



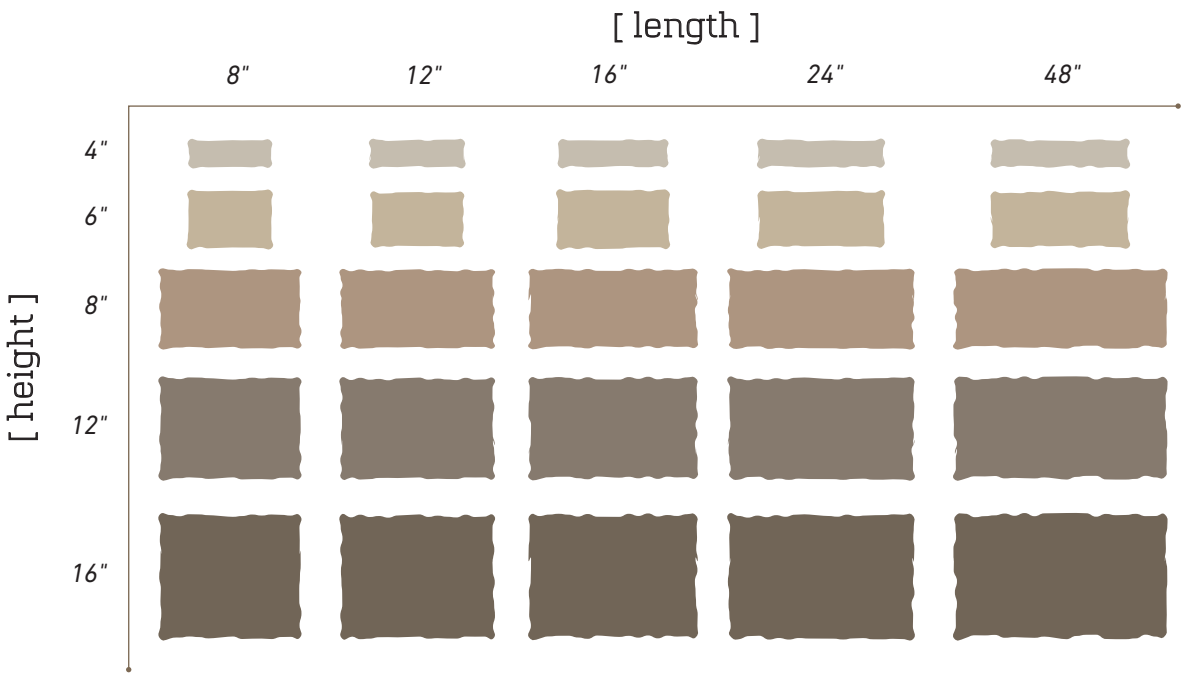
Cordova Stone™



Features & Benefits

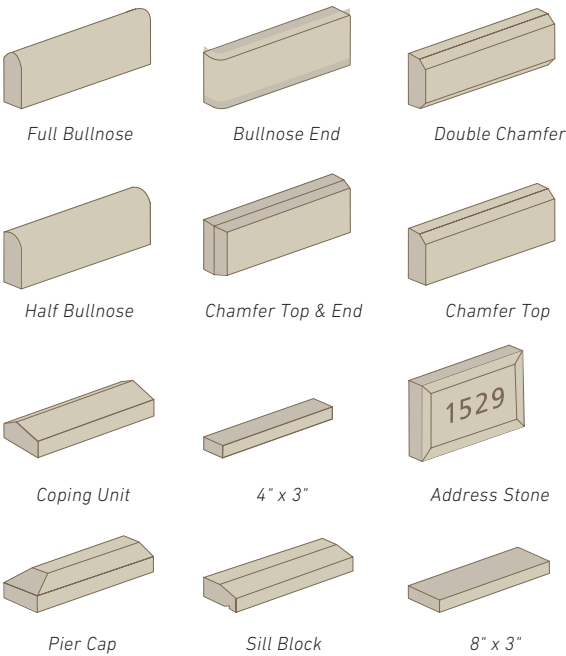
- Made with recycled content
- All natural aggregates
- Aggregate color consistent throughout the unit
- Denser than concrete block
- Tight tolerances on all units
- Greater flexibility in customizing sills, arches, coping units and larger size units
- Integral water repellent added during manufacturing
- Easily cut and shaped in the field
- May combine veneer with through wall applications
- Short lead times from our centralized manufacturing locations
- Ideal for both interior and exterior projects
- Can be installed at or below grade level

Shapes & Sizes



Cordova Stone units are available in hundreds of customized shapes and sizes, we have highlighted a few of the most popular shapes. Also available in 1-inch veneers.

Accessories



Technical Information

C1364-10b standards

Minimum Comprehensive Strength	6500 psi
Minimum Absorption by Weight	6%
Medium Density	Not in Standard

ASTM C90-11b Standard Specification for Loadbearing Concrete Masonry Units
ASTM C1364 - 10b Standard Specification for Architectural Cast Stone

code system

About the Code System:

All new Cordova Stone quotes and orders should be written in code form. In the past, each item was written out in long form describing the unit. We have come up with a code system to simplify the description. The following pages use this type of code system designating each shape drawing.

The system is first made up of the coded size of the unit deleting the "x"s between the number; i.e., 4x8x24 = 4824. After that is a series of two-letter codes divided by commas. (Note: It is *important* that the sizes are in order as follows: "bed depth" x "height" x "length".) Attached is a list of shape codes that will be used to describe the units. The first two letters after the size will designate texture; Groundface (GF), Rockface (RF), Chiselface (CHF) or TextureFace (TF). After that should be the main designation, i.e., Window Sill (WS), Single Chamfer (SC), etc. After that are other special designations, i.e., Corners (CO), Drip Cuts (DR), etc. At the end of the description will be a color code preceded by a "-". If there are similar items in the order, we will designate them by a number or letter in parentheses following the color.

Below are a few examples of how we designate the Cordova Stone code numbers. If you have any questions please contact your local sales representative.

Examples:

1. 4x4x24 Rockface – Midnight
= 4424 RF-MD
2. 4x8x24 Groundface w/chamfer & drip – Alabaster
= 4824 GF,SC,DR-AL
3. 6x4x24 Groundface w/chamfer, drip & right return – Buff (Shape 1)
= 6424 GF,SC,DR,RT,RC-BF(1)

Shape Codes:

Cordova Stone Colors

AL — Alabaster
BF — Buff
GR — Graphite
MD — Midnight
LM — Limestone

Earth Blend Colors

CB — Canyon blend
DB — Desert blend
MB — Mountain blend
WB — Woodland blend

Textures

GF — Groundface
RF — Rockface
TF — Textureface
CHF — Chiselface

Main Designation

SC — Single chamfer
EC — End chamfer
DC — Double chamfer
FB — Full bullnose
DB — Demi bullnose
HB — Half bullnose
WS — Window sill
CP — Coping peaked
CS — Coping sloped
CF — Coping flat
KS — Keystone

Special Designations

CO — Corner (1 end finished)
BE — Both ends finished
DR — Drip cut
MI — Miter inside corner
MO — Miter outside corner
QU — Quirk (i.e., QUMO – quirk miter outside corner)
RC — Return corner
RT — Right hand
LT — Left hand
TG — Top ground
BG — Bottom ground
AC — Angle cut
EU — End unit (i.e., CP, EU – coping peaked end unit)
NO — Notch cut out
SP — Special unit (see attached drawing)
VS — Vertical score ($\frac{3}{8}$ " square cut)
HS — Horizontal score ($\frac{3}{8}$ " square cut)
LC — "L" corner
WC — Wash cut
ME — Medallions
AD — Address stone
EG — End ground
BK — Back finished
LS — Lug sill
PC — Pier cap
ARCH — Arched unit

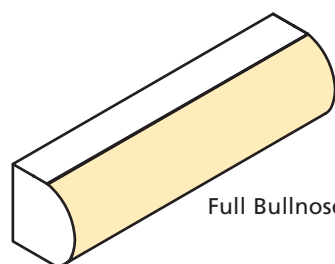
packaging information

Unit WxHxL	Weight Per PC.	Units Per Pallet	Weight/Pallet		SQ/FT AREA
			"AL,BF,LM"	"GR,MD,E.B."	
4x4x8	8	288	2300	2415	0.23
4x4x12	12	192	2300	2415	0.34
4x4x16	18	144	2300	2415	0.44
4x4x24	24	96	2300	2415	0.67
4x6x24	38	72	2700	2835	1.00
4x8x12	24	96	2300	2415	0.67
4x8x16	32	72	2300	2415	0.89
4x8x24	48	48	2300	2415	1.34
4x12x12	39	72	2800	2940	1.00
4x12x16	48	48	2300	2415	1.34
4x12x24	77	36	2800	2940	2.00
4x16x12	48	48	2300	2415	1.34
4x16x16	65	36	2400	2520	1.78
4x16x24	103	24	2500	2625	2.67
6x4x24	38	72	2700	2835	0.67
6x6x24	60	48	2800	2940	1.00
6x8x24	76	32	2400	2520	1.34
6x12x24	120	24	2800	2940	2.00
6x16x24	160	16	2600	2730	2.67
8x8x16	65	36	2400	2520	0.89
8x8x24	98	24	2300	2415	1.34
8x12x24	160	18	2800	2940	2.00
8x16x24	205	12	2500	2625	2.67
*6x4x48	76	36	2800	—	1.34
*16x4x48	205	12	2500	—	1.34

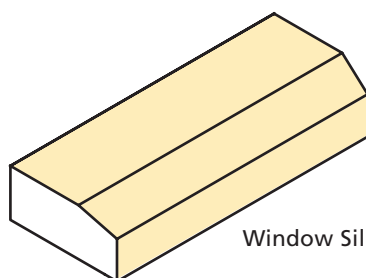
* New 48" long Cordova Stone sills and coping units.

We offer many creative shapes and sizes in the Cordova Stone product line. State-of-the-art equipment is used for customizing standard units to fit your special design needs. Inquire about the endless ways that we can shape, cut and tool Cordova Stone into the pieces that bring your design concept together.

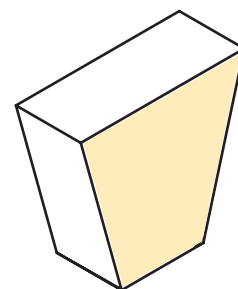
View additional design details, corner units and many additional shapes and sizes at www.cordovastone.com



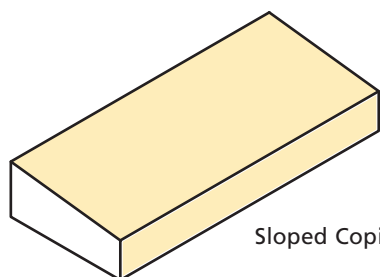
Full Bullnose Units



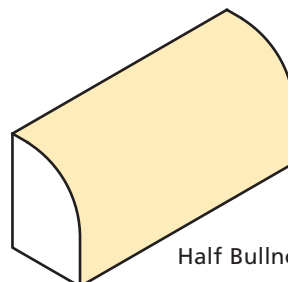
Window Sills



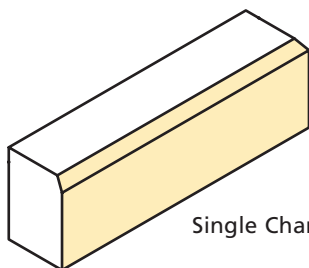
Keystones



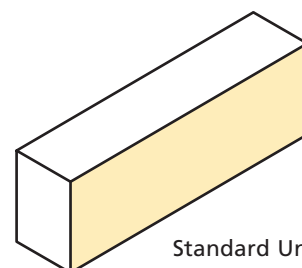
Sloped Coping Units



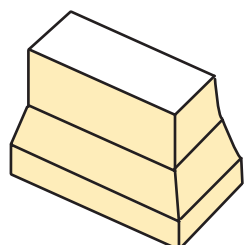
Half Bullnose Units



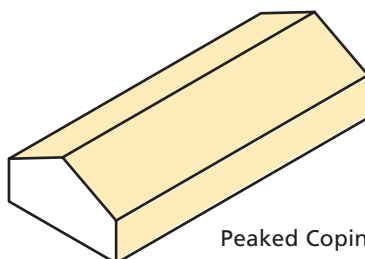
Single Chamfers



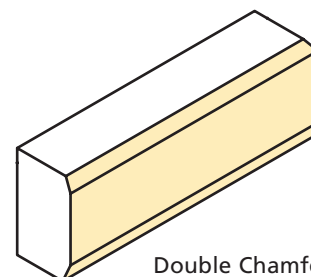
Standard Units



Returned Corners



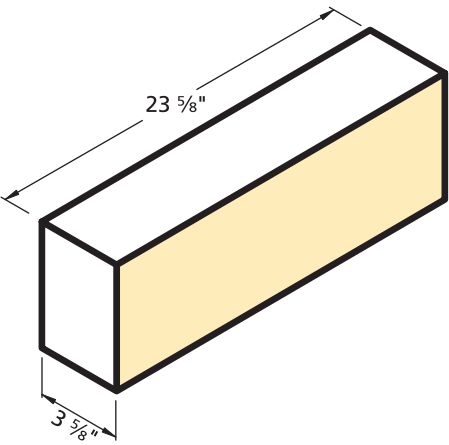
Peaked Coping Units



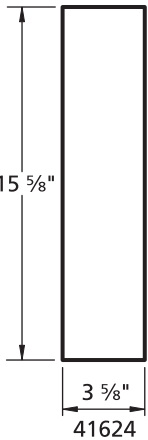
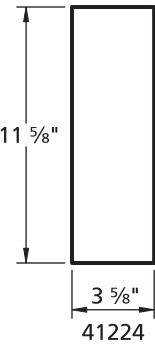
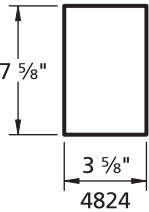
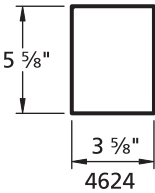
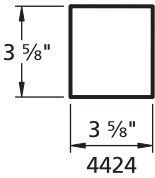
Double Chamfers

standard units

4" Depth Standard Unit

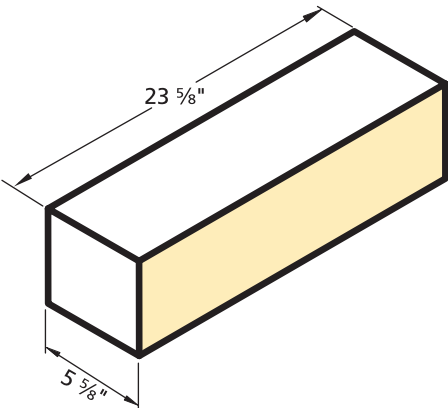
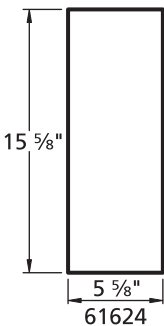
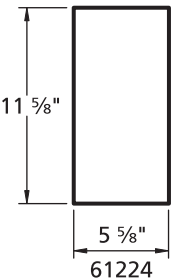
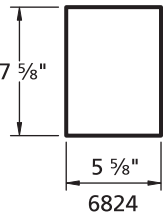
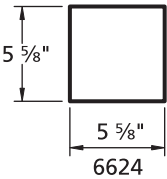
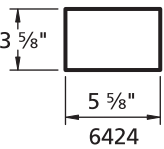


Available in: Rockface (RF),
Groundface (GF), Textureface (TF)
and Chiselface (CHF).



Maximum length on Rockface and Chiselface corners is 19 5/8. Return and/or mitered corners need to be ordered separately.
Note: All units can be cut to a specified height/length. Available with or without drip cut.

6" Depth Standard Unit

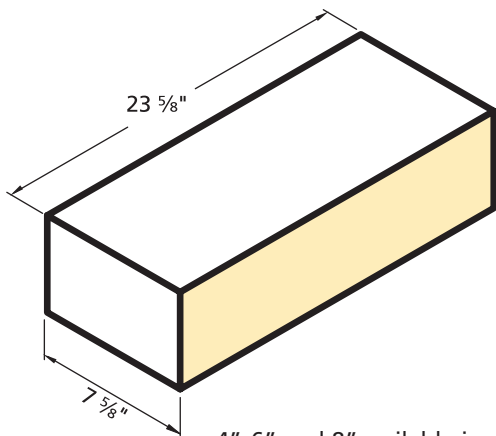


4", 6" and 8" available in Rockface (RF),
Groundface (GF), Textureface (TF)
and Chiselface (CHF).

12" and 16" available in Groundface (GF)
and Textureface (TF).

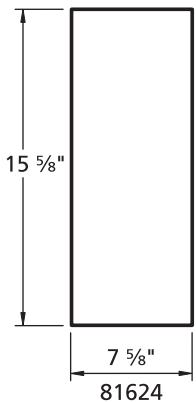
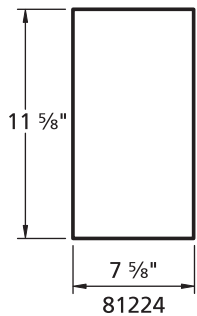
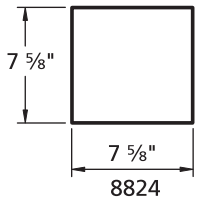
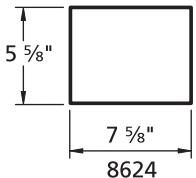
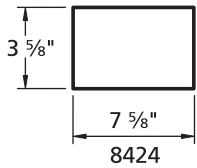
standard units

8" Depth Standard Unit



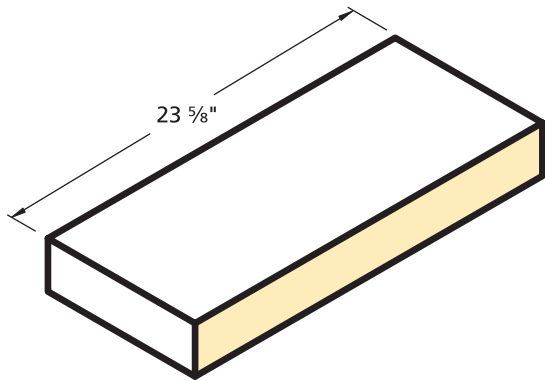
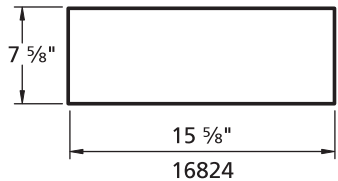
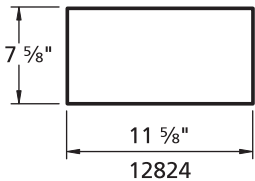
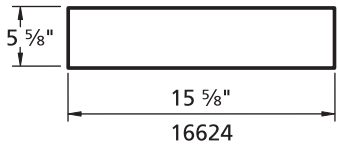
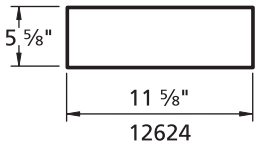
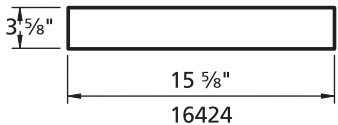
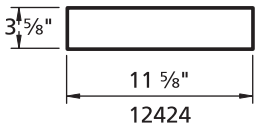
4", 6" and 8" available in Rockface (RF), Groundface (GF), Textureface (TF) and Chiselface (CHF).

12" and 16" available in Groundface (GF) and Textureface (TF).



Maximum length on Rockface and Chiselface corners is 19 5/8". Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified height/length. Available with or without drip cut.

12" & 16" Depth Standard Unit

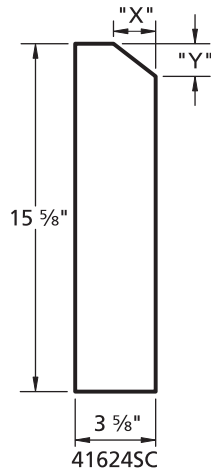
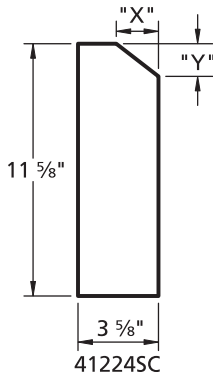
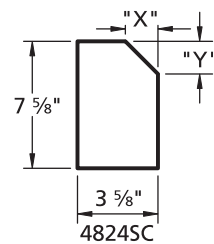
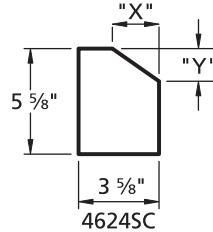
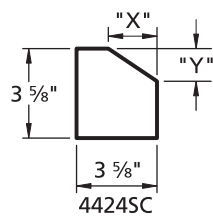
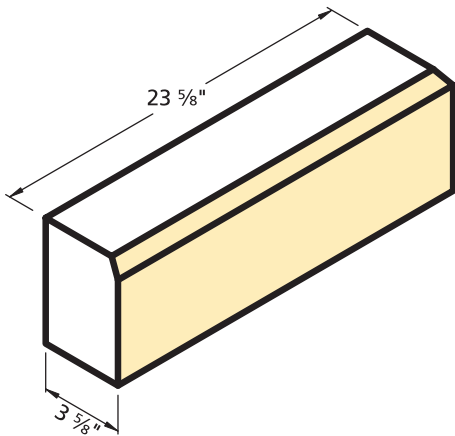


12" available in Rockface (RF), Groundface (GF), Textureface (TF) and Chiselface (CHF).

16" available in Groundface (GF) and Textureface (TF).

chamfers

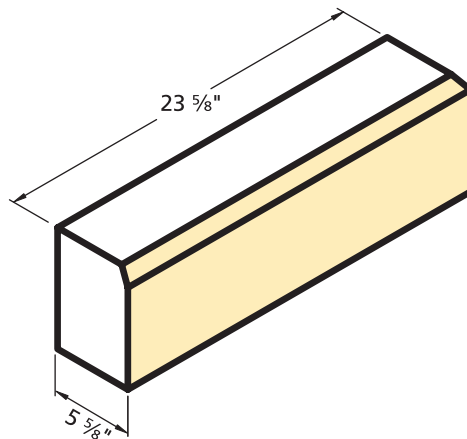
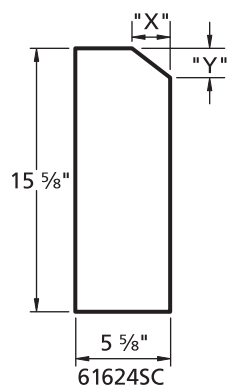
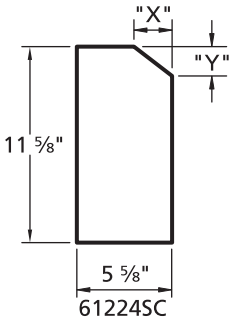
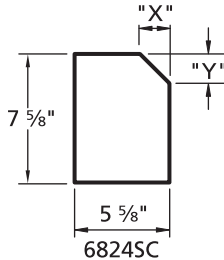
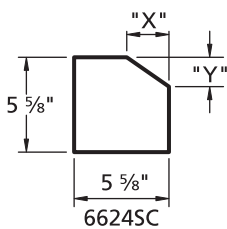
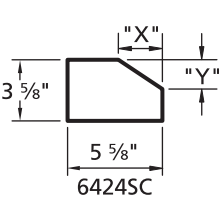
4" Single Chamfer (SC)



Available in Rockface (RF), Groundface (GF) and Textureface (TF).

Customer must specify all chamfer dimensions. Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified height/length. Rockface Units: Due to the irregular surface the chamfer cuts may vary. Available with or without drip cut.

6" Single Chamfer (SC)

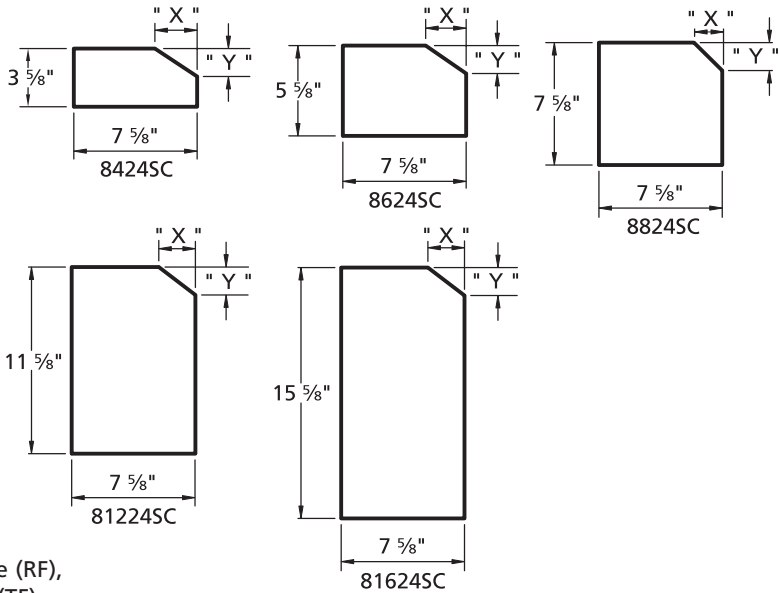
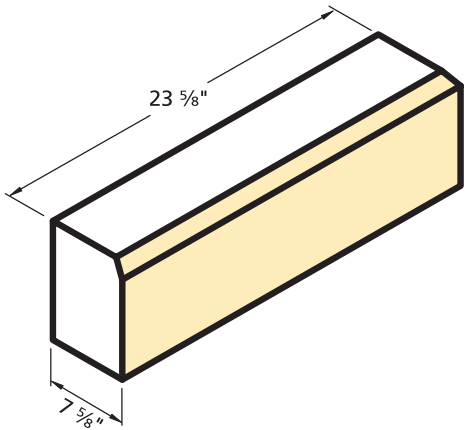


4", 6" and 8" available in Rockface (RF), Groundface (GF) and Textureface (TF).

