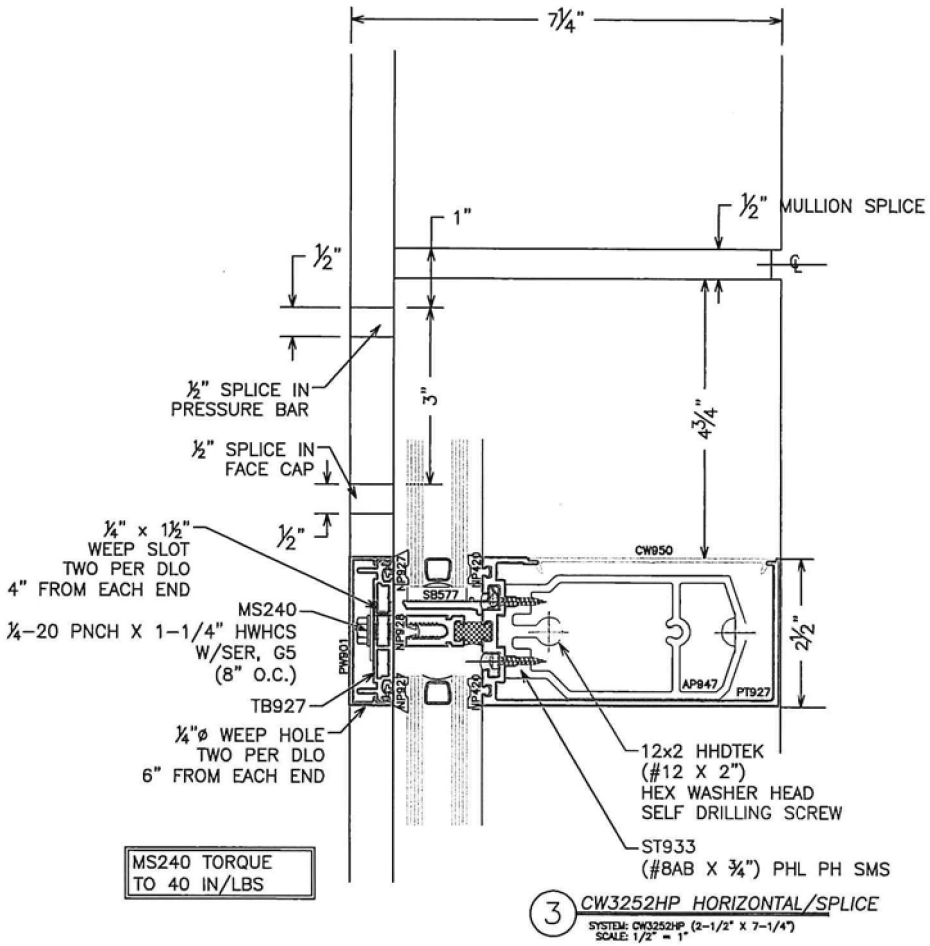


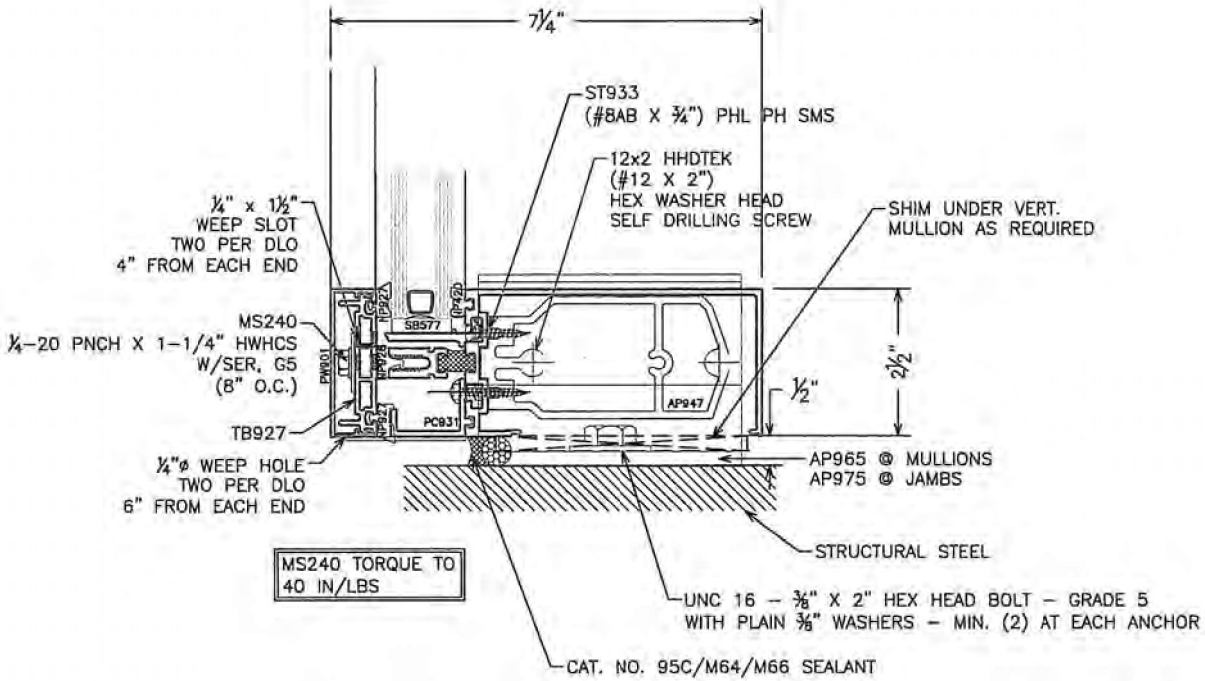
= DENOTES LOCATION OF DIAL INDICATORS DURING STRUCTURAL TESTING


7¼"
MS240 TORQUE TO 40 IN/LBS
CAT. NO. 95C/M64/M66 SEALANT
UNC 16 – ⅜" X 2" HEX HEAD BOLT – GRADE 5 WITH PLAIN ⅜" WASHERS – MIN. (2) AT EACH ANCHOR
¼" x 1½" WEEP SLOT TWO PER DLO 4" FROM EACH END
AP965 @ MULLIONS
AP975 @ JAMBS
½"
MS240 ¼–20 PNCH X 1–¼" HWHCS W/SER, G5 (8" O.C.)
TB927
¼"ø WEEP HOLE TWO PER DLO 6" FROM EACH END
12x2 HHDTEK (#12 X 2") HEX WASHER HEAD SELF DRILLING SCREW
ST933 (#8AB X ¾") PHL HD SMS
2½"
1 CW3252HP HEAD
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"
¼" x 1½" WEEP SLOT TWO PER DLO 4" FROM EACH END
MS240 TORQUE TO 40 IN/LBS
TB927
MS240 ¼–20 PNCH X 1–¼" HWHCS W/SER, G5 (8" O.C.)
¼"ø WEEP HOLE TWO PER DLO 6" FROM EACH END
CW950
12x2 HHDTEK (#12 X 2") HEX WASHER HEAD SELF DRILLING SCREW
ST933 (#8AB X ¾") PHL HD SMS
2½"
2 CW3252HP HORIZONTAL
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

3.01


7¼"
½" MULLION SPLICE
1"
½"
½" SPLICE IN PRESSURE BAR
½" SPLICE IN FACE CAP
½"
¼" x 1½" WEEP SLOT TWO PER DLO 4" FROM EACH END
MS240 ¼-20 PNCH X 1-1/4" HWHCS W/SER, G5 (8" O.C.)
TB927
¼"ø WEEP HOLE TWO PER DLO 6" FROM EACH END
MS240 TORQUE TO 40 IN/LBS
3"
4¾"
2½"
CW950
SB577
AP847
PT927
12x2 HHDTEK (#12 X 2") HEX WASHER HEAD SELF DRILLING SCREW
ST933 (#8AB X ¾") PHL PH SMS
3 CW3252HP HORIZONTAL/SPLICE
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

