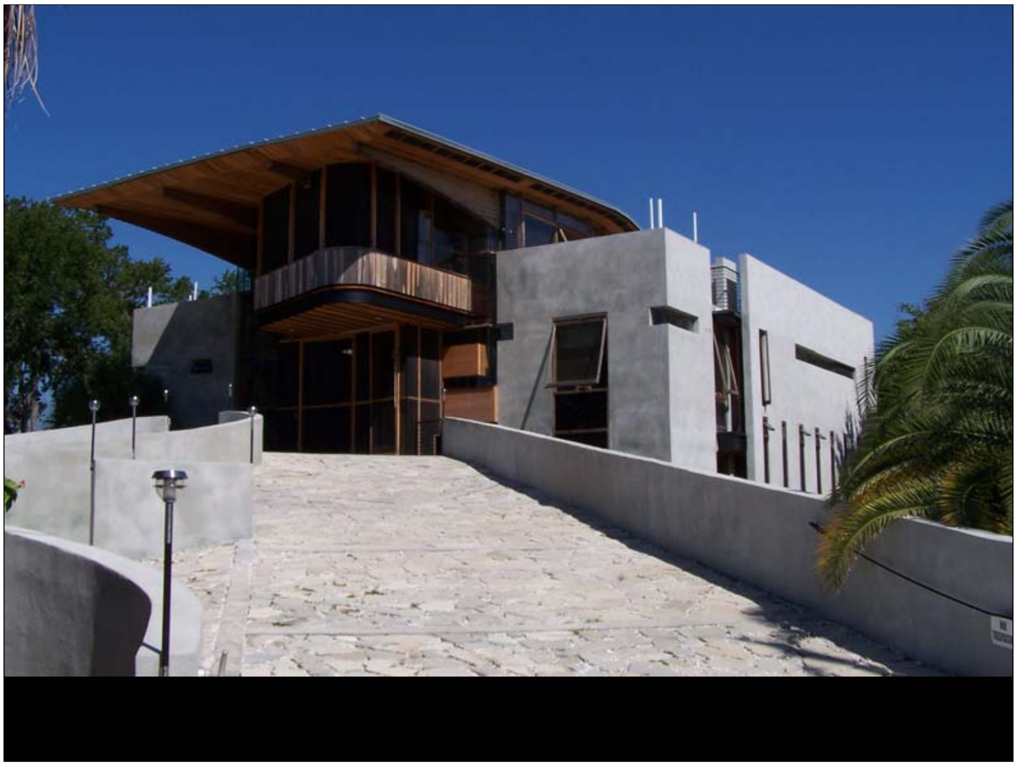
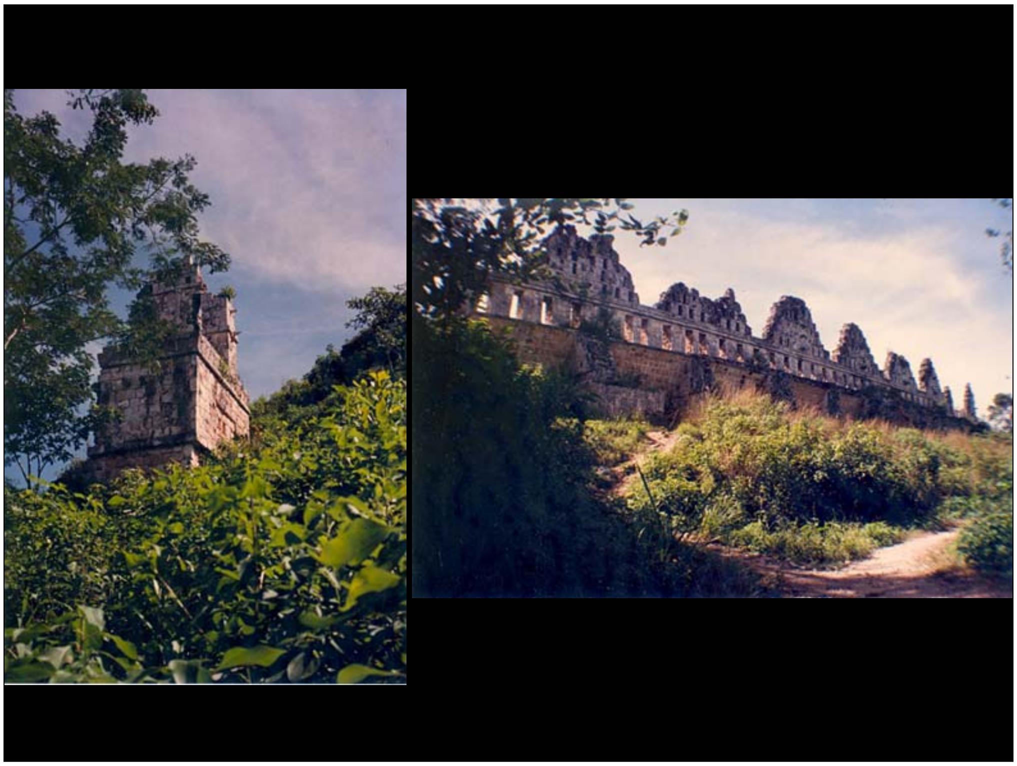

Masonry and Concrete
systems and concepts

Masonry. Mayan ruins, circa 2500BC. Varying levels of craftsmanship depending on the height of the empire. At the peak is precision, toward the end, less so.

Chichetzen Itza random stone floor carvings and precision level with low technology and high labor.

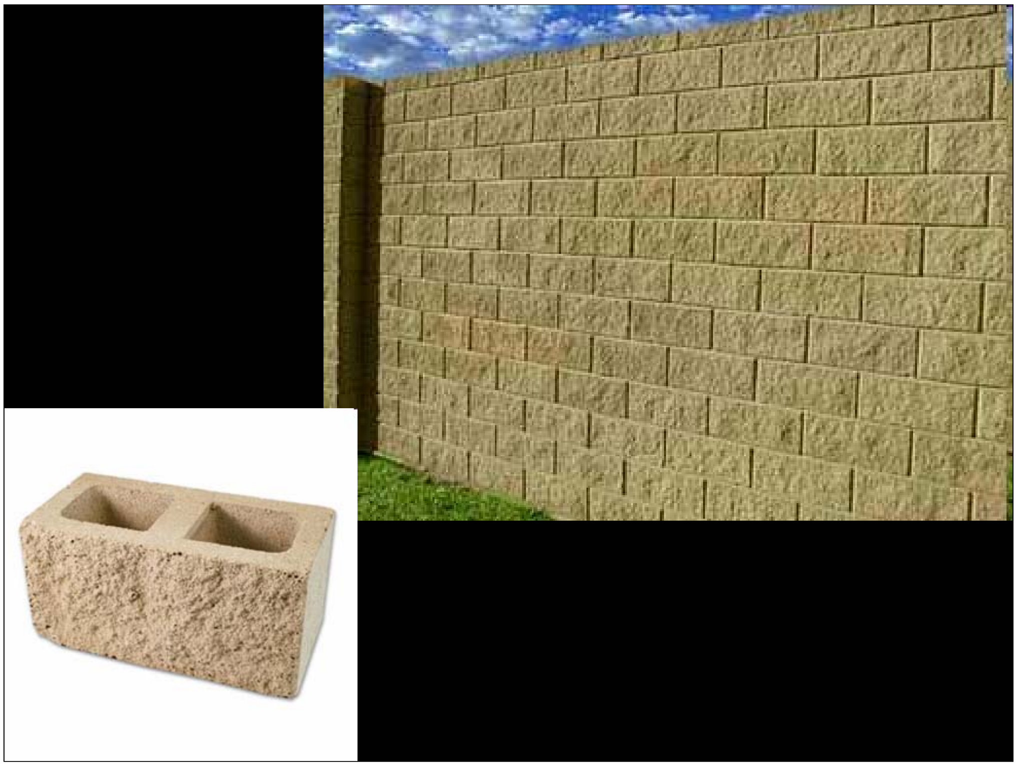


Chichen Itza. Scale and variety of forms. Random stone sizes, lack of mortar.