12" and 16" available in Groundface (GF) and Textureface (TF).

chamfers

8" Single Chamfer (SC)

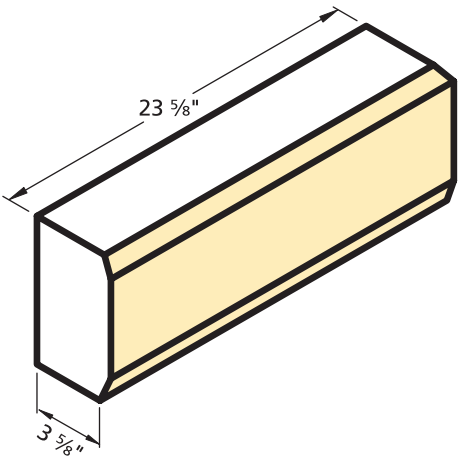
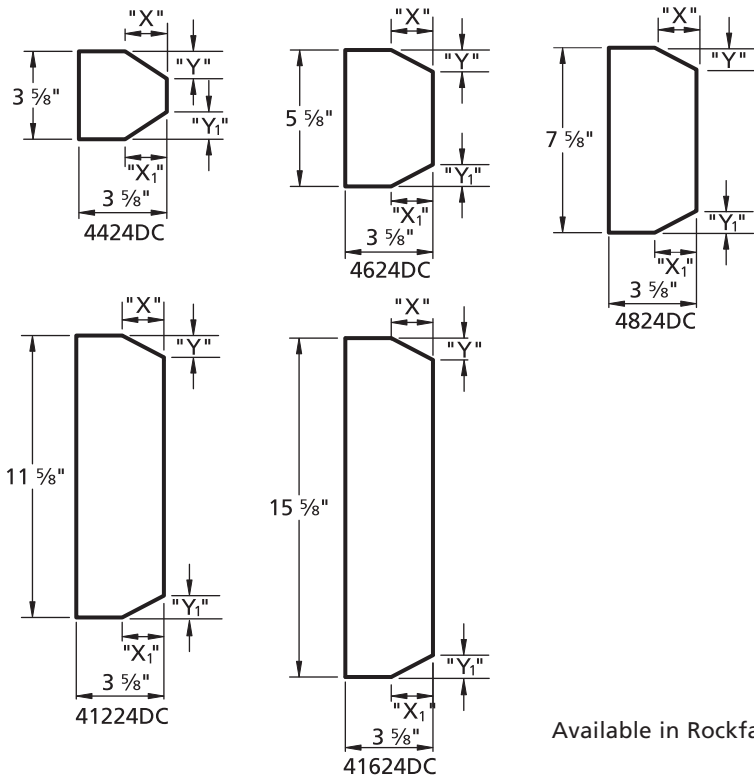


4", 6" and 8" available in Rockface (RF), Groundface (GF) and Textureface (TF).

12" and 16" available in Groundface (GF) and Textureface (TF).

Maximum length on Rockface and Chiselface corners is 19 5/8". Return and/or mitered corners need to be ordered separately.
Note: All units can be cut to a specified height/length. Rockface Units: Due to the irregular surface the chamfer cuts may vary.
Customer must specify all chamfer dimensions. Both chamfers do not need to be the same. Available with or without drip cut.

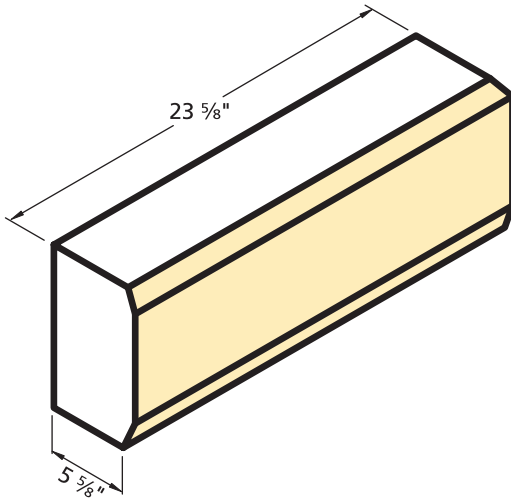
4" Double Chamfer (DC)



Available in Rockface (RF), Groundface (GF) and Textureface (TF).

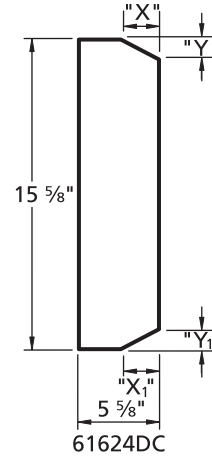
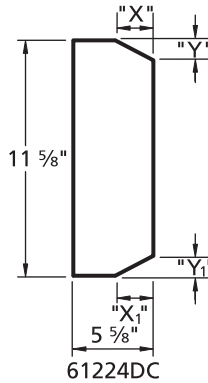
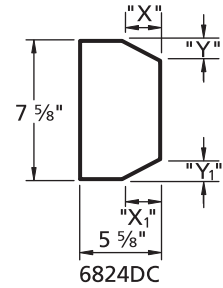
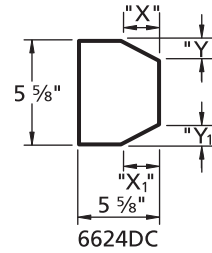
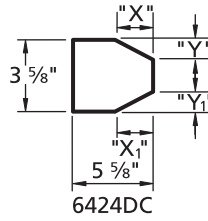
chamfers

6" Double Chamfer (DC)



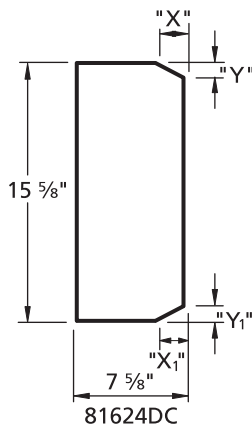
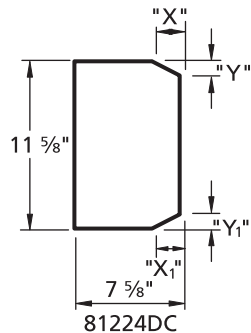
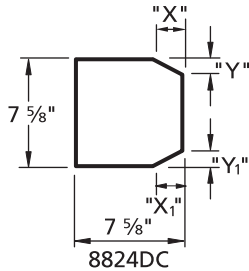
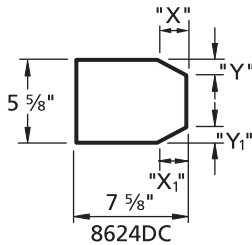
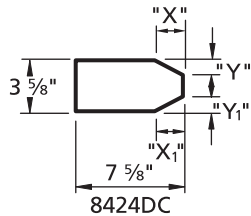
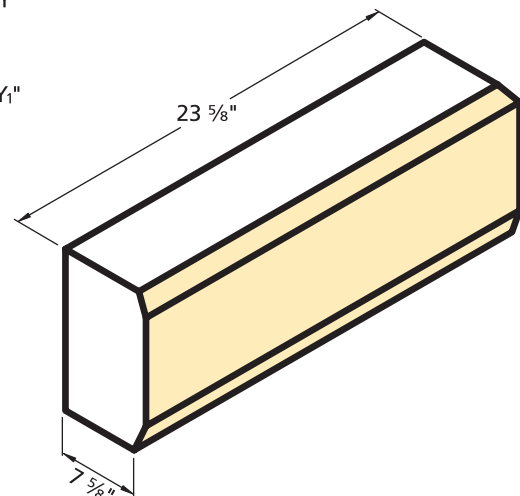
4", 6" and 8" available in Rockface (RF), Groundface (GF) and Textureface (TF).

12" and 16" available in Groundface (GF) and Textureface (TF).



Maximum length on Rockface corners is 19 5/8". Return and/or mitered corners need to be ordered separately. Customer must specify all chamfer dimensions. Both chamfers do not need to be the same. Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified height/length. Rockface Units: Due to the irregular surface the chamfer cuts may vary. Available with or without drip cut.

8" Double Chamfer (DC)

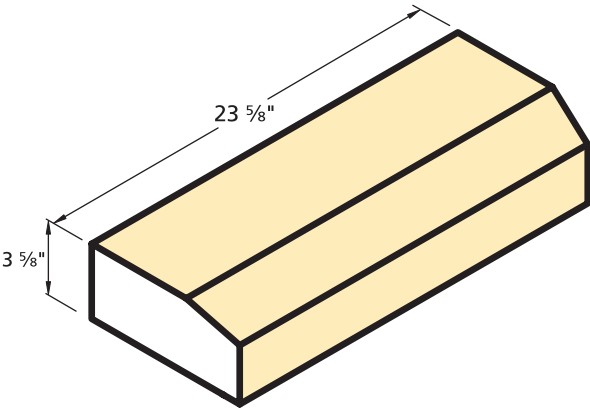


4", 6" and 8" available in Rockface (RF), Groundface (GF) and Textureface (TF).

12" and 16" available in Groundface (GF) and Textureface (TF).

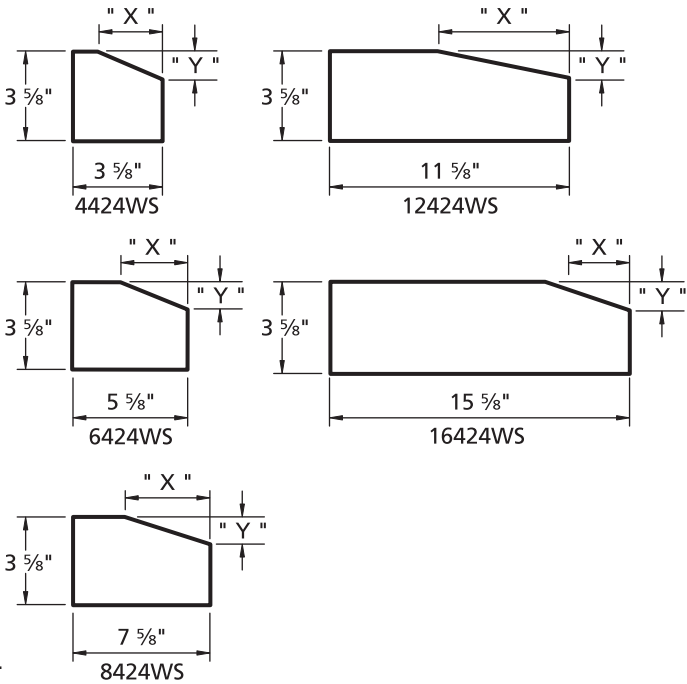
sills

4" Window Sill (WS) Top Finished



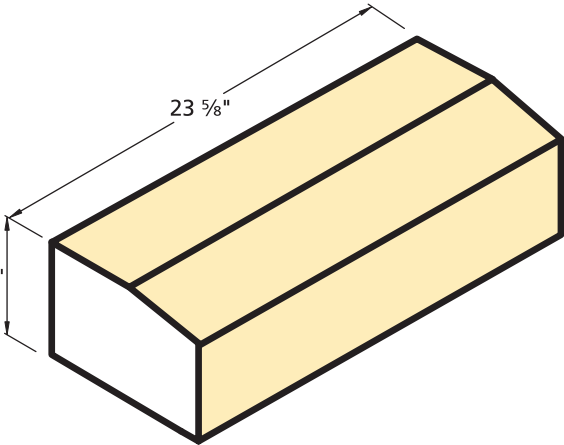
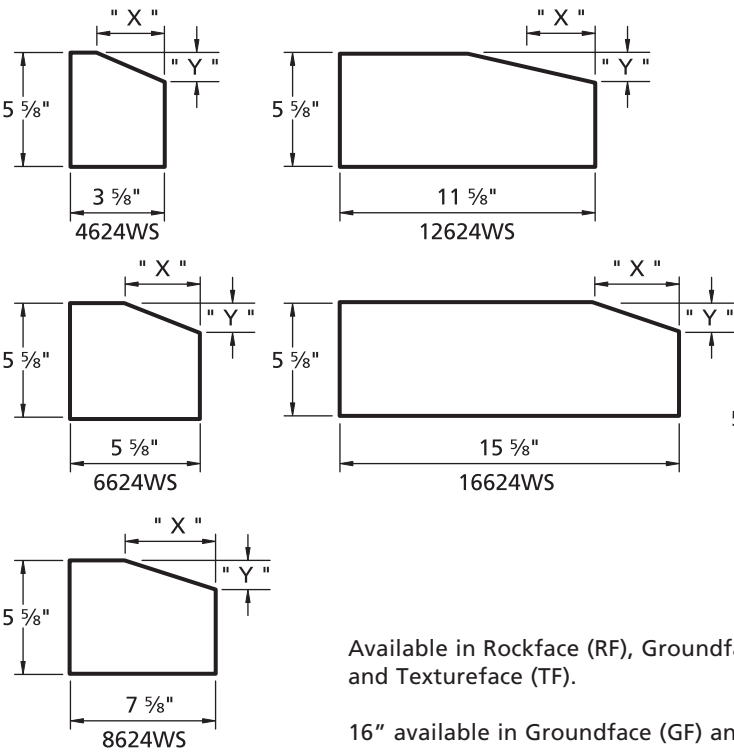
Available in Rockface (RF), Groundface (GF) and Textureface (TF).

16" available in Groundface (GF) and Textureface (TF).



Customer must specify all chamfer dimensions. Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified height/length. Rockface Units: Due to the irregular surface the chamfer cuts may vary. Available with or without drip cut.

6" Window Sill (WS) Top Finished

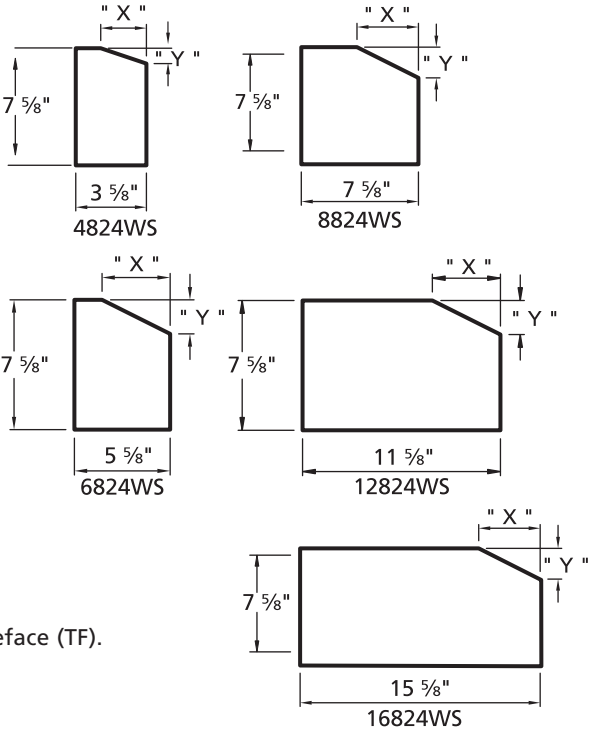
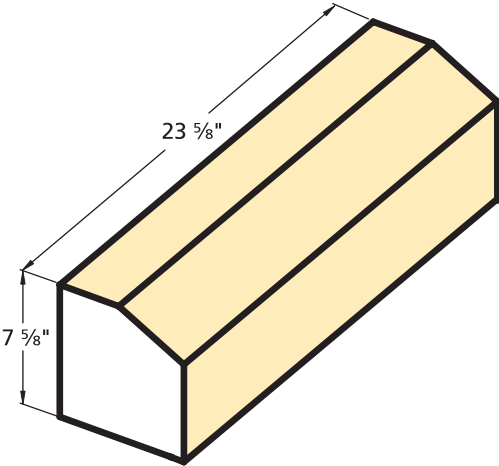


Available in Rockface (RF), Groundface (GF) and Textureface (TF).

16" available in Groundface (GF) and Textureface (TF).

sills

8" High Window Sill (WS)

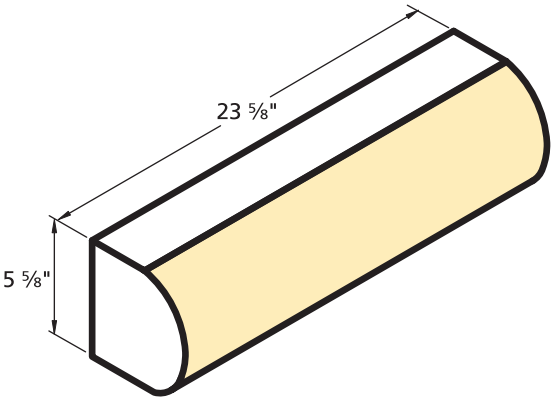
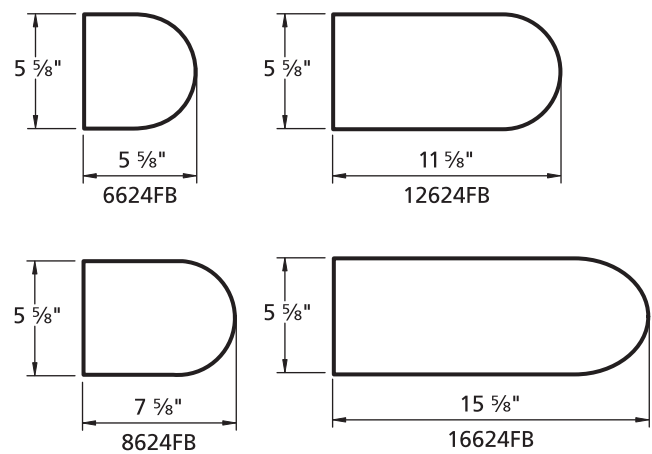


Available in Rockface (RF), Groundface (GF) and Textureface (TF).
16" available in Groundface (GF) and Textureface (TF).

Customer must specify all chamfer dimensions. Return and/or mitered corners need to be ordered separately.
Note: All units can be cut to a specified height/length. Available with or without drip cut.

bullnose unit

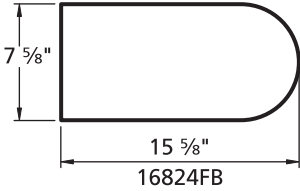
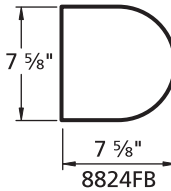
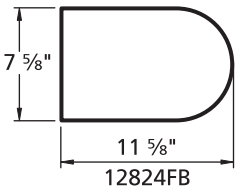
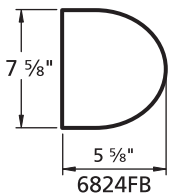
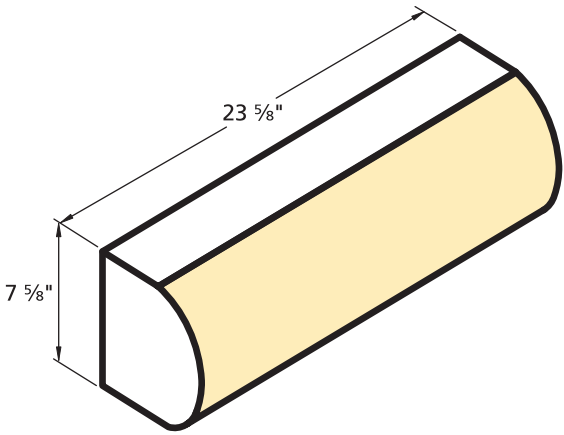
6" High Full Bullnose (FB) 2.8" Radius



Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified length.
Available with or without drip cut.

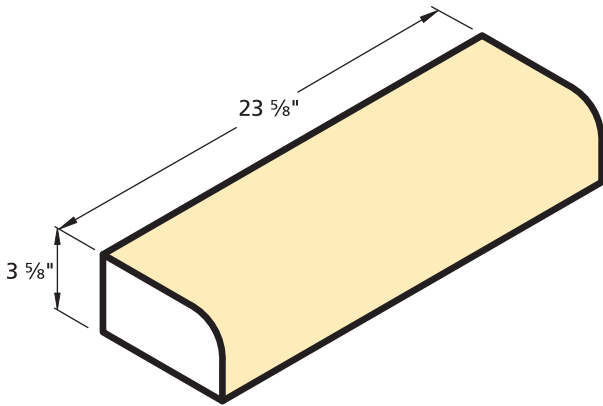
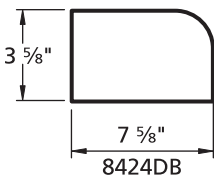
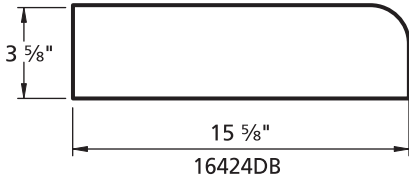
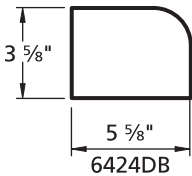
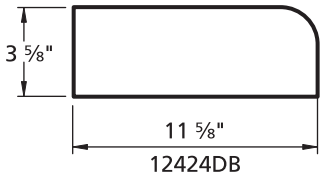
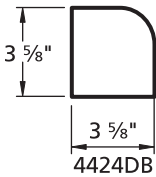
bullnose units

8" High Full Bullnose (FB) 3.8" Radius



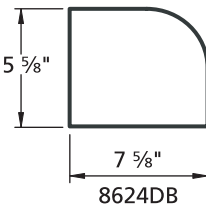
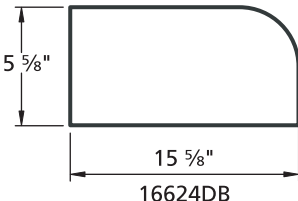
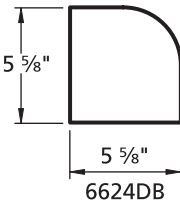
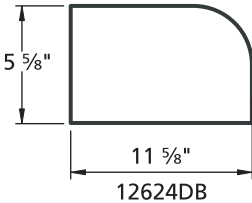
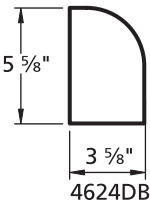
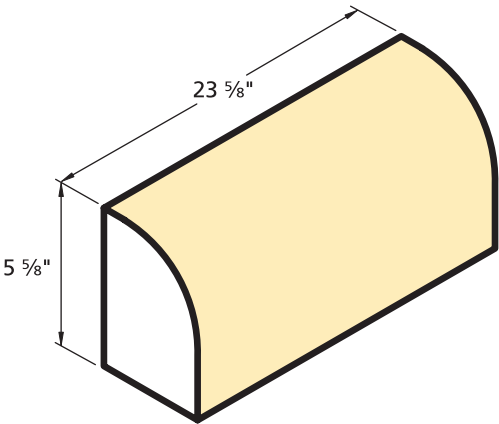
Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified length.
Available with or without drip cut.

