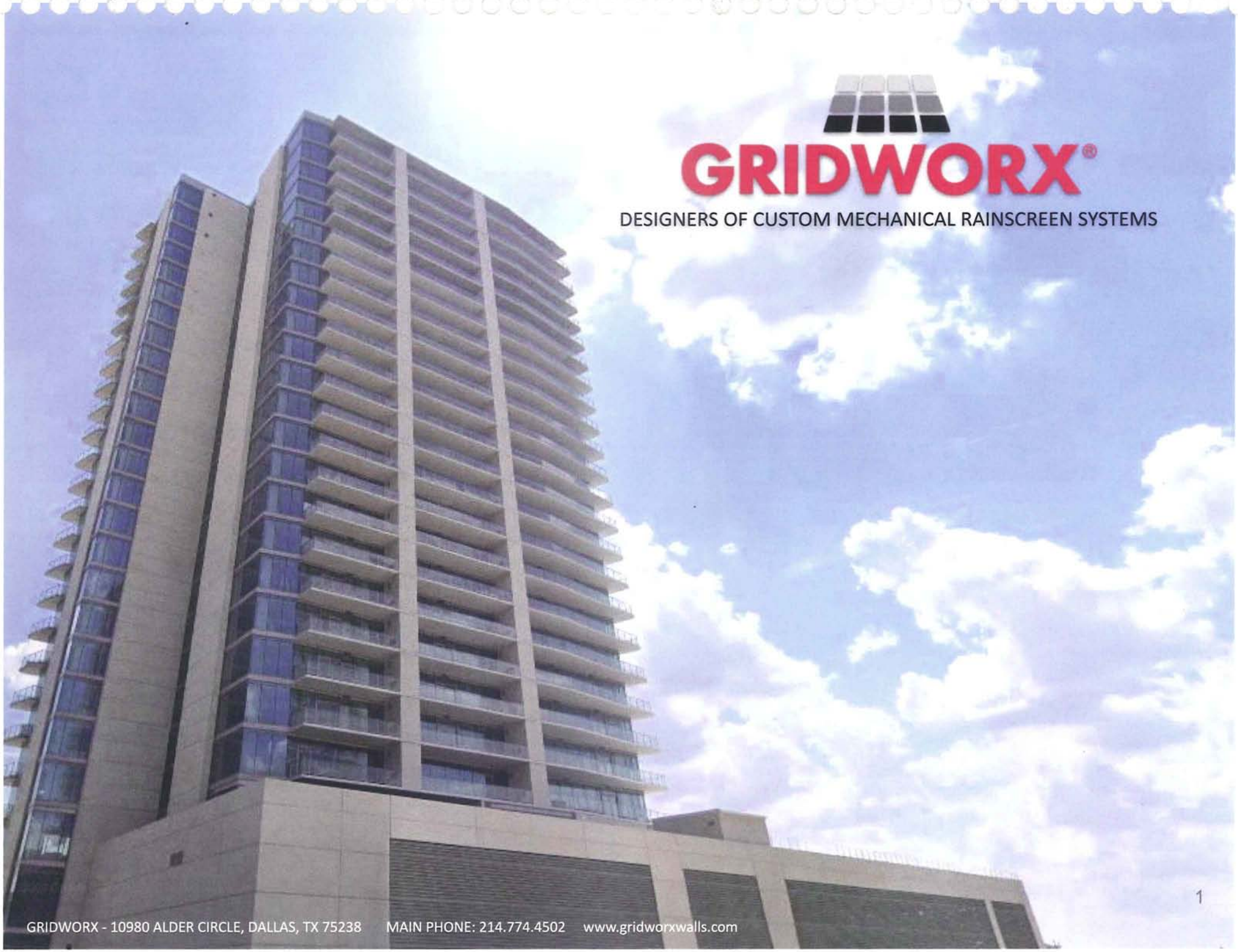


GRIDWORX®

DESIGNERS OF CUSTOM MECHANICAL RAINSCREEN SYSTEMS

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

TABLE OF CONTENTS

INTRODUCTION - PAGE 3

LIST OF CLADDING SOLUTIONS - PAGE 4

GRIDWORX KERF SYSTEM - PAGE 5

GRIDWORX MECHANICAL KERF SYSTEM - PAGE 10

GRIDWORX PLANX SYSTEM - PAGE 13

GRIDWORX ULTRA SYSTEM - PAGE 15

CUSTOM ANCHORING SOLUTIONS - PAGE 18

CODE PERFORMANCE SOLUTIONS - PAGE 20

SOURCING CLADDING MATERIAL - PAGE 21

GRIDWORX ARCHITECTURAL DEPARTMENT - PAGE 23

TESTING DATA - PAGE 28

ROBERT AND JUDI NEWMAN ALUMNI CENTER SOLUTIONS - PAGE 32

CONCEPT TO COMPLETION - PAGE 44

TESTIMONIALS - PAGE 45

CONTACT - PAGE 47

INTRODUCTION

Contemporary construction techniques and materials make the patented Gridworx mechanical stone hanging system the best stone installation system in the world.

Precision Wall Systems, Inc. possesses the manufacturing and distribution rights for the Gridworx mechanical stone hanging system. Gridworx channels are extruded from structural aluminum (6005 alloy). They are anodized with a Type II coating meeting the standards of AAMA 611-98. The channels are pre-punched for weep holes and screw slots and packaged for distribution at our Dallas, TX headquarters.

The Gridworx curtain wall construction system features our patented Gridworx channels, installation components, stone panels, engineering, shop drawings, stone cut tickets and the Gridworx warranty covering the entire wall cladding system. We are aware of the potential for system breakdowns that might occur as a result of using inexact assumptions or inappropriate components. It is for this reason we deliver a complete package, ready for installation.

Gridworx is a two part hanging system. It is the only system in the market that provides for the non sequential setting of stone. Because of this feature, broken or discolored panels are easily removed and replaced with Gridworx. Each stone is supported independently making Gridworx a perfect system for earthquake or hurricane prone areas. In the rare occasion that a panel should be damaged it can be easily replaced without disrupting or replacing the rest of the wall. Imagine the savings of time, resources, and money.

Components include the appropriate fasteners for attaching the Gridworx channels to the substrate. We are aware of the issues of galvanic corrosion, Hydrogen embrittlement and HASCC. Our fasteners are special use, high quality fasteners designed for our purposes. Our specified silicone has been tested for leeching and adhesion. No other cladding system provides this complete of a wall cladding package.

Gridworx is an engineered stone cladding system. All projects are reviewed by a premier curtain wall Professional Engineering firm. They examine the project plans and specifications as well as the ASTM test results for the stone. They also perform calculations for wind load, dead load, pull-out and shear strength of the fasteners. They also provide seismic review calculations. Their project specific Letter of Compliance culminates in their opinion the cladding system as designed conforms to the International Building Code (IBC) as well as local area building codes. This letter is project specific, signed and sealed by a registered PE in the project State. No other cladding system provides "peace of mind" with this level of engineering.

Please visit our web page at http://www.gridworxwalls.com for additional information.

Depending on the project and the needs of our customer, Gridworx offers both propriety "off the shelf" and/or custom anchoring solutions.

Gridworx has developed and perfected (4) unique "off the shelf" anchoring methods.
This includes:

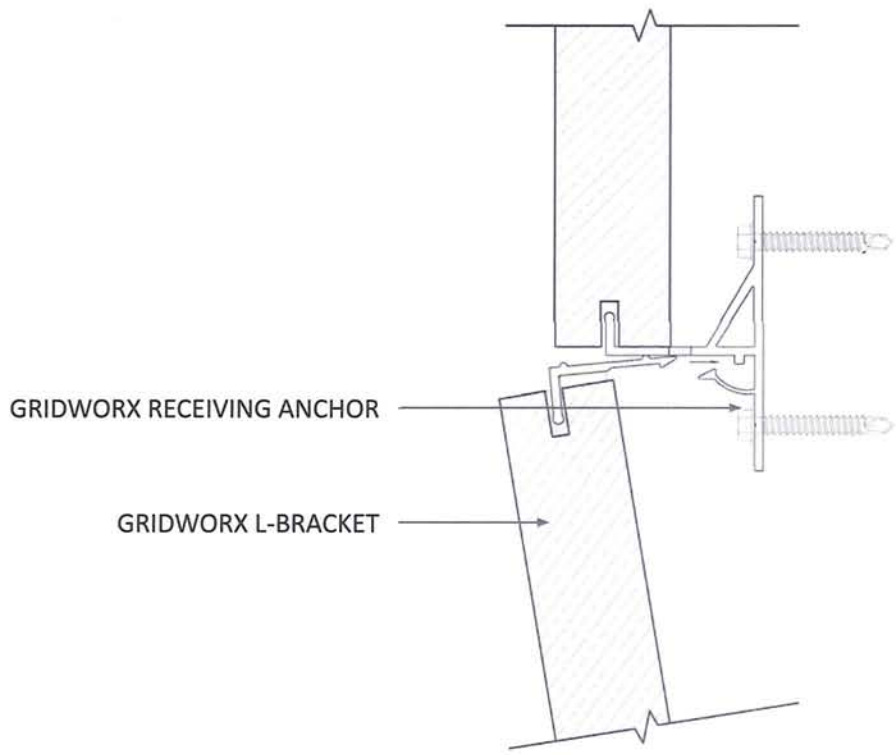
- Saw Kerf System
- Mechanical Kerf System
- Planx Saddle Clip System
- Ultra Floating Mount System

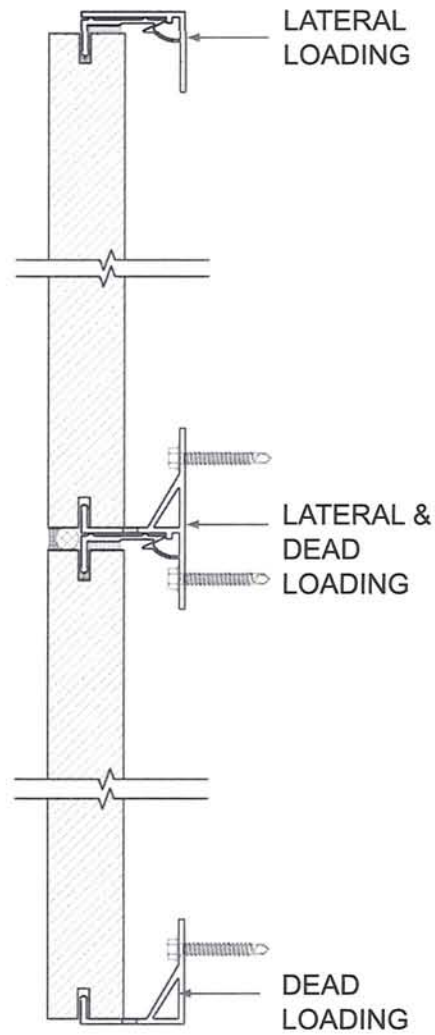
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

KERF SYSTEM

The original Gridworx system, and the most versatile anchor solution in the market today

The patented Gridworx saw kerf system anchors cladding via a continuous kerf located at the top and bottom edge of the cladding panel. This groundbreaking system was the first mechanical attached cladding system to allow for the rotational installation of stone panels. The first to allow for the non-sequential installation of stone, and the first to allow for the removal of damaged or discolored stone without impacting adjacent panels. The patented 2-part system, which fused the traditional T and J anchor with the versatility of a rotational L-bracket, represented the most significant advancement in stone cladding installation in over half a century.





GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

KERF SYSTEM

Donald W. Reynold Razorback Stadium
Fayetteville, Arkansas

GRIDWORX®

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

KERF SYSTEM

San Andreas Courthouse
San Andreas, CA

GRIDWORX

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

KERF SYSTEM

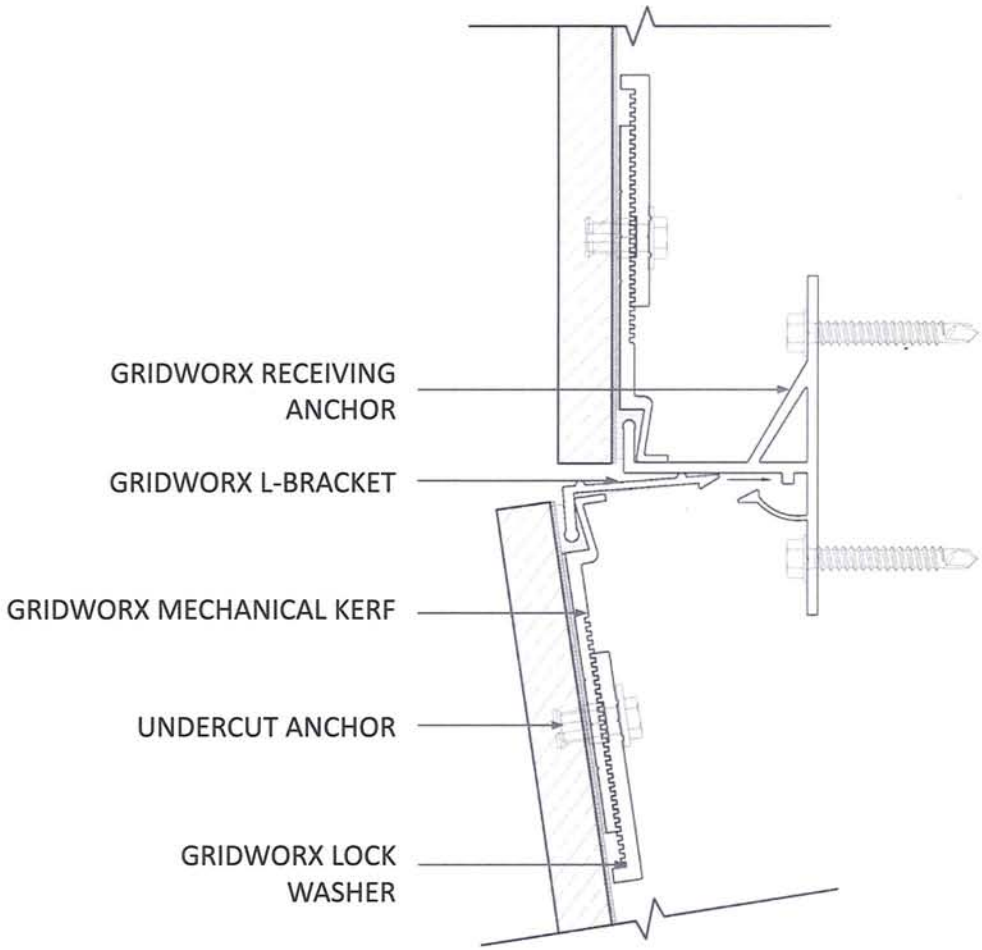
American University Washington College of Law
Washington, DC

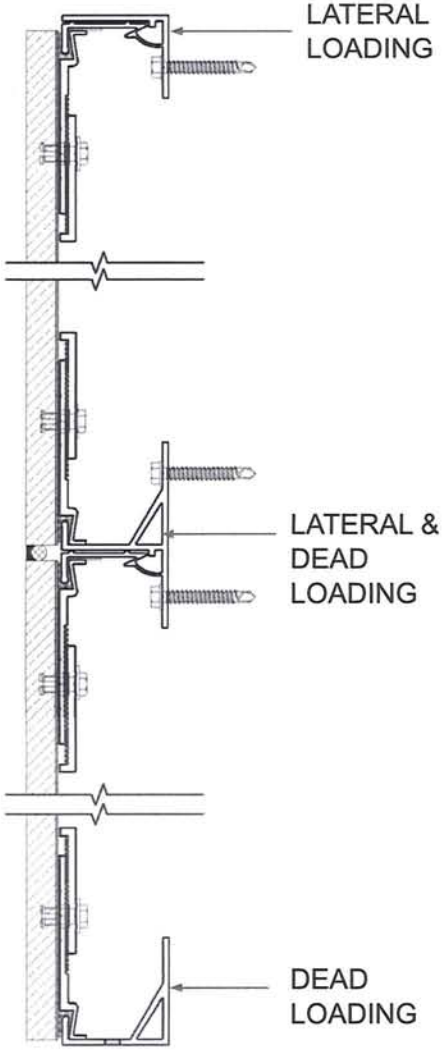
GRIDWORX

MECHANICAL KERF SYSTEM

Delivering the same benefits of our kerf system with blind undercut anchors

A patented Gridworx system, the mechanical kerf channel interlocks with the back face of cladding via an undercut anchor. This connection between the mechanical kerf and stone provides superior load carrying capacity and adjustability. The L-bracket engagement method allows for non-sequential panel installation and the removal of broken or discolored panels.





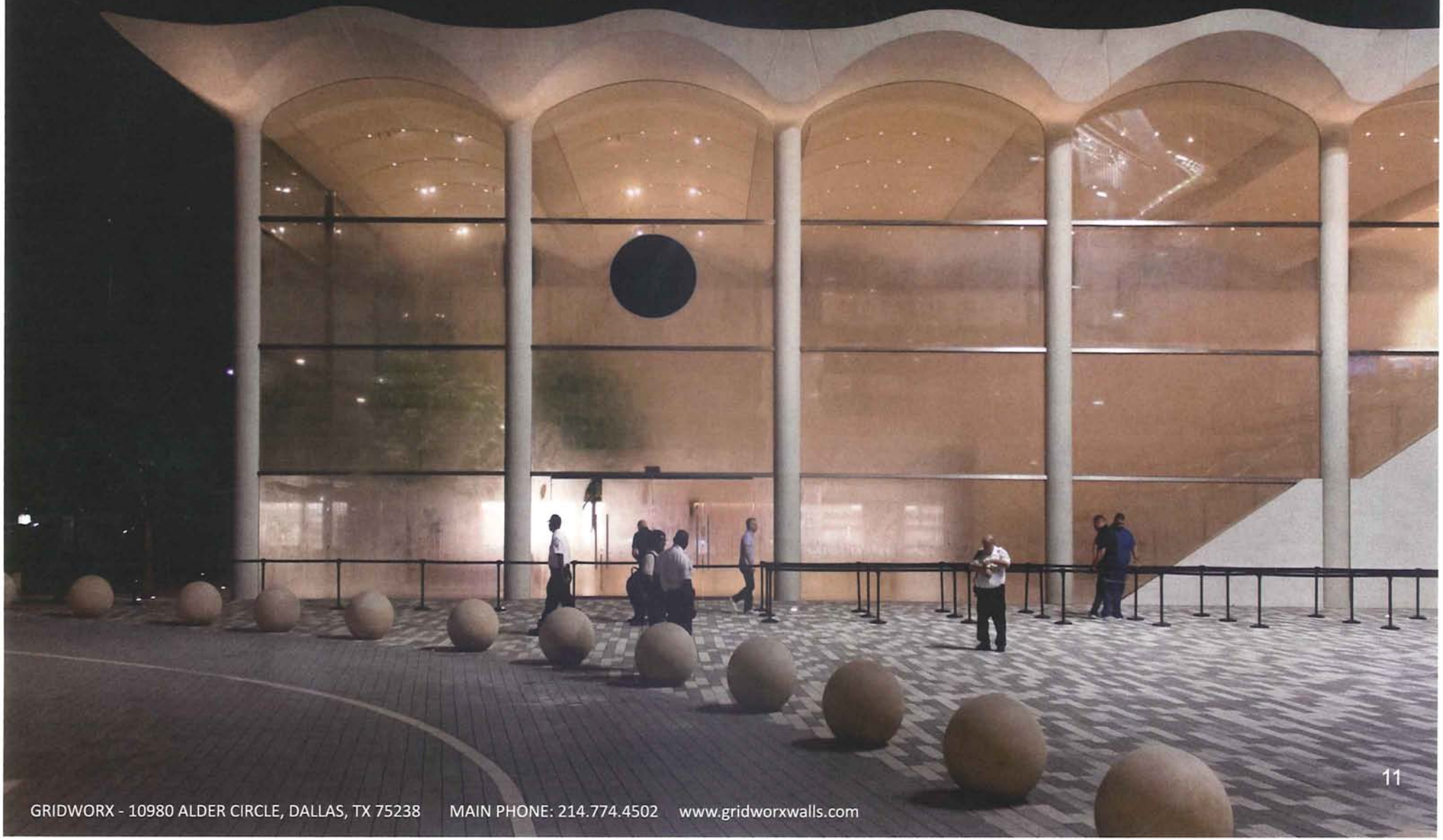
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

MECHANICAL KERF SYSTEM

Flagship Retail - Aventura Mall

Aventura, FL

GRIDWORX®



GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

MECHANICAL KERF SYSTEM

Retail - Waterside Shops

North Naples, FL

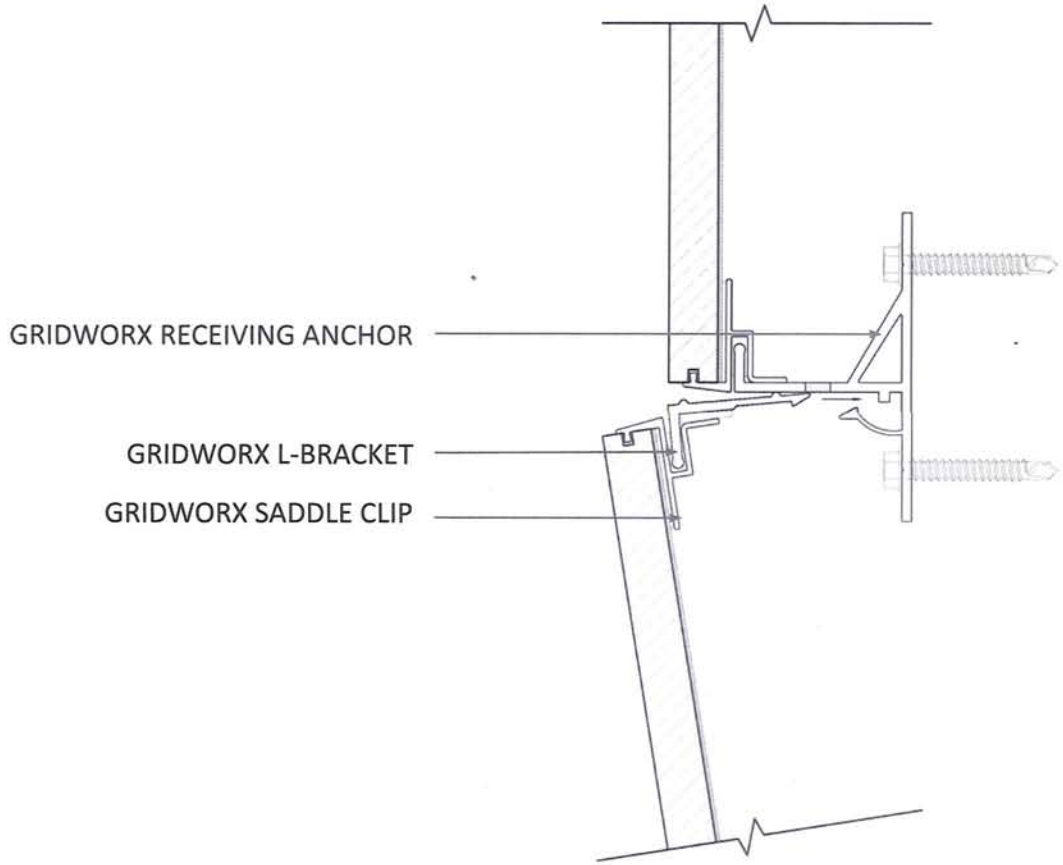
GRIDWORX

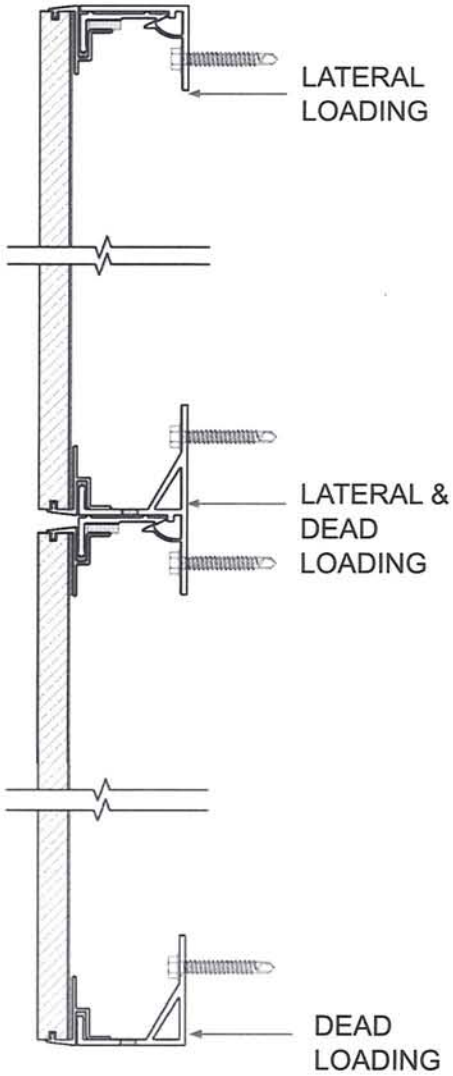
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

PLANX SADDLE CLIP SYSTEM

The most cost effective UCS rainscreen mounting system in the market

The patented GridPlanx system is designed to provide continuous panel support via a 3mm kerf cut continuously along the top and bottom edge of the cladding panel. The black anodized Gridworx saddle locks into the 3mm kerf and is mechanically adhered to the back face of the panel, creating a modern aesthetic. The GridPlanx product is available is panel heights up to 28" with lengths up to 126". Over 40 colors are available.





GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

PLANX SADDLE CLIP SYSTEM

100 Biscayne - New World Tower
Miami, FL

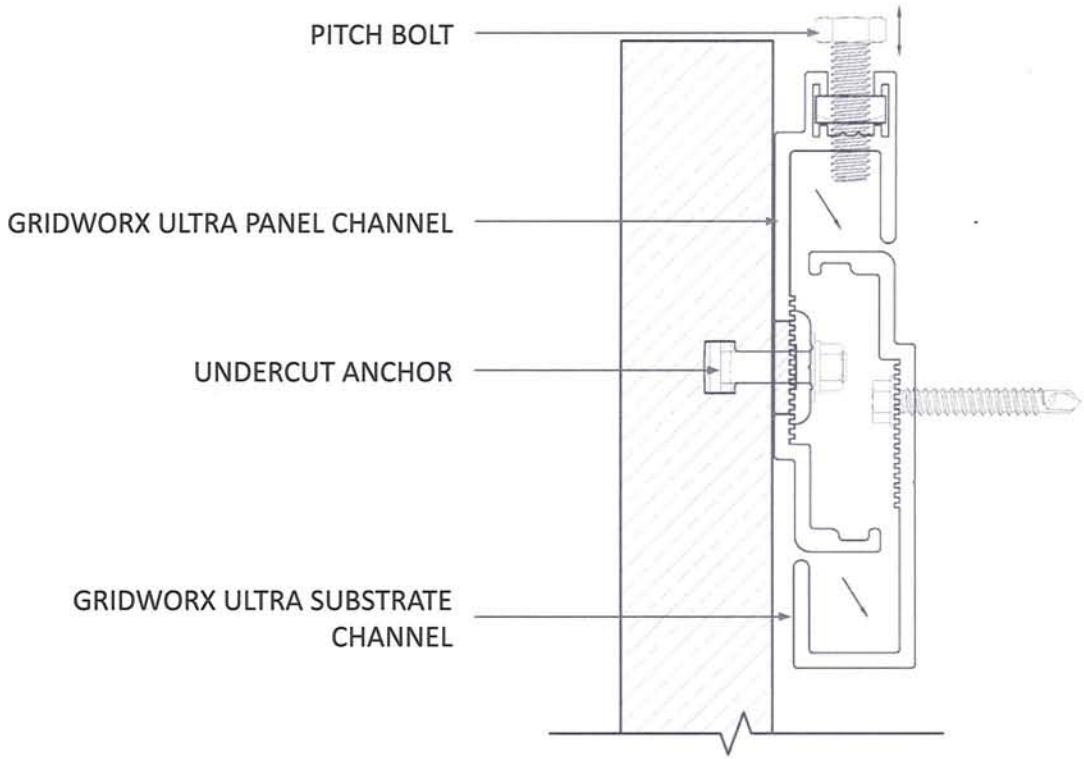
GRIDWORX

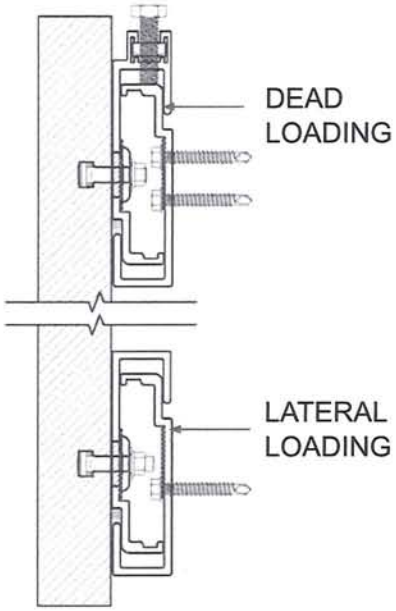
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

ULTRA FLOATING MOUNT SYSTEM

Providing an adjustable, secure anchoring solution for large format panels

The Gridworx ULTRA system allows for the efficient installation of large format ultra-compact surface panels. Continuous rail anchors are fastened to the back face of panel in parallel rows, via an undercut anchor. These rails interlock with adjacent anchors attached to the substrate. Designed as a "floating mount system", pitch bolts at the top channel allow for fast, pinpoint leveling.





GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

ULTRA FLOATING MOUNT SYSTEM

Ocean Avenue Residences
Brooklyn, NY

GRIDWORX

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

ULTRA FLOATING MOUNT SYSTEM

Atlantic Packaging Headquarters
Wilmington, NC

GRIDWORX®

ROCKin'teriors

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

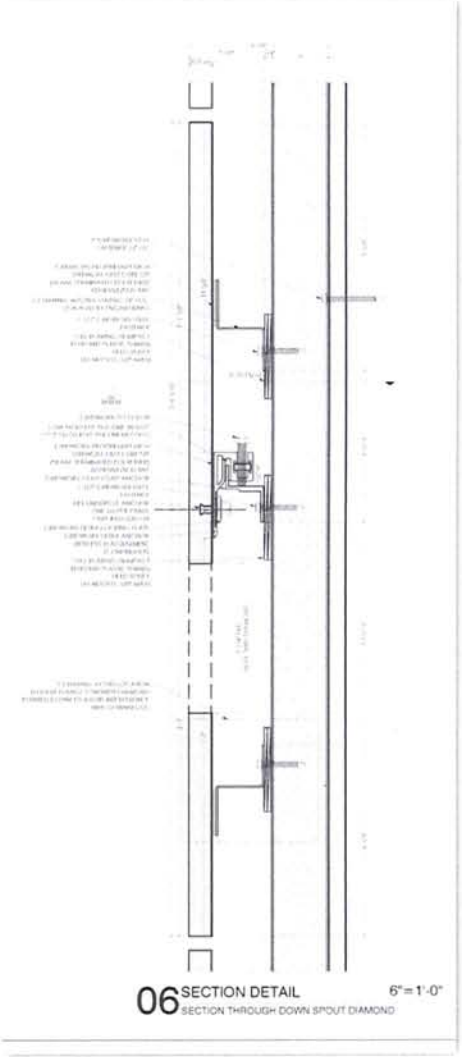
CUSTOM CLADDING ANCHORING SOLUTIONS

FLOATING DIAMOND PATTERN

University of Missouri Memorial Stadium - South Endzone Addition

Columbia, MO

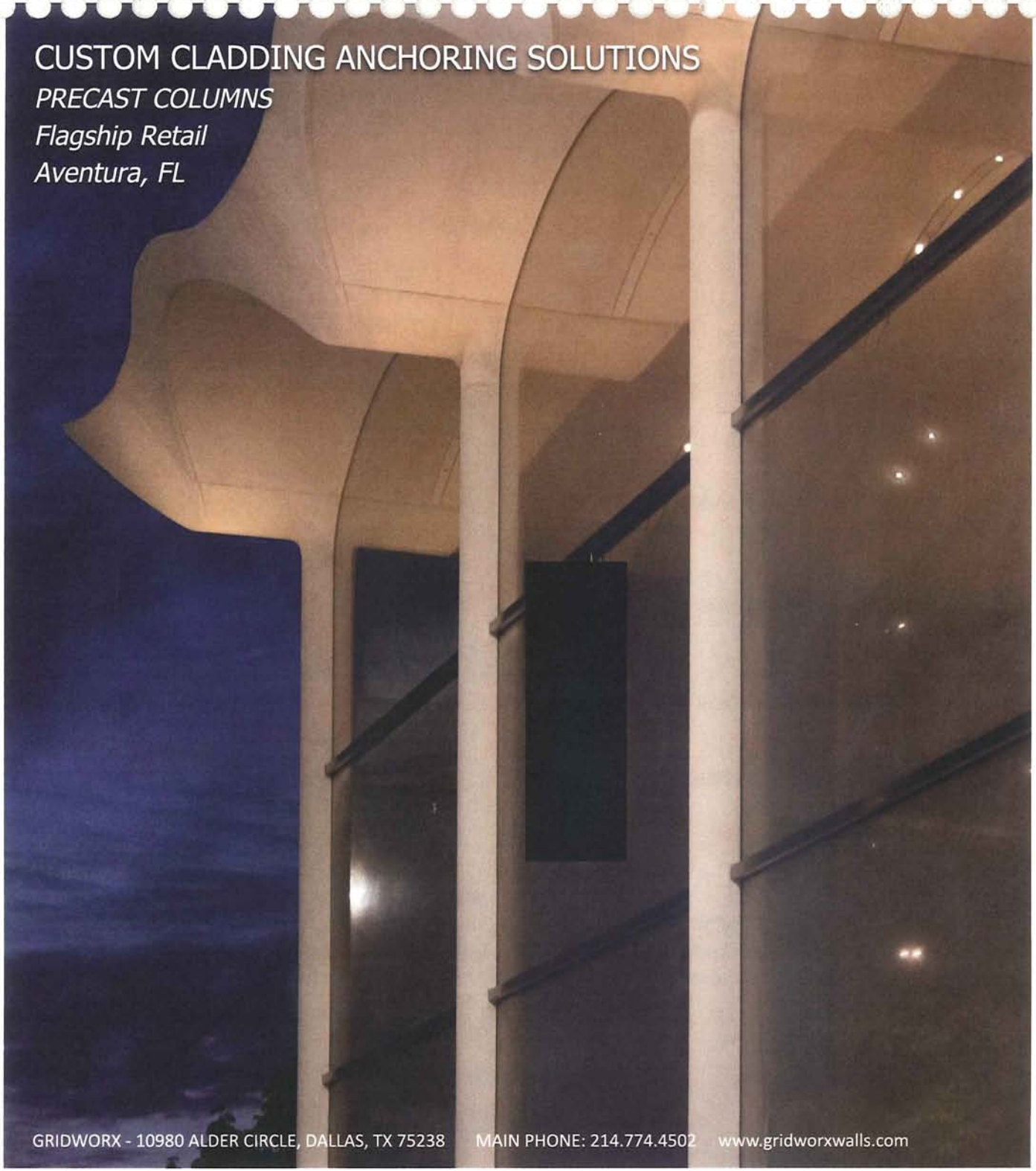
GRIDWORX®



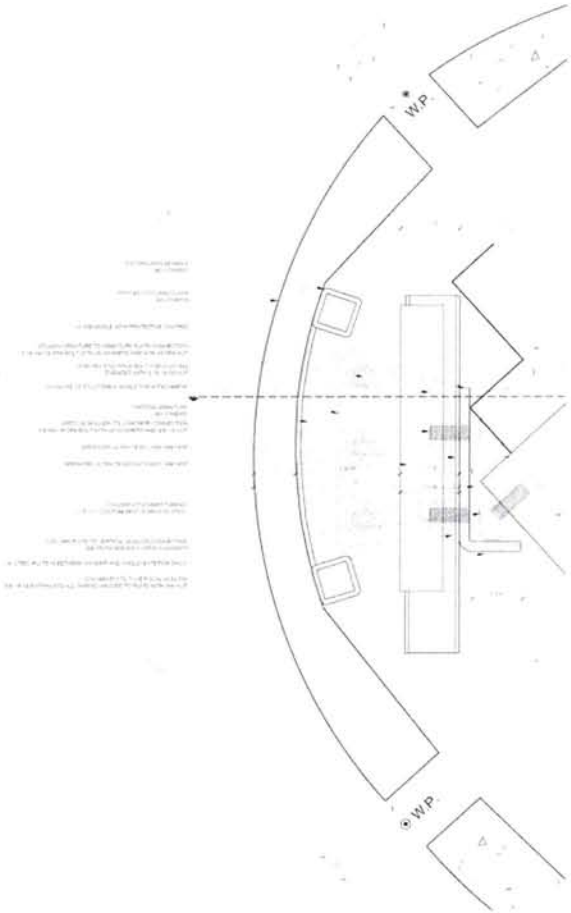
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

CUSTOM CLADDING ANCHORING SOLUTIONS

PRECAST COLUMNS
Flagship Retail
Aventura, FL



GRIDWORX®

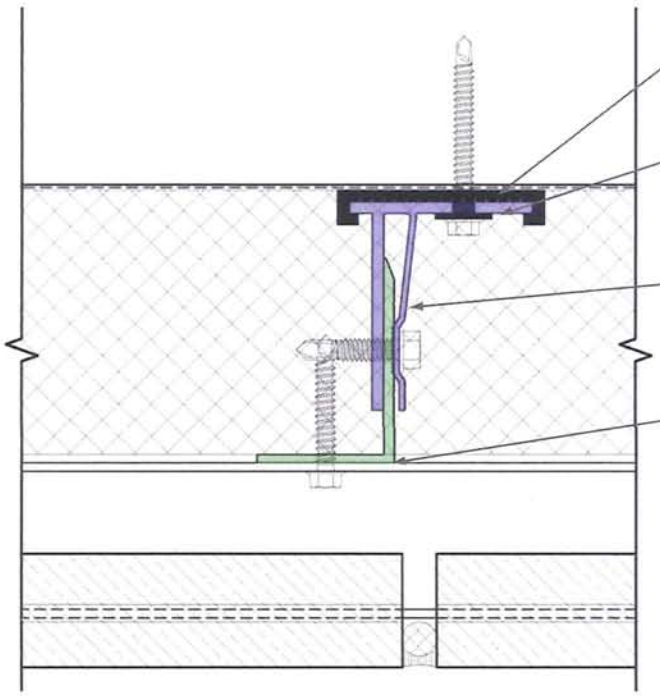


GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

CODE PERFORMANCE SOLUTIONS

THERMALLY BROKEN, ADJUSTABLE BACK UP SYSTEM

To meet or exceed contemporary energy code requirements, Gridworx offers a thermal isolating, adjustable back up system. This highly adjustable ystem is dual purpose - it allows the installer to plumb the wall in 12' increments, and is designed to mitigate thermal bridging from the exterior environment, into the wall cavity.