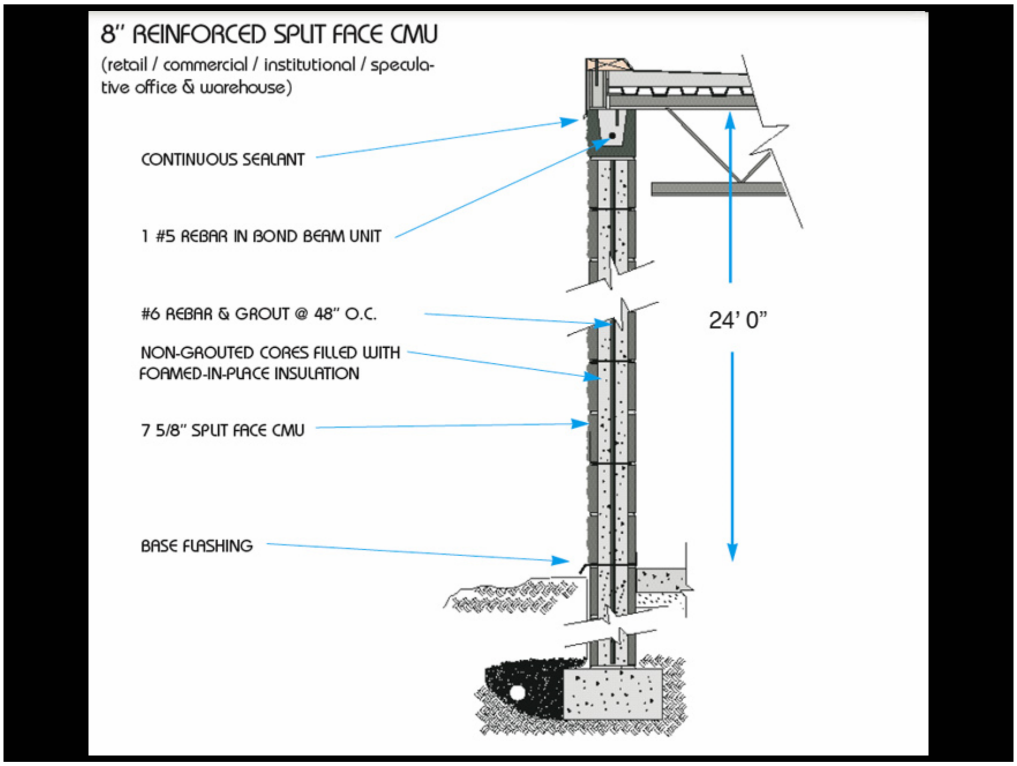


Uxmal – relationship to site, transparency

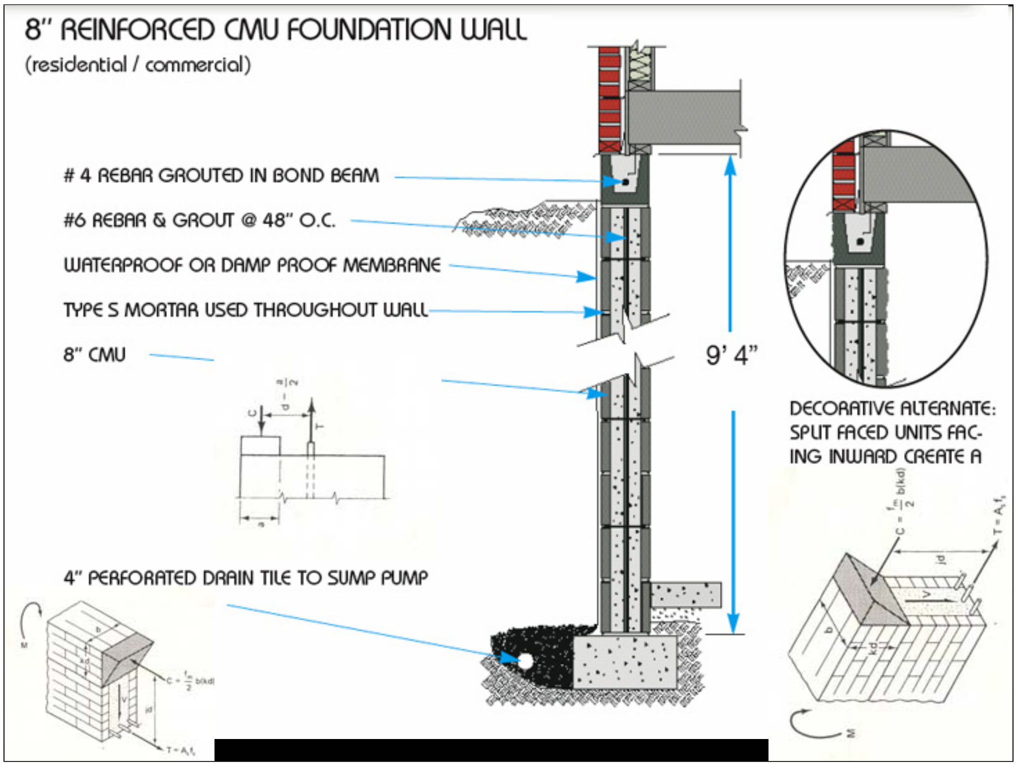
Edzna – texture, uniqueness of stone. Carving, time, labor intensive.



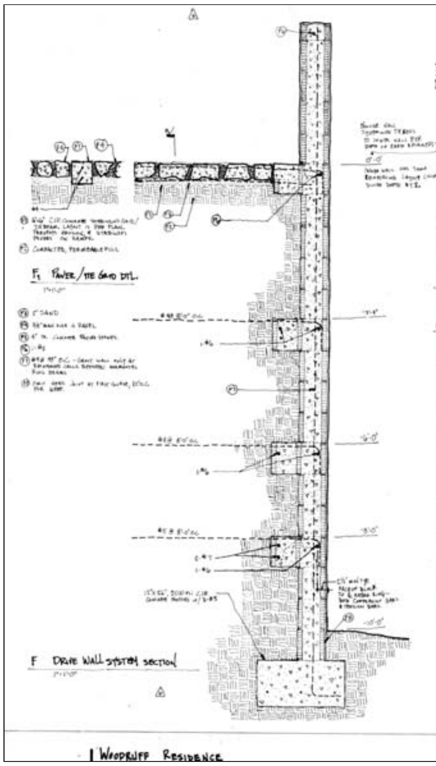
http://www.google.com/imgres?imgurl=http://www.blockwall.org/images/split-face-block.jpg&imgrefurl=http://www.blockwall.org/&h=265&w=354&sz=19&tbnid=aqpYJ8dZ36QrcM:&tbnh=91&tbnw=121&prev=/images%3Fq%3Dsplit%2Bfaced%2Bblock&usg=__5fJkDbDnEHjflK98RtKeTvaYjYo=&ei=JRZyS4OBEY6vtgeIn72FCg&sa=X&oi=image_result&resnum=4&ct=image&ved=0CBIQ9QEwAw