4" High Demi Bullnose (DB) 1.8" Radius



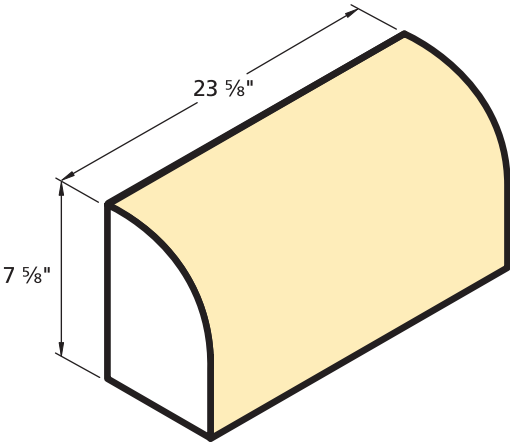
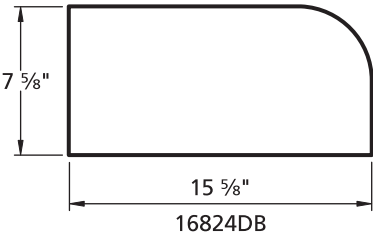
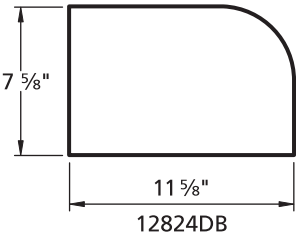
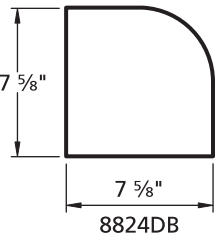
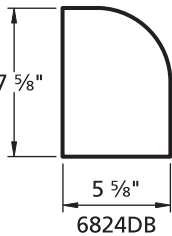
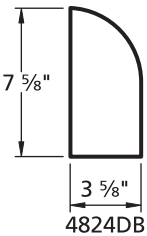
bullnose units

6" High Demi Bullnose (DB) 2.8" Radius



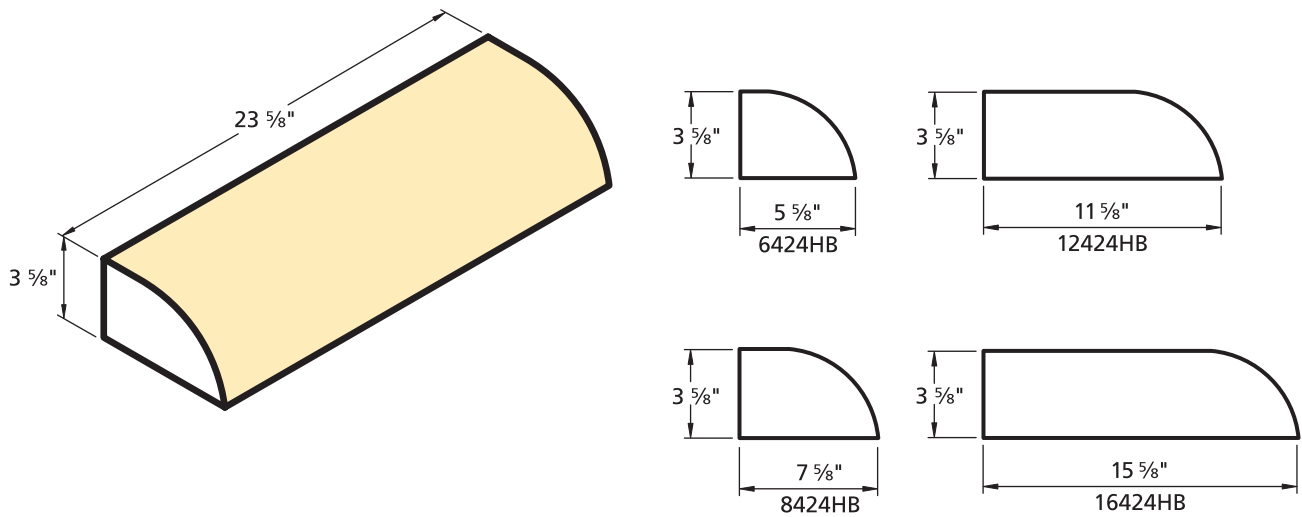
Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified length.
Available with or without drip cut.

8" High Demi Bullnose (DB) 3.8" Radius



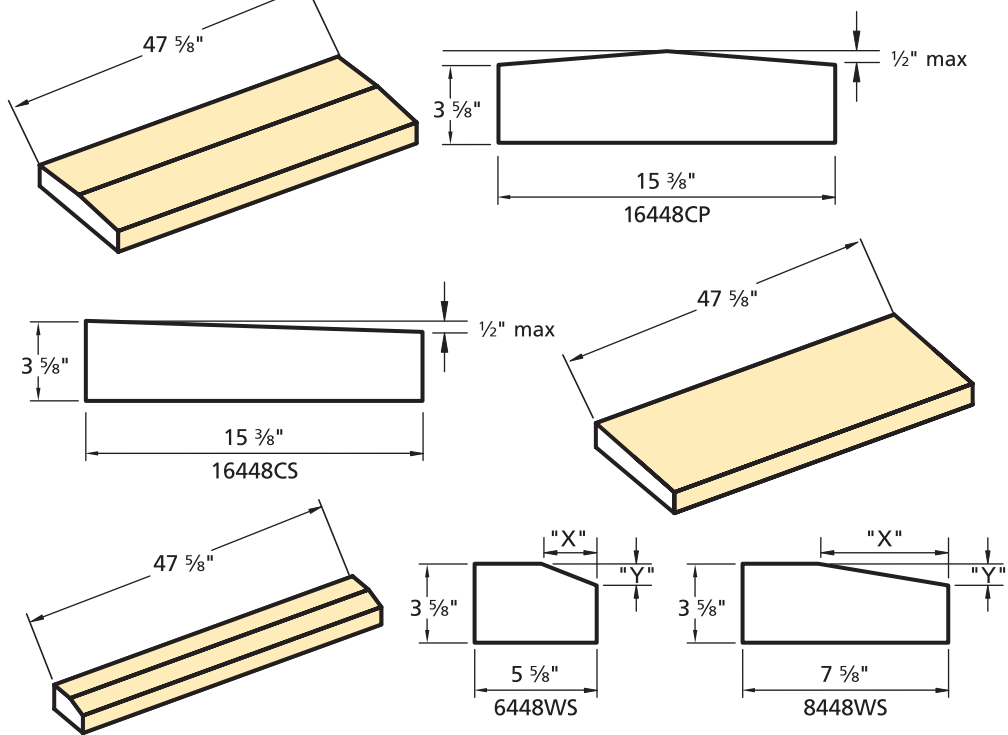
bullnose units

4" High Half Bullnose (HB) 3.8" Radius



Return and/or mitered corners need to be ordered separately.
Note: All units can be cut to a specified length. Available with or without drip cut.

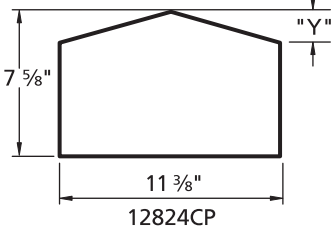
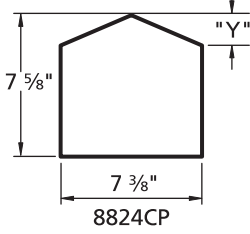
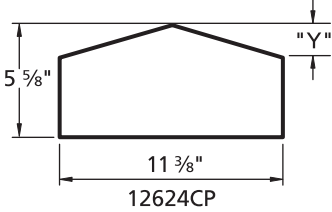
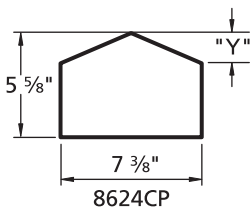
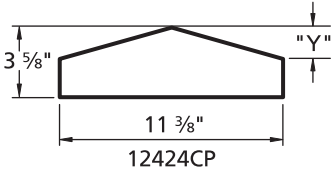
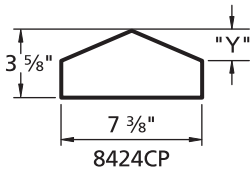
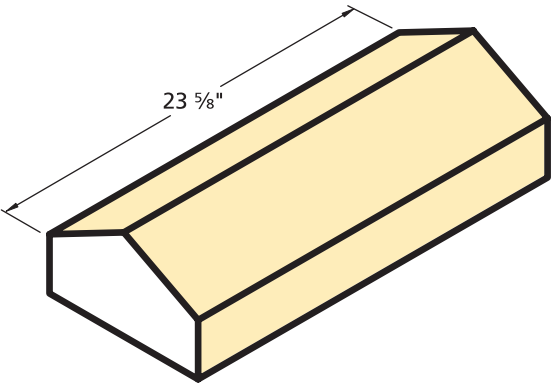
4' Long Sills and Coping Units



Note: Coping units can be custom cut to a specified wall width.

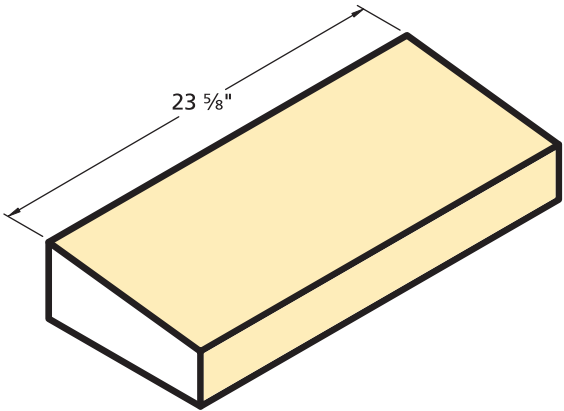
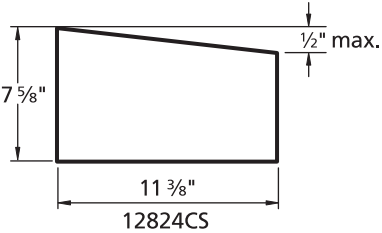
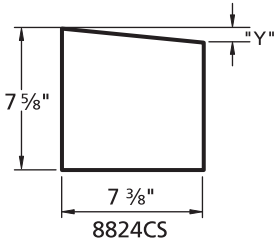
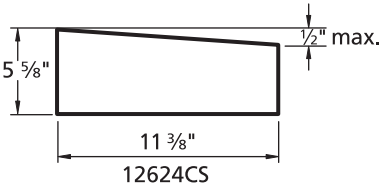
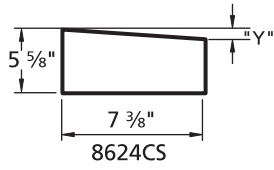
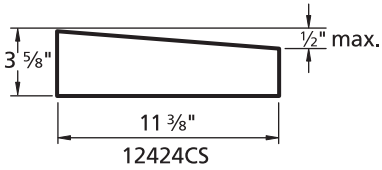
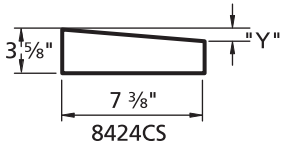
coping units

8" and 12" Wide Coping Units – Peaked (CP)



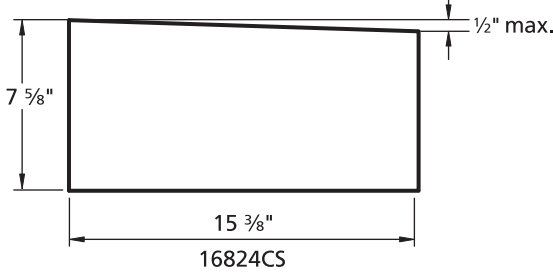
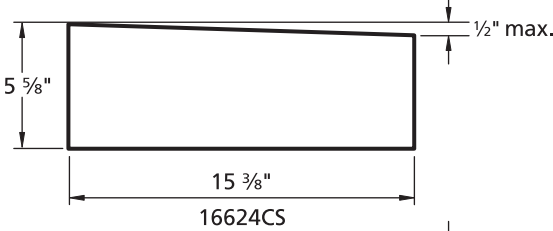
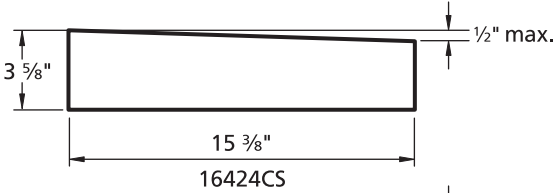
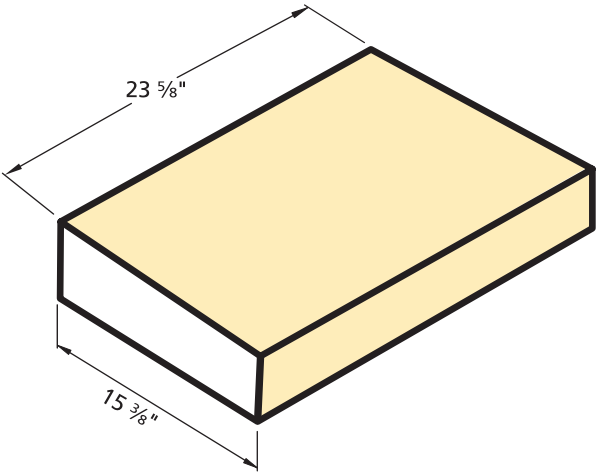
Customer must specify all chamfer dimensions. Return and/or mitered corners need to be ordered separately.
Note: All units can be cut to a specified height/length. Available with or without drip cut.

8" and 12" Coping Units – Sloped (CS)



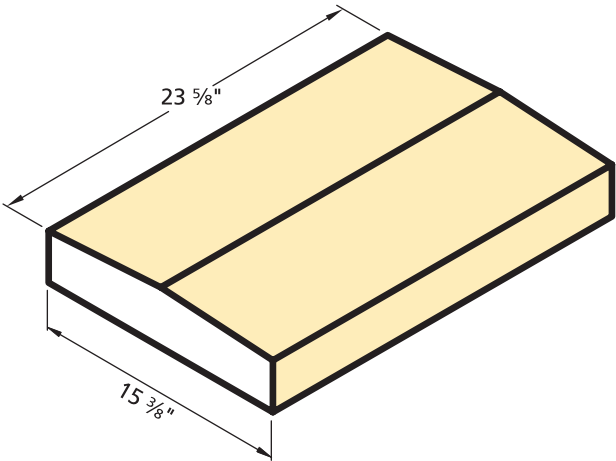
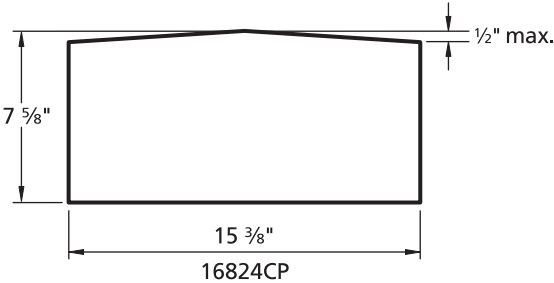
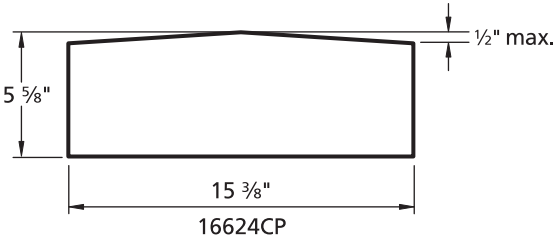
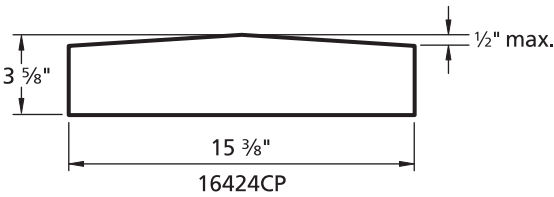
coping units

16" Wide Coping Units – Sloped (CS)



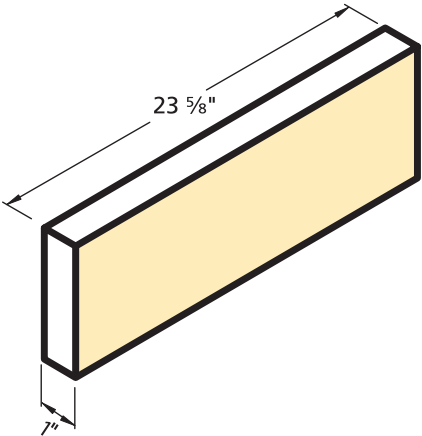
Return and/or mitered corners need to be ordered separately. Note: All units can be cut to a specified height/length.
Available with or without drip cut.

16" Wide Coping Units – Peaked (CP)

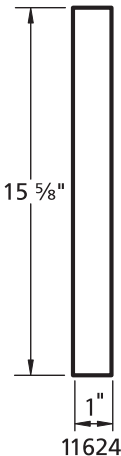
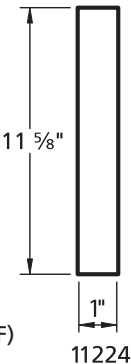
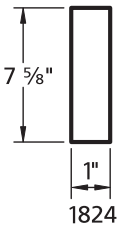
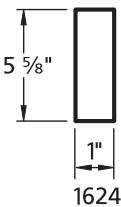
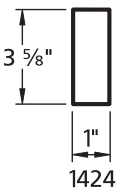


thin veneer units

1" Depth Standard Unit



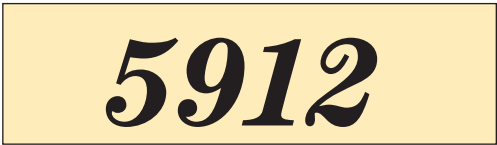
Available in: Rockface (RF),
Groundface (GF), Textureface (TF)
and Chiselface (CHF).



Maximum length on Rockface and Chiselface corners is 19 5/8". Return and/or mitered corners need to be ordered separately.
Note: All units can be cut to a specified height/length.

address stones

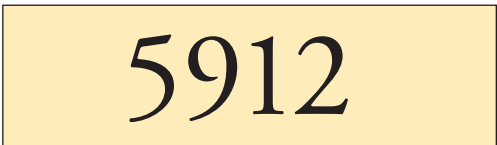
Address Stones



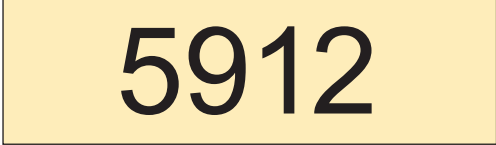
Century



Times Bold



Garamond



Arial

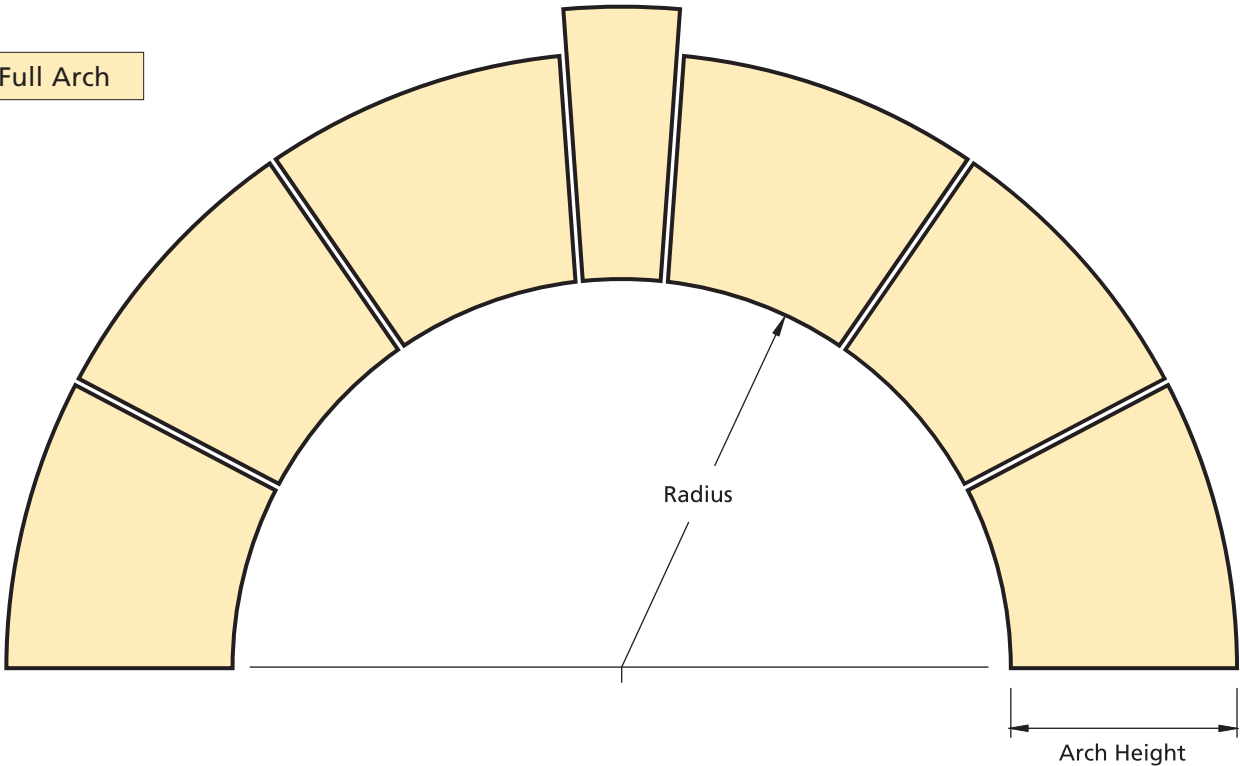
Note: Available in all sizes. Ask your sales representative for layout drawings. Also available in additional fonts.
Custom logos and murals can be accommodated as well.

arch designs

4" height arch band		6" height arch band		8" height arch band		12" height arch band		16" height arch band	
radius	PCS/ARCH	radius	PCS/ARCH	radius	PCS/ARCH	radius	PCS/ARCH	radius	PCS/ARCH
1'0"	2	1'6"	4	2'0"	4	1'0"	4	1'4"	8
1'4"	3	2'0"	4	2'8"	6	2'0"	6	2'8"	10
1'8"	4	2'6"	6	3'4"	6	3'0"	6	4'0"	12
2'0"	4	3'0"	6	4'0"	8	4'0"	8	5'4"	16
2'4"	5	3'6"	6	4'8"	10	5'0"	10	6'8"	20
2'8"	6	4'0"	8	5'4"	10	6'0"	12	8'0"	22
3'0"	6	4'6"	8	6'0"	12	7'0"	14	9'4"	26
3'4"	6	5'0"	10	6'8"	12	8'0"	14	10'8"	30
3'8"	8	5'6"	10	7'4"	14	9'0"	16	12'0"	34
4'0"	8	10'0"	6' to 0'	8'0"	14	10'0"	18	13'4"	38

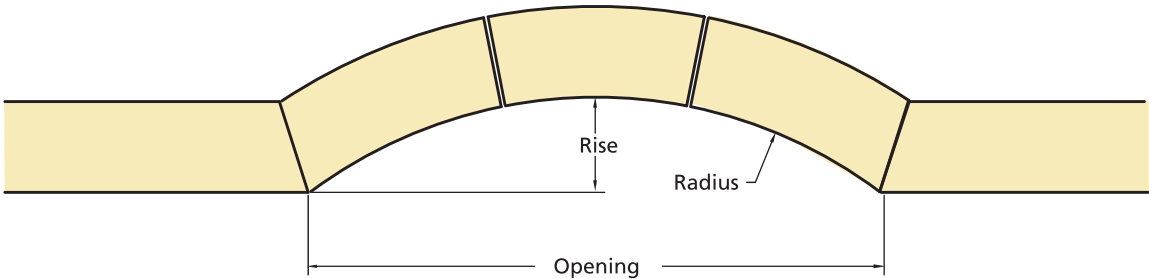
Use as a guide only. Not limited to these openings.

No limit on arch radius or opening, only size of stone.
For all other radius dimensions consult your sales representative.



arch designs

Partial Arch

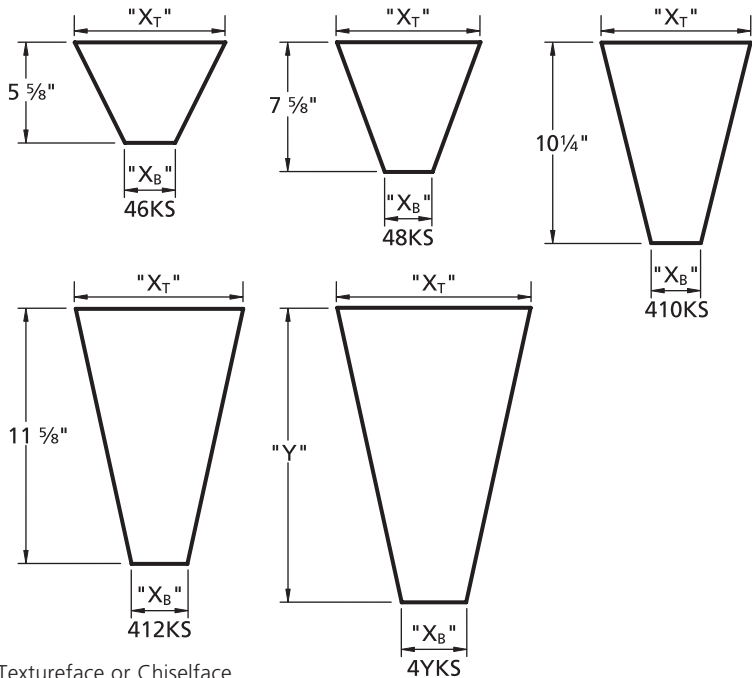
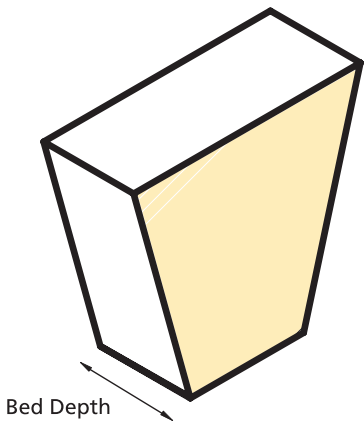


No limit on arch radius or opening, only size of stone.
For all other radius dimensions consult your sales representative.