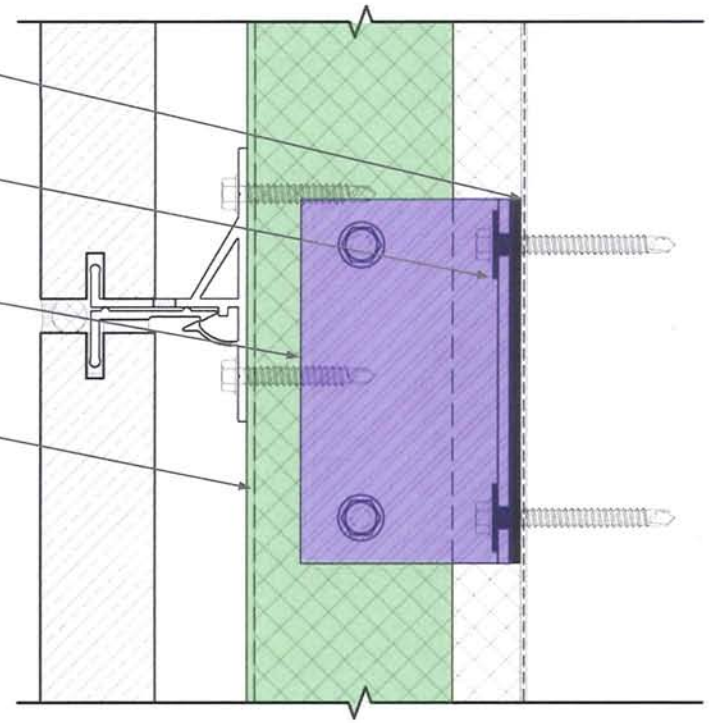


THERMAL ISOLATING BACKPLATE

THERMAL ISOLATING WASHER

DISCRETE SUBSTRATE ANCHOR

ADJUSTABLE VERTICAL MULLION



PLAN VIEW

SECTION VIEW

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

SOURCING CLADDING MATERIAL

GRIDWORX GLOBAL NETWORK OF STONE MANUFACTURERS

The Complete Package

Gridworx has a network of top-tier quarries both domestic and international; bringing limestone, granite and cladding material to the project.

Gridworx provides the quarry/mill with all stone cut tickets. This ensures the cladding material meets the architect's design intent as well as project engineering requirements. This level of involvement and coordination ensures a cost effective installation.

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

ON-SITE TRAINING

INSTALLER SUPPORT UNTIL THE PROJECT IS COMPLETE

GRIDWORX®

- Our team of installation technicians work with installers around the country.
- Gridworx offers installation guides and videos demonstrating the ease and efficiency of the system.
- Our technicians perform on-site installation reviews and training.

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

ARCHITECTURE DEPARTMENT

GRIDWORX®

Design Assistance

- Assist the Architect with designing a wall cladding system that achieves the desired design intent while meeting code and engineering compliance.
- Provide project specific connection details for atypical conditions.
- Submit relevant product submittal documents for permits

Budgeting

- Review the construction documents and provide an itemized take off that gives the owner, architect and installer the tools to meet the project budget.

Drafting Services

- Shop Drawings - a complete design package that ensures that the cladding design meets the design intent, and provides the installation teams the details necessary to efficiently and properly install the Gridworx anchoring system.

- Fabrication Tickets - based on the approved geometry within the shop drawing package. Tickets include panel geometry, size, modifications and quantities to ensure that the quarry has the information needed for fabrication. Each ticket includes an identification tag that aligns with a specific location within the shop drawings.

Engineering

- Gridworx works closely with our third party engineering partner, Architectural Wall Systems, to ensure our cladding solution meets all local code requirements for permit and construction.

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

GRIDWORX®

Design Assistance

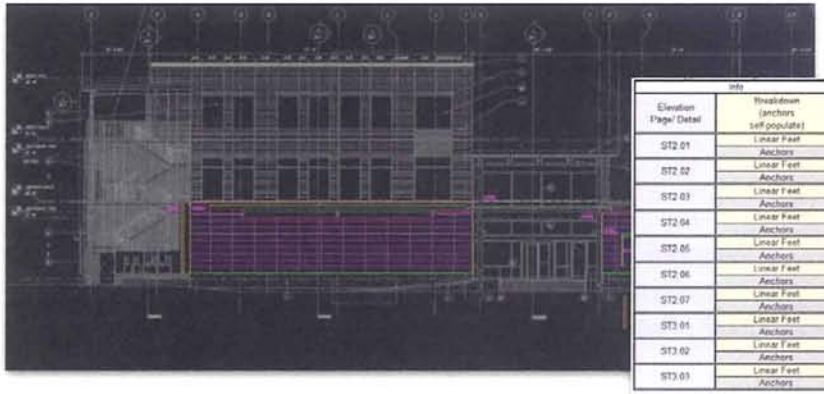
- Assist the Architect with designing a wall cladding system that achieves the desired design intent while meeting code and engineering compliance.
- Draft a project specific specification (CSI 3-part spec, division 04 or division 07)
- Provide project specific connection details for atypical conditions.
- Submit relevant product submittal documents for permits

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

GRIDWORX®

Budgeting

- Review the construction documents and provide an itemized take off that gives the owner, architect and installer the tools to meet the project budget.



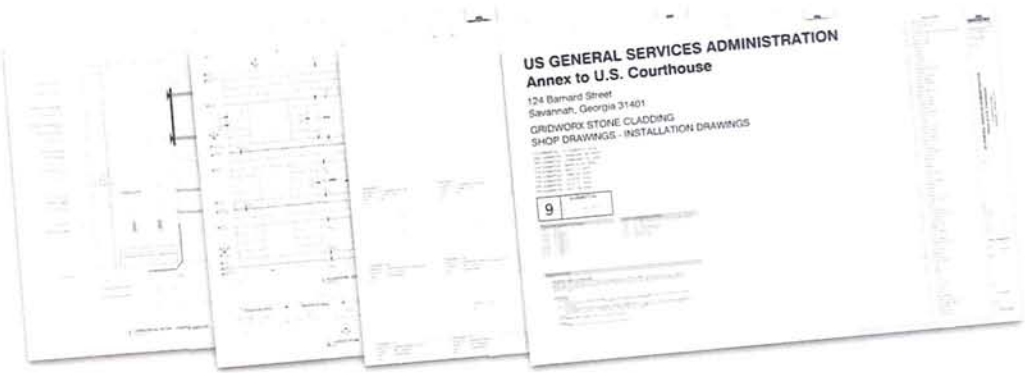
Info		Standard Anchors					Extended Back Plate Anchors				Slim Anchors				Formed Steel
Elevation Page/ Detail	Breakdown (anchors self populate)	Starter	Intermediate	Moderate	Standard	Top	Starter	Intermediate	Soffit T	Top	Starter	Intermediate	Standard	Top	Soffit Angle
ST2.01	Linear Feet	140	759	0	0	0	0	0	27	277	128	0	0	0	355
	Anchors	12	64	0	0	0	0	0	3	24	11	0	0	0	
ST2.02	Linear Feet	91	793	0	0	0	0	0	34	187	100	0	0	0	
	Anchors	7	66	0	0	0	0	0	3	16	9	0	0	0	
ST2.03	Linear Feet	36	928	0	0	0	0	0	27	255	210	0	0	0	
	Anchors	3	78	0	0	0	0	0	3	22	18	0	0	0	
ST2.04	Linear Feet	55	688	0	0	0	0	0	9	102	46	0	0	0	
	Anchors	5	58	0	0	0	0	0	1	9	4	0	0	0	
ST2.05	Linear Feet	41	365	0	0	0	0	0	7	69	27	0	0	0	
	Anchors	4	33	0	0	0	0	0	1	6	2	0	0	0	
ST2.06	Linear Feet	30	255	0	0	0	0	0	9	30	0	0	0	0	
	Anchors	3	22	0	0	0	0	0	1	3	0	0	0	0	
ST2.07	Linear Feet	0	0	0	0	0	0	0	0	135	135	0	0	0	
	Anchors	0	0	0	0	0	0	0	0	12	12	0	0	0	
ST3.01	Linear Feet	0	165	0	0	0	0	0	4	59	57	0	0	0	
	Anchors	0	14	0	0	0	0	0	1	5	5	0	0	0	
ST3.02	Linear Feet	0	172	0	0	0	0	0	1	35	58	0	0	0	
	Anchors	0	16	0	0	0	0	0	1	4	4	0	0	0	
ST3.03	Linear Feet	0	292	0	0	0	0	0	1	83	82	0	0	0	
	Anchors	0	23	0	0	0	0	0	1	7	7	0	0	0	
GROSS LINEAR FEET		383	4527	0	0	0	0	0	114	1236	823	0	0	0	
+		+	+	+	+	+	+	+	+	+	+	+	+	+	
5% OVERAGE		20	227	0	0	0	0	0	6	62	42	0	0	0	
TOTAL LINEAR FEET		403	4754	0	0	0	0	0	120	1298	865	0	0	0	
TOTAL ANCHOR COUNT		34	397	0	0	0	0	0	10	109	73	0	0	0	

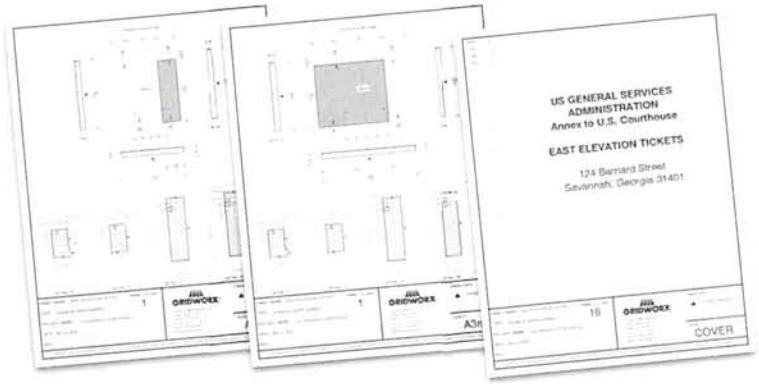
ARCHITECTURE DEPARTMENT

Drafting Services

- **Shop Drawings** - a complete design package that ensures the cladding design meets the architect's design intent, and provides the installation team with the details and workpoints necessary to efficiently and properly install the Gridworx anchoring system.
  - Shop Drawings Include:
    - Product Data
    - Illustrates Parts List
    - Plans
    - Elevations
    - Wall Sections
    - Plan and Section Details

- **Fabrication Tickets** - based on the approved geometry within the shop drawing package. Tickets include panel geometry, size, modifications and quantities to ensure that the quarry has the information needed for fabrication. Each ticket includes an identification tag that aligns with a specific location within the shop drawings.





GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

GRIDWORX®

Engineering

- Critical for projects in South Florida, Gridworx works closely with our third party engineering partner, Architectural Wall Systems, to ensure our cladding solution meets all local code requirements for permit and construction.

- Our engineering package includes:

  - Signed and stamped calculation package
    - Takes into account ASCE 7-10 loading requirements (dead, live, wind and seismic)
    - Anchorage loads
    - Fastener loads
    - Cladding breakage loads (based on ASTM results)
    - All calculations take into account safety factors, per code

  - Signed and stamped shop drawings

  - Supplemental testing, as needed, to meet local codes or to satisfy owners

The Gridworx engineering package, signed and sealed by our Florida licensed engineering tean satisfies South Florida's strict permit and construction requirements.