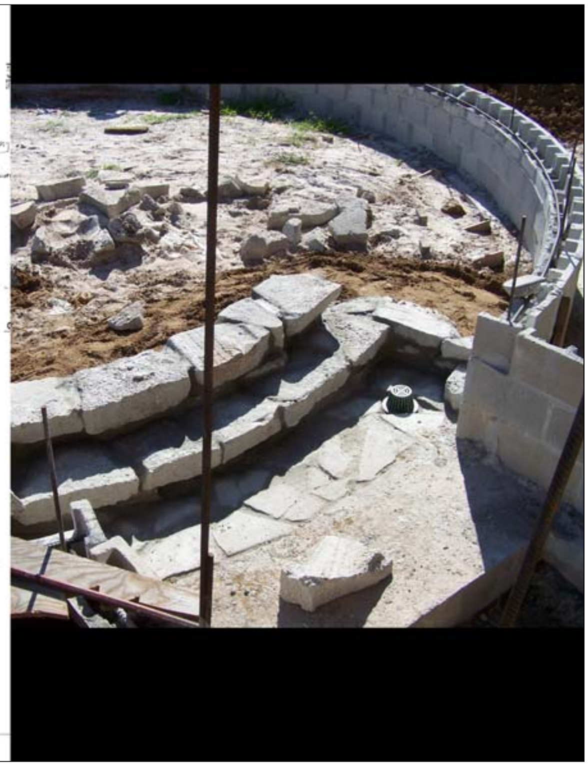


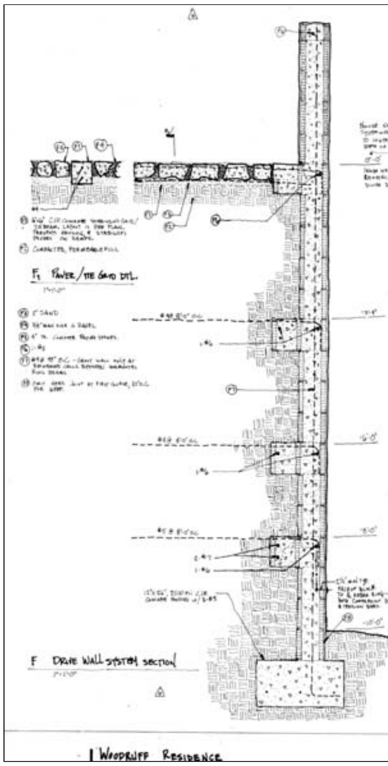
8" REINFORCED SPLIT FACE CMU
(retail / commercial / institutional / specula-tive office & warehouse)
CONTINUOUS SEALANT
1 #5 REBAR IN BOND BEAM UNIT
#6 REBAR & GROUT @ 48" O.C.
NON-GROUTED CORES FILLED WITH FOAMED-IN-PLACE INSULATION
7 5/8" SPLIT FACE CMU
BASE FLASHING
24' 0"

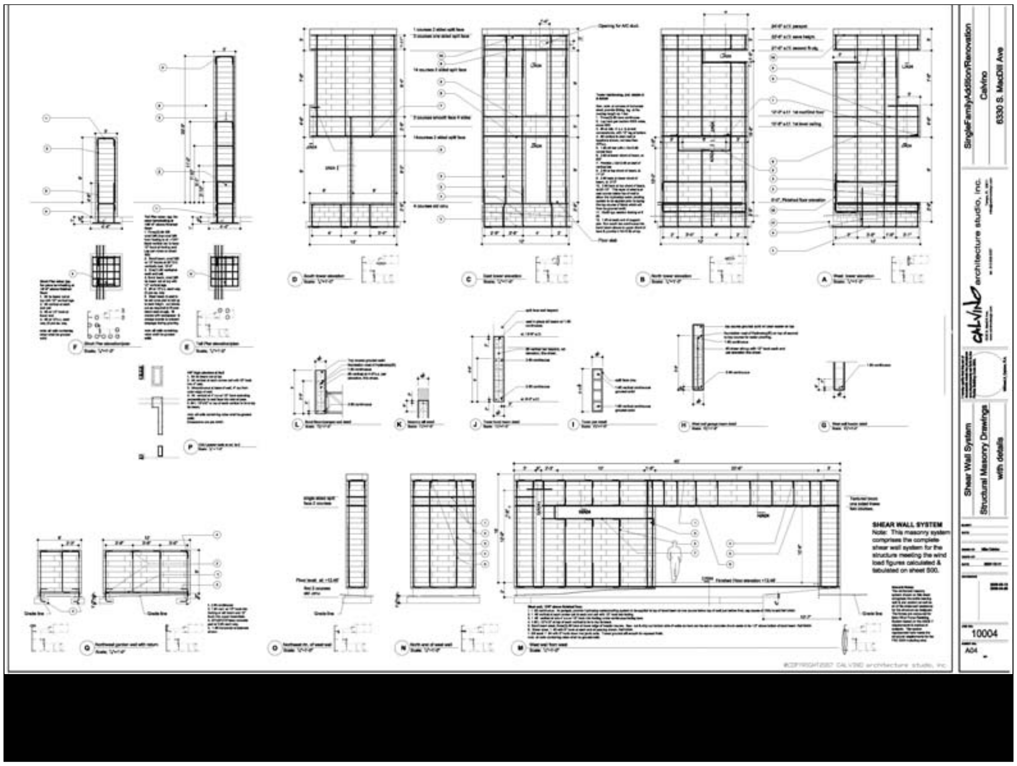


http://www.maconline.org/tech/design/thinksystems/block_foundation_wall/block_foundation_wall.html

