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04 25 13

Metal-Supported Unit Masonry Panels

U-Cara Wall Mount System (UWMS) for Use on Low Walls ≤ 60 inches

For any additional information or assistance with this spec please contact your Unilock Representative.

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FOREWORD

These specifications have been prepared for the general guidance of architects, engineers, contractors and superintendents associated with the construction of segmental retaining wall systems and other exterior cladding systems on walls 60 inches or less in height. Consult with a qualified engineer to determine the suitability of the design, confirm site conditions and monitor the installation in critical applications. Unilock is not responsible for the information in this specification meeting local or national building codes. The Architect or Engineer of Record is responsible for selecting products that meet any and all building code requirements to gain occupancy permits and for updating this specification as necessary.

INTRODUCTION

Unilock® segmental retaining walls and decorative seat walls are manufactured in a variety of shapes and colors for residential, commercial, municipal and industrial applications. They offer design professionals several engineered segmental retaining systems that are efficient, durable, economical and aesthetically attractive.

DESIGN

This specification is only intended for U-Cara Concrete Fascia Panels installed on walls 60 inches or less in height on basement foundation walls or structures without inhabitable space and do not require structural engineering. Design by a qualified structural engineer is required for any U-Cara Concrete Fascia Panels over 60 inches in height intended for building enclosures with inhabitable spaces.

SECTION 04 25 13

Metal-Supported Unit Masonry Panels
U-Cara Wall Mount System (UWMS) for Use on Low Walls

PART 1 GENERAL

1.01 SUMMARY

A. U-Cara Wall Mount System (UWMS) section includes the following:
   1. Unilock U-Cara Fascia Panels
   2. Unilock U-Cara Rail System (URS)

B. Related specification sections:
   1. 32 32 23 Unilock U-Cara Wall Systems
   2. 01 81 13.14 Sustainable Design Requirements (if required)

1.02 REFERENCES

ASTM International, latest edition:

A. U-Cara Wall Mount System
   1. ASTM A123/A123M, Stand Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   2. ASTM A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
   3. ASTM B221, Standard Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Shapes and Tubes
   4. ASTM B633, Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel

5. ASTM C33/C33M, Standard Specification for Concrete Aggregates
6. ASTM C140/C140M, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
7. ASTM C979/C979M, Standard Specification for Pigments for Integrally Colored Concrete
8. ASTM C1193, Standard Guide for Use of Joint Sealants
9. ASTM C1262/C1262M, Standard Test Method for Evaluating the Freeze-Thaw Durability of Manufactured Concrete Masonry Units and Related Concrete Units
10. ASTM C1372, Standard Specification for Dry-Cast Segmental Retaining Wall Units
11. ASTM C1892/C1892M, Standard Test Methods for Strength of Anchors in Masonry
12. ASTM D695, Standard Test Method for Compressive Properties of Rigid Plastics
13. ASTM D1761, Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials
14. ASTM E488/E488M, Standard Test Methods for Strength of Anchors in Concrete Elements
15. ASTM F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

1.03 SUBMITTALS

A. U-Cara Fascia Panels:
   1. Samples of fascia panels for verification: Three representative full-size samples of each type, thickness, color and finish that indicate the range of color variation and texture expected upon project completion.
   2. Approved samples become the standard of acceptance for the product produced.
   3. Manufacturer's product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

B. U-Cara Rail System:
   1. Alignment Bars and Rails
      a. Manufacturer's data sheets for alignment bars and rails indicating the material type, size, thickness and finish.
   2. Mechanical Anchors
      a. Product specifications with recommended design values and physical characteristics for mechanical anchors.
      b. Samples: Representative length and diameter of each type of anchor specified.
      c. Certified test reports showing compliance with specified performance characteristics and physical properties.
      d. Manufacturer's installation instructions.