KEVIN McCLINTICK
LICENSE
37674
STATE OF FLORIDA
PROFESSIONAL ENGINEER

SEP 22, 2020

TESTING DATA - L BRACKET "PULL OUT" FROM RAIL

GRIDWORX®

AADFW, INC.

2161 Regal Parkway
Euless, TX 76040-6733
(817) 540-0153 • FAX (817) 540-0886

A2LA ACCREDITED TESTING CERT # 0403.01

TENSILE TEST CERTIFICATE

Page 1 of 1

Attn: Stephen Loyd
To: Precision Wall Systems, Inc.
1821 Levee Street
Dallas, TX 75207

(214) 774-4502
(214) 432-5963 Fax
stephen@gridworxwalls.com

Date Issued: 10/31/2013
Lab. Number: L13122576
P.O. Number: VERBAL
Date Tested: 10/30/2013
File Number: 122576
Disk Number: T-0980
Revision Date:
Revision Number:

Test Method/Specification: Customer P.O.

Part Number: N/S
Material: N/S

Description: Alum Channel
Reference: 6 Intermediate T, 8 L Brackets

Test Machine: Satec Model 120 HVL S/N: 1290

Requirements: Report results

Results:

Sample ID	Peak Load (lbs)	Accept/ Reject
1	1298	N/A
2	1386	N/A
3	1455	N/A
4	1381	N/A
5	1207	N/A
6	1307	N/A

Disposition: **For review only**, based only on test data reported above.

I certify that these are accurate and true results of the indicated tests performed in accordance with the AADFW Quality Assurance Manual and with the applicable Test Procedures. A2LA Accreditation Certificate #603.01 in the Mechanical Field of Testing

AADFW, Inc.

Jeremy Wilson, B.S., E.I.T.
Metallurgist

Test specimens and/or unused sample material will be retained for 2 months from date of report, except by prior written agreement. Our letters and reports apply to the sample tested and/or inspected and are not necessarily indicative of the qualities of apparently identical or similar products. All measurements, testing, and opinions are subject to change upon receipt of additional information, testing, or measurements. Reproduction except in full is reserved pending written approval. The recording of false, fictitious, or fraudulent statements or entries on this certificate may be punishable as a felony under Federal Law. Texas Registered Engineering Firm F-734.

TESTING DATA - HORIZONTAL RAIL LOAD/DEFLECTION

GRIDWORX®

HORIZONTAL RAIL LOAD TESTING

Construction Testing Sciences
2978 Congressman Ln. Dallas, TX 75220
Phone: 214.703.8911
www.ctsciences.com

Report of Extruded Rail Load / Deflection Testing

Client: Gridworx, Ltd.
Project: **Intermediate Anchor 002**
Project No.: 20-00157-900-01

Report No.: 13920-002
Date of Service: 3/30/2020

Construction Testing Sciences (CTS) was retained by Gridworx, Ltd. to perform compression load / deflection testing on a continuous intermediate "T" anchor, identified as Intermediate Anchor 002. This test program consisted of a steel frame with three vertical members at 16" o.c., simulating metal studs. DensGlass sheathing was secured to the frame, followed by installation of the anchor, which measured 34" long. The anchor was secured to the frame with 1/4" Ø self-tapping hex head screws. A rigid steel loading bar, simulating kerfed stone, was placed on the anchor through which to apply a compression load. Dial gauges were installed at each end of the the anchor to measure deflection under load. Initially, load was applied in 25 lbs. increments up to 300 lbf., followed by loading in 50 lbs. increments up to 2100 lbf. Deflection was recorded at each increment throughout the test. A total of five anchors were tested in this manner. Results of these tests are given on the following pages.

We trust the information provided is acceptable for your use. If you have any questions or require additional information please contact us.

Respectfully submitted,

Jack Gary
General Manager

LIMITATIONS: The test results presented herein were prepared based upon the specific samples provided for testing. We assume no responsibility for variation in quality (composition appearance, performance, etc.) or any other feature of similar subject matter provided by persons or conditions over which we have no control. Our letters and reports are for the exclu use of the clients to whom they are addressed and shall not be reproduced except in full without the written approval of Construction Testing Sciences, LLC

Load (lbs)	Deflection (inches)		
	Gauge 1	Gauge 2	Avg.
25	0.000	0.000	**0.000**
50	0.001	0.000	**0.001**
75	0.002	0.001	**0.002**
100	0.002	0.001	**0.002**
125	0.003	0.002	**0.003**
150	0.003	0.002	**0.003**
175	0.004	0.002	**0.003**
200	0.004	0.003	**0.004**
225	0.005	0.004	**0.005**
250	0.005	0.004	**0.005**
275	0.006	0.005	**0.006**
300	0.006	0.006	**0.006**
350	0.007	0.007	**0.007**
400	0.009	0.009	**0.009**
450	0.011	0.011	**0.011**
500	0.014	0.013	**0.014**
550	0.016	0.015	**0.016**
600	0.019	0.017	**0.018**
650	0.022	0.019	**0.021**
700	0.024	0.022	**0.023**
750	0.027	0.024	**0.026**
800	0.030	0.026	**0.028**
850	0.033	0.028	**0.031**
900	0.036	0.030	**0.033**

TESTING DATA - 1000 HOUR SALT SPRAY

GRIDWORX®

AADFW, INC. A2LA - #603.01 Mechanical Testing ISO 17025 ACCREDITED

(817) 540-0153 • FAX (817) 540-0886 • 2161 Regal Parkway • Euless, TX 76040-6733

Salt Spray Test Certificate

Stephen Loyd
Precision Wall Systems, Inc.
1821 Levee Street
Dallas, TX 75207

PH: (214) 774-4502 FX: (214) 432-5963

Date Issued : 06/17/2010
Lab Number : L10081683
PO Number : 7087
Location of Test: AADFW Lab
Date Tested : 06/17/2010
File Number : 0001923-00
Revision Date : Rev: 00

*Red corrosion was noted on the stone samples. More on the natural stone than the Arriscraft. This corrosion appeared in the first 24 Hours and did not grow. The only effect it had on the aluminum was staining.

Exposure Time: 1008 hours **Photograph(s):** N/A

Process Specification(s):
Spec: N/A, Report Only

Test Method	Rev
ASTM B 117	-09

Equipment: Singleton - SN: SCCH22-8528
Support Method: Plastic Rack
Cleaning Method: Running Water

Part #: N/S Description: Samples

Results: (Military Time)

Sample	[Date In	Time In]	[Date Out/Time Out]		Results	Status
1-3 No Blocks	05/06/2010	09:00	06/17/2010	09:00	No Corrosion on significant areas	N/A
1-3 Natural Limes	05/06/2010	09:00	06/17/2010	09:00	No Corrosion on significant areas	N/A
1-3 Arriscraft cals	05/06/2010	09:00	06/17/2010	09:00	No Corrosion on significant areas*	N/A

Disposition: For Review Only, based only on the test data reported above. I certify that these are accurate and true results of the indicated tests performed in accordance with the AADFW QA Manual and AADFW test Procedures. A2LA Accreditation Certificate #603.01 in the Mechanical Field of Testing.

AADFW, Inc. Jeremy Wilson, B.S., E.I. T., Metallurgist

Test specimens and/or unused sample material will be retained for 6 months from date of report, except by prior written agreement. Our letters and reports apply to the sample tested and/or inspected and are not necessarily indicative of the qualities of apparently identical or similar products. All measurements, testing, and opinions are subject to change upon receipt of additional information, testing, or measurements. Reproduction except in full is reserved pending written approval. The recording of false, fictitious, or fraudulent statements or entries on this certificate may be punishable as a felony under Federal Law. Texas Registered Engineering Firm F-734.

TESTING DATA - RAIL TENSILE STRENGTH FOLLOWING SALT SPRAY

GRIDWORX®

AADFW, INC. ISO 17025 ACCREDITED (817) 540-0153 • FAX (817) 540-0886 • 2161 Regal Parkway • Euless, TX 76040-6733

Tensile Test Certificate
ASTM B 557--06 Rounded Per ASTM E 29-08

Page 1 of 1

Stephen Loyd
Precision Wall Systems, Inc
1821 Levee Street
Dallas, TX 75207

PH: (214) 774-4502 FX: (214) 432-5963

Date Issued : 06/21/2010
Lab Number : L10082803
PO Number : VERBAL/S LOYD
Location of Test: AADFW Lab
Date Tested : 06/21/2010
File Number : 0021682-00
Revision Date : **Rev:** 00

Part #: ID: #1, #2, #3
Samples: 3
Size: 1" gage length

Equipment	Method	REV
Tensile: UTTester SFM-150KN, SN:0408535	ASTM B 557	-06

Bar Type: Flat **Yield Criterion:** 0.2 % Offset **Gage Length:** 1.0 "
Specification: N/A
Material:

	------ Dimensions (in) ------			---- Ultimate ----		-------Yield -------		Elong	R. A.	Hard.
Sample Req:	Width	Thick.		(lbs)	(ksi)	(lbs)	(ksi)	(pct)	(pct)	-
1	0.249	0.088		814	37.1	678	30.9	16		
2	0.248	0.087		813	37.7	687	31.8	16		
3	0.249	0.085		748	35.3	615	29.1	16		

Disposition: For Review Only, based only on test data reported above. Nadcap requirement: Strain Rate prior to yield is .003 - .007 in/in/min; strain rate after yield is approximately .125 in/in/min. I certify that these are accurate and true results of the indicated tests performed in accordance with the AADFW applicable test procedures and relate only to the samples tested. AADFW is accredited by A2LA, Mechanical field of testing, Cert # 603.01.

AADFW, Inc. Jeremy Wilson, B.S., E.I. T., Metallurgist

Test specimens and/or unused sample material will be retained for 6 months from date of report, except by prior written agreement. Our letters and reports apply to the sample tested and/or inspected and are not necessarily indicative of the qualities of apparently identical or similar products. All measurements, testing, and opinions are subject to change upon receipt of additional information, testing, or measurements. Reproduction except in full is reserved pending written approval. The recording of false, fictitious, or fraudulent statements or entries on this certificate may be punishable as a felony under Federal Law. Texas Registered Engineering Firm F-734.

SIMPSON GUMPERTZ & HEGER
Engineering of Structures
and Building Enclosures

Dear Mr. Loyd.

At your request, we reviewed the product samples, salt-spray test results, tensile strength test results, product chemistry and processing information of the Gridworx mechanical stone hanging system that you provided. This report summarizes our findings.

1. BACKGROUND

The Gridworx mechanical stone hanging system is designed as a field-installed, pre-engineered,hand set stone veneer cladding system. We understand that cementitious grout is not used betweenthe stone panels and that the Gridworx supports are not exposed to pH conditions outside the range of 3-10. Gridworx uses 12 ft long aluminum support channels that are mechanically affixed to the structure with fasteners. The stone panels are delivered with kerf cuts on the horizontal edges. They are set in the J portion of the Gridworx channel this carries the dead load of the panel. "L Brackets" are placed in the top kerf and rotated inward so the pointed end snaps into a receptacle in the channel above. These provide lateral wind load support Gridworx channels are produced from aluminum Alloys 6005 and 6005A with a T-5 temper. Although unprotected aluminum is inherently corrosion resistant through natural oxidation and the formation of a protective oxide film, Grdworx channels offer additional protection with the application of an anodized treatment meeting the specifications of AA M12C22A21 in accordance with AAMA 611-98. The channels are affixed to a steel stud substrate with a special-use fastener possessing a dual temper and a Stalgard coating. Bi-metal stainless steel fasteners are used to attach the aluminum channels to backup systems consisting of.concrete masonry units (CMU) or cast-in-place concrete.

2. DOCUMENT REVIEW

You provided two mill certificates showing chemical analysis for the aluminum billets used to extrude the Gridworx support channels. The certificates confirm that both Alloys 6005 and 6005A are used to manufacture the product. The main difference in the requirements between these two alloys is that Alloy 6005A allows for a greater copper and manganese content. You provided reports for salt spray tests of the Gridworx channels. The salt spray procedure is designed to accelerate the corrosive attack on the subject material in order to predict its corrosion resistance in high-chloride environments. It is often referred to as an accelerated weathering procedure. AADFW, Inc. conducted the salt spray testing for 1,008 hrs on the Gridworx channels holding natural limestone, holding Arriscraft International's calcium silicate units, and holding no stone at all. The testing procedures are standardized under national and international standards as ASTM B117, Standard Practice for Operating Salt Spray (Fog) Apparatus and ISO 9227. Corrosion

SIMPSON GUMPERTZ & HEGER INC.
41 Seyon Street, Building 1, Suite 500
Waltham, Massachusetts 02453
main: 781.907.9000 fax: 781.907.9009
www.sgh.com

Boston
Los Angeles
New York
San Francisco
Washington, DC

Tests in Artificial Atmospheres - Salt Spray Tests The tests included nine channels total (three of each). All channels had raw cut edges, punched weep holes and screw slots. This conforms to normal field conditions, the cut edges and weep holes were not anodized. You provided tensile strength test reports for the Gridworx channels used in the three salt spray test conditions (above) as well as with a control sample that had not been through the salt spray test. These tests were conducted in accordance with the standards set by ASTM B557-06, Standard Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products The product literature for the recommend fasteners that you provided describe a 300 series stainless steel with 400 series hardened self-drilling tips and dual tempered fasteners with a Stalgard coating.