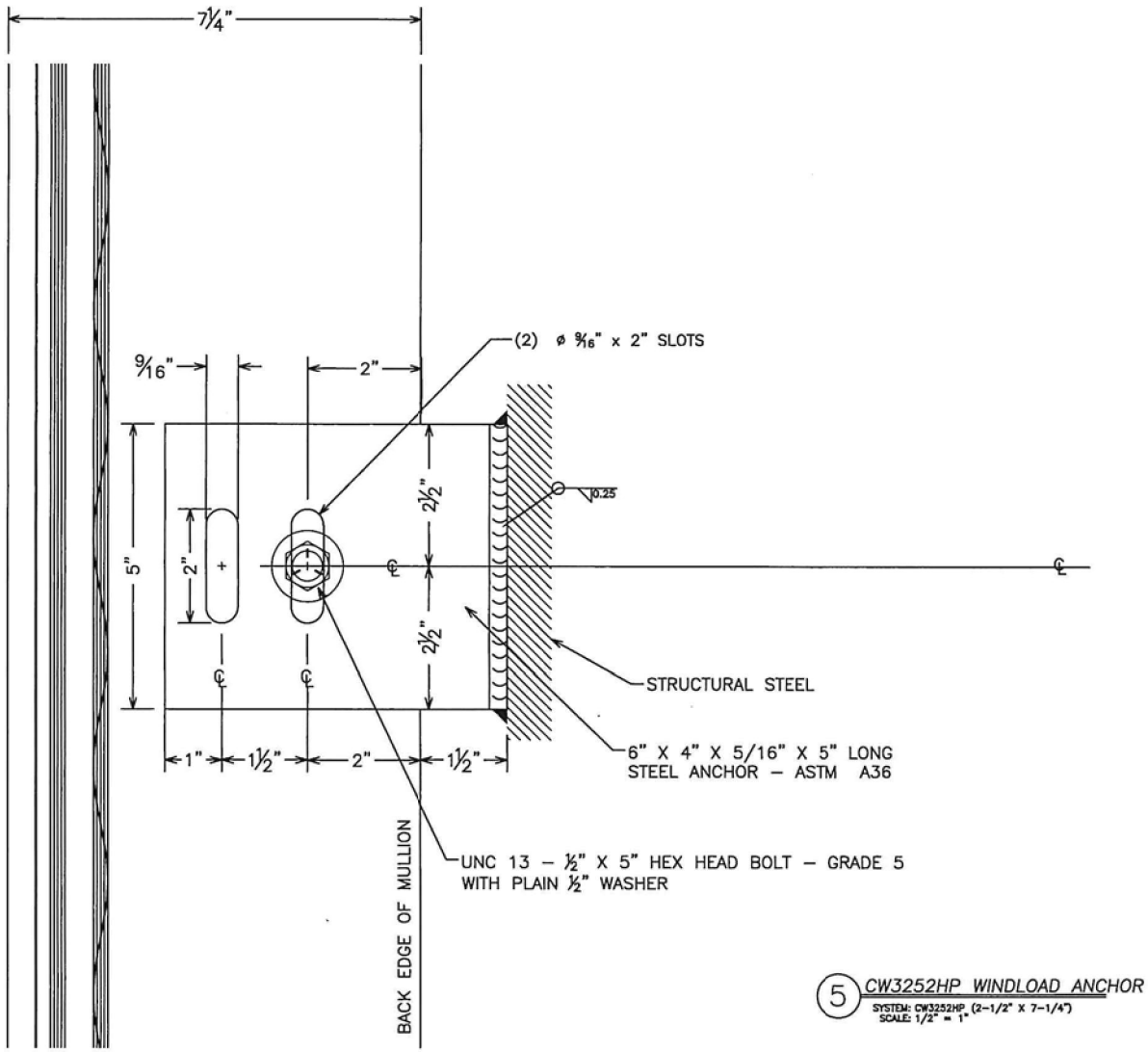
3.02



4 *CW3252HP SILL*

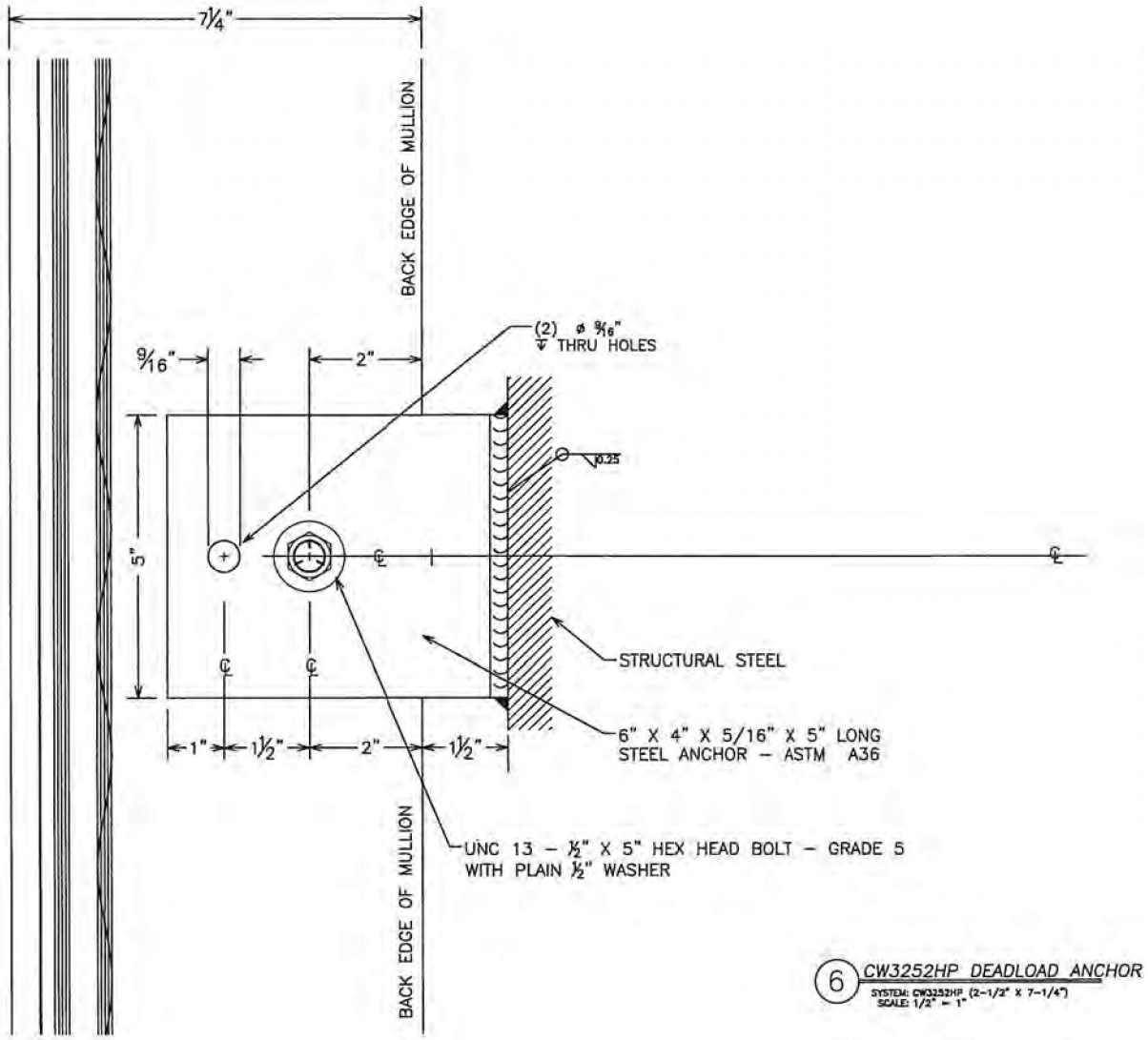
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