C. Accessories:
   1. Sealant
      a. Product Data: Sealant manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and installation instructions.
      b. Manufacturer's Reports and Certifications: Prior to sealant installation, report from sealant manufacturer with results of sealant compatibility, sealant and substrate staining, and mockup adhesion tests.
      c. Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.
   2. Shims
      a. Manufacturer's literature and technical data.
   3. Concrete Adhesive
      a. Manufacturer's literature, technical data, and installation instructions.
      b. Manufacturer's reports and certifications.
      c. Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.

D. LEED: (required only for LEED projects, delete otherwise)

1. Submit manufacturer data or certification letter for U-Cara Fascia materials meeting LEED (latest edition) criteria for:
   a. Sourcing of Raw Materials: Responsible Sourcing of Raw Materials – Recycled Content: product recycled content percentage by weight of post-consumer and pre-consumer recycled content.
   b. Material Ingredients: Option 1. Material Ingredient Reporting – Health Product Declaration (HPD): HPD 2.1 or latest transparency data sheet

1.04 QUALITY ASSURANCE

A. Utilize a Manufacturer having at least ten years of experience manufacturing segmental wall systems on projects of similar nature and size.

B: Source Limitations:
1. Obtain all UWMS products from one source location with the resources to provide products of consistent quality in appearance and physical properties.
2. Obtain sufficient fascia panel material to complete the wall(s) with a single product order including required product overages for attic stock.
3. Obtain all UWMS products from Unilock or an authorized Unilock dealer.

C. Wall Contractor Qualifications:
1. Utilize an installer having successfully completed UWMS installations similar in design, material and extent indicated for this project.
2. Obtain Unilock U-Cara Contractor Training Certification.

D. Mockups:
1. Install a 2 ft x 5 ft wall area per each color and/or style.
2. Use this area to evaluate plumbness and levelness of the wall. This area will serve as the standard by which the workmanship will be judged.
3. Subject to acceptance by owner, mock-up may be retained as part of finished work.
4. If mock-up is not retained, remove and dispose of legally.

1.05 DELIVERY, STORAGE & HANDLING

A. In accordance with Conditions of the Contract and Division 1 Product Requirement Section.

B. Deliver UWMS in manufacturer's original, unopened and undamaged packaging with identification labels intact.
1. Coordinate delivery and schedule to minimize interference with other construction activities.
2. Unload all materials at job site in such a manner that no damage occurs to the product or adjacent surfaces.
3. Store materials in accordance with manufacturer's recommendations and in a manner to prevent damage.

1.06 U-CARA OVERAGE AND ATTIC STOCK

A. Provide a minimum of 5% additional material for overage to be used during construction.

B. Contractor to provide 50 face feet of each product and size used to owner for maintenance and repair. Furnish UWMS from the same production run as installed materials.

C. Manufacturer to supply maintenance manual for UWMS.

PART 2 PRODUCTS

2.01 U-CARA WALL MOUNT SYSTEM

A. Basis of Design: The U-Cara Wall Mount System (UWMS) are based on:
1. Unilock U-Cara Wall Mount System (UWMS) Components:
   a. U-Cara Fascia Panels
   b. U-Cara Rail System (URS)
2. As manufactured by:
   Unilock (Add location)

Address
City, State and Zip
Contact: (insert Unilock representative name and phone number) or your local Territory Manager

3. A continuous water-resistant barrier with associated flashings may be required behind the UWMS. Design and detailing of the water-resistant barrier as well as the need for and positioning of an air barrier and/or vapor retarder within the wall assembly is the responsibility of the Architect-of-Record (AOR).
4. The specified products establish minimum requirements that substitutions must meet or exceed to be considered acceptable.
   a. To obtain acceptance of unspecified products, submit written requests at least seven (7) days before the Bid Date.
   b. Refer to specification section 00 26 00 Procurement Substitution Procedures for information on procedures for submitting substitutions.

Note: Unless required by the owner, an “or equal” line is not necessary when using a basis-of-design specification with the above information listed and outlined in Division 1, Product Substitution Procedures.

Or choose number 3 below and delete above number 3.