Note: To calculate number of pieces, must supply radius and opening or rise and opening. Available with or without keystone.

keystones

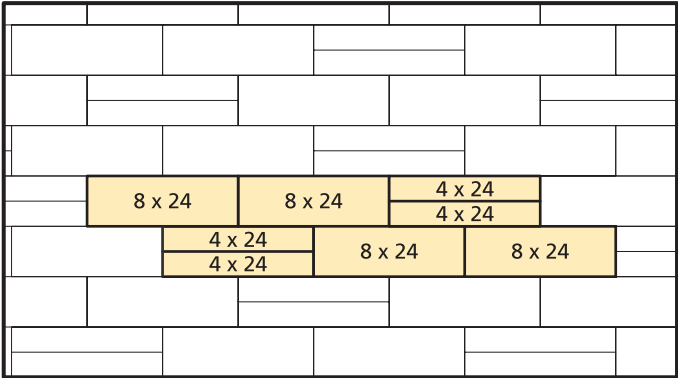
Keystones (KS)



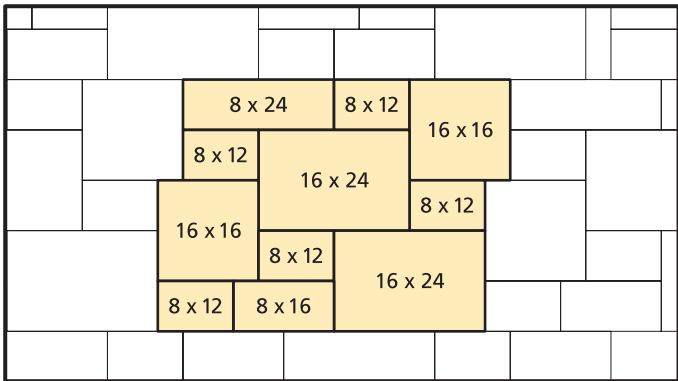
Bed Depth: 4" available in Rockface, Groundface, Textureface or Chiselface.
6" or 8" available in Groundface or Textureface only.

ashlar designs

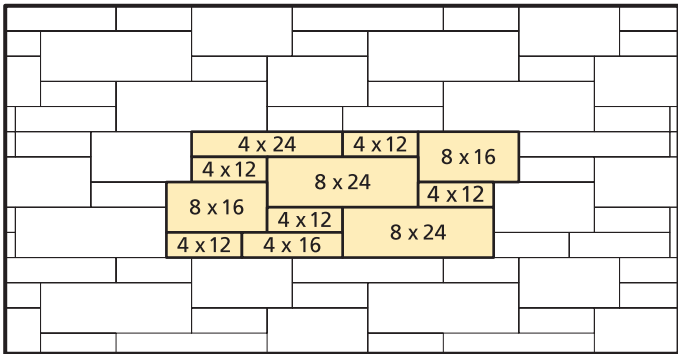
Coursed Ashlar
8.0 Sq. Ft. Pattern



Patterned Ashlar
14.46 Sq. Ft. Pattern

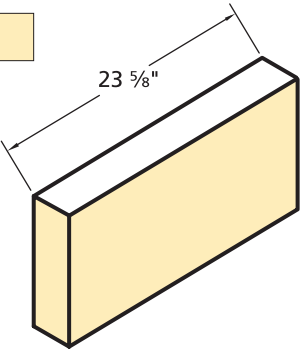


Patterned Ashlar
7.23 Sq. Ft. Pattern

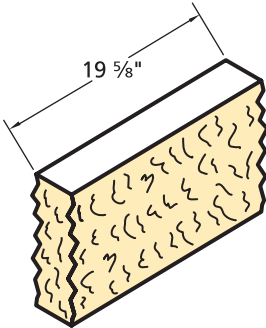


corner details

Standard Units

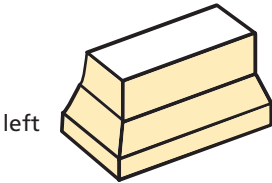
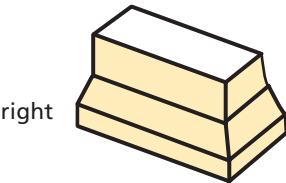
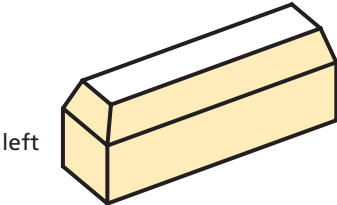
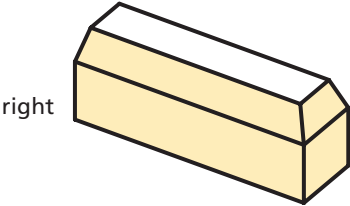


Available only in Groundface (GF) and Textureface (TF).



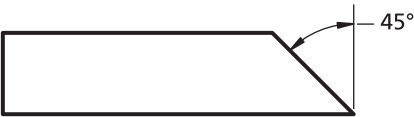
Available in Rockface (RF) and Chiselface (CHF). Maximum length is 19 5/8".

Return Corners

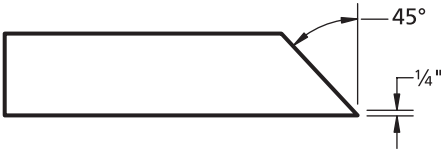


Note: Return corners are available in all special profiles.

Mitered Corners



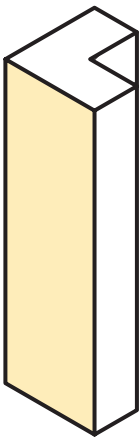
Quirk Mitered Corners



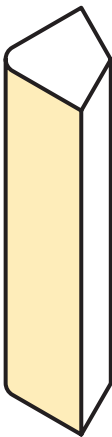
Note: With profiles please specify right and left hand.

optional shapes

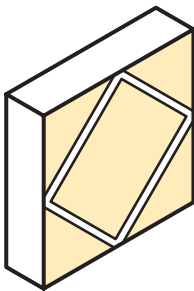
Optional Shapes



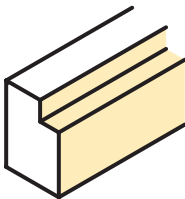
"L" Corner



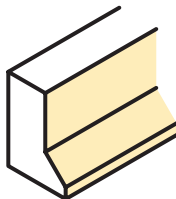
Bullnose Corner



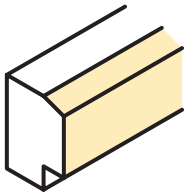
Medallion



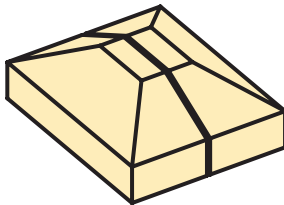
Notched Band



Accent Band



Water Table

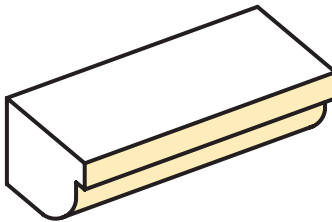
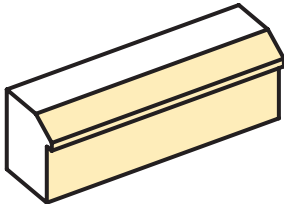
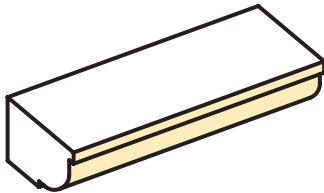
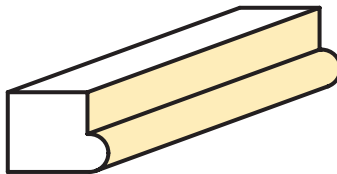
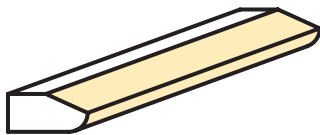
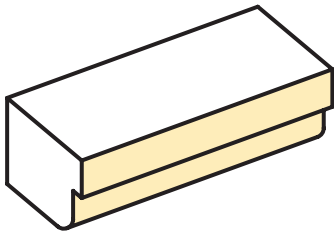


Pilaster Cap

Note: All units can be cut to a specified height/length.

let us help you design your next detail!

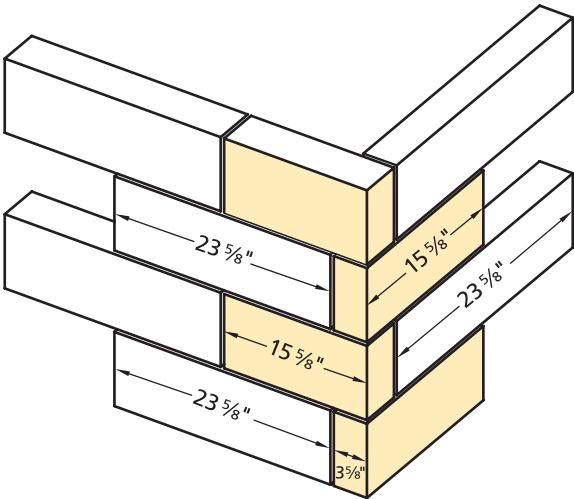
Design Options



corner coursing

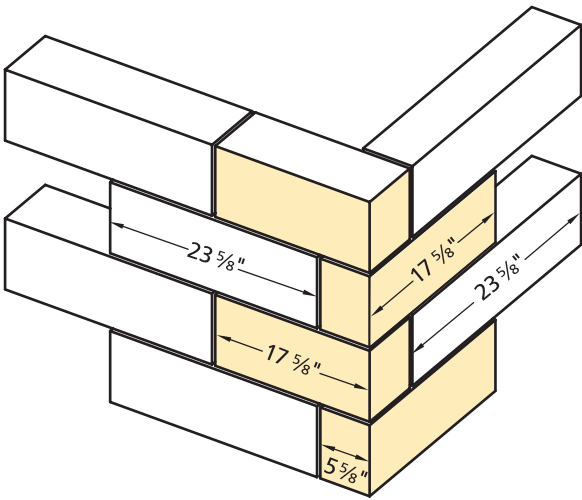
Cordova Stone
4" Corner Coursing

Detail Number 001



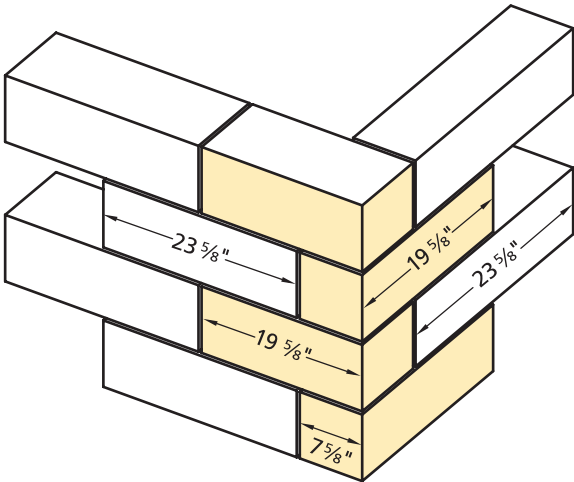
Cordova Stone
6" Corner Coursing

Detail Number 002



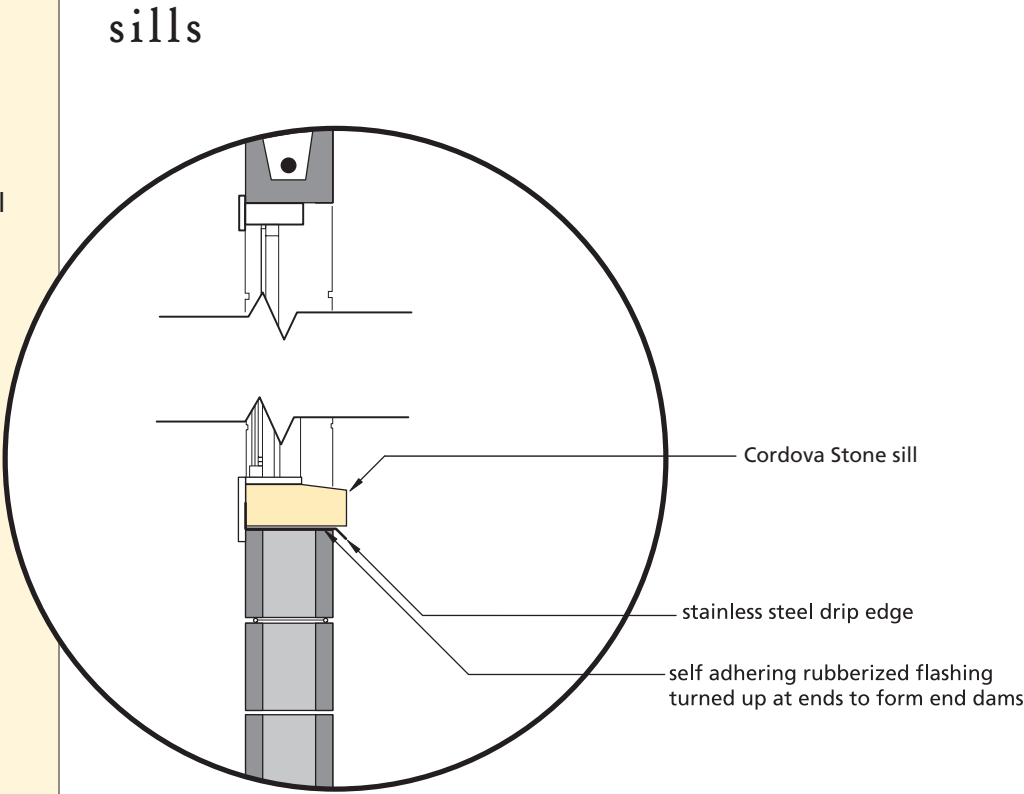
Cordova Stone
8" Corner Coursing

Detail Number 003



Cordova Stone
Window Sill Section /
Single Wythe CMU Wall

Detail Number 004



Cordova Stone
Window Sill & Elevation /
Single Wythe CMU Wall

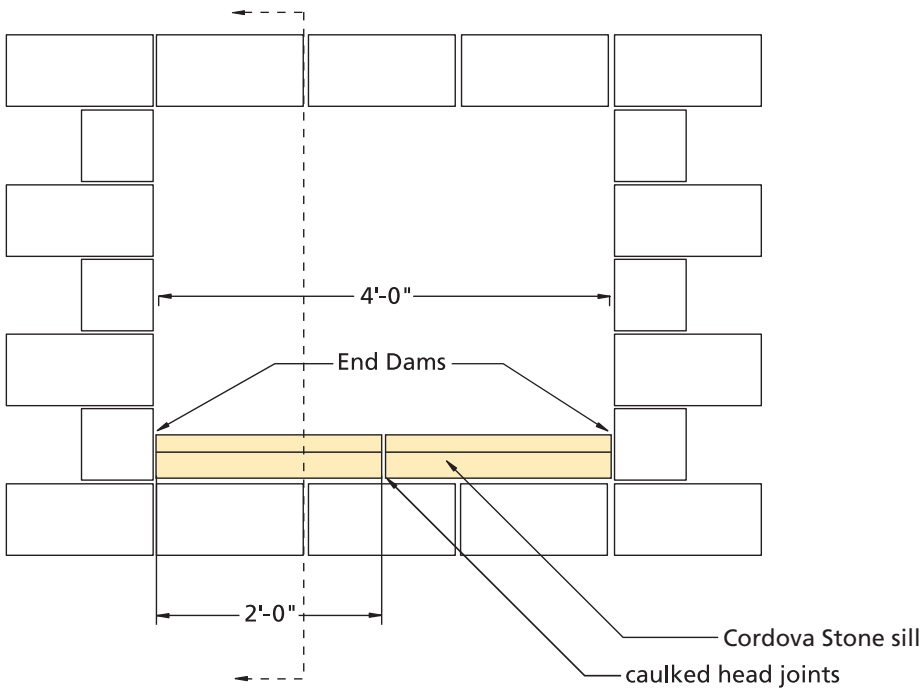
Detail Number 005

General Notes:

Control joints should be placed in Cordova Stone and all other concrete masonry products at no more than 25 feet apart. Place control joints per NCMA TEK 10-2A. Use Type N, Portland Cement / Lime Mortar conforming to ASTM C270.

Always use hot dipped, galvanized joint reinforcement @ 16" O.C. Joint reinforcement should always be discontinuous across control joints.

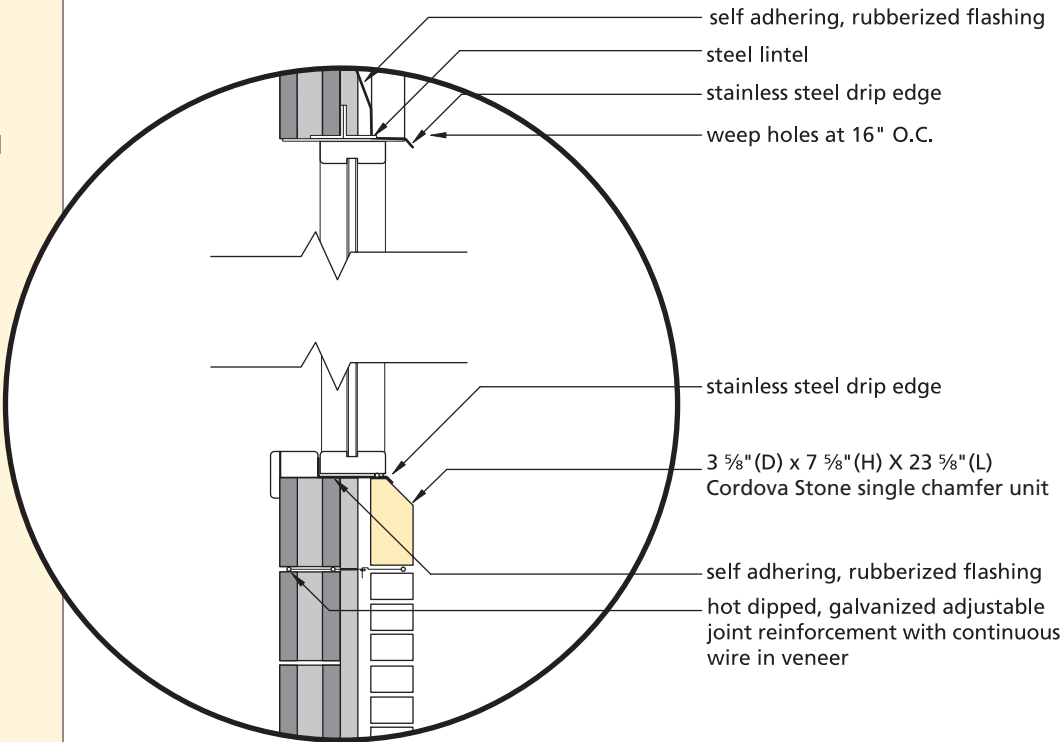
Integral Water Repellent Mortar Additive should be included in the mortar mix.



sills

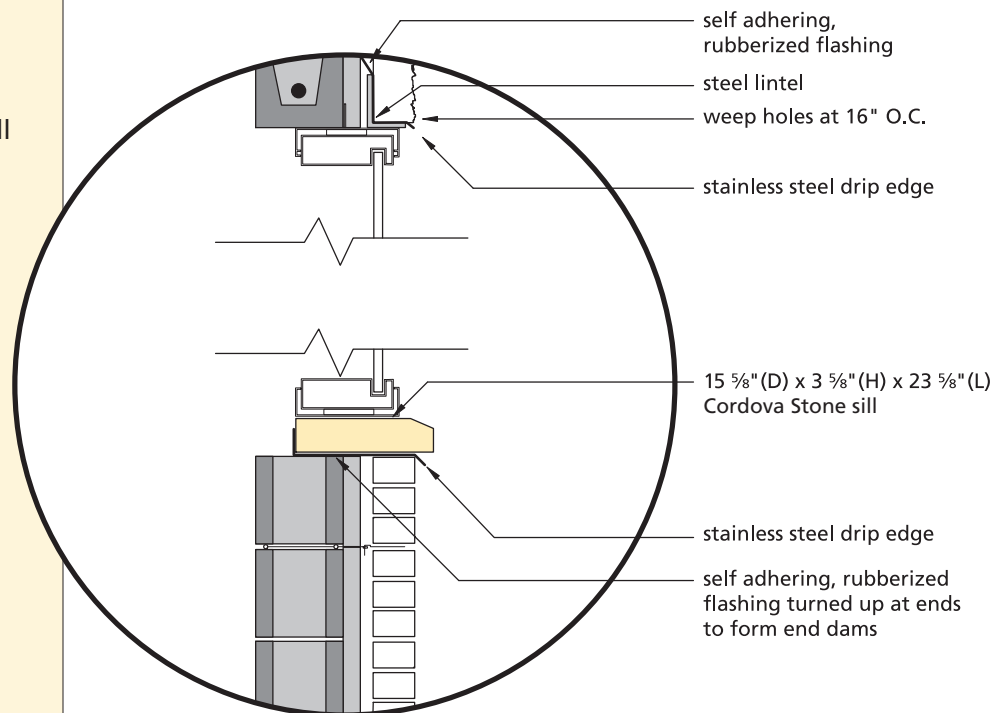
Cordova Stone
Window Sill Section /
Brick & Block Cavity Wall

Detail Number 006



Cordova Stone
Window Sill Section /
Brick & CMU Cavity Wall

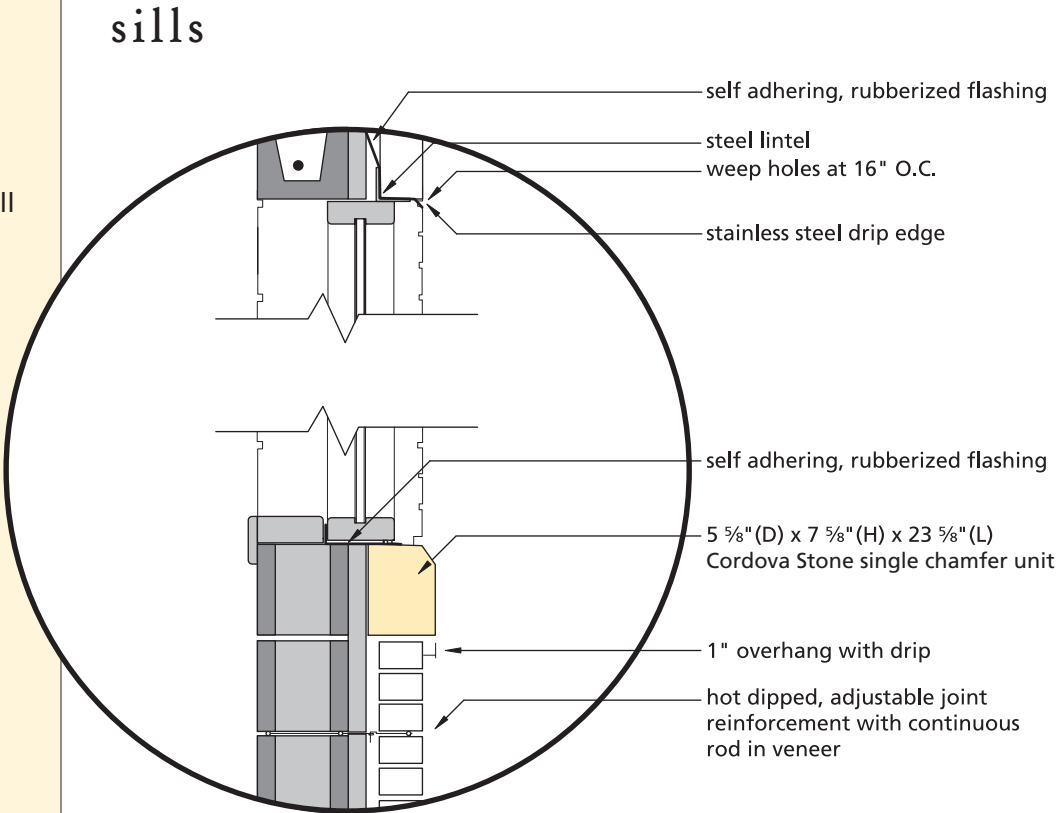
Detail Number 007



General Notes:
Control joints should be placed in Cordova Stone and all other concrete masonry products at no more than 25 feet apart. Place control joints per NCMA TEK 10-2A. Use Type N, Portland Cement / Lime Mortar conforming to ASTM C270.
Always use hot dipped, galvanized joint reinforcement @ 16" O.C. Joint reinforcement should always be discontinuous across control joints.
Integral Water Repellent Mortar Additive should be included in the mortar mix.

Cordova Stone
Window Sill Section /
Brick & CMU Cavity Wall

Detail Number 008



Cordova Stone
Chamfer Band /
Window Sill
Section Isometric

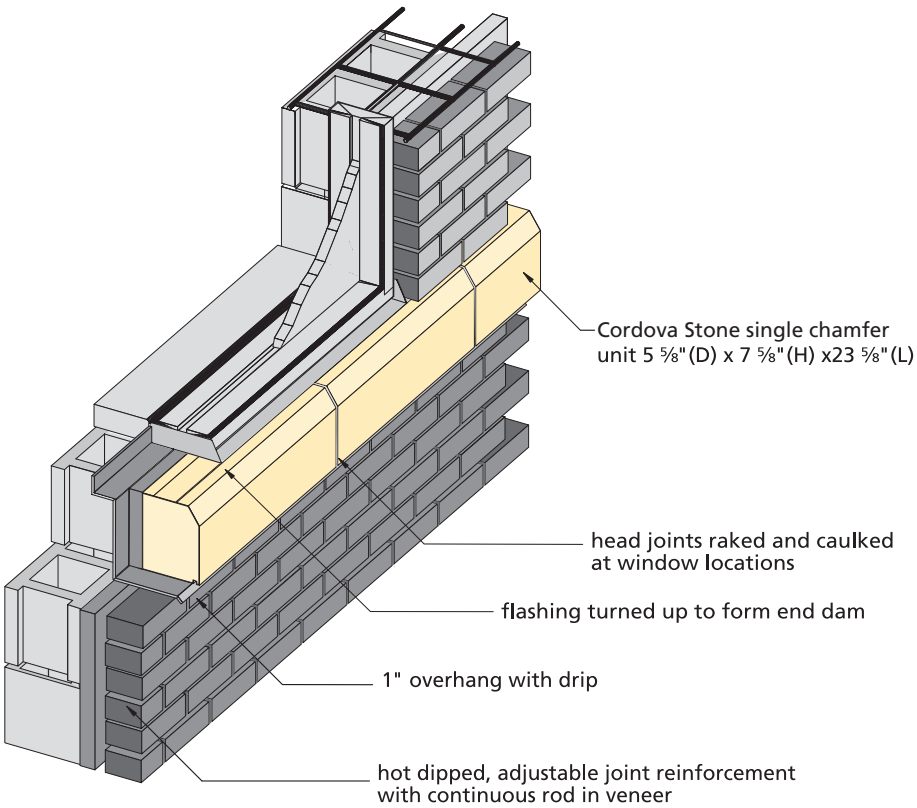
Detail Number 009

General Notes:

Control joints should be placed in Cordova Stone and all other concrete masonry products at no more than 25 feet apart. Place control joints per NCMA TEK 10-2A. Use Type N, Portland Cement / Lime Mortar conforming to ASTM C270.