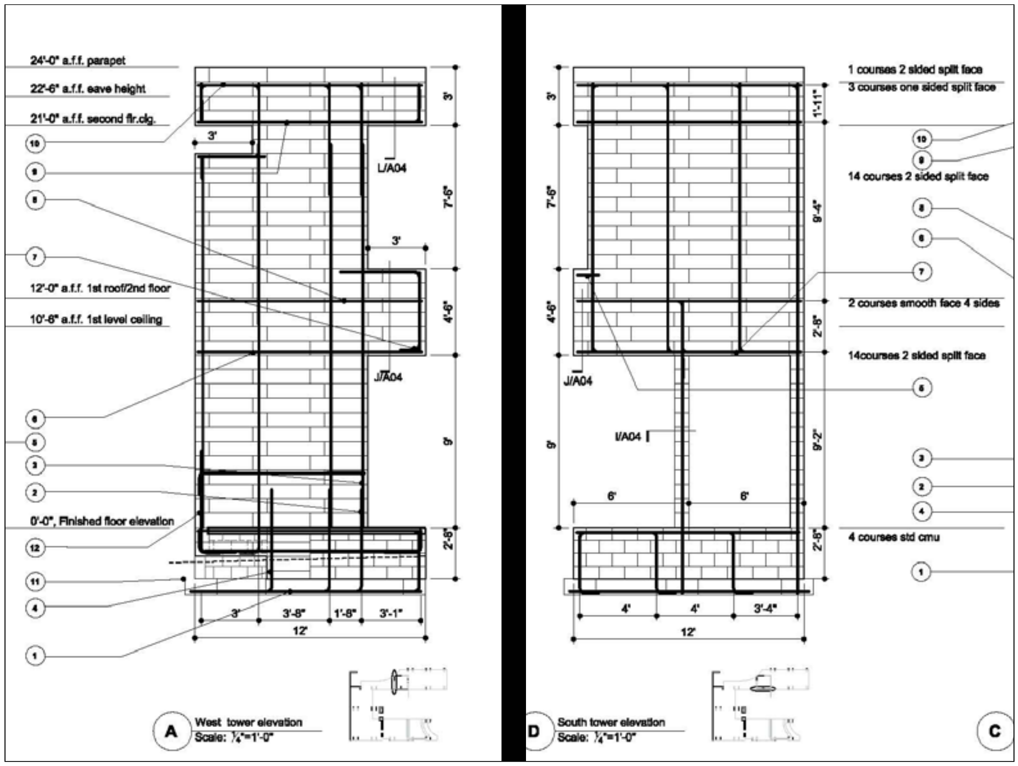

F DRIVE WALL SYSTEM SECTION
WOODRUFF RESIDENCE

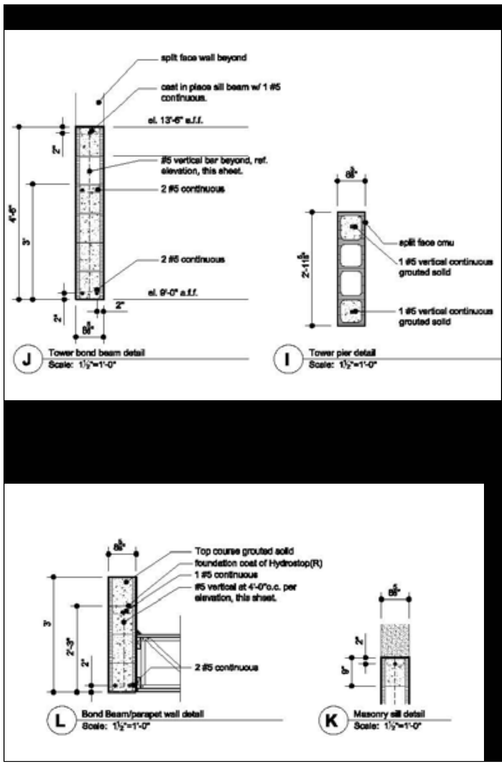


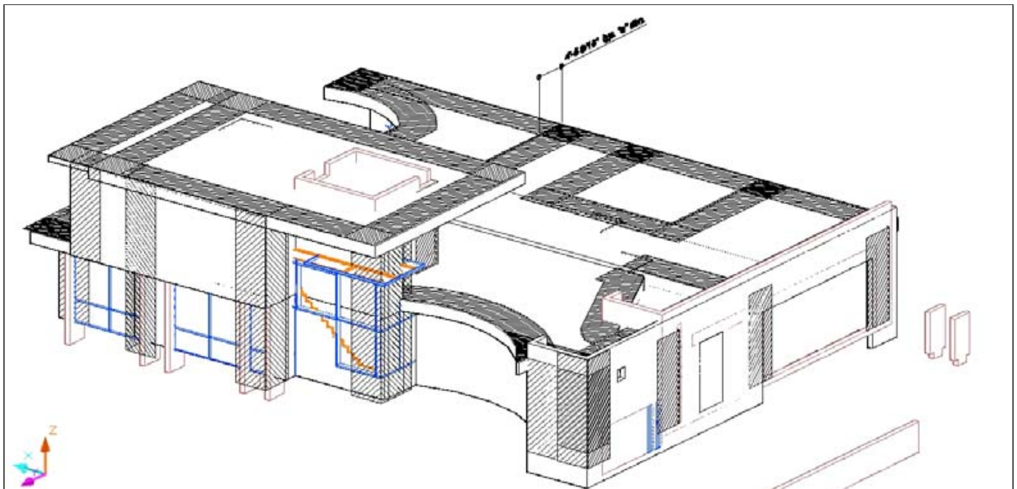

F1 PAVER/TIE GRID DTL.
F DRIVE WALL SYSTEM SECTION
WOODRUFF RESIDENCE



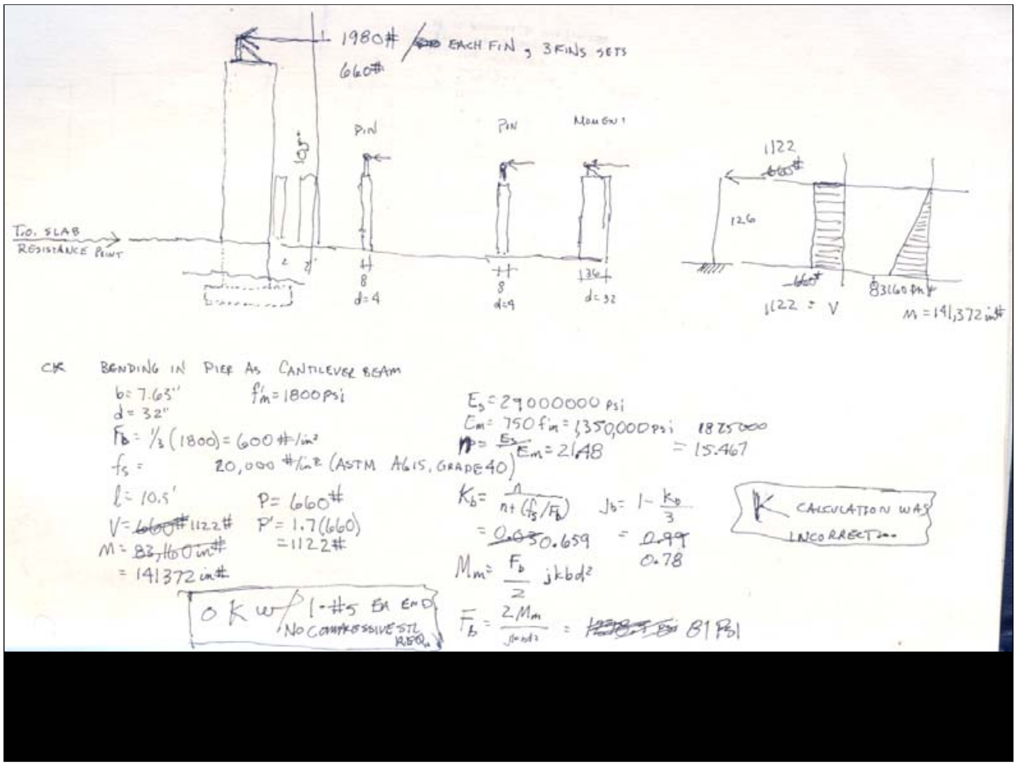
SHEAR WALL SYSTEM
Note: This masonry system comprises the complete shear wall system for the structure meeting the wind load figures calculated & tabulated on sheet S00.
SingleFamilyAddition/Renovation
Calvino
6330 S. MacDill Ave
architecture studio, inc.
Shear Wall System
Structural Masonry Drawings
with details
10004
A04

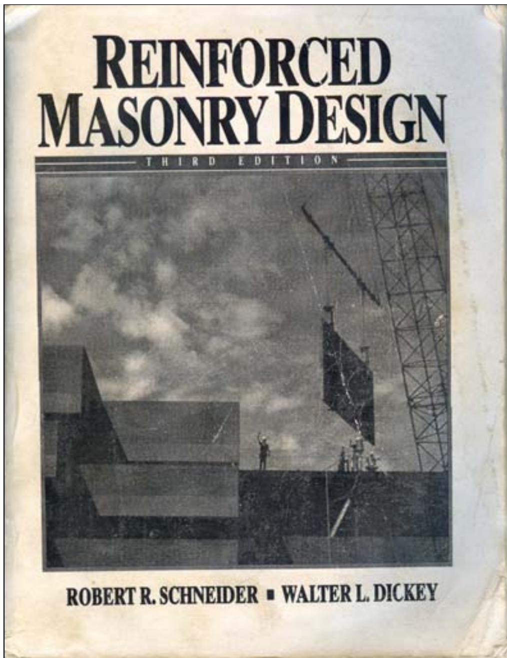

24'-0" a.f.f. parapet
22'-6" a.f.f. eave height
21'-0" a.f.f. second flr.clg.
12'-0" a.f.f. 1st roof/2nd floor
10'-6" a.f.f. 1st level ceiling
0'-0", Finished floor elevation
L/A04
J/A04
3'
3'
7'-6"
4'-6"
9'
2'-6"
3'
3'-8"
1'-8"
3'-1"
12'
A
West tower elevation
Scale: ¼"=1'-0"
1 courses 2 sided split face
3 courses one sided split face
14 courses 2 sided split face
2 courses smooth face 4 sides
14courses 2 sided split face
4 courses std cmu
J/A04
I/A04
1'-11"
9'-4"
2'-8"
9'-2"
2'-8"
6'
6'
4'
4'
3'-4"
12'
D
South tower elevation
Scale: ¼"=1'-0"
C

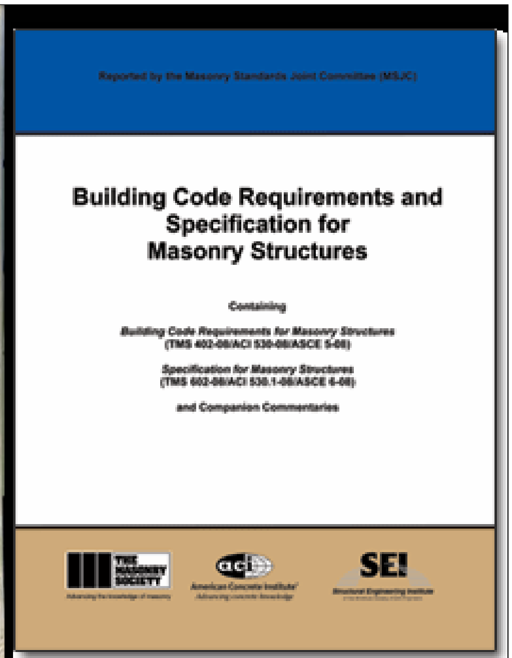

split face wall beyond
cast in place sill beam w/ 1 #5 continuous.
el. 13'-6" a.f.f.
#5 vertical bar beyond, ref. elevation, this sheet.
2 #5 continuous
2 #5 continuous
el. 9'-0" a.f.f.
J
Tower bond beam detail
Scale: 1½"=1'-0"
split face cmu
1 #5 vertical continuous grouted solid
1 #5 vertical continuous grouted solid
I
Tower pier detail
Scale: 1½"=1'-0"
Top course grouted solid
foundation coat of Hydrostop(R)
1 #5 continuous
#5 vertical at 4'-0"o.c. per elevation, this sheet.
2 #5 continuous
L
Bond Beam/parapet wall detail
Scale: 1½"=1'-0"
K
Masonry sill detail
Scale: 1½"=1'-0"