3. Substitutions: No substitutions permitted.

B. U-Cara Fascia Panel Product requirements:
   1. Fascia Panel Type 1
      a. Fascia Panel Finish: Insert Fascia Panel finish
         1. Umbriano
         2. Series
         3. Premier Smooth
         4. Premier Pitched
      b. Color: Insert local available product color or
         1. Umbriano
            a. French Grey
            b. Winter Marvel
            c. Midnight Sky
            d. Summer Wheat
            e. Harvest Brown
         2. Series
            a. Black Granite
            b. Peppered Granite
         3. Premier Smooth
            a. Almond Grove Fusion
            b. Bavarian
            c. Cream
            d. Granite Fusion
            e. Graphite
            f. Opal Blend
            g. Sierra
            h. Tuscany
         4. Premier Pitched
            a. Almond Grove Fusion
            b. Bavarian
            c. Granite Fusion
            d. Opal Blend
            e. River
            f. Sierra
            g. Steel Grey
            h. Steel Mountain
      c. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 2mm (1/16 in) in all directions.

1. Standard Fascia Panel: 15cm x 46.6cm x 6cm (6in x 18in x 2-3/8in)
2. Corner Facade Panel:
    a. Closed-end: 15cm x 53cm x 6cm (6in x 21in x 2-3/8in)
    b. Standard Half: 15cm x 23.3cm x 6cm (6in x 9-1/4in x 2-3/8in)
3. Quarter Fascia Panel: 7.5cm x 23.3cm x 6cm (3in x 9-1/4in x 2-3/8in)

Note: Imperial dimensions are nominal equivalents to the metric dimensions.

d. LEED: HPD 2.1 or latest transparency data

2. Fascia Panel Type 2
    a. Fascia Panel Finish: Insert Fascia Panel finish
        1. Umbriano
        2. Series
        3. Premier Smooth
        4. Premier Pitched
    b. Color: Insert local available product color or
        1. Umbriano
            a. French Grey
            b. Winter Marvel
            c. Midnight Sky
            d. Summer Wheat
            e. Harvest Brown
        2. Series
            a. Black Granite
            b. Peppered Granite
        3. Premier Smooth
            a. Almond Grove Fusion
            b. Bavarian
            c. Cream
            d. Granite Fusion
            e. Graphite
            f. Opal Blend
            g. Sierra
            h. Tuscany
        4. Premier Pitched
            a. Almond Grove Fusion
            b. Bavarian
            c. Granite Fusion
            d. Opal Blend
            e. River
            f. Sierra
            g. Steel Grey
            h. Steel Mountain
    c. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 2mm (1/16 in) in all directions.
        1. Standard Fascia Panel: 15cm x 46.6cm x 6cm (6in x 18in x 2-3/8in)
        2. Corner Fascia Panel:
            a. Closed-end: 15cm x 53cm x 6cm (6in x 21in x 2-3/8in)
            b. Standard Half: 15cm x 23.3cm x 6cm (6in x 9-1/4in x 2-3/8in)
        3. Quarter Fascia Panel: 7.5cm x 23.3cm x 6cm (3in x 9-1/4in x 2-3/8in)

        Note: Imperial dimensions are nominal equivalents to the metric dimensions.
    d. LEED: HPD 2.1 or latest transparency data
3. (Insert additional Fascia Panel Types here as necessary or delete this line)
4. Provide U-Cara Fascia Panels meeting the minimum material and physical properties set forth in ASTM C936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection. Note: Unilock Fascia Panels are manufactured to the same high-quality standards as concrete pavers.

a. Average compressive strength 8000 psi (55MPa) with no individual unit under 7,200 psi (50 MPa).
b. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C140.
c. Resistance to 50 freeze-thaw cycles, when tested according to ASTM C1645.