3.03

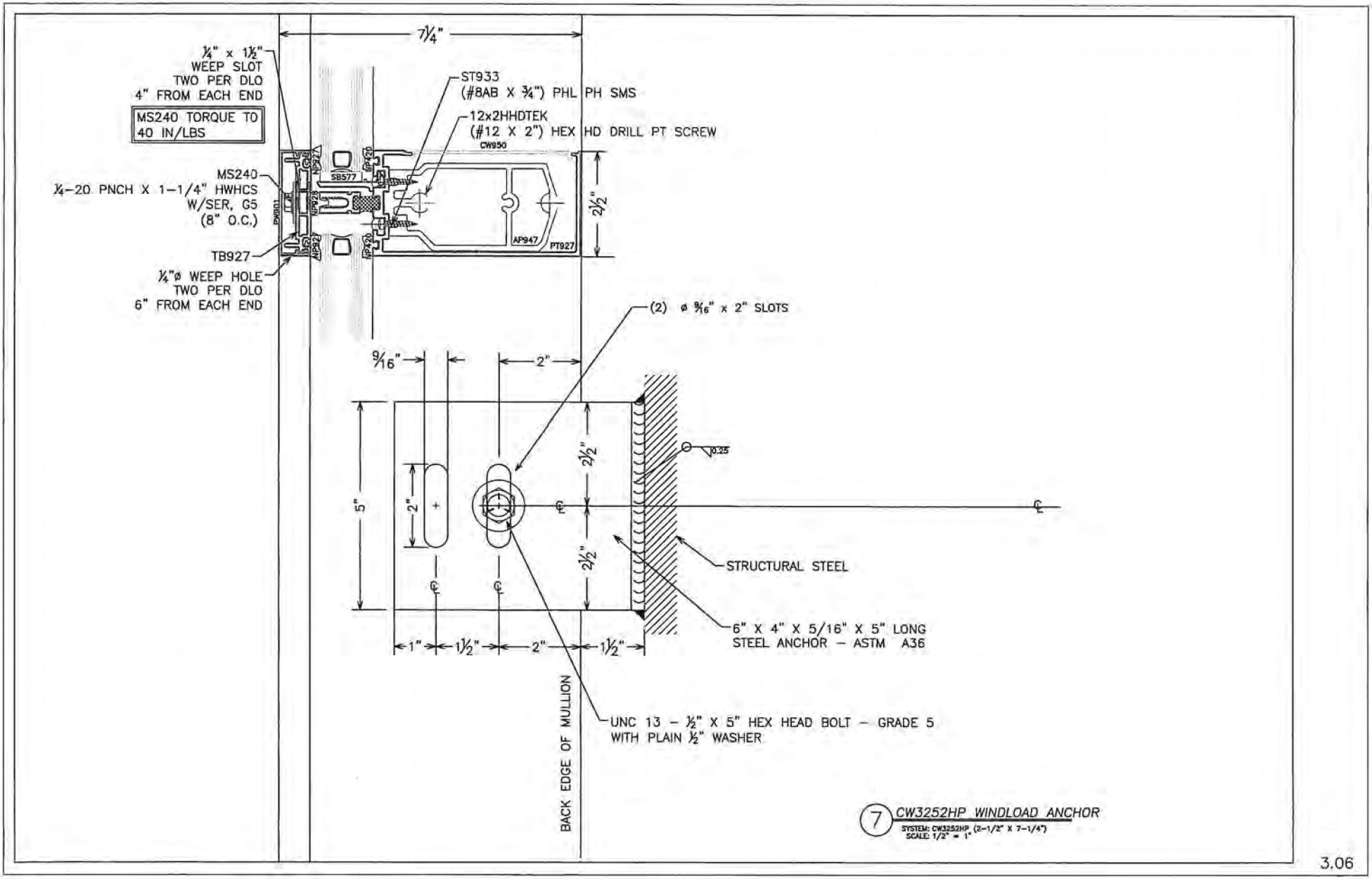


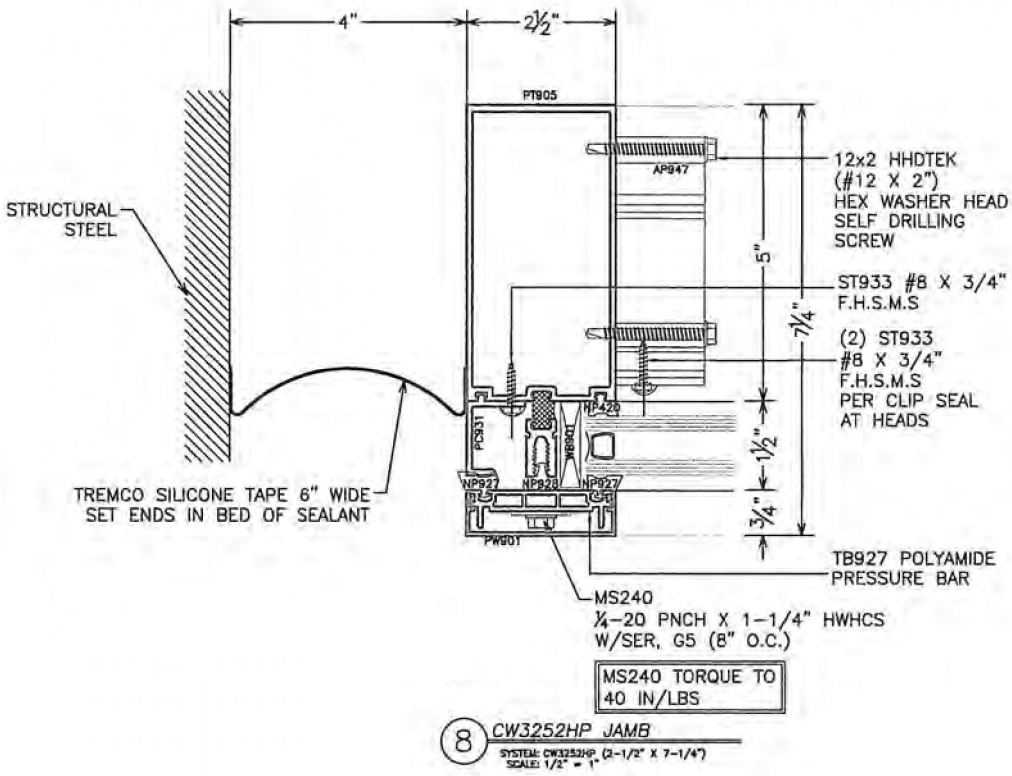
5 CW3252HP WINDLOAD ANCHOR
SYSTEM: CW3252HP (2-1/2" x 7-1/4")
SCALE: 1/2" = 1"

3.04


7¼"
BACK EDGE OF MULLION
(2) ø 9/16" THRU HOLES
9/16"
2"
0.25
5"
STRUCTURAL STEEL
6" X 4" X 5/16" X 5" LONG
STEEL ANCHOR – ASTM A36
1"
1½"
2"
1½"
UNC 13 – ½" X 5" HEX HEAD BOLT – GRADE 5
WITH PLAIN ½" WASHER
BACK EDGE OF MULLION
6 CW3252HP DEADLOAD ANCHOR
SYSTEM: CW3252HP (2-1/2" x 7-1/4")
SCALE: 1/2" = 1"