3. LABORATORY ANALYSIS

Laboratory Testing, Inc. performed a chemical analysis of a stone support channel using direct-reading atom emissions spectroscopy. This analyzed section came from the no-stone salt-spray specimen. The results of this chemical analysis show that the alloy conforms to the specification for Alloy 6005A as per ASTM B221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes. We used a stereo optical microscope to examine the salt spray channels We did not see any pitting or material loss as a result of the salt-spray testing, however, the surface of the aluminum was stained by particles on the stone samples

4. DISCUSSION

The aluminum alloys currently used for the Gridworx mechanical stone supports are 6005 and 6005A, both with a T-5 temper. Manganese is not a critical alloying element in this material from a corrosion standpoint, therefore, the manganese content in either alloy should not affect the corrosion performance of this product. Large amounts of copper, however, can increase the potential for corrosion in series 6000 aluminum alloys, so the copper content of Alloy 6005A must be kept lower than 0.1%, which is the upper limit of Alloy 6005. Aluminum alloys perform well in coastal locations with high salt content because they are more resistant to the chlorides that cause pitting corrosion than other alternative materials, such as carbon steel and stainless steel. The Gridworx support channels performed well after 1,008 hrs of salt-spray testing and did not show signs of pitting corrosion or other harmful effects of the chloride exposure. This evaluation includes the cut edges, weep holes, and screw slots where the anodized treatment had been removed. Aluminum Alloys 6005 and 6005A are lighter and more compliant than hot worked stainless steel; however, these materials have similar yield strengths. The tensile test results on the Gridworx aluminum samples showed yield strengths ranging from 29.1 to 33 2 ksi, with an average yield strength of 31.25 ksi. The average yield strength of the Gridworx aluminum samples tested in tension is comparable to the minimum yield strength (30 ksi) of hot worked stainless steel extruded shapes and tubes given by ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes. The yield strength of a material signifies the onset of permanent deformation in the material; therefore, design codes limit the allowable stresses in these materials to a percentage below their yield strength so that the materials will not exceed their elastic limits during their service life. For typical stone hanging systems, the yield strength of the material is the critical design

parameter and the aluminum alloys of the Gridworx system compare favorably with the yield strength of stainless steel. The dual tempered fasteners with the Stalgard coating and the bl-metal fasteners recommended with the Gridworx system are appropriate selections to provide resistance to hydrogen embrittlement and to minimize galvanic corrosion occurring when dissimilar metals come into contact with the 300 series stainless steel

5. CONCLUSIONS

- Our findings regarding the review of the Gridworx mechanical stone hanging system are summarized as follows:
- The Gridworx stone hanging system utilizes aluminum Alloys 6005 and 6005A with less than 0.1% copper by weight.
- These aluminum alloys exhibit excellent corrosion resistance even in the accelerated environment imposed by the salt-spray tests.
- Aluminum Alloys 6005 and 6005A have a yield strength that is comparable to that of hot-worked stainless steel, Grades 304 and 316.
- The metallurgy of the fasteners specified for installation of the Gridworx supports is appropriate to minimize the potential for galvanic corrosion and hydrogen embrittlement.

The Gridworx aluminum stone hanging system provides strength and corrosion-resistant characteristics that make it an attractive alternative to stainless steel stone hanging systems in a variety of applications. In the preparation of this report, we reviewed samples of an aluminum material used in the manufacture of the Gridworx stone hanging system for a generic exterior condition Due to the many variables associated with the use of any building product, including but not limited to, climatic conditions, design, and product application, any specification and/or use of the Gridworx stone hanging system should be evaluated by a licensed design professional on a project-by-project basis. Simpson Gumpertz & Heger disclaims responsibility for any and all claims arising out of the specification and/or use of the Gridworx stone hanging system alleged to have occurred based on reliance on the opinions expressed herein without such independent evaluation.

Sincerely Yours,

Simon C. Bellemare, P.E.
Senior Staff II – Materials
TX License No. 106753

John H. Thomsen
Associate Principal

Texas Registered Firm F-5107
I:\BOS\Projects\2010\100931 00-WORX\WP\004SCBellemare-L-100931 00 esb doc

STATE OF TEXAS
SIMON C. BELLEMARE
106753
LICENSED
PROFESSIONAL ENGINEER

PROJECT GOALS

- Design and engineer a beautiful and dependable stone cladding solution that meets the lifespan of the building
  - Provide a mechanical rainscreen solution to anchor 30mm stone cladding material
  - Design proper drainage between the back of stone and face of sheathing
  - Work closely with waterproofing consultant to ensure connections and transitions have proper membrane and flashing
  - Provide 20 year limited manufacturers warranty on the Gridworx cladding system

- Honor the current design intent
  - Collaborate with architect on shop drawing submittals to ensure sensitive rainscreen connections do not compromise the appearance of the project

- Provide a cost effective, efficient solution
  - Collaborate with Florida licensed engineer to ensure that we do not "over design" our connections or anchor spacing

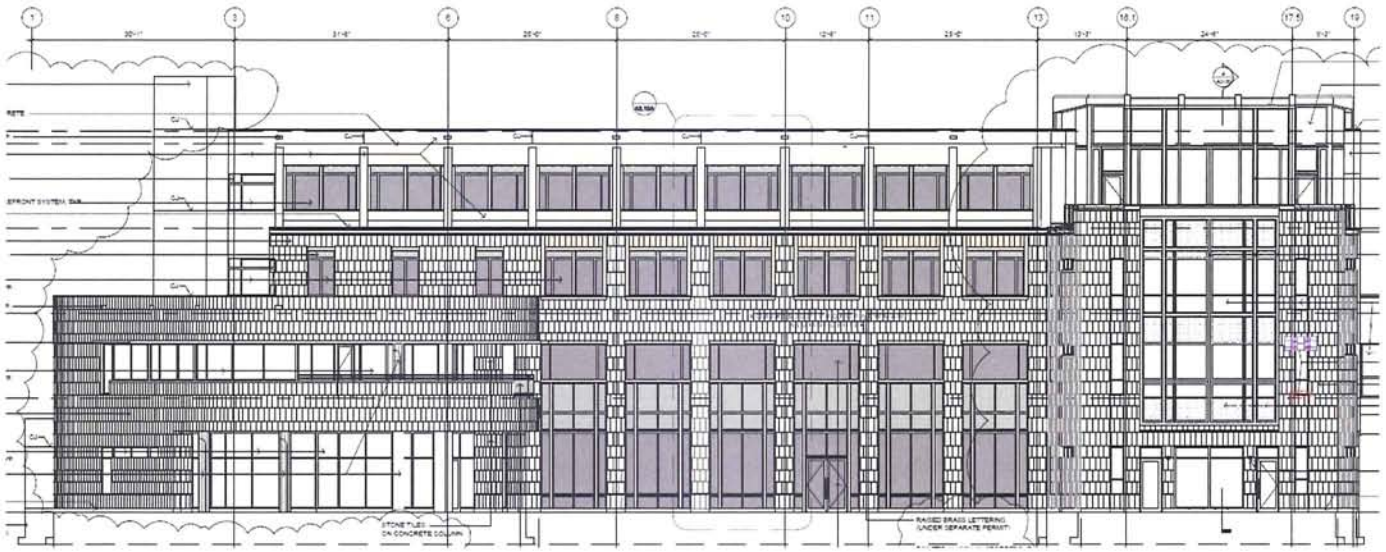
- Be a single source contact for ownership, architect, general contractor and installer
  - Provide the design, engineering, anchors and cladding material, to ensure a seamless process from concept to completion
  - If there are any questions or concerns, there is a single company to contact

ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

GRIDWORX®

PROJECT OBSERVATIONS AND POTENTIAL SOLUTIONS

- Existing cladding includes thinset tiles (roughly 24" height x 12" length)
- Substrate is combination of CMU and cast in place concrete
- Stone cladding scope includes heads, jambs and sills around windows
- Scope includes radial wall with faceted panel layout
- Recessed stone panels surround storefront window system
- Aluminum and stucco transitions



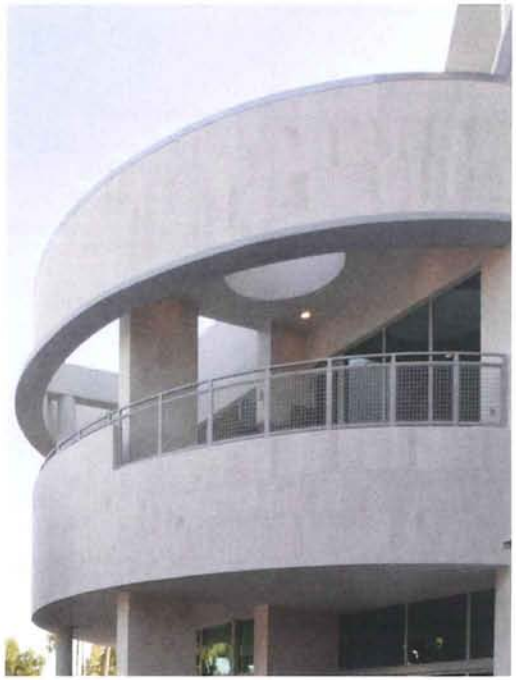
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

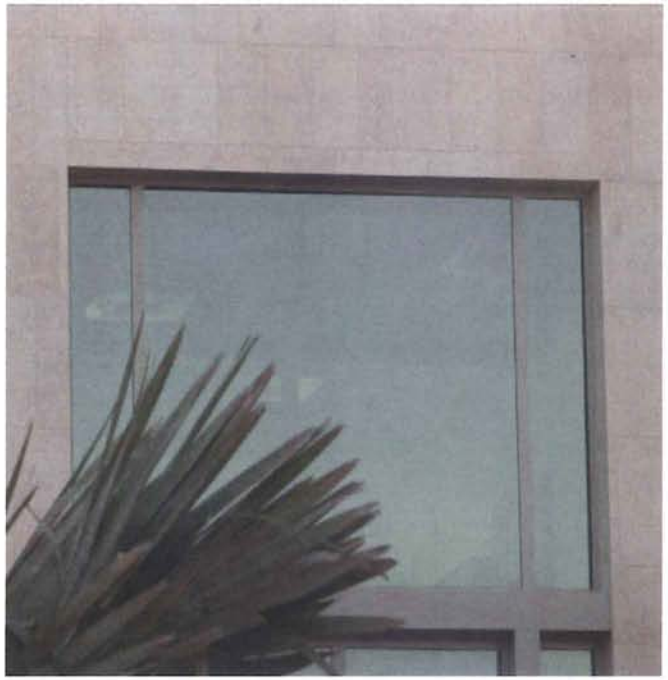
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

GRIDWORX®

PROJECT OBSERVATIONS AND POTENTIAL SOLUTIONS

- Maintaining panel length and height, but increasing thickness to 30mm
- Gridworx recommends a hybrid anchoring solution
  - Kerf anchors are primary attachment method, with 2 ½" Assembly depth from face of stone to face of connection
  - Mechanical kerfs to be used at window head and sill transitions
- With increase in cladding assembly depth, what is impact to adjacent systems and materials?
  - Windows, aluminum panel, etc
    - Custom slim profile extrusions at returns that terminate at window system, minimize impact





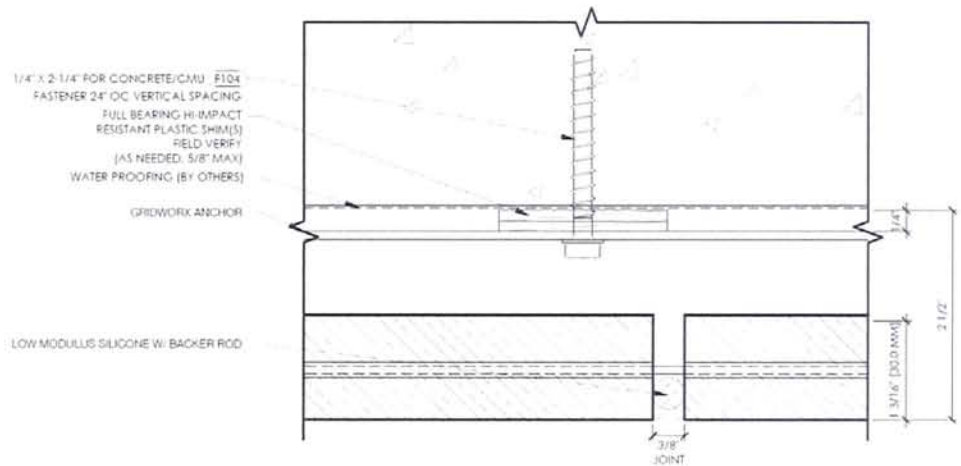
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