Always use hot dipped, galvanized joint reinforcement @ 16" O.C. Joint reinforcement should always be discontinuous across control joints.

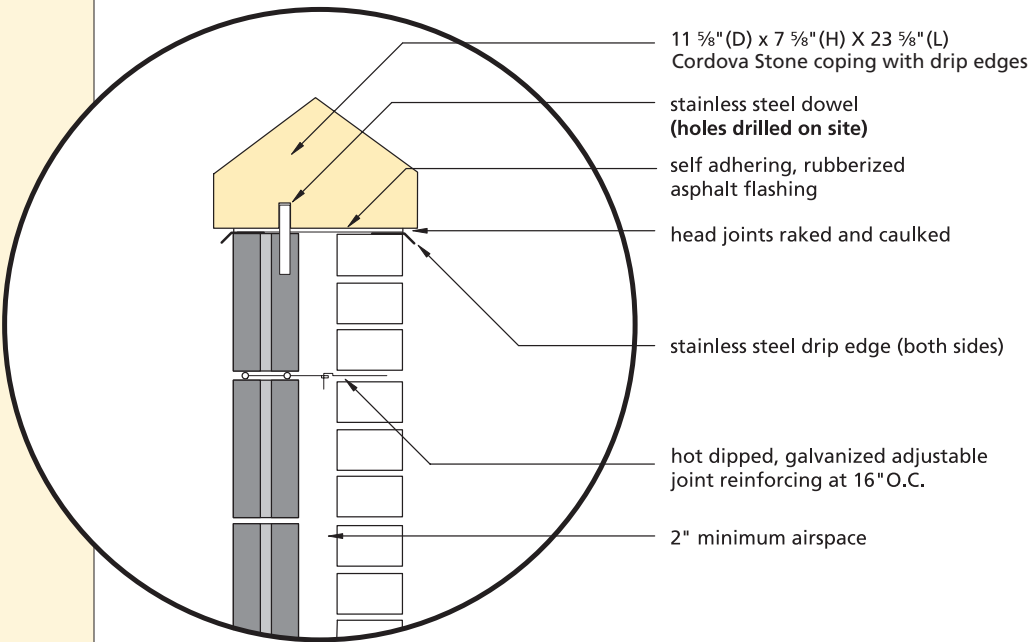
Integral Water Repellent Mortar Additive should be included in the mortar mix.



coping

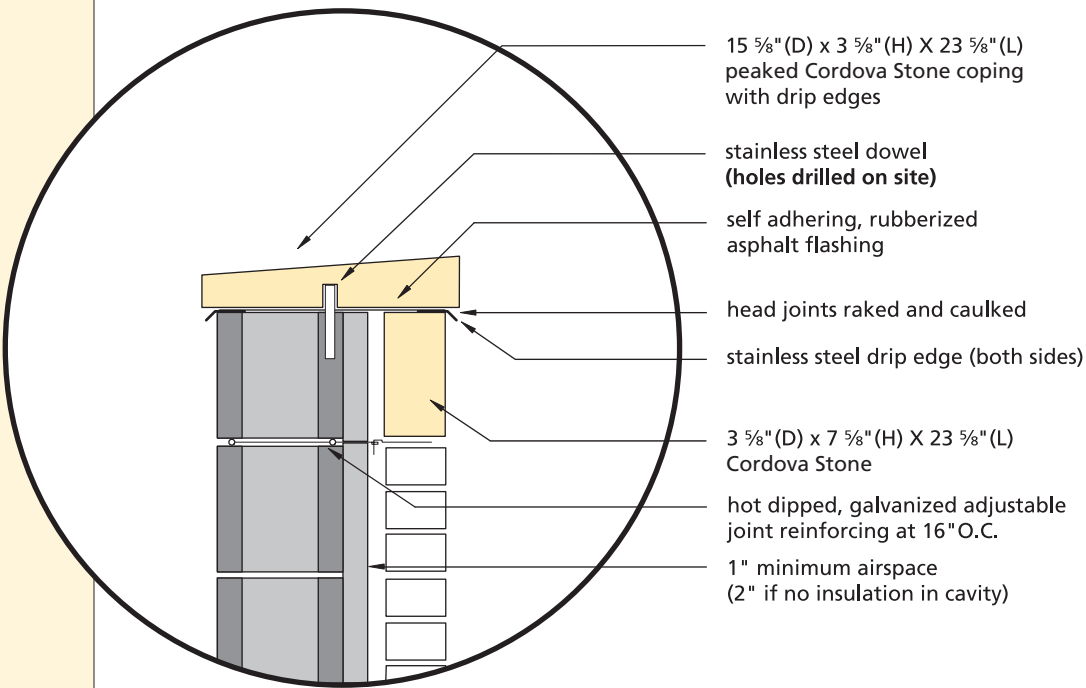
Cordova Stone
Coping Unit –
Cavity Wall

Detail Number 010



Cordova Stone
Coping Unit –
Cavity Wall

Detail Number 011



General Notes:

Control joints should be placed in Cordova Stone and all other concrete masonry products at no more than 25 feet apart. Place control joints per NCMA TEK 10-2A. Use Type N, Portland Cement / Lime Mortar conforming to ASTM C270.

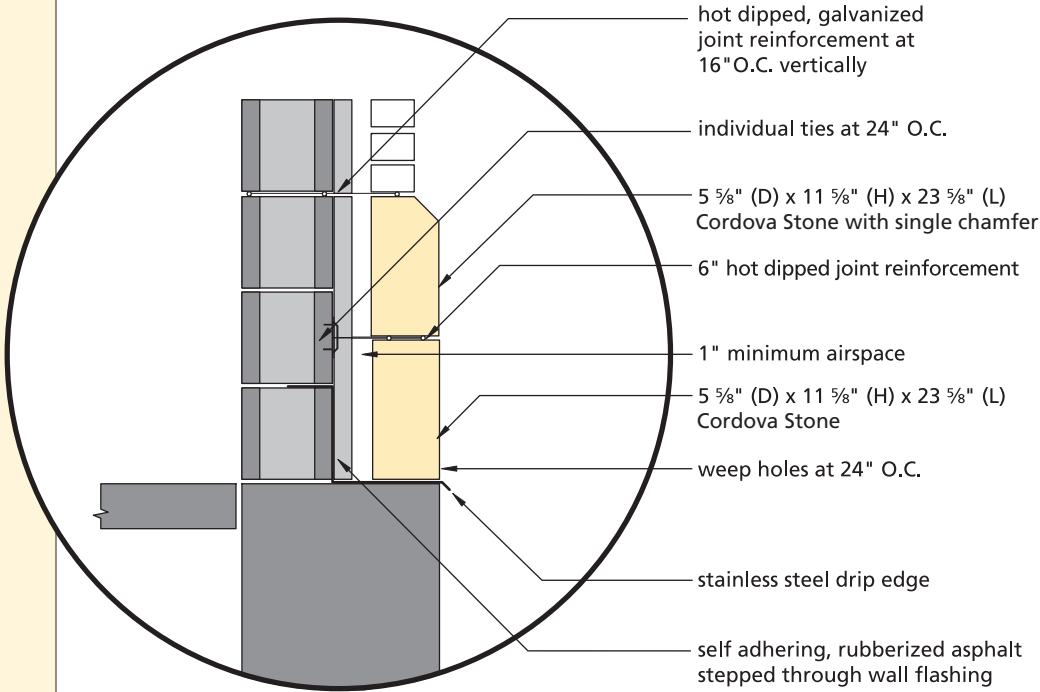
Always use hot dipped, galvanized joint reinforcement @ 16" O.C. Joint reinforcement should always be discontinuous across control joints.

Integral Water Repellent Mortar Additive should be included in the mortar mix.

wainscot

5 5/8" Cordova Stone
Wainscot – Cavity
Wall

Detail Number 012



Cordova Stone
Bullnose Band / Brick &
Wood Stud Cavity Wall

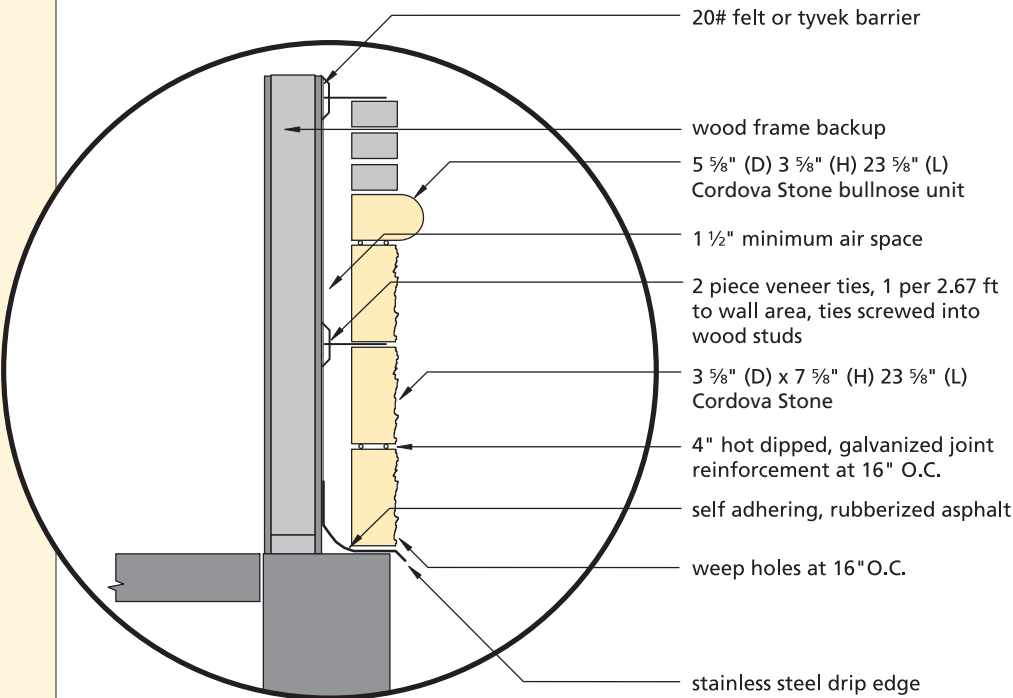
Detail Number 013

General Notes:

Control joints should be placed in Cordova Stone and all other concrete masonry products at no more than 25 feet apart. Place control joints per NCMA TEK 10-2A. Use Type N, Portland Cement / Lime Mortar conforming to ASTM C270.

Always use hot dipped, galvanized joint reinforcement @ 16" O.C. Joint reinforcement should always be discontinuous across control joints.

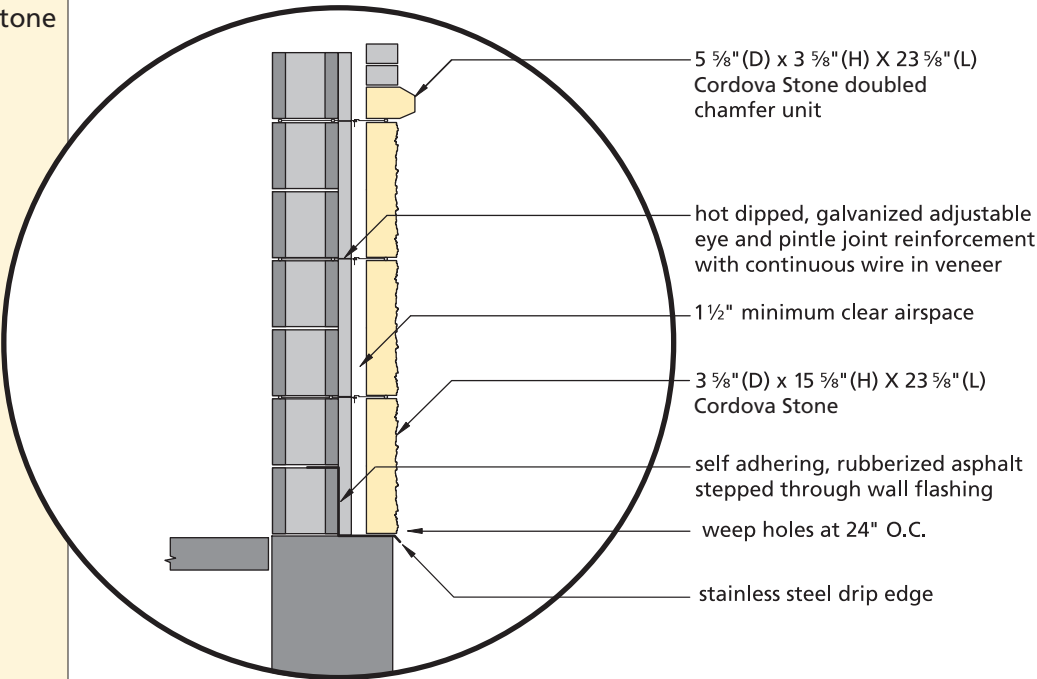
Integral Water Repellent Mortar Additive should be included in the mortar mix.



wainscot

3 5/8" x 15 5/8" Cordova Stone
Base – Cavity Wall

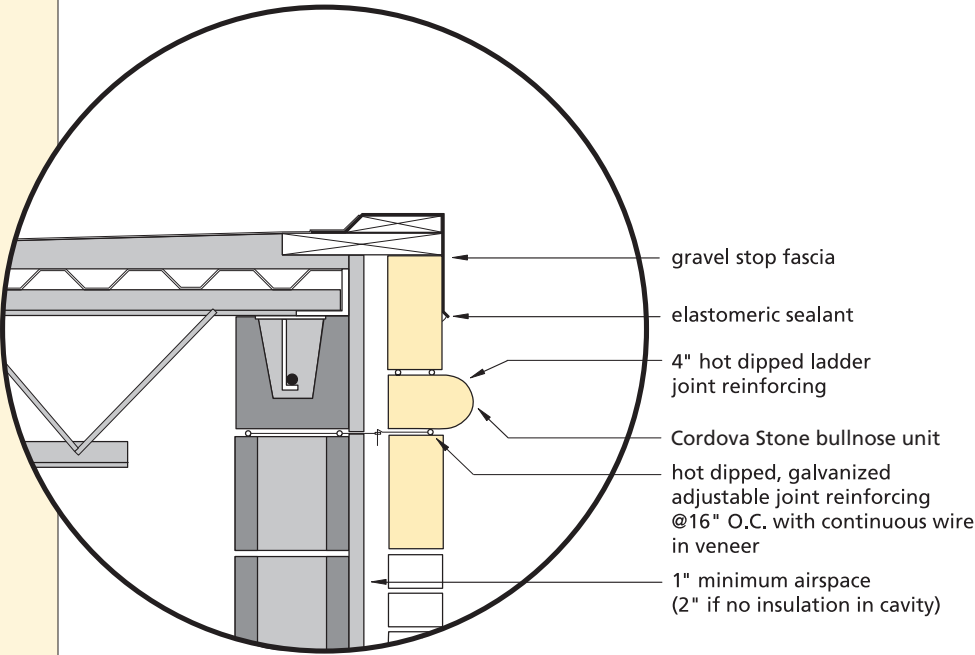
Detail Number 014



cornice detail

Cordova Stone Pediment
Gravel Stop Fascia –
Cavity Wall

Detail Number 015

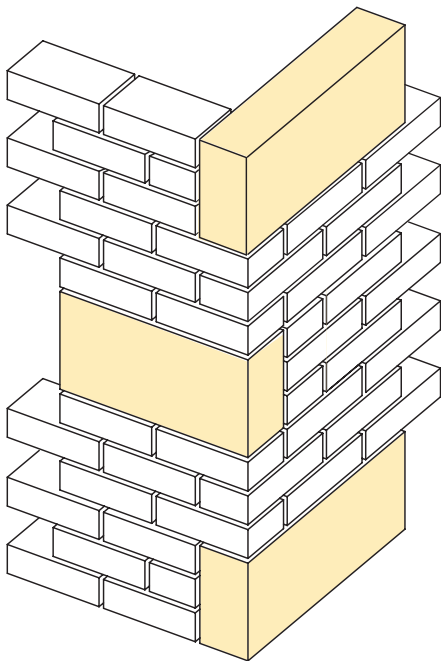


General Notes:
Control joints should be placed in Cordova Stone and all other concrete masonry products at no more than 25 feet apart. Place control joints per NCMA TEK 10-2A. Use Type N, Portland Cement / Lime Mortar conforming to ASTM C270.
Always use hot dipped, galvanized joint reinforcement @ 16" O.C.
Joint reinforcement should always be discontinuous across control joints.
Integral Water Repellent Mortar Additive should be included in the mortar mix.

quoins

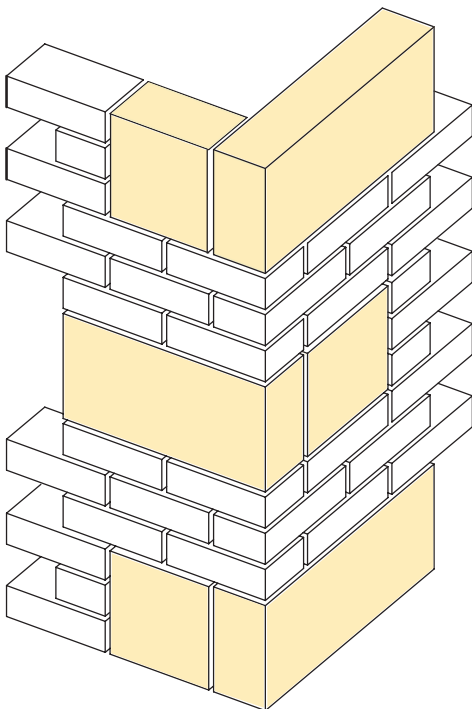
Quoin Corner

Detail Number 016



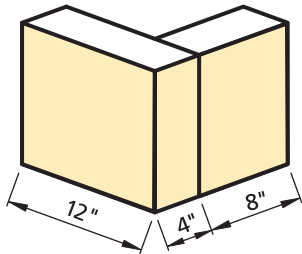
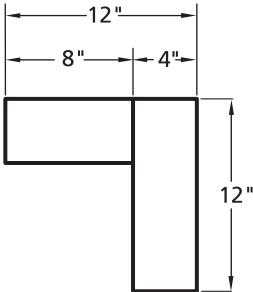
Quoin Corner with Return

Detail Number 017

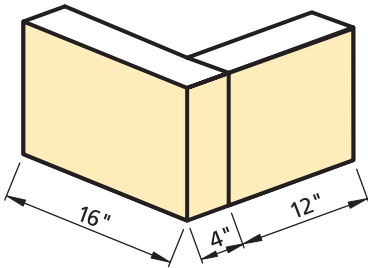
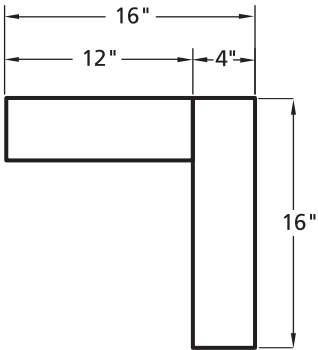


quoins in plan
Offset Equal

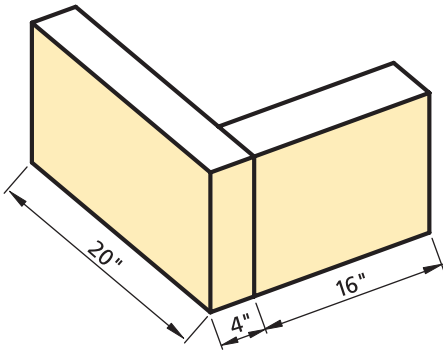
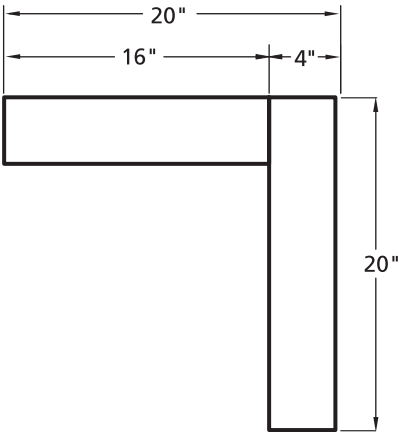
Detail Number 018
Note: Available in all standard heights.



Detail Number 019
Note: Available in all standard heights.



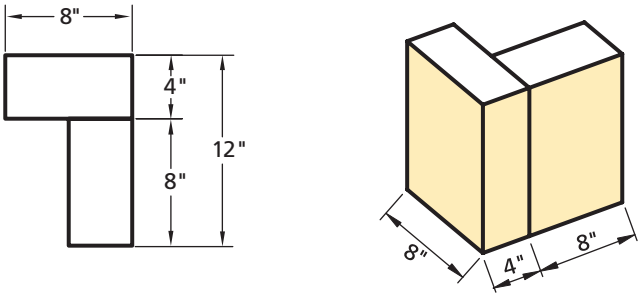
Detail Number 020
Note: Available in all standard heights.



quoins in plan
Offset Short

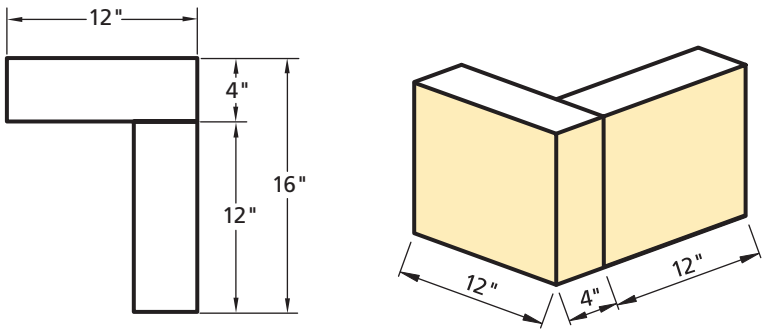
Detail Number 021

Note: Available in all standard heights.



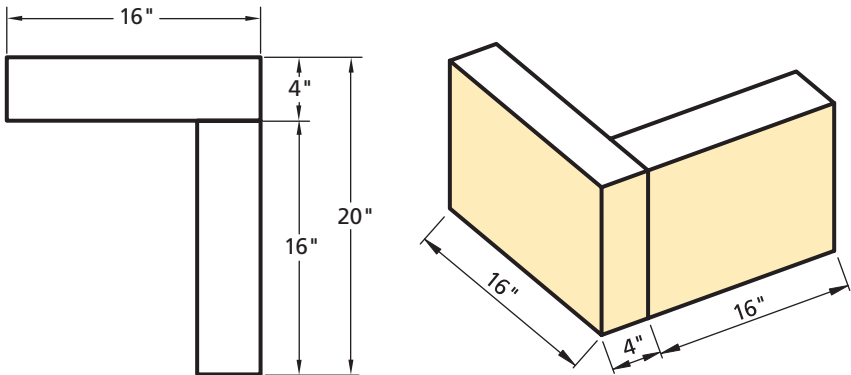
Detail Number 022

Note: Available in all standard heights.



Detail Number 023

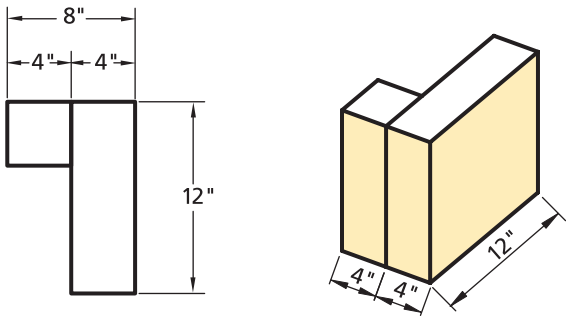
Note: Available in all standard heights.



quoins in plan
Offset Long

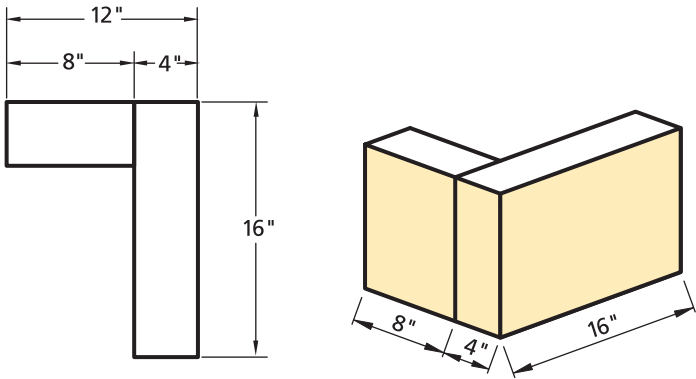
Detail Number 024

Note: Available in all standard heights.