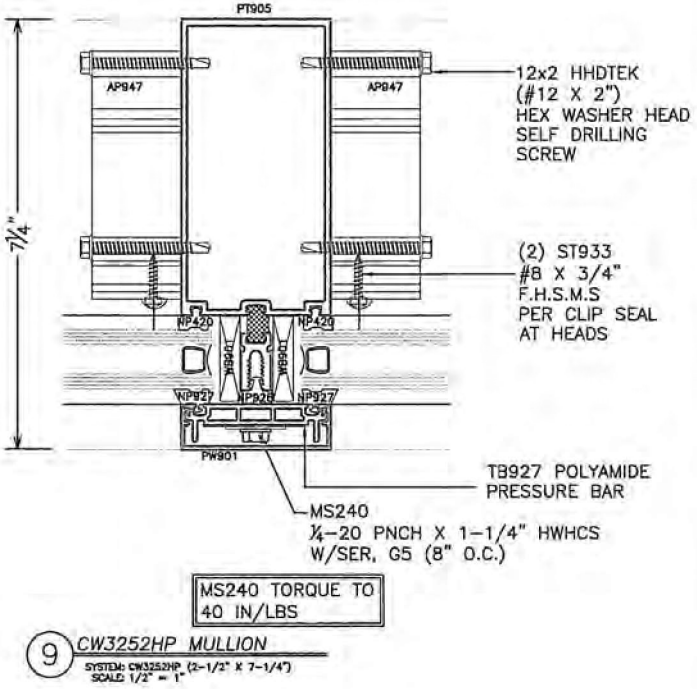
3.05


7¼"
¼" x 1½" WEEP SLOT TWO PER DLO 4" FROM EACH END
MS240 TORQUE TO 40 IN/LBS
ST933 (#8AB X ¾") PHL PH SMS
12x2HHDTEK (#12 X 2") HEX HD DRILL PT SCREW
CW950
MS240 ¼-20 PNCH X 1-1/4" HWHCS W/SER, G5 (8" O.C.)
TB927
¼"ø WEEP HOLE TWO PER DLO 6" FROM EACH END
SB577
AP947
PT927
2½"
(2) ø 9/16" x 2" SLOTS
9/16"
2"
5"
0.25
STRUCTURAL STEEL
6" X 4" X 5/16" X 5" LONG STEEL ANCHOR – ASTM A36
1"
1½"
2"
1½"
BACK EDGE OF MULLION
UNC 13 – ½" X 5" HEX HEAD BOLT – GRADE 5 WITH PLAIN ½" WASHER
7 CW3252HP WINDLOAD ANCHOR
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"
3.06



8 *CW3252HP JAMB*

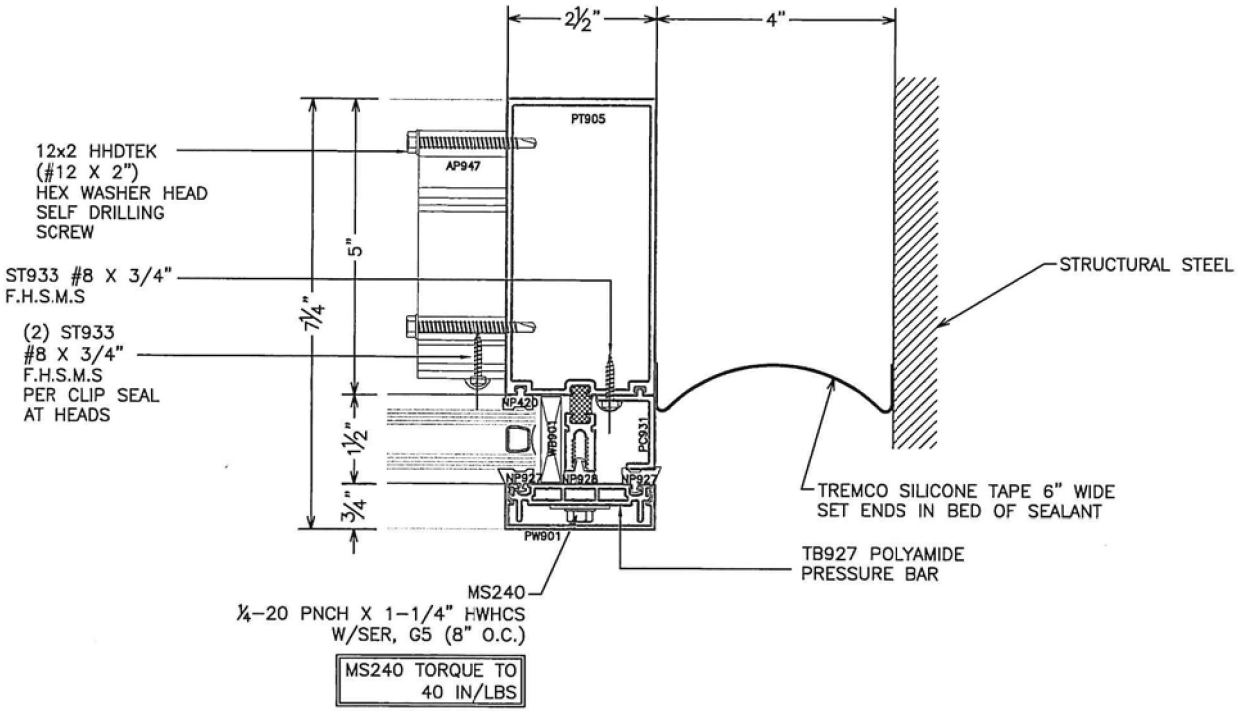
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"