External pressure coeffecient	C_p or GC_{pf}	p.43	6-4	see below									
							Design Pressures						
		units		value	units								
velocity pressure	6.7	psf											
$q=.00256K_z(IV)^2$	q_{0-15ft}	psf		**31.33440**	psf								
	$q_{16-20ft}$			**33.17760**	psf								
	$q_{21-25ft}$			**34.65216**	psf								
	$q_{26-30ft}$			**36.12672**	psf								
	$q_{31-35ft}$			**38.33856**	psf								
							Main Wind Force Resisting System						
Part 1 pressures for design of the main frame		p.48	6-4										
windward surface - wind direction northeast to southwest		positive	negative										
External pressure coeffecients (GC_p)	**caseA**	**1**	**2**	**3**	**4**	**1E**	**2E**	**3E**	**4E**				
		0.4	-0.69	-0.37	-0.29000	0.61	-1.07000	-0.53	-0.43				
	caseB	**1**	**2**	**3**	**4**	**5**	**6**	**1E**	**2E**	**3E**	**4E**	**5E**	**6E**
		-0.45	-0.69	-0.37	-0.45000	0.4	-0.29000	-0.48	-1.07	-0.53	-0.48	0.61	-0.4
	a	**1.2**	**4.8**	**3**									
	2a	**6**											
CaseA	**caseA**												
$p=q(G_fC_p-q(GC_{pi})$	p_{0-15ft}	5.161903718	-24.27380711	-15.63213054	-13.47171	10.833004	-34.53579805	-19.952969	-17.25244				
	p_{20ft}	7.200072	-28.884512	-18.24768	-15.59847	14.286368	-41.472	-28.536096	-20.23834				
	p_{25ft}	7.6234752	-30.1473792	-19.058688	-16.28652	14.9004288	-43.3152	-24.603034	-21.13782				


1980# / EACH FIN, 3 FINS SETS
660#
PIN
PIN
MOMENT
1122
T.O. SLAB
RESISTANCE POINT
126
d=4
d=4
d=32
1122 = V
M = 141,372 in#
CK BENDING IN PIER AS CANTILEVER BEAM
b = 7.63"
d = 32"
f'm = 1800 psi
Fb = 1/3 (1800) = 600 #/in²
fs = 20,000 #/in² (ASTM A615, GRADE 40)
Es = 29000000 psi
Em = 750 f'm = 1350,000 psi 1875000
n = Es/Em = 21.48 = 15.467
l = 10.5'
P = 660#
P' = 1.7(660) = 1122#
V = 1122#
M = 141372 in#
Kb = n / (n + (fs/Fb))
= 0.659
Jb = 1 - Kb/3
= 0.78
K CALCULATION WAS INCORRECT...
Mm = Fb/2 jkbd²
Fb = 2Mm / jkbd² = 81 PSI
OK w/ 1-#5 EA END
NO COMPRESSIVE STL REQ'D


REINFORCED
MASONRY DESIGN
THIRD EDITION
ROBERT R. SCHNEIDER ▪ WALTER L. DICKEY


Reported by the Masonry Standards Joint Committee (MSJC)
Building Code Requirements and
Specification for
Masonry Structures
Containing
Building Code Requirements for Masonry Structures
(TMS 402-08/ACI 530-08/ASCE 5-08)
Specification for Masonry Structures
(TMS 602-08/ACI 530.1-08/ASCE 6-08)
and Companion Commentaries
THE MASONRY SOCIETY
American Concrete Institute
SEI
Structural Engineering Institute

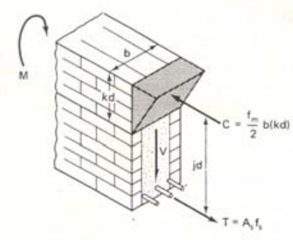


FIGURE 6-1 Internal force system for a cracked system.

The assumption that the masonry carries no tensile stresses implies a cracked section. This sometimes leads to erroneous conclusions. For instance, where the

The principle of the transformed section is resorted to in analyzing the internal mechanics at a section. Figure 6-2 shows the straight-line stress and strain distribution patterns assumed to exist in the cracked section. From the internal force system shown in Figure 6-1, assuming that equilibrium obtains throughout, the necessary design and analysis formulas are developed. As previously noted, it is assumed that all the masonry on the tensile side of the neutral axis has cracked and is therefore

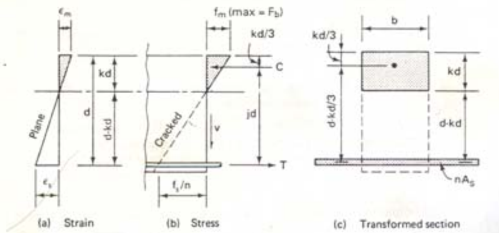
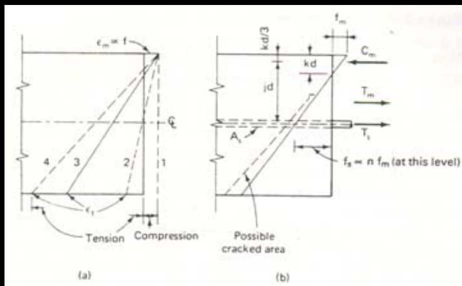
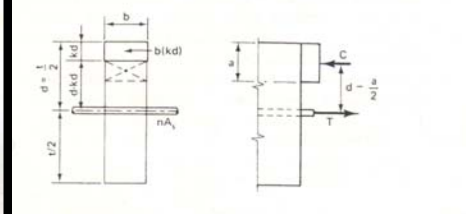


FIGURE 6-2 Stress/strain patterns for cracked section design assumption.





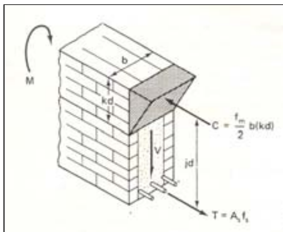


FIGURE 6-1 Internal force system for a cracked system.

This expression for k can be used in analyzing the moment capacity of a beam with a given cross section for which the modular ratio, n, and the steel ratio, p, are known, or for calculating unit stresses in the steel and masonry when a known moment is applied. It cannot be used in design, since p is usually unknown.

The total compression force is computed as $C = b(kd)(f_m/2)$ and the total tensile force $T = A_s f_s$. Equilibrium dictates, of course, that these two forces must be numerically equal, and the moment of the couple that they comprise can be expressed in terms of the tensile force T; thus

$$M_s = T(jd) = A_s f_s jd \qquad \boxed{\text{Steel moment}} \quad (6\text{-}2)$$

or

$$M_s = pbdf_s jd$$

and the steel stress then becomes

$$f_s = \frac{M}{A_s jd} \qquad \boxed{\text{Steel stress}} \quad (6\text{-}2a)$$

Taking moments about T gives

$$M_m = Cjd = b(kd)\frac{f_m}{2}(jd) = \frac{f_m}{2}jkbd^2 \qquad \boxed{\text{Masonry moment}} \quad (6\text{-}3)$$

from which the masonry stress becomes

$$f_m = \frac{2M}{bd^2jk} = \frac{M}{bd^2}\frac{2}{jk} \qquad \boxed{\text{Masonry stress}} \quad (6\text{-}3a)$$

[redacted]

A typical wall design problem entails the determination of the amount required for a given wall cross section. In this situation, two possibilities themselves:

1. p is governed by f_s allowable (which typically is the case); then

$$\text{trial } A_s = \frac{M}{f_s jd} \qquad \text{Assume } j = 0.9\text{; then verify}$$

and

$$p = A_s/bd$$

Now solve for

$$k = \sqrt{2pn + (pn)^2} - pn \quad \text{and} \quad j = 1 - \frac{k}{3}$$

Check $f_m = \frac{M}{bd^2} \times \frac{2}{jk} \leq F_b$. If true, then f_s remains equal to f_s allowable and trial A_s becomes the actual A_s.