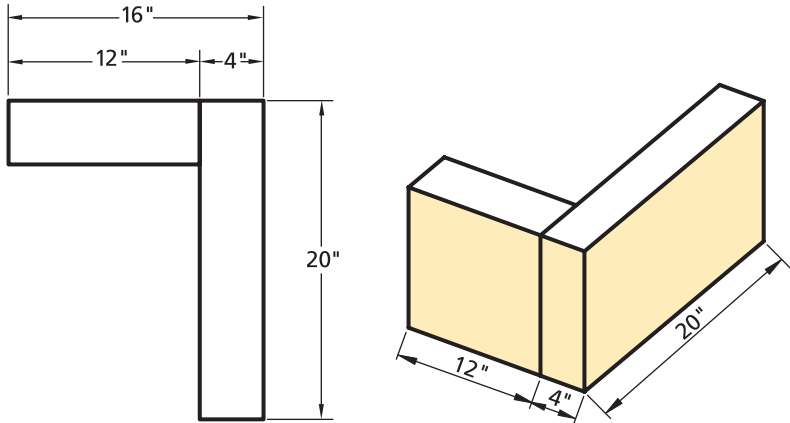
Detail Number 025

Note: Available in all standard heights.



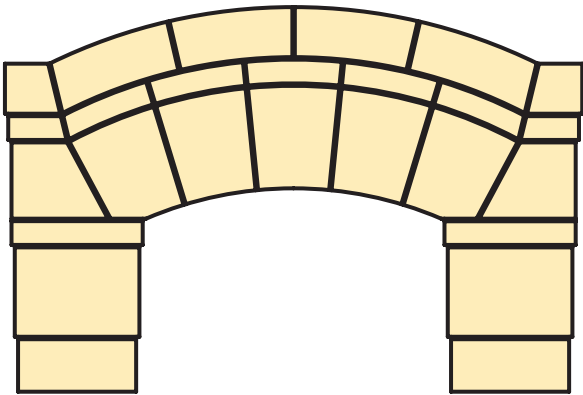
Detail Number 026

Note: Available in all standard heights.

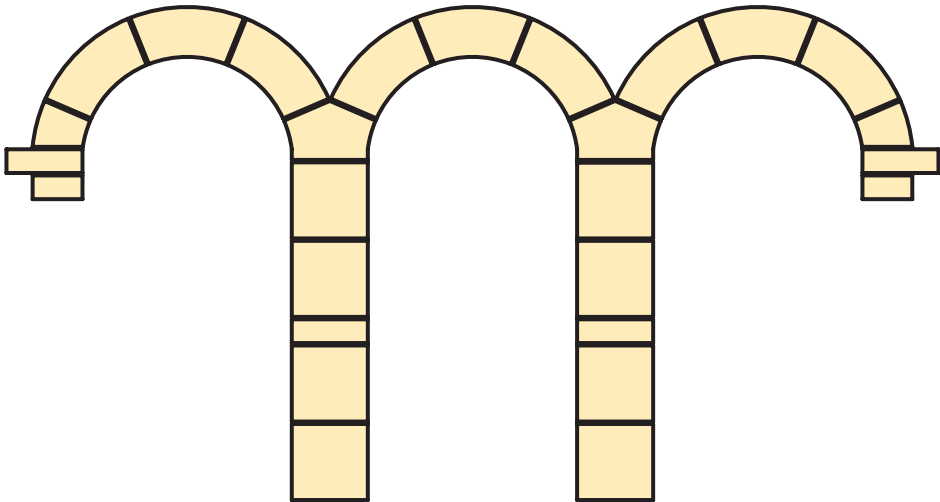


accent detail options

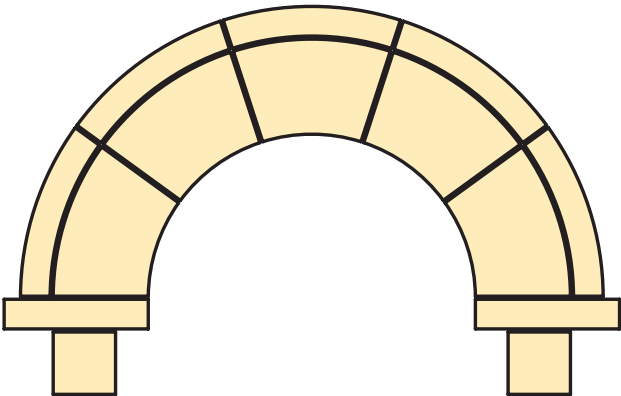
Detail Number 027



Detail Number 028



Detail Number 029



let us help you design your next detail!

installation

Important: A full size sample panel complete with complementary mortar should be installed at the jobsite prior to installation of any Cordova Stone product. This panel will represent the quality, color and texture of the product and the workmanship to be expected for the project. Either the owner or the project architect must approve the panel. Cordova Stone will provide 4" units for a sample panel 4' x 4' at no cost for the material (not including freight to the site).

Installation Recommendations

Cavity wall construction is recommended for exterior walls, with proper flashing, venting and weep holes.

A complementary or matching mortar color is recommended when using Cordova Stone units.

Control joint spacing should be approximately 20' maximum.

Continuous horizontal joint reinforcement is recommended every 16" or every course when installing 12" and 16" high units.

Keep walls clean by bagging or brushing during installation. This significantly simplifies cleaning. Avoid harsh cleaning methods after the walls have been erected as this may mar the surface of the units.

Limitations

The facing is not intended for use as an impervious surface.

Muratic acid should not be used as a cleaning agent or in direct contact with the facing.

The facing should not be continuously exposed to temperatures above 250° F.

Jobsite Storage and Handling

Cordova Stone units shall be delivered to the jobsite on banded wood pallets with protective material. Each edge of a cube shall be protected by a pre-molded edge protector. Each cube shall be covered with a clear plastic wrap. Keep protective covers on the units until installation. Pallets shall be stored in single stacks on level ground and covered with a waterproof covering (e.g., tarpaulins) to protect the units from inclement weather. Units must be handled carefully to avoid breakage and damage to the finished surfaces.

Protection of Work: Cover walls, including open tops, each day after installation to keep open walls dry and protected. After units are installed, they should be protected from damage by other trades performing operations that can stain or otherwise damage the finished surfaces by covering walls with plastic. Corners should be protected from damage after installation by covering them with plywood. Do not, under any circumstance, install a damaged unit. If units have been damaged during transit, contact Cordova Stone immediately.

Laying Masonry Walls

Lay masonry units using best concrete masonry practices. Install only quality units; reject all defective units. Proper care shall be taken in handling to prevent marring or damaging faces, edges and corners.

Lighting: Provide adequate lighting for masonry work by placing all lighting at a reasonable distance from the wall for even illumination. Do not use trough lighting.

Draw units from more than one pallet at a time during installation. We recommend that all exterior mortar to have an integral water-repellent additive added to each batch in the appropriate dosage rates for mortar type N per the manufacturer's instructions. Refer to NCMA TEK-3-1C for Hot and Cold weather construction practices.

Lay Cordova Stone units with the faces level, plumb and true to a line strung horizontally. Units shall have uniform joints both horizontally and vertically on the finished side of the wall. Align carefully tooled joints on the finished side of the wall.

Cutting: Make all unit cuts, including those for bonding, holes, boxes, etc., with motor-driven masonry saws, using either an abrasive or diamond blade. Cut neatly and locate for best appearance.

Tool joints neatly after they are finger-hard to make them straight and uniform. Size and place cut pieces appropriately to maintain consistency and bond. Complete masonry construction using procedures and workmanship consistent with the best masonry practices.

Mortar Beds and Joints

Use type N mortar. A water repellent mortar additive is highly recommended for all exterior walls.

1. Lay units with full mortar coverage on head and bed joints.
2. Tool all mortar joints when thumbprint hard into a concave configuration.
3. Care should be taken to remove mortar from the face of masonry units before it sets.

Flashing of Masonry Work

Install flashing at locations shown in the plans and in strict accordance with the details and the best masonry flashing practices.

Weep Holes and Vents

Install weep holes and vents at proper intervals, 24" O.C. and 2" high, above bed joints, at courses above grade, above flashing, and at any water stops over windows, doors, and beams.

cleaning instructions

Inspection

Cordova Stone faces shall be free of chips, cracks, crazes or any other imperfections that would detract from the overall appearance of the finished wall when viewed from a distance of 20 feet at right angles to the wall with diffused lighting.

Cleaning During Installation

Walls must be cleaned on a daily basis as block laying proceeds during installation using brushes, rags and burlap squares.

Do not allow excess mortar lumps or smears to harden on the finished surfaces. Harsh cleaning methods after walls have been erected may mar the surface of the units.

Final cleandown of masonry surfaces should be completed before installation of windows, doors, hardware, light fixtures, roofing materials and any other non-masonry item that may be damaged by the cleaning product. If such fixtures have been installed, they must be protected before the cleaner is applied. All caulking and sealant materials should be in place and thoroughly cured before cleaning begins.

Protect all surrounding metal and non-masonry materials, painted surfaces and plant life from contact with the cleaner, residue or fumes.

Masonry Cleaners

Use masonry cleaners such as:

PROSOCO Inc.

Burnished Custom Masonry Cleaner (dilute 1:4)

Custom Masonry Block Cleaner (1:6)

Vanatrol (1:6)

Diedrich Technologies Inc.

Diedrich 222 Cast Stone & Burnished Masonry Cleaner (1:4)

Specialty Masonry Cleaner (1:5)

Carefully follow manufacturer's instructions.

DO NOT apply cleaners with pressure spray above 50 psi.

CAUTION! We do not recommend using muriatic acid on units.

Test Application

Prior to overall application, always test the cleaner (minimum 4' x 4' area) to ensure suitability and desired results. Test each type of masonry and each type of stain. Allow test area to dry for 3 – 7 days before inspection and approval by the project architect or building owner. Clean test areas according to the application below and always make sure the test panel is available throughout the cleaning project.

Application

The following cleaning procedure is recommended unless otherwise indicated during testing:

1. Thoroughly saturate a large portion of the masonry surface with clean water.
2. Using a densely packed, soft-fibered masonry washing brush or low-pressure spray (50 psi maximum), apply diluted solution freely. (Do not apply cleaner with pressure spray above 50 psi. Such an application will drive the chemicals deep into the surfaces, making it more difficult to rinse completely.)
3. Depending on the absorption rate of masonry and drying conditions, allow cleaning solution to remain on the wall for approximately five (5) minutes. Do not allow cleaner to dry into the masonry because it may leave a residue and cause staining.

Note: *To remove mortar smears that have been allowed to harden on the wall and cannot be removed by following the procedures listed above, a stronger solution of the cleaner may be applied. The surface must remain wet at all times strictly following manufacturer's instructions.*

WARNING! *Never use high pressure on Cordova Stone. This may leave unsightly wand marks on the face of the units. Failure to strictly follow manufacturer's instructions can result in permanent damage to the finished faces.*

Materials

- Two plastic or hard rubber buckets
- Rubber gloves
- Soft fiber masonry brushes (or whitewash brushes)
- Wooden, plastic or other soft, non-staining scraping device
- Supply of "clean" wipers, such as lint-free cloths or paper towels
- Clean water
- Specified cleaning solution
- **DO NOT USE ACID**

sealers and maintenance

Topical Sealers

Cordova Stone units do not require a field sealer. All units are manufactured with an integral water repellent. This product is throughout the unit and performs for the life of the units. *Integral water repellent mortar additive should be used in the mortar to add to the overall performance of the water-repellent wall.* A topical sealer will add an added layer of protection to the building as well as help keep the walls clean. There are many products on the market that may be applied to the Cordova Stone units. Some approved sealers are: PROSOCO – Weather Seal Siloxane, Chemprobe Coating Systems – Prime-A-Pell, TK Products – TK-290 WB and Diedrich Technologies Inc. – Diedrich 300-C.

or open areas. Apply the acrylic evenly to cover the entire surface without forming drips or runs. For maximum coverage and best appearance, apply the acrylic with airless spray equipment. Follow manufacturer's directions carefully. This coating will provide some extra resistance to moisture; however, the facing is not intended for use as an impervious surface. If an impervious surface is required, compatible water repellent must be used to completely seal out moisture. Some interior applications may require a water-based coating material only. Always produce a sample area of the acrylic finish for architect/owner approval prior to applying the finish coat to the entire surface. Some approved sealers are: Chemprobe Coating Systems – Pylon 1422, TK Products – Brightseal and Diedrich Technologies Inc. – Kolorclassic Sealer.

Midnight Groundface Field Coat

Cordova Stone units do not require a field coat. However, the Midnight Groundface units are sampled with a glossy finish. A finish coat of a masonry commercial acrylic coating with a minimum of 20% solids may be applied. This would be applied to all Cordova Stone walls after cleandown and when the walls are completely dry. Use only in well-ventilated

Maintenance

Cordova Stone units, properly installed and cleaned, need virtually no maintenance other than routine cleaning with standard commercial grade cleaning agents. Graffiti, paint or dye stains may need special cleaning methods and products. Contact manufacturer for specific cleaning recommendations. *Do not power wash.*

Suggested Mortar Colors

Standard Cordova Stone Colors	Type N Mortar	Solomon Grind	Prism
Alabaster	50–100% White Cem. Limestone	—	—
Limestone	Regular Mortar	—	—
Buff	Regular Mortar	10H w/ White Cement	P3520 Goldenrod w/ White Cem.
Graphite	Regular Mortar	60H White	P9110 Slate Grey
Midnight	Regular Mortar	92A Iron Back	P9140 Slate Grey

Earth Blend Colors	Type N Mortar	Solomon Grind	Prism
Desert Blend	Regular Mortar	—	P3520 Goldenrod
Canyon Blend	Regular Mortar	70H Orange	P4191 Spec. Brown
Mountain Blend	Regular Mortar	33X Brown	P4740 Mushroom
Woodland Blend	Regular Mortar	10X Lt. Buff	P4710 Mushroom

It is recommended to specify Type N mortar when installing Cordova Stone units. There is no reason to use a strong mortar for a non-load bearing veneer wall system. The strong mortar creates unnecessary stress in the wall which may result in surface cracks or hairline mortar cracks.

There are many variables that will affect the color of mortar. Sand, cement and the amount of water will determine color. Always require a cleaned sample panel to be built for approval of mortar color and the overall workmanship.

crack control

There are many things to consider when designing a masonry building. All masonry veneer walls experience all types of stresses due to weather, ground movement, characteristics of the products being used and the overall design of the wall. For this reason, certain design elements have to be considered. Control joint spacing, wall reinforcement, and mortar type all affect the performance of the finished wall. There are many misconceptions about these topics that need to be addressed. Our goal is for you to have a problem-free job when using our Cordova Stone products.

The masonry walls that you design **MAY CRACK** unless you design it with the following in mind:

Type N Mortar

Type S mortar is too strong and may create hairline shrinkage cracks. The more cement the more shrinkage.

Horizontal Joint Reinforcement

9 gauge galvanized 4" ladder type horizontal joint reinforcement should be installed every 16" O.C. on units up to 8" high. When installing 12" or 16" high units, joint reinforcement should be installed at every course. In this case, to maintain a 3/8" bed joint, seismic wall ties and a single 9 gauge galvanized rod should be used.

Wall Ties

Typical brick wall ties can be used depending on the backup structure. When using single rod wire in every course, seismic wall ties are available.

Control Joints

Important considerations need to be made when determining control joint placement. The height of the Cordova Stone wall should be considered when determining the maximum spacing distance. A suggested maximum of 20' should not be exceeded. Included are some NCMA Tek Notes that address the placement of joints. Typical locations are as follows: approx. 4'-6' from corners, all inside corners especially at piers, at wall height changes and at the side of any large window or opening. If the opening is over 6' control joints should be on both sides of the opening.

Mortar Additive

All Cordova Stone units are manufactured with an integral water repellent. Putting the mortar additive in the mortar will complete the water repellent system of the wall and increase the bond strength of the mortar.

Caulking Sills & Coping

All window sill and coping unit head joints should be raked and caulked with a matching color which will be practically unnoticeable. Flashing should always be used below these units.

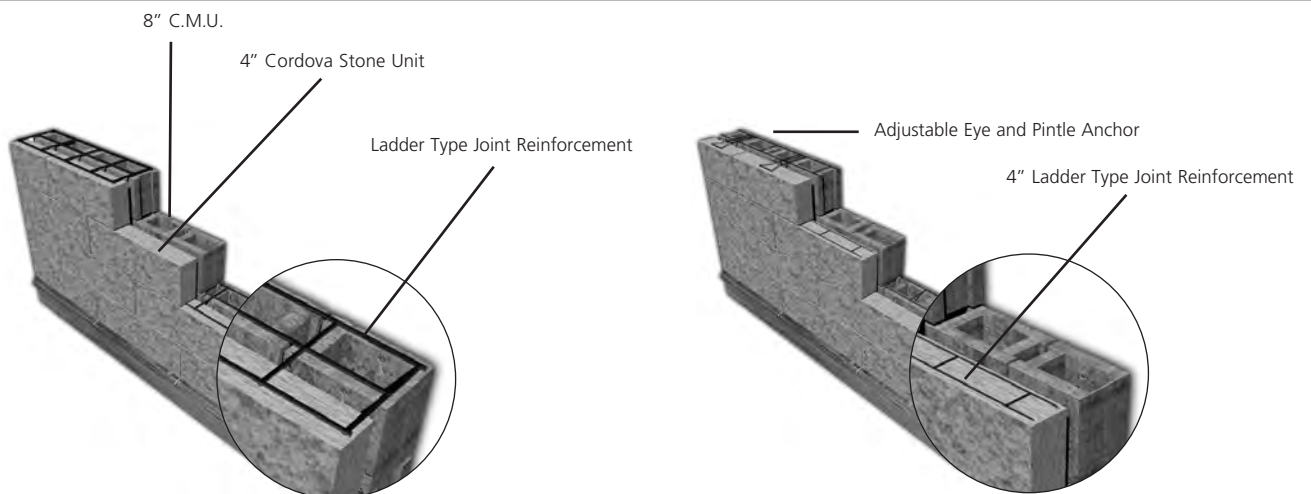
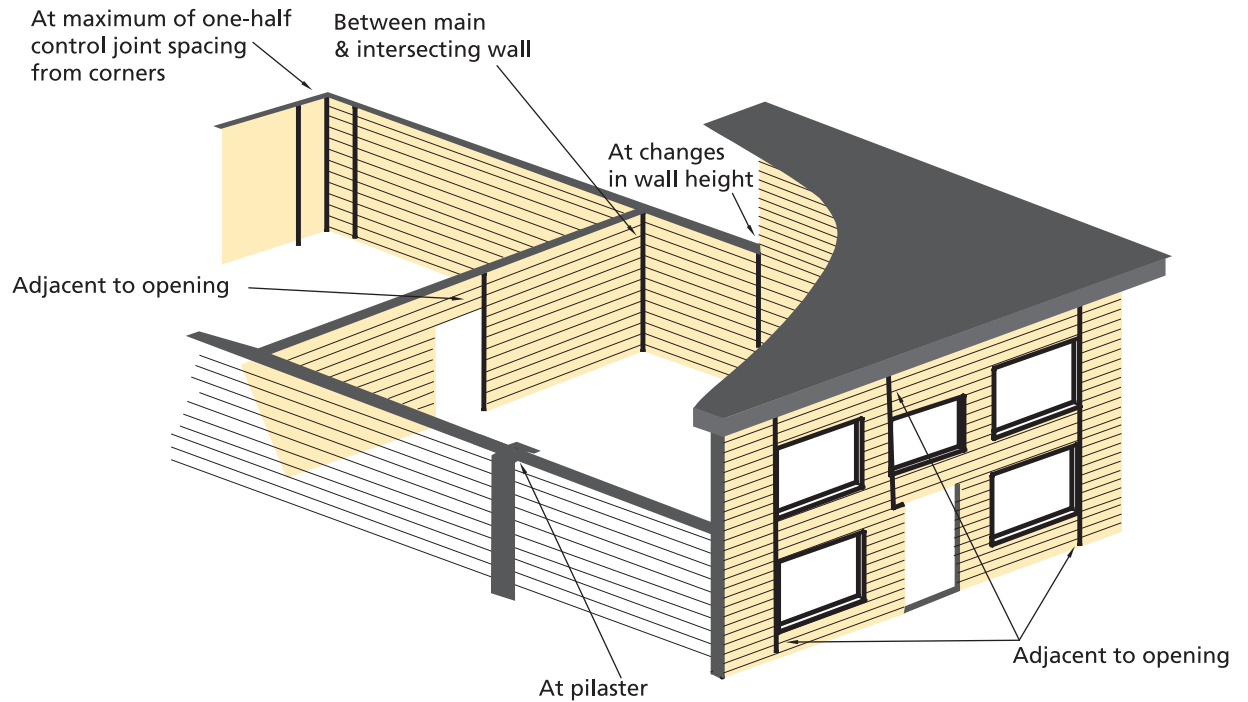
All of these points will have an affect on the end result of you project. These are good standard masonry practices that need to be considered when designing with architectural masonry products.

Superior Design + Quality Products + Outstanding Installation = Award Winning Projects

control joint and joint reinforcement

Crack Control Tek Bulletin 10-2B

Joint Locations

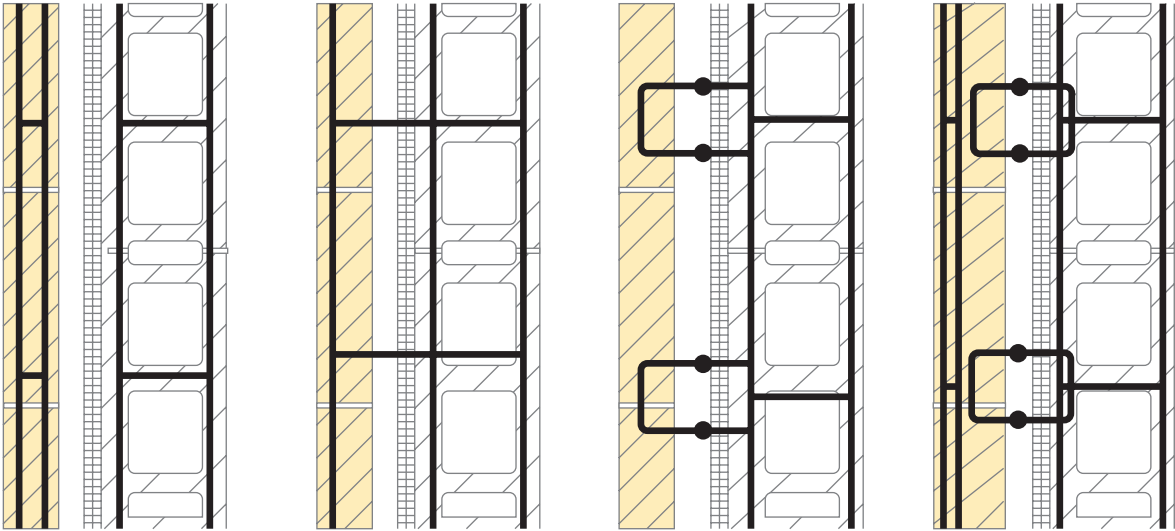


Continuous horizontal joint reinforcement is recommended in the exterior wythe every 16" or every course with 12" and 16" high units.

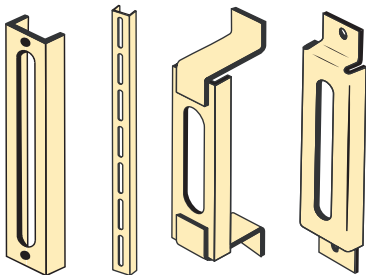
Cordova Stone can be installed using block, wood or metal stud back-up structures.

wall ties and joint reinforcement

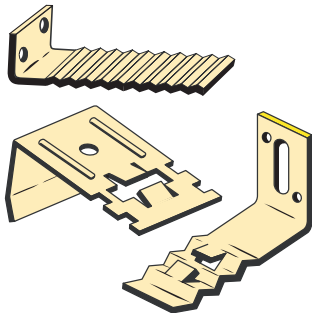
Multiwythe Wall Assemblies



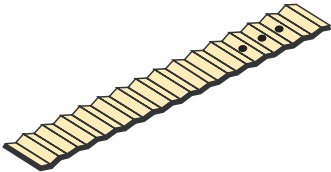
Channel Slots and Anchors



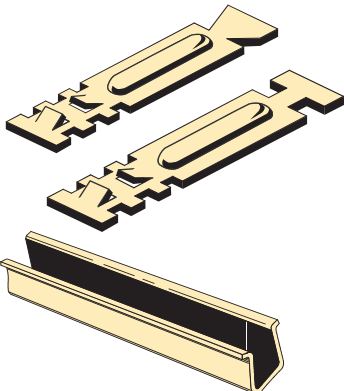
Seismic Anchor and Buck and Frame Anchors



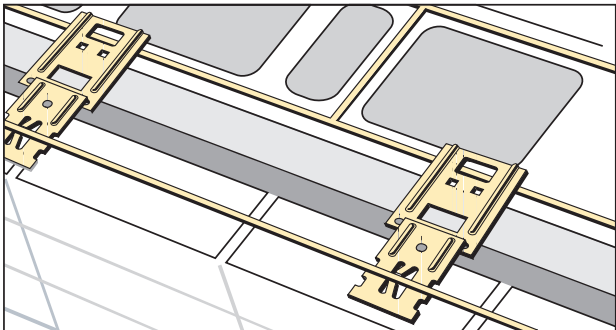
Corrugated Wall Tie



Dovetail Slots and Anchors



Seismic Joint Reinforcement



water repellents

Below is a list of recommended water repellents for use with Cordova Stone.
Please contact us if you would like more information.