Note: Efflorescence is a whitish powder-like deposit that sometimes appears on concrete products. Calcium hydroxide and other water-soluble materials form or are present during the hydration of Portland cement. Pore water becomes saturated with these materials, and diffuses to the surface of the concrete. When this water evaporates, the soluble materials remain as a whitish deposit on the concrete surface. The calcium hydroxide is converted to calcium carbonate during a reaction with carbon dioxide from the atmosphere. The calcium carbonate is difficult to remove with water. However, the efflorescence will wear off with time, and it is advisable to wait a few months before attempting to remove any efflorescence. Commercially available cleaners can be used, provided directions are carefully followed. Some cleaners contain acids that may alter the color of the pavers. If using a cleaner, perform a trial sample on attic stock unit or unit hidden from view to confirm adequate performance.

5. Accept only pigments in concrete fascia panels conforming to ASTM C979.
Note: ACI Report No. 212.3R provides guidance on the use of pigments.

C. U-Cara Rail System (URS) Product Requirements

Note: Alignment Bar and Rail material choices are listed in order from the most corrosion resistant material to the least. Unilock stocks Zinc planted Alignment Bar and Rail.

1. Alignment Bar: 1-1/2 wide x 38-1/4 inches long by 1/16 inch thick, bar. Pre-punch vertical leg at 3 inches on center.
   a. 300 series stainless steel
   b. Aluminum
   c. Hot dipped galvanized
   d. Zinc plated – Unilock stock item
2. Rail: Break-formed 1-3/8 wide x 96 inches long by 1/16 inch thick bar.
   a. 300 series stainless steel
   b. Aluminum
   c. Hot dipped galvanized
   d. Zinc plated – Unilock stock item
3. Mechanical Anchors: 300 series stainless steel
   a. Concrete or Masonry Substrate
      1. DeWalt Aggre-Gator 300 Series Stainless Bi-Metal Concrete and Masonry Fastener
      2. Hilti KH-EZ SS316 Screw Anchor
      3. Approved equal
   b. Wood Substrate
      1. Stainless steel wood screw meeting the requirements of ANSI/ASME B18.6.1
      2. Simpson Strong-Tie Strong-Drive SDWH Timber-Hex SS Screw
      3. Approved equal

D. Accessories

1. Non-skinning butyl sealant. Sealant compatibility with UWMS components, backup material, and/or underlying air/moisture barrier to be confirmed.
   a. Tremco JS773
   b. Pecora BA-98
   c. Approved equal
2. HDPE plastic shims, solid, uniform thickness
3. Concrete adhesive: Provide a Concrete Adhesive manufactured by the following:
   a. LePage:
      1. Product Type: PL Premium Polyurethane construction adhesive
      2. LePage PL 9000 Heavy Duty construction adhesive

b. Alliance:
   1. Product Type: Gator Glue XP Polyurethane construction adhesive
c. Unilock Concrete Adhesive

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas indicated to receive the UWMS for compliance with installation tolerances and other conditions affecting performance for the following items before placing any units.
   1. Verify that the substrate is dry prior to installation of the UWMS.
   2. Verify that liquid air/moisture barriers, sealants, and all associated flashings within the cladding area have been installed and sufficiently cured (where applicable) in accordance with manufacturer's specifications prior to installation of UWMS.
   3. Identify any obstructions, uneven surfaces or intrusions on the substrate surface and correct as necessary. Verify surfaces receiving UWMS are level and plumb.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
   1. Beginning installation of the UWMS signifies acceptance of substrate conditions.

3.02 PREPARATION

A. Store UWMS materials such that they are free from standing water, uniformly graded, free of any organic material or sediment/debris, and ready for placement.

B. Keep area where UWMS is to be constructed free from sediment during entire length of construction. Remove and replace all UWMS materials contaminated with sediment with clean materials.

C. Completely clean substrate material of all dirt and debris and allow to dry completely. Do not damage or use cleaning methods that might damage the substrate, underlying air/moisture barrier, sealants, or flashing system. .