2. p is governed by F_b. In this case,

$$M = \frac{F_b}{2}jkbd^2$$

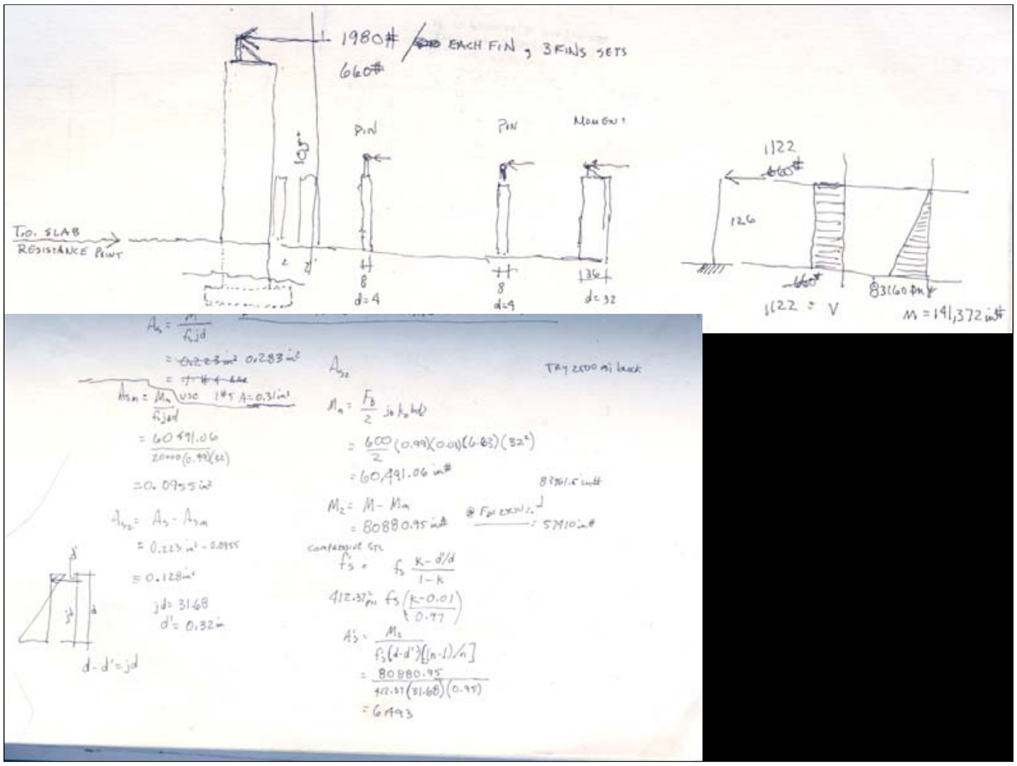
or

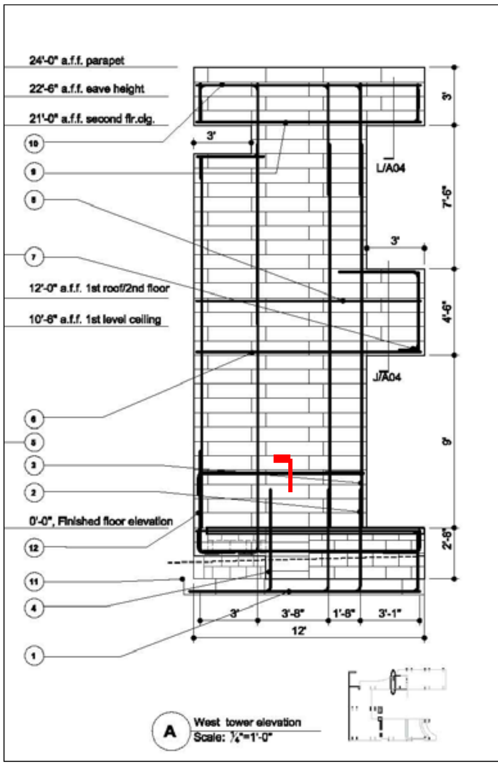
$$jk = \frac{2M}{F_b bd^2} = \text{a calculated numerical value}$$

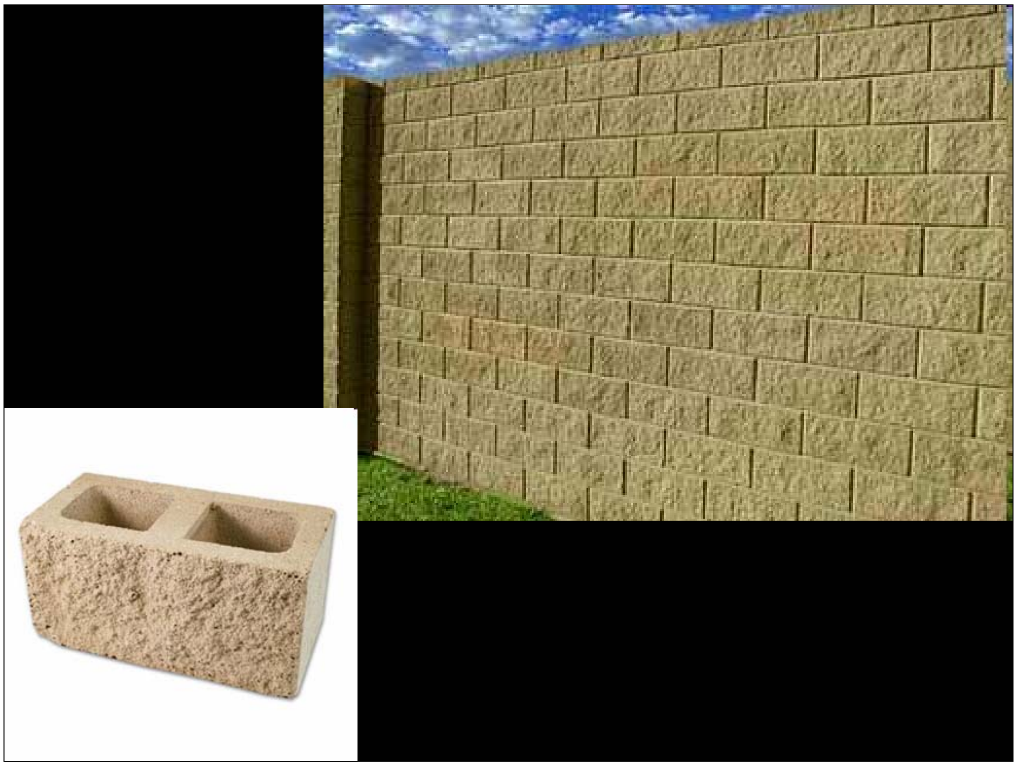
Since

$$j = 1 - \frac{k}{3}, \qquad jk = k - \frac{k^2}{3}$$

[redacted]


1980# / EACH FIN, 3 FINS SETS
660#
PIN
PIN
MOMENT
T.O. SLAB
RESISTANCE POINT
1122
126
1122 = V
M = 141,372 in#


24'-0" a.f.f. parapet
22'-6" a.f.f. eave height
21'-0" a.f.f. second flr.clg.
12'-0" a.f.f. 1st roof/2nd floor
10'-6" a.f.f. 1st level ceiling
0'-0", Finished floor elevation
10
9
8
7
6
5
3
2
12
11
4
1
L/A04
J/A04
3'
7'-6"
4'-5"
9'
2'-6"
3'
3'-8"
1'-8"
3'-1"
12'
A
West tower elevation
Scale: ¼"=1'-0"