Weather Seal Siloxane

PROSOCO, Inc.
Lawrence, KS
(800) 255-4255
www.prosoco.com

Weather Seal Siloxane (PD) is a ready-to-use water based silane/siloxane water repellent for Cordova Stone. Siloxane PD will not impair the natural breathing characteristics of Cordova Stone. It helps resist cracking, spalling, staining and other damage related to water intrusion.

Prime-A-Pell 200

Chemprobe Coating Systems, L.P.
Division of Tnemec Co., Inc.
Garland, TX
(972) 271-5551
www.tnemec.com

Prime-A-Pell 200 is a clear, filmless, penetrating water repellent for all above grade Cordova Stone. The treatment does not alter the color or texture of the surface, nor significantly affect the vapor transmission qualities of the substrate. The solution penetrates the substrate and chemically reacts to create a powerful barrier against water penetration. This barrier is resistant to ultraviolet and weather deterioration.

TK-290 WB

TK Products
Division of Sierra Corp.
Minnetonka, MN
(952) 938-7223
www.tkproduct.com

Tk-290 WB Tri-Siloxane is chemically bonded within the Cordova Stone, not just physically bonded like other surface penetrating sealers. This formula is a ready-to-use, colorless, breathable, non-staining, non-yellowing, deep penetrating, masonry water repellent. It protects the surface against damaging effects of water intrusion, acid rain, deicing chemicals, freeze/ thaw exposure, airborne dirt and most other atmospheric chemicals.

DIEDRICH 300-C

Diedrich Technologies Inc.
Oak Creek, WI
(800) 323-3565
www.diedrichtechnologies.com

DIEDRICH 300-C Concentrate Water Repellent is VOC compliant, water dilutable, penetrating and a breathable solvent-free microemulsion concentrated alkoxy siloxane material. Specially formulated for use on pre-cast and site cast concrete, clay and concrete masonry and sandstone where surface darkening is unacceptable. 300-C reduces bonding of airborne dirt and hydrocarbons.

acrylic sealers

Below is a list of recommended acrylic sealers for use with Midnight Groundface.
Please contact us if you would like more information.

Phylon 1422

(solvent based with 25% solid content)
Chemprobe Coating Systems, L.P.
Division of Tnemec Co., Inc.
Garland, TX
(972) 271-5551
www.tnemec.com

Phylon1422 is a non-yellowing, acrylic coating. Phylon 1422 highlights the natural color of the Cordova Stone by providing a clear, semi-gloss sheen. The treatment does not alter the natural texture of the surface, nor significantly affect the vapor transmission qualities of the Cordova Stone. Phylon 1422 provides a durable, wet-look finish to exposed aggregate, Groundface block, Textureface and many other masonry and natural stone surfaces.

Bright Seal

(solvent based with 26% solid content)
TK Products, Division of Sierra Corp.
Minnetonka, MN
(952) 938-7223
www.tkproduct.com

Bright Seal is a blend of 100% methyl methacrylate polymers used as a superior final sealer and protective coating on exposed aggregate, architectural concrete brick, Cordova Stone or any cementitious materials where yellowing or discoloration cannot be allowed. The coating is clear and does not yellow with age or exposure to ultraviolet rays. Bright Seal intensifies the color highlights of exposed aggregate and adds sparkle to the finished project, increasing the aesthetic value and longevity of the property.

KOLORCLASSIC SEALER

(solvent based w/24% solid content)
United Products Corp.
Fremont, NE
(402) 727-7525
www.unitedproductsonline.com

KOLORCLASSIC SEALER is a high performance compound designed to provide high gloss sealing qualities that are resistant to yellowing from ultraviolet exposure. It has a gloss finish, is extremely tough and has excellent resistance to dirt stains and most other liquids. To be used for interior or exterior applications and is UV stable.

tek notes

ncma tek note 10-1a

The following information was taken in part from NCMA TEK note 10-1A. For more complete information please see the entire NCMA TEK note 10-1A at www.cordovastone.com, NCMA TEK note link.

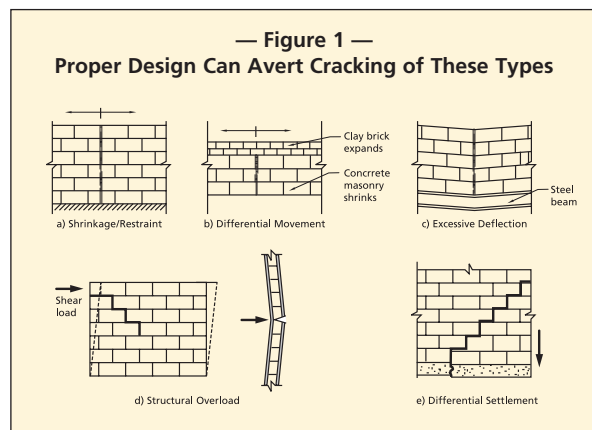
Crack Control in Concrete Masonry Walls

Cracks in buildings and building materials normally result from restrained movement. This movement may originate within the material, as with volume changes due to moisture loss or acquisition, temperature expansion or contraction, or may result from movements of adjacent or supporting materials, such as deflection of beams or slabs. In many cases, movement is inevitable and must be accommodated or controlled.

Designing for effective crack control requires an understanding of the sources of stress which may cause cracking. It would be a simple matter to prevent cracking if there were only one variable, however, prevention is made more difficult by the fact that cracking often results from a combination of sources.

Causes of Cracking

There are a variety of potential causes of cracking. Understanding the cause of potential cracking allows the designer to incorporate appropriate design procedures to control it. The most common causes of cracking in concrete masonry are shown in Figure 1 and are discussed below.



Shrinkage/Restraint

Cracking resulting from shrinkage can occur in concrete masonry walls because of drying shrinkage, temperature fluctuations, and carbonation. These cracks occur when masonry panels are restrained from moving.

Drying Shrinkage

Concrete products are composed of a matrix of aggregate particles coated by cement which bonds them together. Once the concrete sets, this cementitious-coated aggregate matrix expands with increasing moisture content and contracts (shrinks) with decreasing moisture content. Drying shrinkage is therefore a function of change in moisture content.

Although mortar, grout and concrete masonry units are all concrete products, unit shrinkage has been shown to be the predominate indicator of the overall wall shrinkage, principally due to the fact that it represents the largest portion of the wall. Therefore, the shrinkage properties of the unit alone are typically used to establish design criteria for crack control.

For an individual unit, the amount of drying shrinkage is influenced by the wetness of the unit at the time of placement, as well as the characteristics and amount of cementitious materials, the type of aggregate, consolidation, and curing. Specifically, drying shrinkage is influenced in the following ways:

- walls constructed with “wet” units will experience more drying shrinkage than drier units;
- increases in cement content increase drying shrinkage;
- aggregates that are susceptible to volume change due to moisture content will result in increased shrinkage; and
- units that have undergone at least one drying cycle will not undergo as much shrinkage in subsequent drying cycles (ref. 7).

Typical drying shrinkage coefficients range from 0.0002 to 0.00045 in./in. (mm/mm) or 0.24 to 0.54 in. (6.1 to 13.7 mm) in 100 ft (30.48 m).

Temperature Changes

Concrete masonry movement has been shown to be linearly proportional to temperature change. The coefficient of thermal movement normally used in design is 0.0000045 in./in./°F (0.0000081 mm/mm/°C) (ref. 2). Actual values may range from 0.0000025 to 0.0000055 in./in./°F (0.0000045 to 0.0000099 mm/mm/°C) depending mainly on the type of aggregate used in the unit. The actual change in temperature is, of course, determined by geographical location, wall exposure, and color.

As an example, a wall constructed during 70°F (21°C) weather and subjected to a minimum temperature of 0°F (-18°C) results in a shortening of about 0.38 in. (9.7 mm) in a 100 foot (30.48 m) long wall using the 0.0000045 in./in./°F (0.0000081 mm/mm/°C) coefficient.

Carbonation

Carbonation is an irreversible reaction between cementitious materials and carbon dioxide in the atmosphere that occurs slowly over a period of several years. Since there currently is no standard test method for carbonation shrinkage, it is suggested that a value of 0.00025 in./in. (mm/mm) be used. This results in a shortening of 0.3 in. (7.6 mm) in a 100 foot (30.48 m) long wall.

tek notes

ncma tek note 10-1a (continued)

Restraint

Differential Movement

Various building materials may react differently to changes in temperature, moisture or structural loading. Any time materials with different properties are combined in a wall system, a potential exists for cracking due to differential movement. With concrete masonry construction, two materials in particular should be considered: clay brick and structural steel.

Differential movement between clay brick and concrete masonry must be considered when the two are attached since concrete masonry has an overall tendency to shrink while clay brick masonry tends to expand. These differential movements may cause cracking, especially in composite construction and in walls that incorporate brick and block in the same wythe.

When clay brick is used as an accent band in a concrete masonry wall, or vice-versa, the differential movement of the two materials may result in cracking unless provisions are made to accommodate the movement. To reduce cracking, slip planes between the band and the surrounding wall. Horizontal reinforcement or more frequent control joints or a combination thereof can be used to control cracking. See Crack Control for Concrete Brick and Other Concrete Masonry Veneers (ref. 6) for more information on these approaches.

Excessive Deflection

As walls and beams deflect under structural loads, cracking may occur. Additionally, deflection of supporting members can induce cracks in masonry elements.

Structural Overload

All wall systems are subject to potential cracking from externally applied design loads due to wind, soil pressure or seismic forces. Cracking due to these sources is controlled by applying appropriate structural design criteria such as allowable stress design or strength design. These criteria are discussed in detail in Allowable Stress Design of Concrete Masonry and Strength Design of Concrete Masonry (refs. 1 and 9).

Settlement

Differential settlement occurs when portions of the supporting foundation subside due to weak or improperly compacted foundation soils. Foundation settlement typically causes a stair-step crack along the mortar joints in the settled area, as shown in Figure 1. Preventing settlement cracking depends on a realistic evaluation of soil bearing capacity, and on proper footing design and construction.

CRACK CONTROL STRATEGIES

In addition to the proper design strategies discussed above for structural capacity and differential movement, the following recommendations can be applied to limit cracking in concrete masonry walls.

Control Joints

Control joints are essentially vertical separations built into the wall to reduce restraint and permit longitudinal movement. Because shrinkage cracks in concrete masonry are an aesthetic rather than a structural concern, control joints are typically only required in walls where shrinkage cracking may detract from the appearance or where water penetration may occur. TEK 10-2B (ref. 4) provides much more detailed information on control joint details, types and locations.

Reinforcement to Limit Crack Width

In addition to external restraint, reinforcement causes some internal restraint within the wall. Reinforcement responds to temperature changes with corresponding changes in length; however, reinforcement does not undergo volumetric changes due to moisture changes or carbonation. Consequently, as the wall shrinks, the reinforcement undergoes elastic shortening (strain) which results in compressive stress in the steel. Correspondingly, the surrounding masonry offsets this compression by tension. At the point when the masonry cracks and tries to open, the stress in the reinforcement turns to tension and acts to limit the width of the crack by holding it closed.

Studies have shown that reinforcement, either in the form of joint reinforcement or reinforced bond beams, effectively limits crack width in concrete masonry walls. As indicated previously, as the level of reinforcement increases and as the spacing of the reinforcement decreases, cracking becomes more uniformly distributed and crack width decreases. For this reason, a minimal amount of horizontal reinforcement is needed when utilizing the NCMA recommended maximum control joint spacings (refs. 3 & 4).

Source: Reprinted in part with permission from NCMA.

Control Joints For Concrete Masonry Walls-Empirical Method, TEK 10-2B. National Concrete Masonry Association, 2001.

Disclaimer: NCMA and the companies disseminating this technical information disclaim any and all responsibility and liability for the accuracy and the application of the information contained in this publication.

Disclaimer: Northfield Block Company disclaims any and all legal liability or responsibility for the accuracy and the application of the information contained in this publication.

tek notes

ncma tek note 10-2b

The following information was taken in part from NCMA TEK note 10-2B. For more complete information please see the entire NCMA TEK note 10-2B at www.cordovastone.com, NCMA TEK note link.

Empirical Method for Control Joints in Concrete Masonry Walls

Concrete masonry is a popular construction material because its inherent attributes satisfy the diverse needs of both exterior and interior walls. While these attributes are the primary basis for concrete masonry's popularity, performance should not be taken for granted. Like all construction systems, design decisions significantly influence field performance of the concrete masonry wall system. Proper application of crack control measures, including control joints when required, can help ensure satisfactory performance of the concrete masonry.

Control joints are one method used to relieve horizontal tensile stresses due to shrinkage of the concrete masonry units, mortar, and when used, grout. They are essentially vertical separations built into the wall at locations where stress concentrations may occur. These joints reduce restraint and permit longitudinal movement.

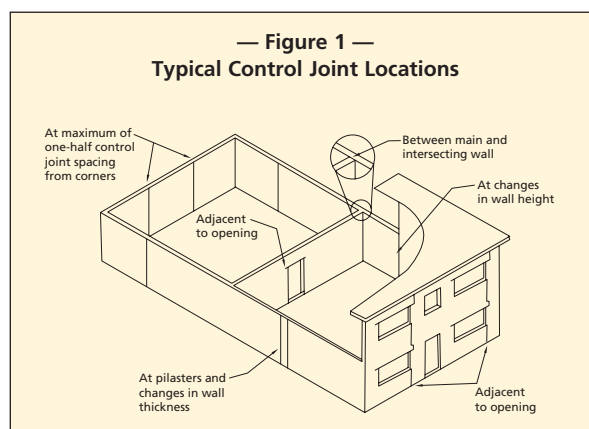
Control joints are typically only required in exposed concrete masonry walls, where shrinkage cracking may detract from the appearance of the wall. Shrinkage cracks in concrete masonry are an aesthetic, rather than a structural, concern. In addition, walls with adequate horizontal reinforcement may not require control joints, as the reinforcement effectively reduces the width of shrinkage cracks. Foundation walls traditionally do not include control joints due to concerns with waterproofing the joint to withstand hydrostatic pressure. Additionally, since foundation walls are subjected to relatively constant temperature and moisture conditions, shrinkage cracking in below grade walls tends to be less significant than in above grade walls.

This TEK focuses on cracking resulting from internal volume change of the concrete masonry. Potential cracking resulting from externally applied design loads due to wind, soil pressure, seismic forces or differential settlement of foundations is controlled by limiting the design stress in allowable stress design or by providing adequate strength when strength design is used. These design considerations are not covered here. Where external loads are an issue in combination with internal volume change, the design should consider the combined effects of these influences on cracking.

Control Joint Placement

When required, control joints should be located where volume changes in the masonry due to drying shrinkage, carbonation or temperature changes are likely to create tension in the masonry that will exceed its capacity. In practice, this can be difficult to determine, but several methods are presented in the following sections to provide guidance in locating control joints.

In addition, care should be taken to provide joints at locations of stress concentrations, such as (see Figure 1):



1. at changes in wall height,
2. at changes in wall thickness, such as at pipe and duct chases and pilasters,
3. at (above) movement joints in foundations and floors,
4. at (below) movement joints in roofs and floors that bear on a wall,
5. near one or both sides of door and window openings (generally, a control joint is placed at one side of an opening less than 6 ft (1.83 m) wide and at both jambs of openings over 6 ft (1.83 m) wide. Control joints can be away from the opening if adequate tensile reinforcement is placed above, below, and beside wall openings.),
6. adjacent to corners of walls or intersections within a distance equal to half the control joint spacing.

tek notes
ncma tek note 10-2b (continued)

Empirical Crack Control Criteria

For walls without openings or other points of stress concentration, control joints are used to effectively divide a wall into a series of isolated panels. Table 1 lists recommended maximum spacing of these control joints based on empirical criteria. This criteria has been developed based on successful, historical performance over many years in various geographical conditions. The empirical method is the most commonly used method and is applicable to most building types. An engineered method is presented in TEK 10-3 Control Joints for Concrete Masonry Walls – Alternative Engineered Method (ref. 1). It is generally used only when unusual conditions are encountered, such as dark colored units in climates with large temperature changes.

— Table 1 —
Recommended Control Joint Spacing for
Above Grade Exposed Concrete Masonry Walls

Distance between joints should not exceed the lesser of:

Length to height ratio	or ft (m)
1 1/2	25 (7.62)

Notes:

1. Table values are based on the use of horizontal reinforcement having an equivalent area of not less than 0.025 in./ft (52.9 mm/m) of height to keep unplanned cracks closed.
2. Criteria applies to all concrete masonry units.
3. This criteria is based on experience over a wide geographical area. Control joint spacing should be adjusted up or down where local experience justifies but no farther than 25 ft (7.62 m).

The provisions in this TEK assume that units used in the construction comply with the minimum requirements of ASTM C 90 Standard Specification for Loadbearing Concrete Masonry Units (ref. 2) and that a minimum amount of horizontal reinforcement is provided as indicated in Footnote 1 of Table 1. It is intended to provide the most straightforward guidelines for those cases where detailed properties of the concrete masonry are not known at the time of design. As indicated in Footnote 3 of Table 1, local experience may justify an adjustment to the control joint spacings presented in the table.

To illustrate these criteria, consider a 20 ft (6.10 m) tall warehouse with walls 100 ft (30.48 m) long. Table 1 indicates control joints spaced every 25 ft (7.62 m). In this example, the maximum spacing of 25 ft (7.62 m) governs over the maximum length to height ratio of 1 1/2 times 20 ft (6.10 m) or 30 ft (9.14 m). For walls containing masonry parapets, consider the parapet as part of the masonry wall below if it is connected by masonry materials such as a bond beam unit when determining the length to height ratio.

The control joint spacings of Table 1 have been developed based on the use of horizontal reinforcement to keep unplanned cracks closed as indicated in Footnote 3. The minimum area of reinforcement given, 0.025 in.2/ft (52.9 mm2/m) of height, translates to horizontal joint reinforcement spacing.

Source: Reprinted in part with permission from NCMA.

Control Joints For Concrete Masonry Walls-Empirical Method , TEK 10-2B. National Concrete Masonry Association, 2001.

Disclaimer: NCMA and the companies disseminating this technical information disclaim any and all responsibility and liability for the accuracy and the application of the information contained in this publication.

Disclaimer: Northfield Block Company disclaims any and all legal liability or responsibility for the accuracy and the application of the information contained in this publication.

tek notes
ncma tek note 10-4

The following information was taken in part from NCMA TEK note 10-4. For more complete information please see the entire NCMA TEK note 10-4 at www.cordovastone.com, NCMA TEK note link.

Crack Control for Concrete Brick and Other Concrete Masonry Veneers

Concrete masonry veneer is used to provide a beautiful, economical and highly durable exterior. The finished appearance of the wall can be altered by changing the unit size, unit or mortar color, as well as the masonry bond pattern. A wide range of surface textures is also available, such as split face, molded, striated, or “wormed,” which describes a series of random, twisted indentations. This TEK addresses crack control measures specifically developed for concrete masonry veneers to accommodate cracking resulting from internal volume change of the concrete masonry.

Crack Control Recommendations

Concrete masonry veneer units, like all concrete products, tend to decrease in volume as drying occurs. This potential shrinkage should be provided for in the design, detailing and construction to minimize shrinkage cracking. Shrinkage cracks in concrete masonry are an aesthetic, rather than structural, concern. Because veneers, by definition, are primarily aesthetic, crack control for veneers is often a high design priority.

While movement due to moisture change is the primary focus when addressing nonstructural movement in masonry walls, temperature changes can also cause reversible shrinkage and expansion. It should be noted that darker masonry units as well as those installed on southern and western exposures will experience larger daily temperature variations due to solar exposure, and hence may require more attention to adequately address wall movement.

Crack control measures for concrete masonry veneers are similar to those for other concrete masonry walls. In fact, conventional concrete masonry crack control measures, such as those in TEK 10-2B, Control Joints for Concrete Masonry Walls—Empirical Method (ref. 1), have been used successfully for concrete masonry veneers in many cases.

Crack control recommendations for concrete masonry veneers are summarized below and are described more fully in the following sections.

Crack Control Recommendations for Concrete Masonry Veneers¹

- Control joints: maximum panel length to height ratio of 1½, and maximum spacing of 20 ft (6.1 m) and where stress concentrations occur
- Joint reinforcement: at 16 in. (406 mm) o.c.
- Mortar: Type N

1. Adjust as needed to suit local conditions and experience

Unit Characteristics

Conventional concrete masonry crack control recommendations, such as those presented in TEK 10-2B, Control Joints for Concrete Masonry Walls—Empirical Method (ref. 1), have been developed based primarily on the performance of walls constructed using larger hollow concrete masonry units, such as the common 8 x 8 x 16 in. (203 x 203 x 406 mm).

Because the units used for veneers are often produced specifically for veneer applications, the physical properties may differ from those of larger concrete masonry units. These differences can impact how the concrete masonry veneer moves and reacts to changes in moisture content and temperature. Hence, crack control recommendations have been tailored specifically for concrete masonry veneers.

Ensuring that the concrete masonry units are relatively dry when laid and remain dry during construction will also help minimize initial drying shrinkage of the wall.

Techniques to minimize water absorption by the veneer will also help limit subsequent movement due to moisture loss. Some manufacturers have had success in reducing veneer movement by incorporating integral water repellents in the veneer units during manufacture. When used in the units and added to the mortar on site, integral water repellents help minimize water absorption. See TEK 19-1 Water Repellents for Concrete Masonry Walls (ref. 2) for additional information on integral water repellents.

Mortar

Using a lower compressive strength mortar helps ensure that when cracks do occur, they occur in the mortar joint rather than through the unit. Type N mortar is often specified for concrete brick veneers, because it tends to be more flexible than other mortar Types. ASTM C 270, Standard Specification for Mortar for Unit Masonry (ref. 6) recommends Type O mortar for exterior above grade nonloadbearing walls where the masonry is unlikely to be frozen when saturated, or unlikely to be subjected to high winds or other significant lateral loads.

Joint Reinforcement

Horizontal joint reinforcement effectively limits crack width by holding any cracks that form tightly together. For this reason, joint reinforcement, spaced at 16 in. (406 mm) on center, is recommended in concrete masonry veneers, although acceptable performance has been achieved without joint reinforcement in some cases.

To protect joint reinforcement from corrosion, Specification for Masonry Structures (ref. 9), requires at least 5/8 in. (16 mm) of mortar cover between the joint reinforcement and the weather-exposed face of the masonry.

When both joint reinforcement and control joints are used, the joint reinforcement should be discontinued at the control joint to avoid restricting horizontal movement at the joint.

tek notes

ncma tek note 10-4 (continued)

Control Joints

Control joints are vertical separations built into the veneer and located where stress concentrations are likely to cause cracks. The joints allow unrestrained longitudinal movement, thereby relieving horizontal tensile stress that may develop due to shrinkage.

Ideally, a control joint should be located wherever masonry volume changes are likely to cause cracking. Because this can be difficult to determine in practice, the following are general guidelines for locating control joints.

For veneer panels without openings or other points of stress concentration, control joints are used to effectively divide a wall into a series of panels. In general, it is desirable to keep these panels as square as possible to minimize cracking between the control joints. When this is not possible, the panel length to height ratio should be limited to 1 qs, with a maximum control joint spacing of 20 ft (6.1 m). Control joint spacing should be adjusted where local experience justifies.

Whenever possible, control joints should be located where stress concentrations occur, such as: at changes in wall height or thickness; at inside corners; within 4 in. (102 mm) of outside corners; and near one or both sides of large door and window openings. Note that every opening does not necessarily require control joint(s), particularly in buildings with many small openings (see Residential Construction section, below). Note that control joints should line up with the end of the lintel, rather than be placed through the lintel, as shown in Figure 2.