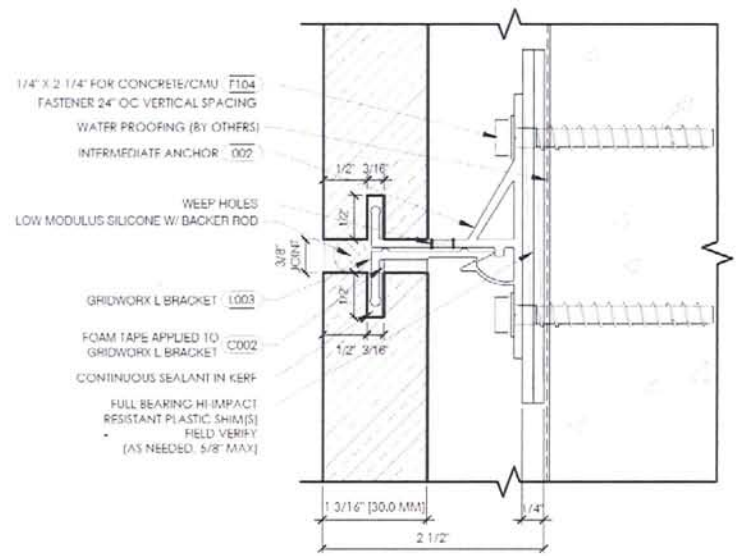
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

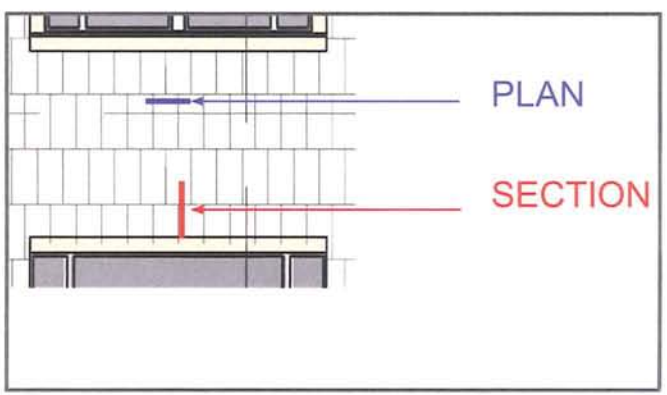
GRIDWORX®

STANDARD KERF CONNECTIONS

- *Typical face panels*
- *2 ½" from face of stone to face of substrate*







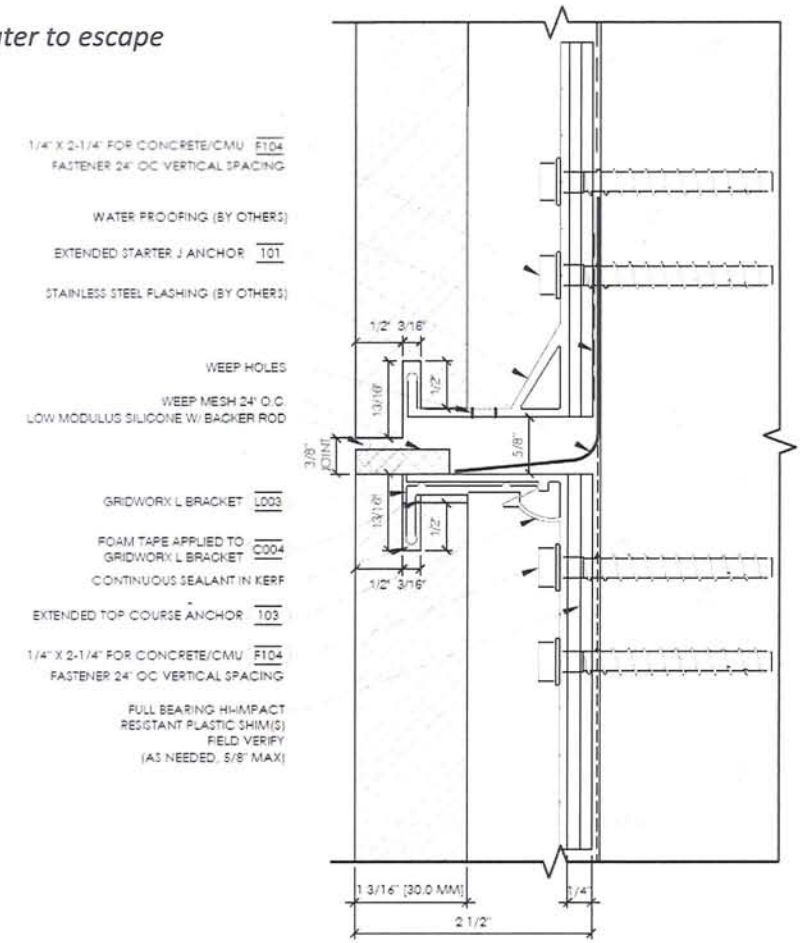
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

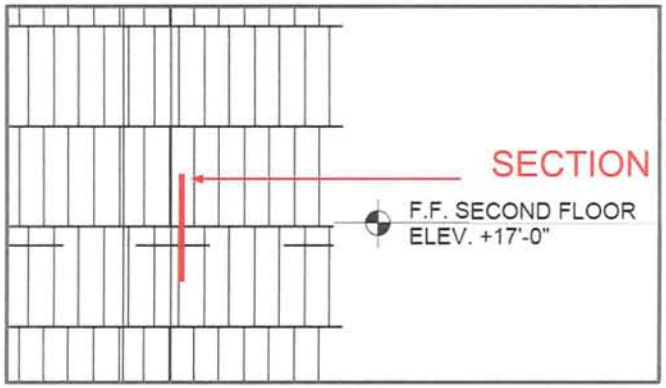
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

GRIDWORX®

INTERSTORY WEEP

- *Combination of starter and top anchors creates a cavity for water to escape*
- *2 ½" from face of stone to face of substrate*





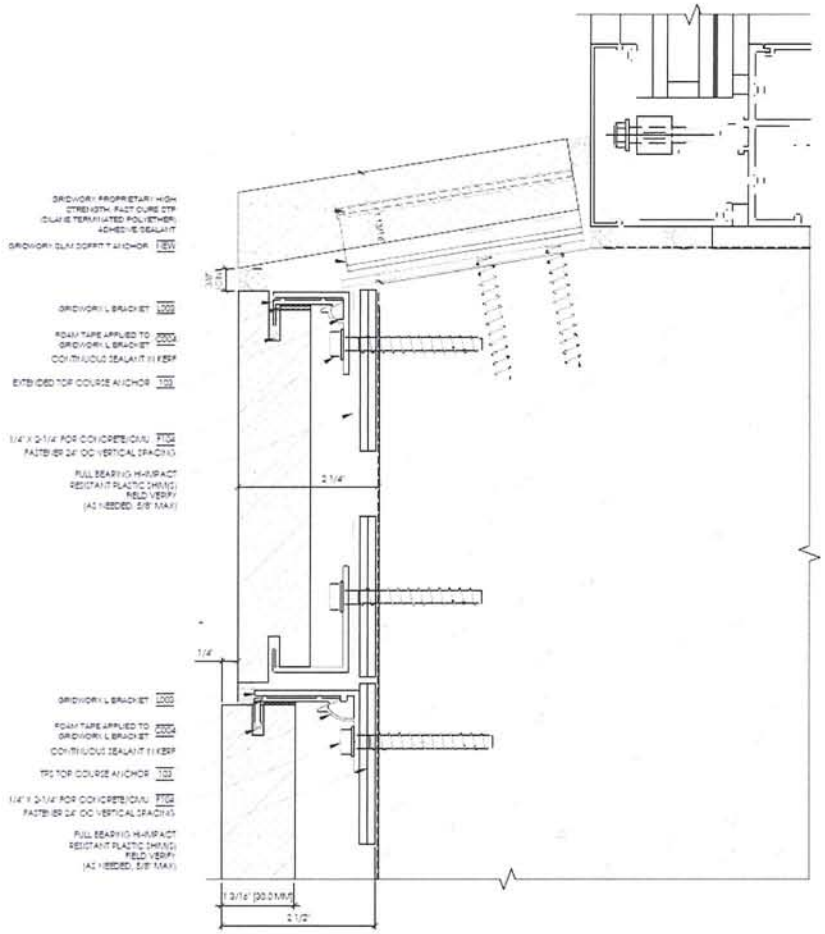
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

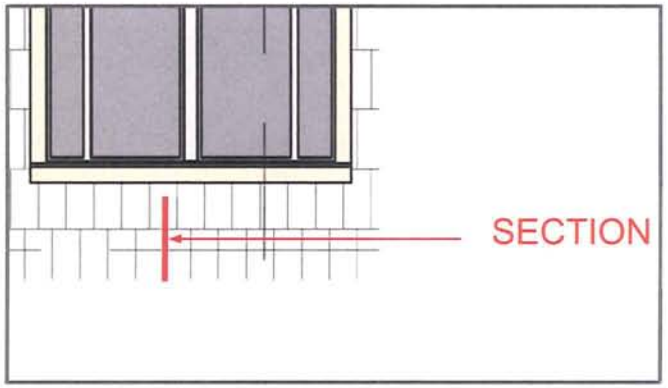
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

GRIDWORX®

SILL TRANSITION

- *Custom slim extrusion at sill*
  - *1 13/16" assembly depth*
- *Slim kerf anchor profile at recessed band*
  - *2 ¼" assembly depth*
- *Standard kerf system transition at face panel*
  - *2 ½" assembly depth*





GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

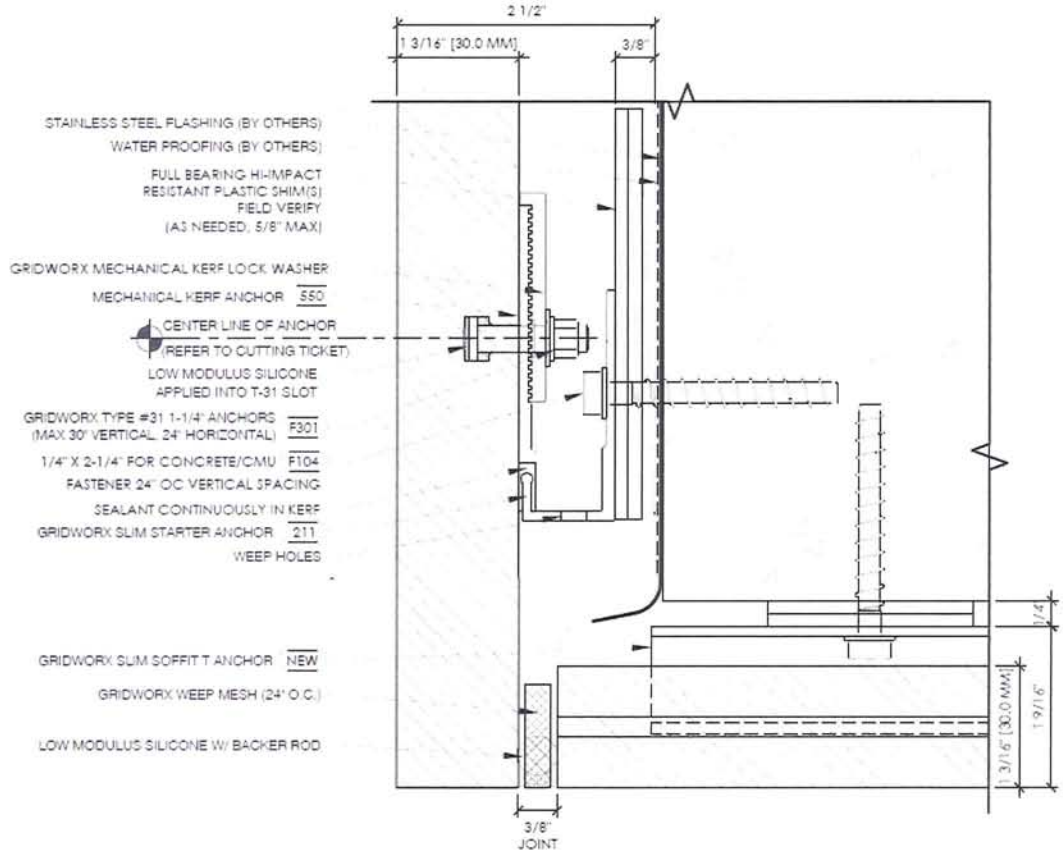
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