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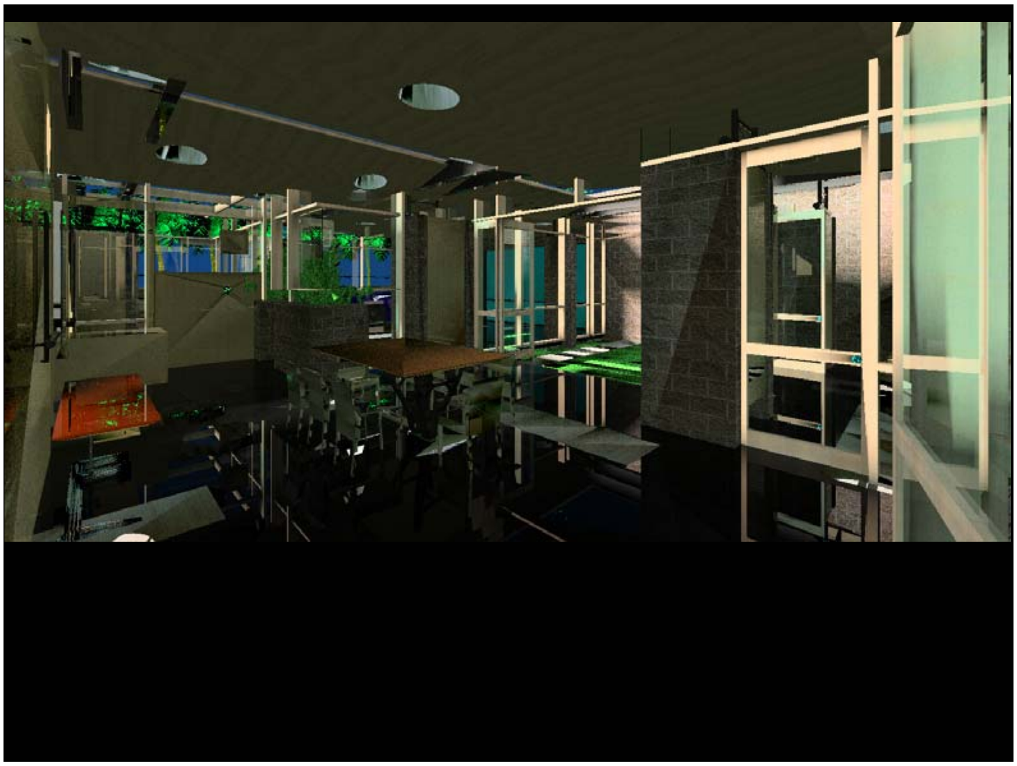
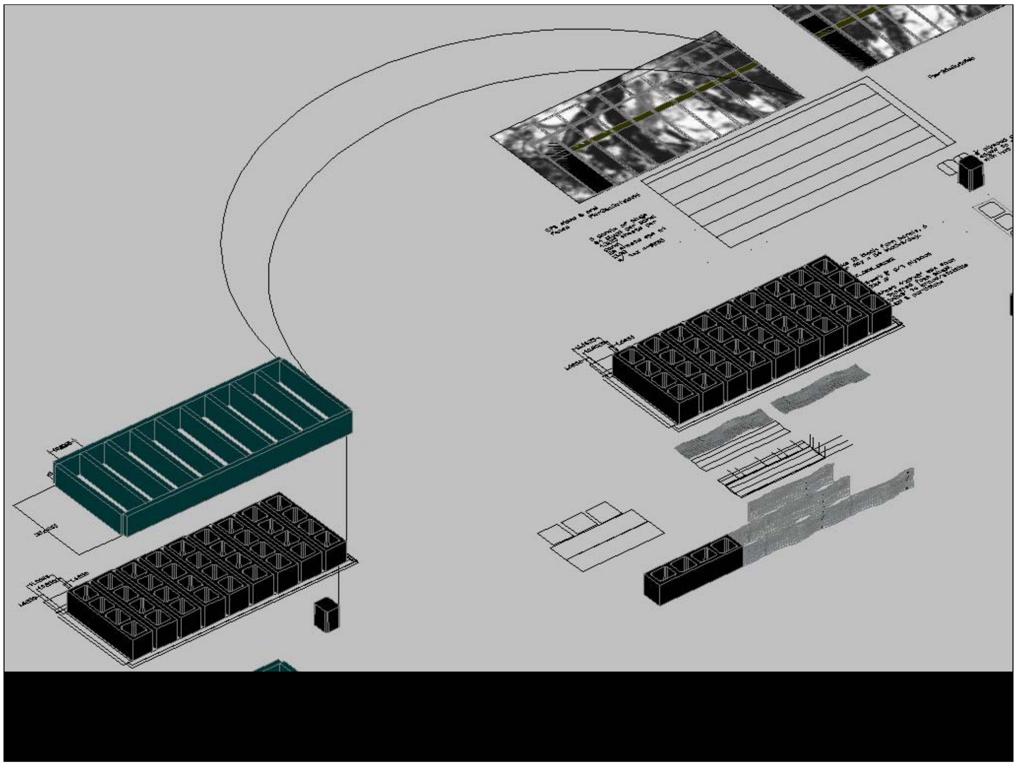
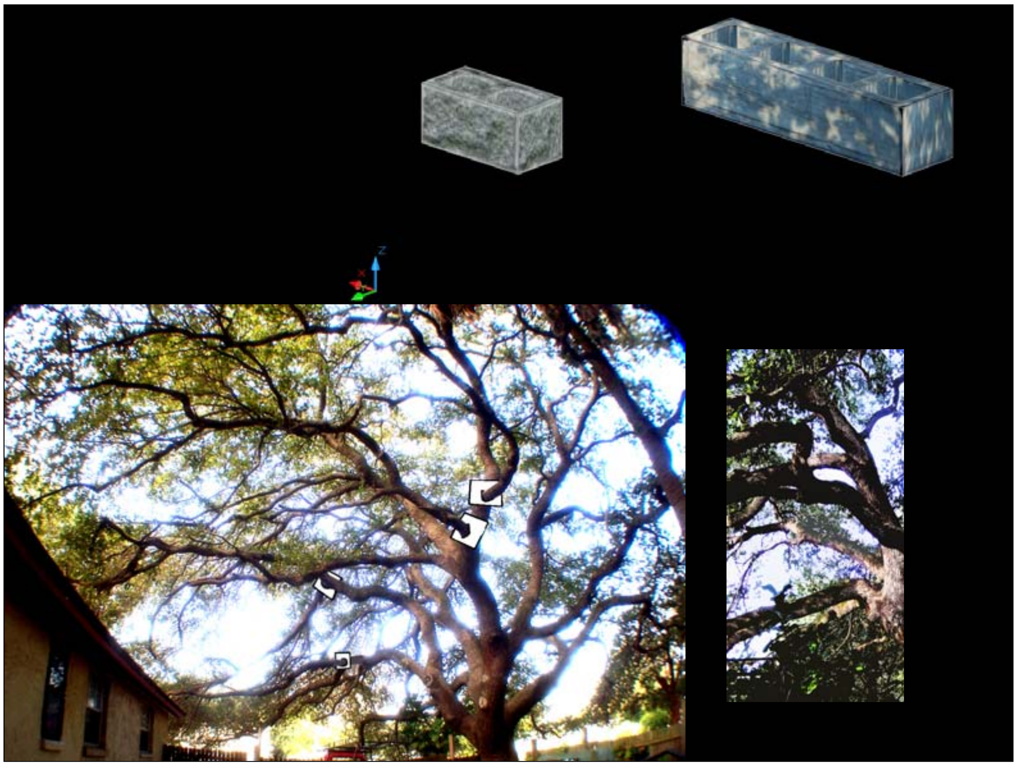
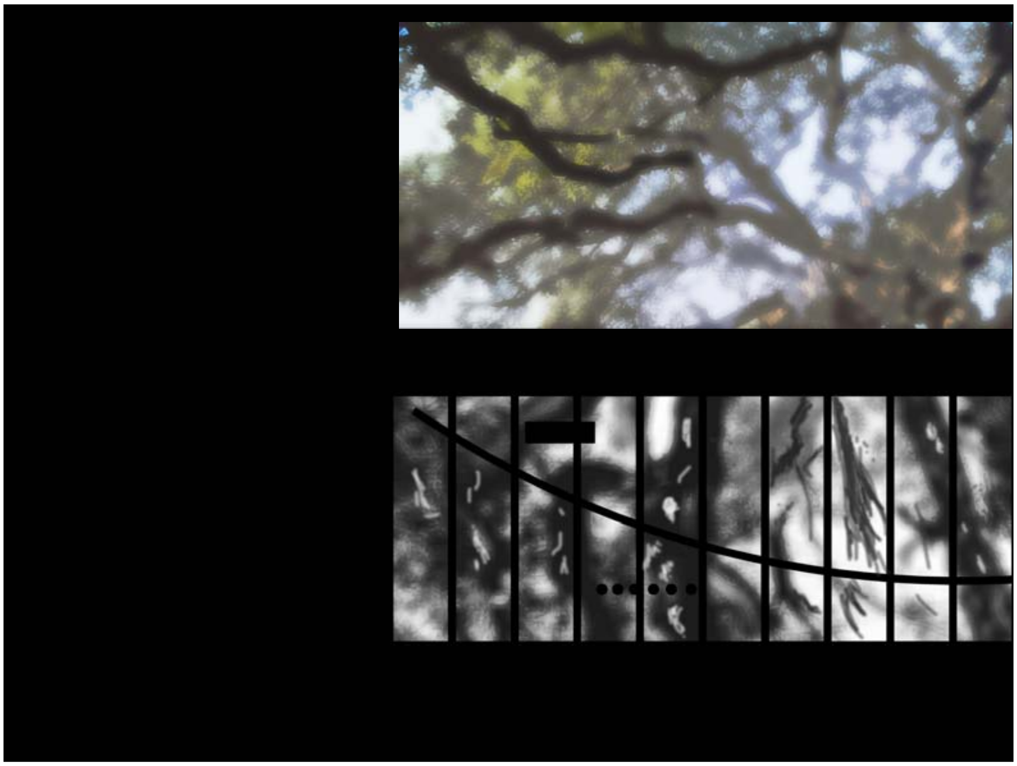
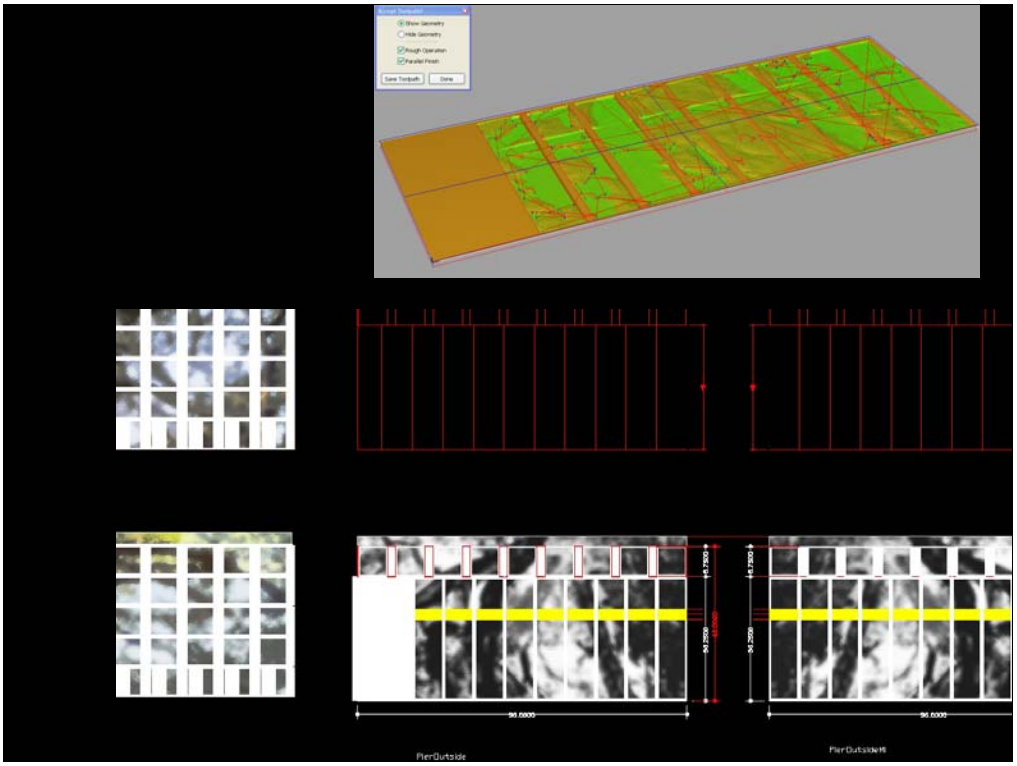