9 *CW3252HP MULLION*

SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

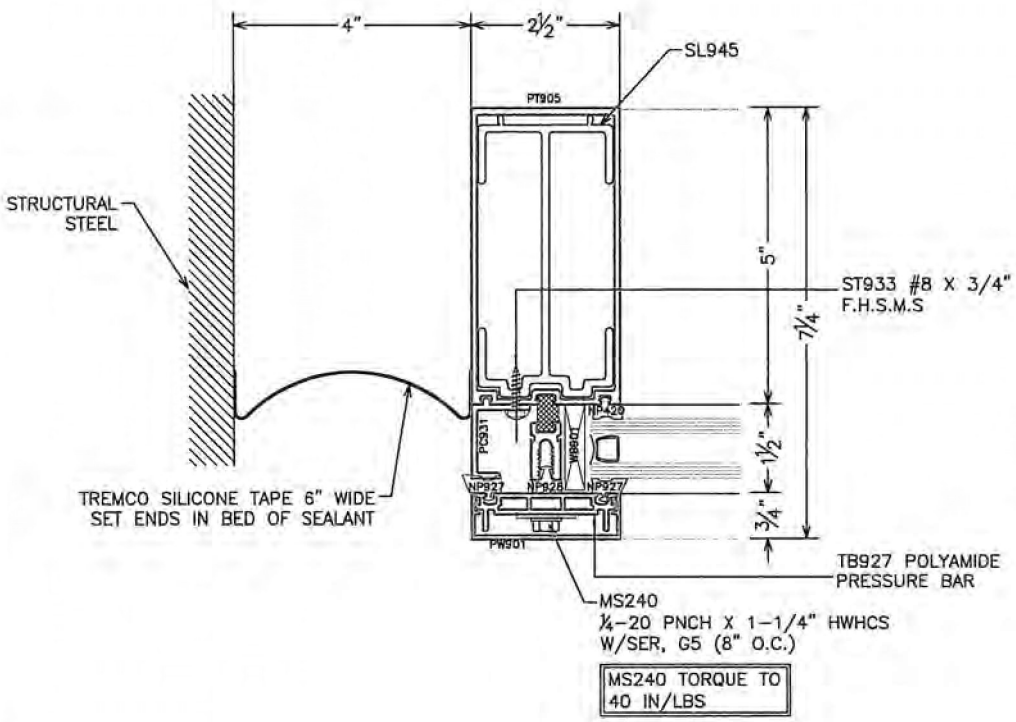
3.07



10 *CW3252HP JAMB*

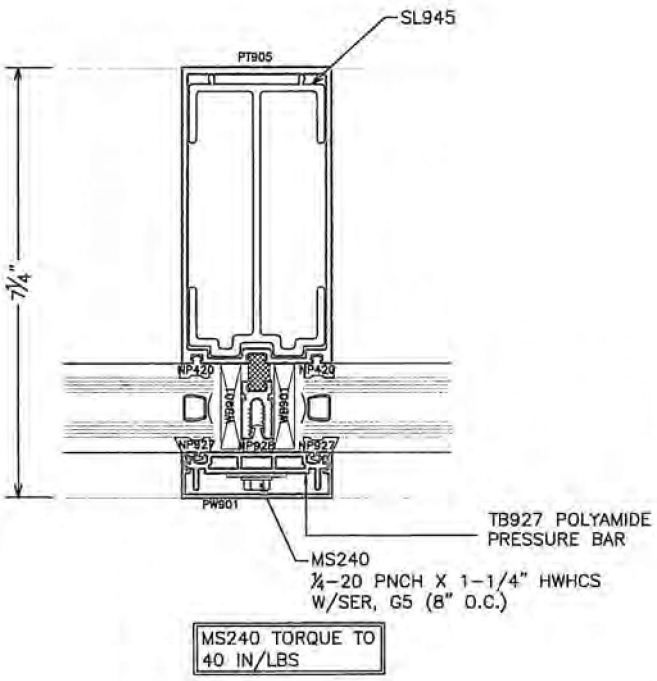
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

3.08



11 CW3252HP JAMB/SPLICE

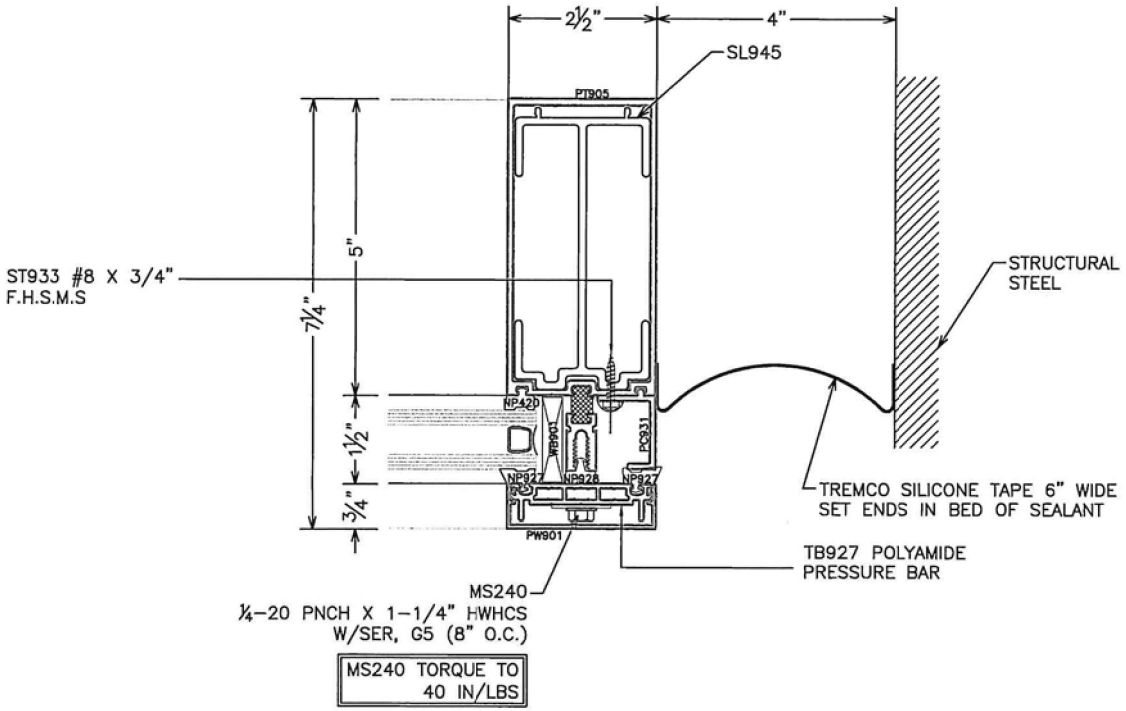
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"