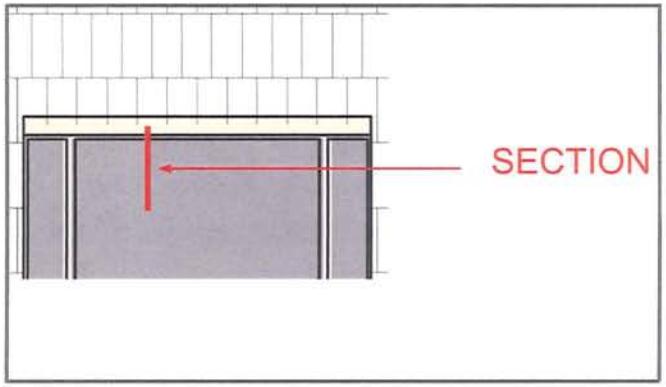
GRIDWORX®

FASCIA/SOFFIT TRANSITION

- *Mechanical Kerf/Slim J Anchor at Fascia*
  - *2 ½" assembly depth*
  - *Clean bottom edge transition*

- *Custom slim extrusion at soffit/header return*
  - *1 13/16" assembly depth*





GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

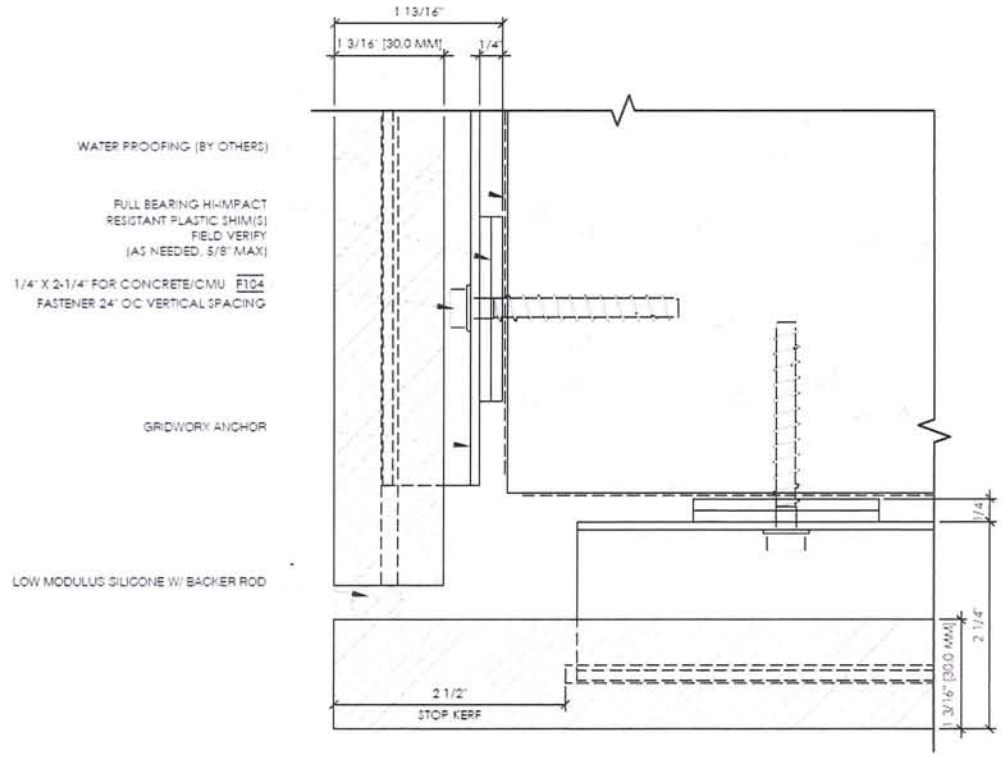
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

GRIDWORX®

PILASTER/JAMB CORNER TRANSITION

- *Custom slim extrusion at jamb*
  - *1 13/16" assembly depth*

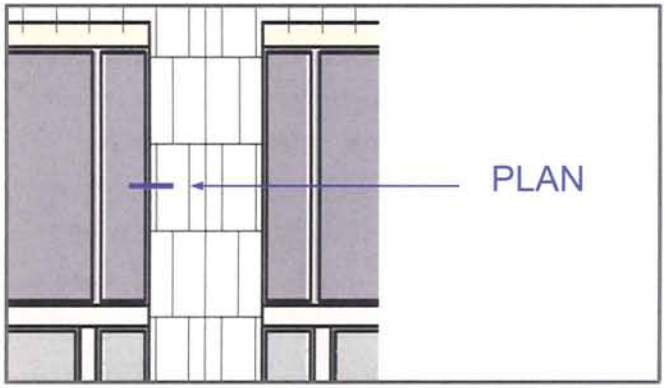
- *Standard kerf system transition at face panel*
  - *2 ½" assembly depth*



OUTSIDE CORNER
AT PILASTER RETURNS

01
ST3.00

ARCH. REF.: N/A
SCALE: N/A



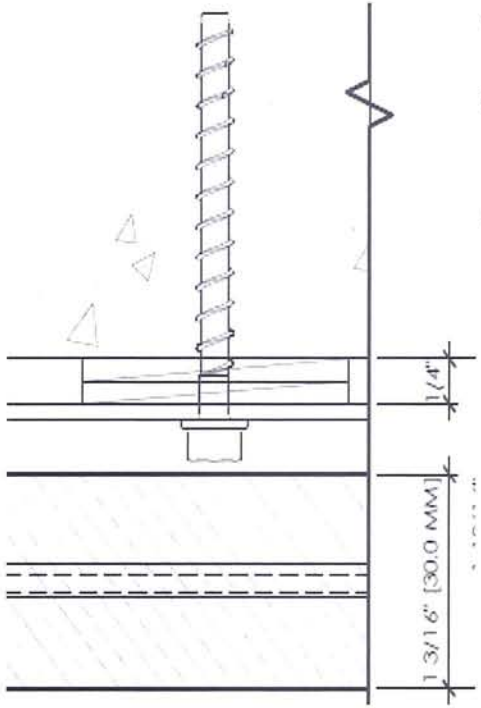
GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

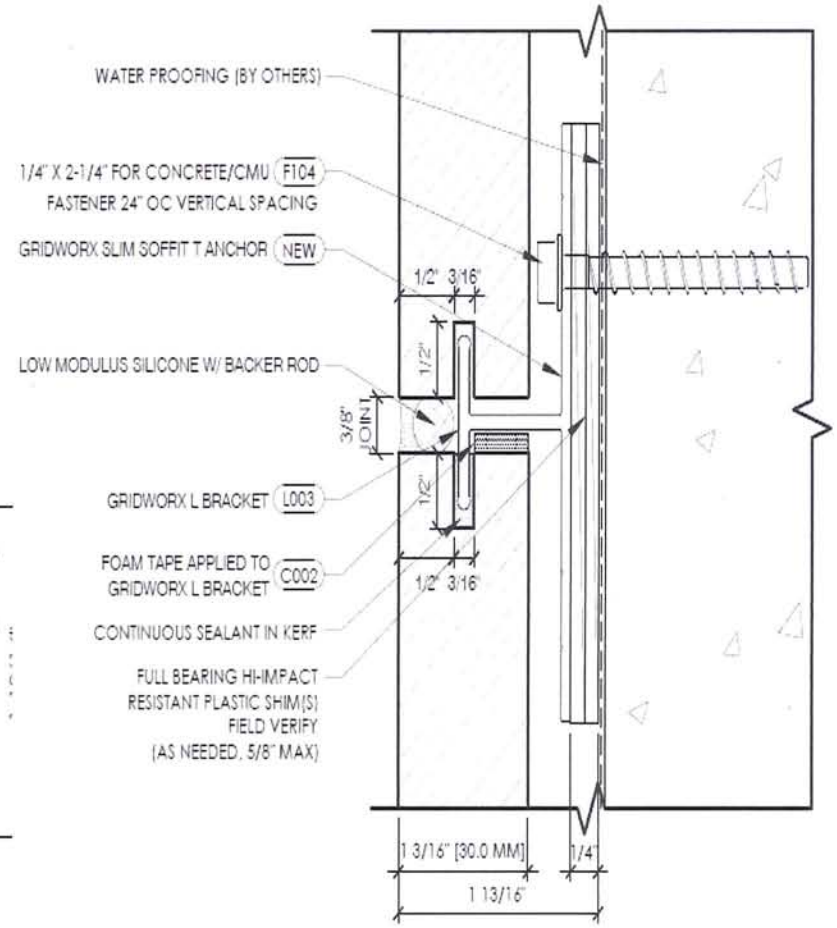
ROBERT AND JUDI PROKOP NEWMAN ALUMNI CENTER

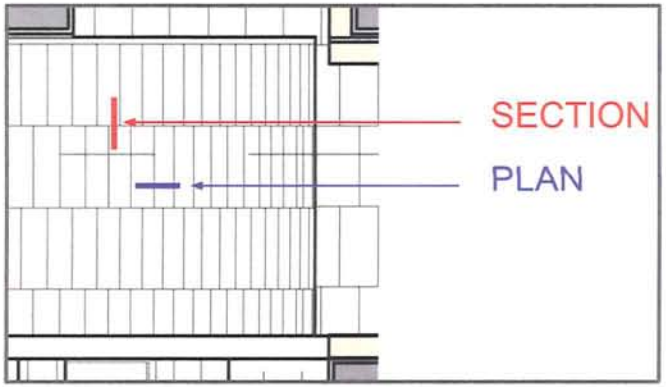
GRIDWORX®

RADIAL WALL INSTALLATION METHOD

- *Custom slim extrusion at jamb*
  - *1 13/16" assembly depth*
  - *T and J Anchor - stacked method*
  - *Scope will require sequential Installation*







GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

FROM CONCEPT TO COMPLETION

Will County Justice Center
Juliet, IL

- 85,000 SF 1 ¾" Kansas Limestone
- 48" tall panels
- Ultimate wind zone loading (+120 psf zone 5 pressure)
- Compound mitered corners and transitions
- Custom extruded accent bands integrated with system
- Kerf and Mechanical Kerf Systems
- ASHRAE 90.1 and ICC thermal requirements
- Custom Coated Anchors for Cast Stone Base
- Complete Architectural and Engineering Services
- On-Site training and on demand consultation

GRIDWORX - 10980 ALDER CIRCLE, DALLAS, TX 75238 MAIN PHONE: 214.774.4502 www.gridworxwalls.com

ARCHITECT TESTIMONIAL

Will County Justice Center
Juliet, IL

GRIDWORX®

The Will County Courthouse is a complicated 10 story building with an exterior envelope comprised of an open joint stone rainscreen using the Gridworx stone anchoring system and glass curtain wall. **Gridworx played a very critical role during design and construction to ensure the success of the project. Together we examined each difficult condition, and there were many, and the Gridworx team always figured out how to make the details work.** Over the three years of construction Gridworx worked closely with the mason and us (the architects) to address unforeseen conditions. They were exceedingly reliable and devoted to see the project all the way through regardless of the challenge. We are all very proud of this building and how it turned out. It is stunning and we owe a good portion of the success of the exterior to Gridworx's eagerness to be creative and solve very difficult problems.

The Will County Courthouse has recently been completed and is everything we had hoped it would be. It's really a fantastic building that lives up to all of our expectations.

Thank you Gridworx!

Justin Illg

Design Technical Director

Wight & Company

Wight

INSTALLER TESTIMONIAL

Will County Justice Center
Juliet, IL

GRIDWORX®

On behalf of A.L.L. Masonry, I would like to thank you for the outstanding support on the Will County Justice Center project. It was a pleasure to work with the Gridworx team from the design phase, all the way through completion.

This project had many complex aspects, some of which have not previously been incorporated into a stone project. Such as the extruded aluminum banding that Gridworx designed into their system. **Every elevation of the building has details (knife corners, stone soffits) that would be troubling for most, but It was truly a seamless process with Gridworx engineering and drafting team.**

Thank you so much for the hard work and I am looking forward to working together on the next project.
Kind regards,

Blake Peter
Project Manager/Estimator
A.L.L. Masonry Construction Company, Inc.

ALL MASONRY CONSTRUCTION CO., INC.

GRIDWORX®

CONTACT:
Gridworx
10980 Alder Circle
Dallas, TX 75238

MainPhone:
214.774.4502

WEBSITE:
www.gridworxwalls.com

EMAIL:
info@gridworxwalls.com