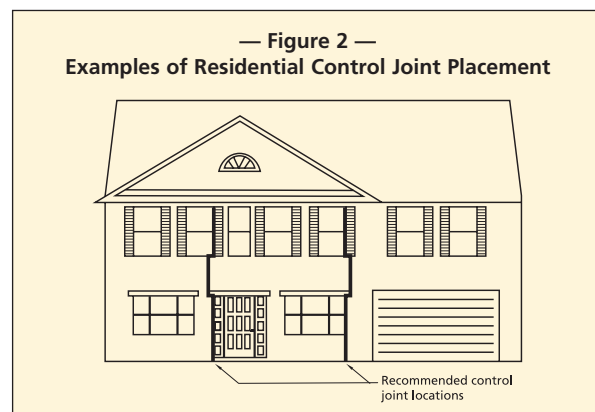
Veneers are typically attached to a structural backup with adjustable ties or anchors (for tie and anchor types, design criteria and spacing requirements, see TEK 12-1A, Anchors and Ties for Masonry (ref. 8)). Ties should be placed within 12 in. (305 mm) of the control joint. When flexible ties are used, control joint locations need not align with control joints in the backup when a masonry backup wythe is used, although it is considered good practice to align them. If the veneer is rigidly bonded to a masonry backup, however, control joints should extend through the backup and veneer in the same location.

Residential Construction

Control joint recommendations for larger buildings typically call for a control joint at each window, and on both sides of the window if the window is over 6 ft (1.8 m) wide (ref. 1). However, this may be difficult to accomplish in residential construction because of the large number of relatively small openings. One strategy is to use control joints to divide the wall into panels that are no longer than they are high. Because residential buildings typically have fewer stories than commercial, this often results in closer control joint spacings than are common in commercial buildings.

Figure 2 shows a residential facade with recommended control joint locations. As an alternative to the right-hand joint shown in Figure 2, a control joint could be placed through or to one side of the garage door. Horizontal joint reinforcement placed at 16 in. (406 mm) o.c. will help compensate for not placing control joints at every window opening.

In residential construction, veneers are most often supported by wood frame construction. Detailed requirements for masonry veneer over wood frame are described in TEK 3-6A, Concrete Masonry Veneers.



Source: Reprinted in part with permission from NCMA.

Crack Control For Concrete Brick And Other Concrete Masonry Veneers, TEK 10-4. National Concrete Masonry Association, 2001.

Disclaimer: NCMA and the companies disseminating this technical information disclaim any and all responsibility and liability for the accuracy and the application of the information contained in this publication.

Disclaimer: Northfield Block Company disclaims any and all legal liability or responsibility for the accuracy and the application of the information contained in this publication.

unit specifications

Part 1: General

Submittal

Submit product literature, unit shop drawings, certification, test reports and full size sample(s) of each color selected.

Quality Assurance

All high density pre-finished concrete masonry units shall be Cordova Stone masonry units manufactured by Northfield Block Company. All units shall conform to ASTM C90 and shall have either a *Rockface*, *Groundface*, *Textureface* or *Chiselface* finish as shown on the drawings.

Field Constructed Mock-up: Construct a sample panel, no less than 4' x 4', of units of each color and size to be used in the project. The cleaning agent and method should also be determined and applied at the time the sample panel is constructed.

Delivery, Storage, and Handling

Cordova Stone units shall be delivered to the jobsite banded on wood pallets. Each exposed ground face shall be protected by a plastic protective layer. Each edge of the cube shall be protected by a pre-molded edge protector. Each cube shall be covered with a clear plastic wrap. Pallets should be stored in single stacks on level ground and covered with a waterproof covering (e.g., tarpaulins) to protect the units from inclement weather. Units must be handled carefully to avoid breakage and damage to the finished surfaces.

Project/Site Conditions and Handling

Cover walls each day after installation to keep open walls protected and dry.

Part 2: Products

Product Name

Cordova Stone Masonry Units

Manufacturer

Northfield Block Company
One Hunt Court
Mundelein, Illinois, 60060
847 949 3600 (PH)
847 816 9072 (FAX)

Part 3: Execution

Laying Masonry Walls

Lay units using the best concrete masonry practices. Install only quality units; reject all defective units. Align units level, plumb, and true with uniform, carefully tooled 3/8" wide joints on the finished side of the wall. Draw blocks from two or more pallets at a time during installation. Use a water-repellent mortar additive, following the manufacturer's instructions, for all exterior walls.

Installation

Lighting: Provide adequate lighting for masonry work by placing all lighting a reasonable distance from the wall for even illumination. Do not use trough lighting.

Cutting: Make all unit cuts, including those for bonding, holes, boxes, etc., with motor-driven masonry saws, using either an abrasive or diamond blade. Cut neatly for best appearance.

Inspection

The facing shall be free from chips, cracks, crazes or any other imperfection that would detract from the overall appearance of the finished wall when viewed from a distance of fifteen (15) feet at right angles to the wall with normal lighting.

Flashing of Masonry Work

Install flashing at locations shown in the plans and in strict accordance with the details and the best masonry flashing practices.

Weep Holes and Vents

Install weep holes and vents at proper intervals (24" O.C.) at courses above grade, above flashing, and at any water stops (24" O.C.) over windows, doors, and beams.

Cleaning

Keep walls clean daily during installation using brushes, rags and burlap squares. Do not allow excess mortar lumps or smears to harden on the finished surfaces. Remove green mortar with burlap or a dry cloth. Harsh cleaning methods after walls have been erected may mar the surface of the units.

Final Cleandown

No acid or acid-based solutions shall be used in the cleaning of Cordova Stone units. A detergent masonry cleaner shall be used following the manufacturer's instructions and the surface shall be thoroughly rinsed with clean water.

Maintenance

Cordova Stone units, properly installed and cleaned, need virtually no maintenance other than routine cleaning with standard commercial grade cleaning agents. Graffiti, paint or dye stains may need special cleaning methods and products. Contact manufacturer for specific cleaning recommendations.

Installation Recommendations

- Cavity wall construction is recommended for exterior walls, with proper flashing, venting and weep holes.
- A complementary or matching mortar color is recommended when using Cordova Stone units.
- A water-repellent mortar additive is highly recommended for all exterior walls.
- Control joint spacing should be approximately 20' – 25' maximum. Located at approximately 4' from corners, all inside corners, at wall piers and at window or large openings.
- Continuous horizontal joint reinforcement is recommended in the exterior wythe every 16" or every course with 12" and 16" high units.

Limitations

- The facing is not intended for use as an impervious surface.
- Acid solutions should not be used as a cleaning agent or in direct contact with the facing.

For additional details visit
www.cordovastone.com



test
report:



September 30, 2014

Northfield Block Company
One Hunt Court
Mundelein, IL 60060

REPORT OF TESTS

SUBJECT: Physical Analysis of Architectural Cast Stone

PROJECT: Northfield Block – Cordova Stone

SPECIFICATION: ASTM C 90-14, "Specification for Loadbearing Concrete Masonry Units"

TEST METHODS: ASTM C 140-14, "Test Methods for Sampling and Testing Concrete Masonry Units and Related Units."
ASTM C 426, "Test Method for Linear Drying Shrinkage of Concrete Masonry Units"

MATERIALS: Delivered to NTL in August 2014

NTL PROJECT #: 14-1191(C1)

PAGE: 1 of 2

TEST RESULTS

Dates of Testing: August and September 2014

ASTM C 140 – Physical Analysis of Concrete Masonry Units

Specimen ID	A	B	C	Average
Average Dimensions (in)				
Height	3.6	3.6	3.6	3.6
Width	7.6	7.6	7.6	7.6
Length	12.0	12.0	12.0	12.0
Linear Drying Shrinkage (%)	0.042	0.033	0.031	0.035
Density (lbs/ft³)	133.6	133.6	134.7	134.0
Absorption (lbs/ft³)	7.3	7.2	7.3	7.3
Absorption (%)	5.4	5.4	5.4	5.4
*Compressive Load (lbs)	26,500	27,220	27,000	26,910
*Compressive Strength (psi)	6,630	6,810	6,750	6,730

**specimens cut down to 1.0 x 2.0 x 4.0-in specimens for testing*

The above-listed test results from the Cordova Stone units met or exceeded their corresponding requirements as set forth in ASTM C 90-14.

Respectfully submitted,

NELSON TESTING LABORATORIES

Mark R. Nelson
President

Nelson Testing Laboratories is certified and inspected by AASHTO and CCRL under ASTM C1093.

material safety data sheet

Identity: Cordova Stone Concrete Masonry Products

Section 1:

Manufacturer's Name: Northfield Block Company
 Address: One Hunt Court
 Mundelein, IL 60060

Emergency Telephone Number: (847) 949 3600
 Date Prepared: 03-18-2005

Section 2: Hazardous Ingredients/
Identify Information

Hazardous Components: Silica, Crystalline Quartz (respirable)

Specific Chemical Identity: Silicon Dioxide SiO₂ (CAS 14808-60-7)

Common Names: Silica, Flint, Sand, Crystalline Free Silica, Quartz, Ground Silica, Silica Flour

OSHA PEL: Exposure to airborne crystalline silica shall not exceed an 8-hour time-weighted average limit as stated in 29 CFR 1910.1000 Table Z-1-A, Air Contaminants, specifically:

Silica, Crystalline Quartz (respirable Dust) $\frac{10\text{mg} / \text{m}^3}{\% \text{Quartz} + 2}$

ACGIH TLV:

Crystalline Quartz

TLV – TWA = 0.1 0.05 mg/M³ (respirable Dust)

See Threshold Limit Value and Biological Exposure Indices for 2000-2001

American Conference of Governmental Industrial Hygienists

Other Limits Recommended: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration = 0.05 mg/M³ (respirable free silica) as determined by a full-shift sample up to a 10-hour work day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica.

Section 3: Physical/Chemical Characteristics

Boiling Point: N/A

Vapor Pressure: N/A

Vapor Density: N/A

Solubility in Water: Not Soluble

Appearance and Odor: Odorless Solid

Specific Gravity (H₂O = 1): N/A

Melting Point: N/A

Evaporation Rate

(Butyl Acetate = 1): N/A

Section 4: Fire and Explosion Hazard Data

Flash Point (Method Used): N/A

Flammable Limits: N/A LEL: N/A UEL: N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

Section 5: Reactivity Data

Stability:

Unstable: ☐ Stable: ☒

Conditions to Avoid: None

Incompatibility (Materials to Avoid): None

Hazardous Decomposition or By-products: None

Hazardous Polymerization:

May Occur: ☐ Will Not Occur: ☒

Conditions to Avoid: None

Section 6: Health Hazard Data

Route(s) of Entry:

Inhalation? Yes **Skin?** No **Ingestion?** Yes

Health Hazards (Acute and Chronic): Dry sawing or grinding of concrete masonry products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). Acute or rapidly developing silicosis may occur in a short period of time in heavy exposure. Silicosis is a form of disabling pulmonary fibrosis, which can be progressive and may lead to death.

Carcinogenicity:

NTP: Yes

The National Toxicology Program (NTP) published its Ninth Annual Report on Carcinogens which concludes that "silica, crystalline (respirable)" is known to be a human carcinogen. The NTP conclusion is based on sufficient evidence for the carcinogenicity of respirable crystalline silica from studies in humans indicates a causal relationship between exposure and increasing lung cancer rates in workers exposed to crystalline silica was reviewed in IARC, 1997; Brown et. al., Horizdot, et. al., 1997.

IARC Monographs? Yes

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans (volume 68, 1997) concludes that there is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals, and that there is limited evidence of the carcinogenicity of crystalline silica to humans. IARC Group 1 Carcinogenic to humans.

Signs and Symptoms of Exposure: Undue breathlessness, wheezing, cough and sputum production.

Medical Conditions Generally Aggravated by Exposure:

Pre-existing lung diseases such as emphysema or asthma: Pulmonary function may be reduced by inhalation of respirable crystalline silica. Also, lung scarring produced by such inhalation may lead to a progressive massive fibrosis of the lung which may aggravate other pulmonary conditions and diseases and which increases susceptibility to pulmonary tuberculosis. Progressive massive fibrosis may be accompanied by right heart enlargement, heart failure, and pulmonary failure. Smoking aggravates the effects of exposure.

Emergency and First Aid Procedures: For sand in eyes during dry sawing or grinding operations, immediately flush generously with water for 15 minutes. If irritation persists, seek medical attention. For gross inhalation, remove person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.

Section 7: Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: When dry sawing or grinding, use dustless systems for handling, storage and clean-up so that airborne dust does not exceed the PEL. Use adequate ventilation and dust equipment. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery or equipment. Maintain, clean and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing which has become dusty. See also control measures in Section 8.

Waste Disposal Method: Normal breakage may be picked up and discarded as common waste. Residue from dry sawing and grinding operations should be disposed of in accordance with federal, state and local regulations.

Precautions to be Taken in Handling and Storing: None

Other Precautions: See OSHA Hazard Communication Rule 29 CFR Sections 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, and 1928.21, and state and local worker or community “right to know” laws and regulations. We recommend that smoking be prohibited in all areas where respirators must be used. *Warn Your Employees (and your customers – users in case of resale) by posting, and other means, of the hazard and OSHA precautions to be used. Provide training for your employees about the OSHA precautions.*

See also American Society for Testing and Materials (ASTM) Standard Practice E1132-86, “Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust.”

Section 8: Control Measures

Respiratory Protection: The following chart specifies the type of respirators which may provide respiratory protections for crystalline silica.

RESPIRATORY PROTECTION FOR CRYSTALLINE SILICA

Condition Particulate Concentration	Minimum Respiratory Protection*
Up to 5 x PEL	Any dust respirator.
Up to 10 x PEL	Any dust respirator, except single-use or quarter-mask respirator. Any fume respirator or high efficiency particulate filter respirator. Any supplied-air respirator. Any self-contained breathing apparatus.
Up to 50 x PEL	A high efficiency particulate filter respirator with a full facepiece. Any supplied-air respirator with a full facepiece, helmet, or hood. Any self-contained breathing apparatus with a full facepiece.
Up to 500 x PEL	A powered air-purifying respirator with a high efficiency particulate filter. A type C supplied-air respirator operated in a pressure-demand or other positive pressure or continuous-flow mode.
Greater than 500 x PEL or entry and escape from unknown concentrations	Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive mode. A combination respirator which includes a Type C supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure continuous-flow mode and an auxiliary self contained breathing apparatus operated in pressure-demand or other positive pressure mode.

*Only NIOSH-approved or MSHA-approved equipment should be used. (see 29 CFR 1910.134).
See also ANSI Standard Z88.2-1980 “Practices for Respiratory Protection.”

Ventilation:

Local Exhaust:

When dry sawing or grinding concrete masonry products, use sufficient local exhaust to reduce the level of respirable dust to the PEL. See ACGIH “Industrial Ventilation, A Manual of Recommended Practice,” latest edition.

Mechanical: See “Other Precautions” under Section 7.

Special: See “Other Precautions” under Section 7.

Other: See “Other Precautions” under Section 7.

Protective Gloves: Optional

Eye Protection: When sawing or grinding concrete masonry products, wear protective shield or tight fitting goggles (safety glasses).

Other Protective Clothing or Equipment: Optional

Work/Hygienic Practices: Avoid creating and breathing dust. See “Other Precautions” under Section 7.

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful health effects, which may be caused by exposure to airborne dust particles created by dry sawing or grinding of our products. Customers/users of concrete masonry products must comply with all applicable health and safety laws, regulations and orders.

supplemental information

Discussing OSHA PEL Change

How does the OSHA Permissible Exposure Limit (PEL) of $10/(\% \text{Quartz} + 2)$ compare to the American Conference of Government Industrial Hygienists' (ACGIH) old Threshold Limit Value (TLV) of 0.1 mg/m³?

Most OSHA PELs are set values for a single air contaminant such as cadmium or a related family of contaminants such as the polyaromatic hydrocarbons (PAHs). The PEL for respirable dust containing quartz differs considerably in that it is a function that varies between a value of 0.1 mg/m³ (when the material is pure quartz) up to a value approaching the Particulates Not Otherwise Regulated (PNOR) OSHA PEL of 5 mg/m³. The PEL does not apply below 1% quartz, so the highest it can get is 3.3%. (When the concentration drops below 1%, the PNOR PEL of 5 mg/m³ applies.) It can be shown mathematically that when this PEL function for respirable dust containing quartz is divided into the TWA exposure, the resulting standardized concentration (or exposure severity) is the sum of the standardized concentrations for the separate quartz and PNOR exposures. This derivation requires only simple algebra, but is available in the literature [Frank J. Hearl, "Mixture Formula Justified," Letters to the Editor, AIHA Journal 57, June 1996, p 575 and also in Frank J. Hearl, "Guidelines and Limits for Occupational Exposure to Crystalline Silica," in Silica and Silica-Induced Lung Diseases, V. Castranova, V. Vallyathan, and W. E. Wallace Eds., CRC Press Inc. pp.15-22.] [Note that the derivations count the quartz twice because it is not subtracted from the dust exposure in determining the PNOR exposure. If the quartz were subtracted, the quartz standard of 0.098 mg/m³ would result, which is only very slightly more restrictive than the 0.1 mg/m³ proposed in the (now vacated) Final Rule.] Through the same approach, it is easy to derive the PEL for the mixture of respirable dust containing quartz and cristobalite [$PEL = 10/(\% \text{Quartz} + 2(\% \text{Cristobalite}) + 2)$]. The use of these PELs achieves the same result as using the mixture calculation specified in 29 CFR 1910.1000 for exposures to substances having an additive effect on the body or target organ system.

Emergency Telephone Number: (847) 816-9000

Date Prepared: 03-18-2005

installation specifications

Cordova Stone vs. ASTM C-90 Specifications

	ASTM C-90 Specifications	Cordova Stone
Absorption (lbs./cu. foot) per ASTM C-140	13 Maximum	5.6
Compressive Strength per ASTM C-140	1900 Minimum	5,870 Average
Density (lbs./cu. foot) per ASTM C-140	125 + Normal Weight	130
Shrinkage per ASTM C-426	0.065	0.012
Freeze Thaw Durability per ASTM C-1262	10% Maximum	< 1%

Installation Specifications

4" horizontal joint reinforcing wire installed every 16" O.C.

When using 12" or 16" tall units, install every course.

Control Joints should be no more than 20' apart.

It *does not* have to continue through the brick in some applications.

If less than 4' tall the control joint spacing should be 12'–14'.

Location of Control Joint:

- Approximately 4'–6' from corners
- All inside corners, especially at wall piers
- At the corner/side of any large opening or window (if openings are over 6' locate at both sides)
- At wall height changes

Mortar to be used should be "Type N" mortar or "Type O"

Type S mortar is too strong and may create hairline shrinkage cracks.

Use an integral water repellent mortar additive in the mortar.

All Cordova Stone units have this admixture throughout the unit.

Putting the mortar additive in the mortar will increase bond strength and complete the water repellent wall system.

Rake and caulk all head joints for Window Sills and Coping units.

Flashing and drip edge should be installed under all sills & coping units.

faq's Frequently Asked Questions

How are Cordova Stone units manufactured?

The Cordova Stone natural look is achieved through combining crushed limestone aggregates, silica, cement and other densifiers. This admixture is carefully molded with automatic machinery. The units are then cured for a minimum of 28 days.

One or more faces are split, then ground, polished or machine cut to expose the natural aggregates to create a uniquely colored limestone effect, or in the case of the Earth Blend Collection, a blended two-tone color. These molded units are then customized according to our customer's requirements. Cutting these units is easy because the all-natural aggregates are dispersed through the entire unit, ensuring the same consistent color all the way through.

Can I grind or split Cordova Stone corners or ends at the jobsite?

Yes. Pre-finished Cordova Stone units may be cut, ground or split at the jobsite. Please contact customer service for detailed information before proceeding.

Can Cordova Stone masonry units be patched? Can chips be repaired?

Yes, Cordova Stone masonry units can be patched for very small chips just like repairing stone. Many scratches and scuffs will become almost unnoticed when the wall is clean. Units with large imperfections should not be installed and should be replaced. A matching color Cordova Stone patch kit is available. Please call Northfield Block for more information.

Can I return Cordova Stone masonry units that I do not use?

No. Cordova Stone masonry units are custom manufactured. We require a signed sales contract before we proceed with any order. Cordova Stone masonry units that are ordered in excess must be taken and cannot be returned. We strongly recommend that extra care be taken with "take offs" to avoid this problem.

What happens if muratic acid is used on Cordova Stone masonry units?

The danger in using muratic acid on Cordova Stone masonry surfaces is that even a small amount of the solution may burn or permanently mar the face of the unit.

How can I be sure it will not be chipped and scuffed in shipment and jobsite handling?

We take great care in the manufacturing, packaging and shipping of Cordova Stone units to protect the finished surfaces. The units are placed on sturdy wooden pallets and covered with a protective layer. Cordova Stone units should be handled as finished material on the jobsite to avoid scuffing, chipping or other damage.

Can any mason install this product?

Any mason can install this product. However, masons who are not experienced in laying architectural units may do a poor job installing Cordova Stone. Conversely, masons experienced in laying architectural units who follow best masonry practices can lay masonry units expertly. Unfortunately, no matter how well Cordova Stone units are manufactured, if they are not installed properly, the appearance of the project may be disappointing.

Can Cordova Stone colors be matched to other types of masonry?

No, Because Cordova Stone units are produced using select natural limestone aggregates, and this is what produces its unique look, any additional pigments may adversely affect its unique texture.

Can Cordova Stone units be used in flooring or paving?

No. Cordova Stone units are designed as wall material and are not suitable for flooring or paving. However, Northfield Block Company does make a line of pavers and retaining walls suitable for architectural landscape design.

What special shapes are available?

Cordova Stone specializes in a large assortment of special shapes. Cordova Stone can be easily customized using a set of our standard sizes (see the Shapes Section). Just send us a drawing or sketch of the special shape and let us demonstrate our capabilities in producing a one-of-a-kind architectural unit. Cordova Stone units are available in sizes up 8"x16"x 24". We would love to create something special for you.

faq's (continued)

Is there any special mortar required?

Colored mortar that complements Cordova Stone colors can create a seamless effect. Type N mortar is recommended as noted in the product specifications. For more information on mortars see NCMA TEK note 9-1A. Please also note an integral water repellent is recommended for all exterior mortar applications.

What special precautions should be taken in the handling, storage and installation of the product?

Please refer to the Installation Section or visit www.cordovastone.com.

How does Cordova Stone rate on fire ratings and thermal R-Values?

The National Concrete Masonry Association has published standards for thermal values and fire ratings for masonry units. See NCMA TEK notes 6-1A and 7-1A, respectively.

Can Cordova Stone be used with wood or metal stud back-up walls?

Yes, it doesn't matter what back-up system is used, Cordova Stone is most often used as a veneer.

Do you need special anchors or a wall tieback system?

No, due to the limited size of units, typical brick veneer wall ties may be used. Always use horizontal joint reinforcement within the Cordova Stone veneer wall.

When cleaning, will dark colored brick installed above Cordova Stone stain the lighter colored Cordova Stone unit?

No, there has never been a problem with staining, but always remember to follow carefully manufacturers' recommendations.

Does Cordova Stone come in pieces larger than a 16"x24" face dimension?

No, 16" x 24" is the largest single Cordova Stone size unit as of Spring 2006. The product line will continue to expand, so contact your local dealer to verify the sizes.

Can Cordova Stone be used for interior applications?

Yes, Cordova Stone is typically used as an exterior veneer, but is definitely an option for interior stone wall designs.

Should you use horizontal joint reinforcement?

All masonry units should use some type of horizontal joint reinforcement. When installing Cordova Stone it is recommended every 16" o.c., every course when laying 12" or 16" tall units, every door and every window.

How far apart should the control joints be spaced?

This is one of the most critical issues when designing a masonry wall. Control joints should be no more than 25' apart. Placement of the joints is just as important. They should be located near corners, at openings, at wall height changes and at piers. When Cordova Stone is installed less than 8' high on a wall, control joint spacing should be reduced to approximately 16' apart.

How does Cordova Stone compare in price to other similar products on the market?

There are many factors to consider when determining the in-wall costs. Cordova Stone is very versatile and the most economical product for the amount of shape variations available to you.

Where is Cordova Stone available?

It is manufactured in Morris, Illinois and is distributed nationally through dealers and manufacturer reps in every state. Cordova Stone has also been shipped to Panama and the islands of St. Martin. There are no limits to where Cordova Stone will go!

Corporate Headquarters:



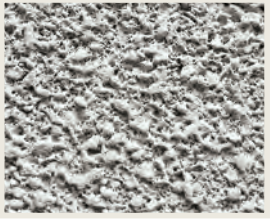

Northfield Block Company
An Oldcastle Company
One Hunt Court
Mundelein, IL 60060
(847) 949-3600
(847) 816-9062 Fax
www.northfieldblock.com

Manufactured By:

Northfield Block Company
3400 Bungalow Rd
Morris, IL 60450
(800) 358-3003 Toll-Free
(815) 941-0688 Fax

Colors & Textures

Natural Collection

	<i>Groundface</i>	<i>Rockface</i>	<i>Textureface</i>	<i>Chiselface</i>
<i>Alabaster</i>				
<i>Buff</i>				
<i>Graphite</i>				
<i>Limestone</i>				
<i>Midnight</i>				

Earthblend Collection

			
<i>Mountain Blend</i>	<i>Desert Blend</i>	<i>Canyon Blend</i>	<i>Woodland Blend</i>



ONE HUNT COURT
MUNDELEIN, IL 60060
847-949-3600
www.northfieldblock.com