3.03 INSTALLATION

A. URS (ALIGNMENT BAR)
   1. Provide vertical Alignment Bars used to properly space the horizontal rails.
   2. Maintain a 3 inch minimum edge distance between Alignment Bars and substrate corners.
   3. Trim any Alignment Bars that extend beyond the bottom course or minimum of 2 inches above grade. Trimming should be done before the bar is fully fastened in order to avoid damaging the air/moisture barrier or associated flashings.
   4. Where Alignment Bars are located atop an air/moisture barrier or flashing system,
      a. Set the Alignment Bars in a continuous bead of sealant.
      b. Align sealant bead with fastener penetration locations to create a seal where the air/moisture barrier or flashing system will be penetrated by the fasteners.
   5. Plumb and fasten to substrate using Mechanical Anchors spaced at 32 inches on center, maximum. Embed Mechanical Anchors completely and tighten to manufacturer's recommended torque for substrate material. Do not overtighten.

B. URS (RAIL)
   1. Provide, overlay, and align the horizontal Rail holes with pre-punched holes on the Alignment Bar.
   2. Trim any Rail that extends beyond corners or at any change in direction. Trimming should be done before the Rail is fully fastened in order to avoid damaging the backup, air/moisture barrier, or associated flashings.
   3. Provide solid, uniform thickness, HDPE plastic shims at all fastener locations to provide a drainage space behind the Rails.
   4. Set shims in sealant at the following locations:
      a. Where the air/moisture barrier will be penetrated by the fasteners.

b. Where the flashing system will be penetrated by the fasteners.

5. Level and fasten the horizontal Rails with Mechanical Anchors to:
   a. Concrete substrate: Install fasteners at 8 inches on center
   b. Wood substrate: Install fasteners to align with wood stud spacing.
   NOTE: Architect to perform anchor calculations to confirm spacing.
6. Fasten Mechanical Anchors to substrate
   a. Utilize all of the pre-punched hole locations within the rails.
   b. Tighten Mechanical Anchors to manufacturer's recommended torque for substrate material. Do not overtighten.

C. U-CARA FASCIA PANELS

1. Provide and place U-Cara Fascia Panels on horizontal Rails starting at the wall bottom.
   a. Set hand snug on Rails.
   b. Complete entire horizontal Fascia Panel installation before ascending to adjacent row.
2. Mix Fascia panels using a minimum of two (2) bundles simultaneously to produce uniform blend of colors and textures.
   NOTE: Color variation occurs with all concrete products. This phenomenon is influenced by a variety of factors, e.g. moisture content, curing conditions, different aggregates and, most commonly, from different production runs. By installing from a minimum of two bundles simultaneously, variation in color is dispersed and blended throughout the project.
3. Place Fascia Panels in desired wall laying pattern, i.e. running bond, stacked bond.
   a. Review vertical joint alignment and adjust panels that deviate more than 3/16 inch before continuing.
   b. Provide a 1/4 inch expansion gap between Fascia Panel units every 50 linear feet.
4. Repeat until desired height is achieved.
   a. Do not exceed 10 rows in height.
5. Cut fascia panel units with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to fit adjoining work. Use full units without cutting where possible.
6. Remove any cracked or damaged fascia panel units and replace with new units.

3.04 FIELD QUALITY CONTROL

A. Install fascia panel units within the following maximum allowable deviation from:
   1. Vertical control: +/-0.125 inches over a 3 feet distance
   2. Horizontal control: +/-0.125 over a 3 feet distance
   3. Fascia laying pattern: +/-0.125 vertical alignment from plumb string line.

3.05 REPAIR

A. Remove and replace fascia panel units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units, and install in same manner as original units, with same joint treatment and with no evidence of replacement.

3.06 PROTECTION

A. Protect completed work from damage due to subsequent construction activity on the site.

3.07 CLEANING

A. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.

B. After completing UWMS Work:
   1. Remove excess dirt, debris, stains, grit, etc. from exposed wall surfaces; wash and scrub clean. Clean all materials resulting from Work that are not intended to

be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.

a. Clean fascia panels in accordance with the manufacturer's written recommendations. Refer to Unilock Maintenance Guide.

2. Repair at no cost to Owner all items damaged during the Work.
3. Remove debris and surplus materials from Site.

END OF SECTION