12 CW3252HP MULLION/SPLICE

SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

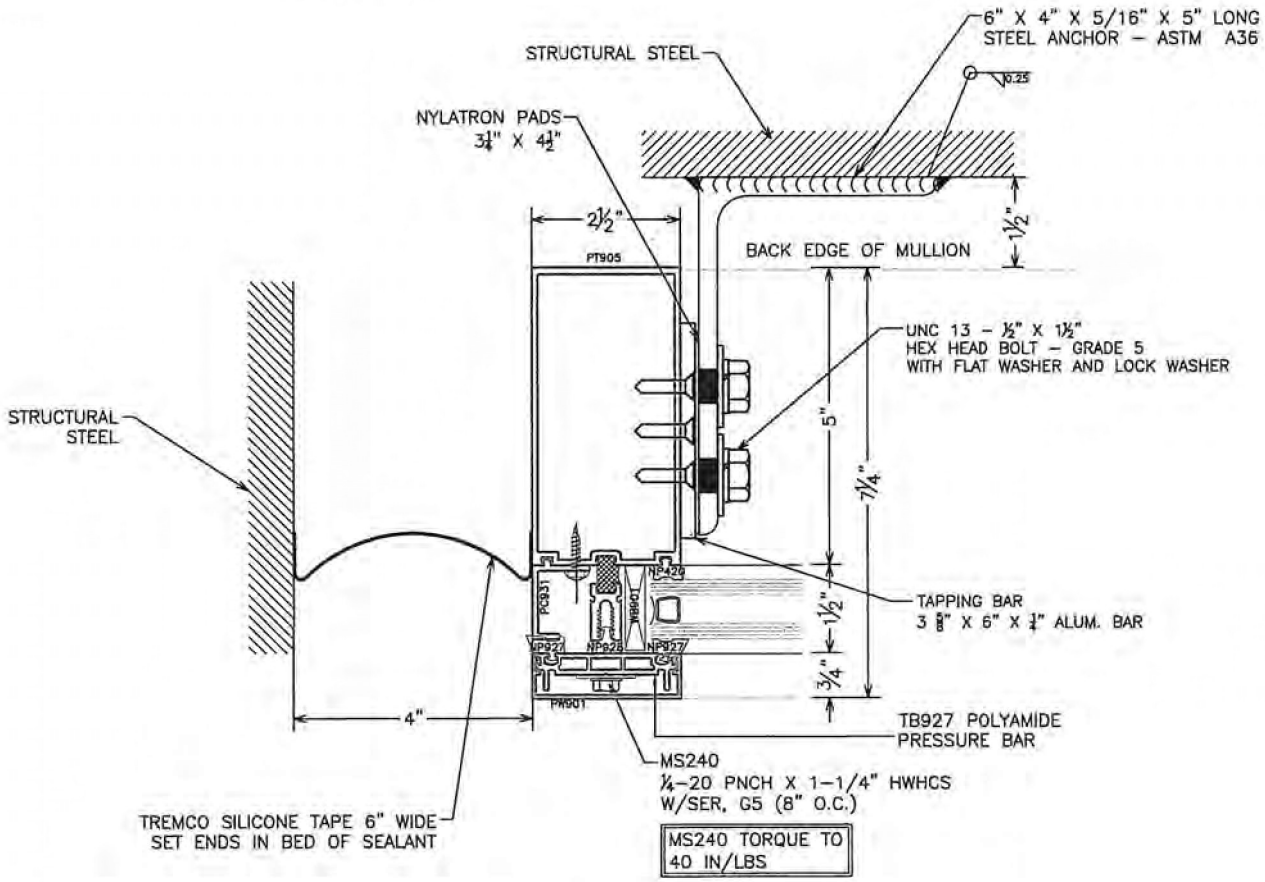
3.09



13 *CW3252HP JAMB/SPLICE*

SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

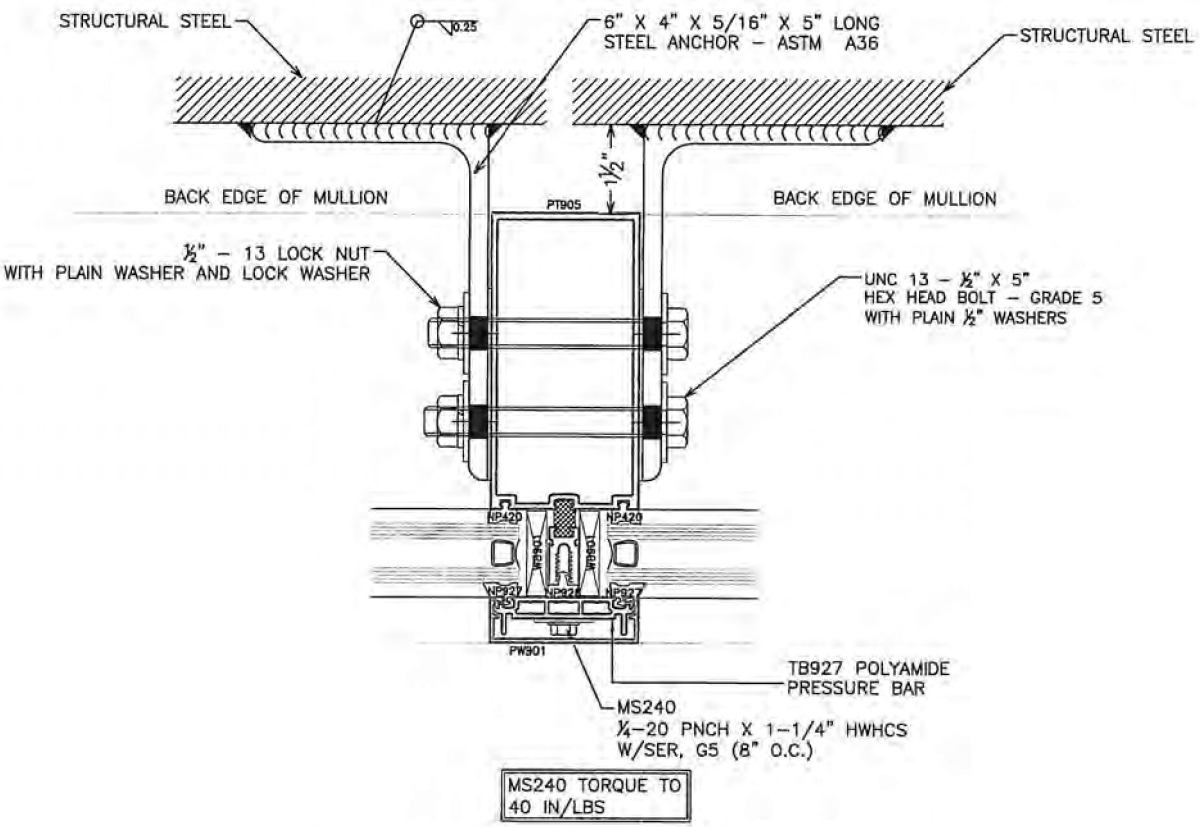
3.10



14 *CW3252HP JAMB/ANCHOR*

SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

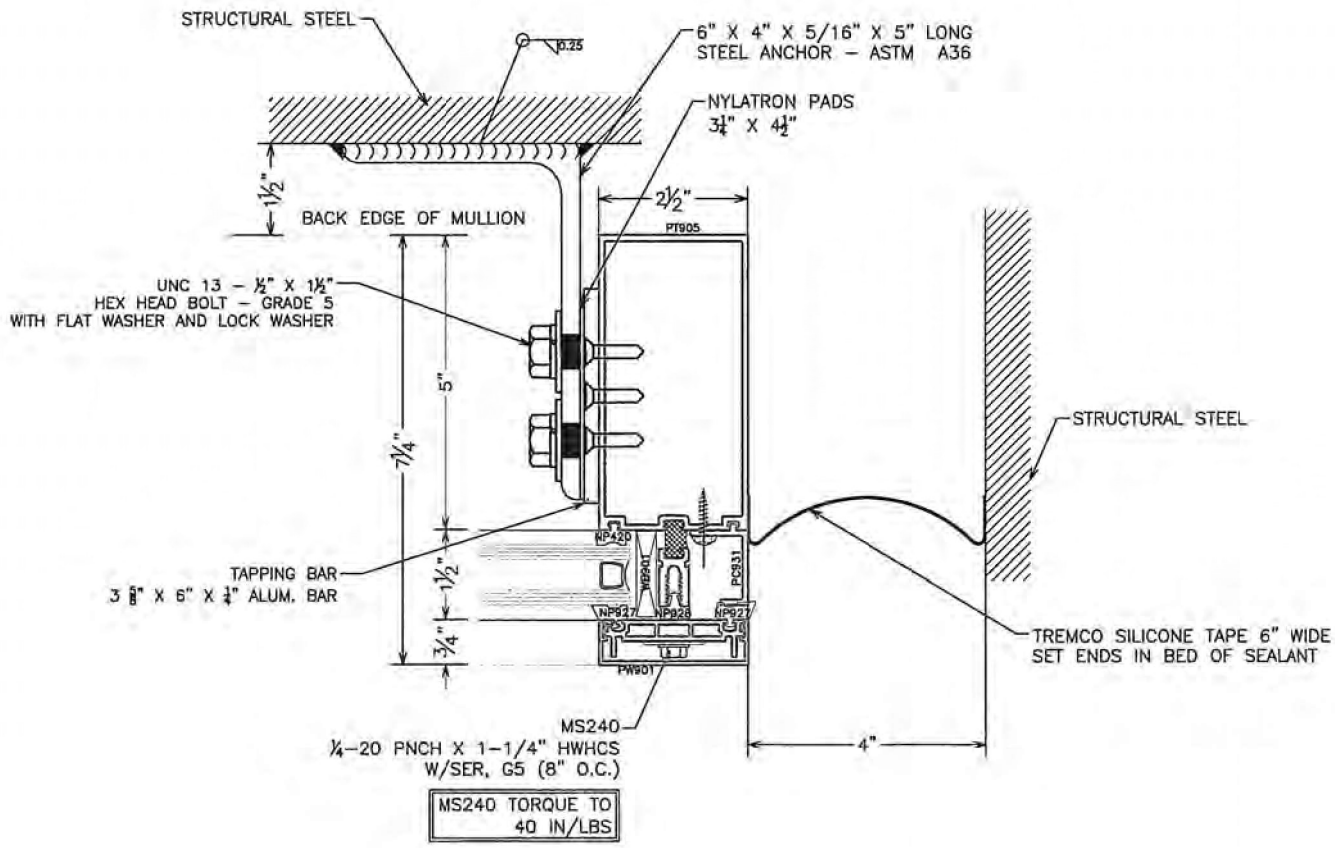
3.11



15 CW3252HP MULLION/ANCHOR

SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

3.12



16 CW3252HP JAMB/ANCHOR
SYSTEM: CW3252HP (2-1/2" X 7-1/4")
SCALE: 1/2" = 1"

3.13