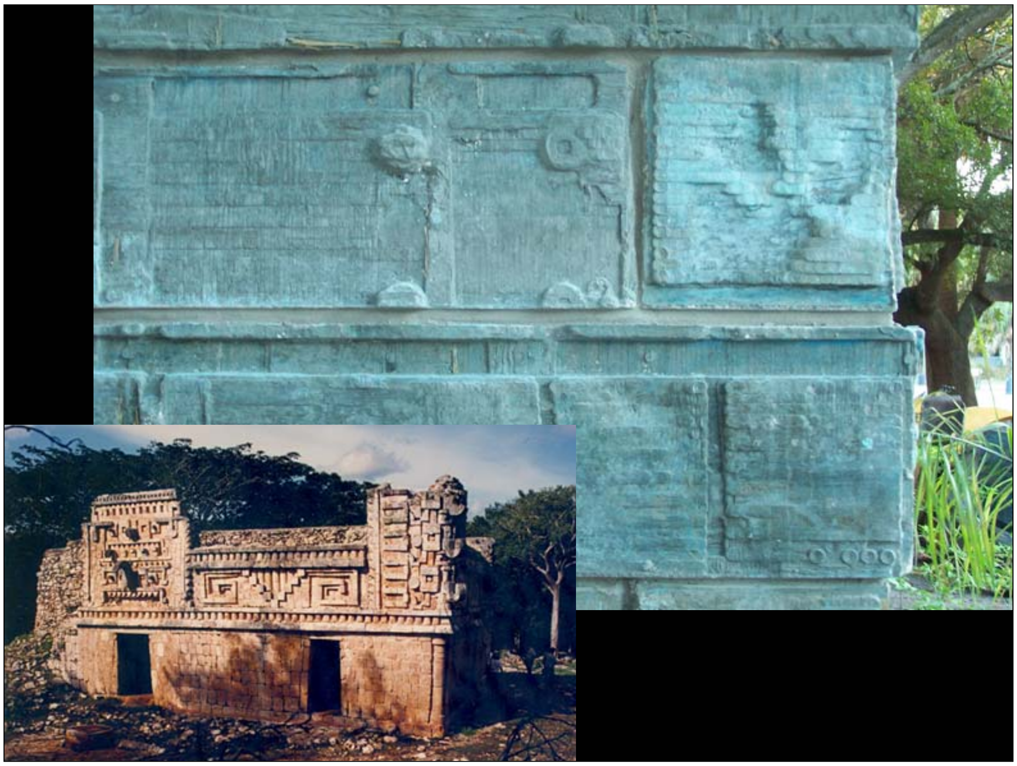
http://www.google.com/imgres?imgurl=http://www.blockwall.org/images/split-face-block.jpg&imgrefurl=http://www.blockwall.org/&h=265&w=354&sz=19&tbnid=aqpYJ8dZ36QrcM:&tbnh=91&tbnw=121&prev=/images%3Fq%3Dsplit%2Bfaced%2Bblock&usg=__5fJkDbDnEHjflK98RtKeTvaYjYo=&ei=JRZyS4OBEY6vtgeIn72FCg&sa=X&oi=image_result&resnum=4&ct=image&ved=0CBIQ9QEwAw








PierOutside
PierOutsideM



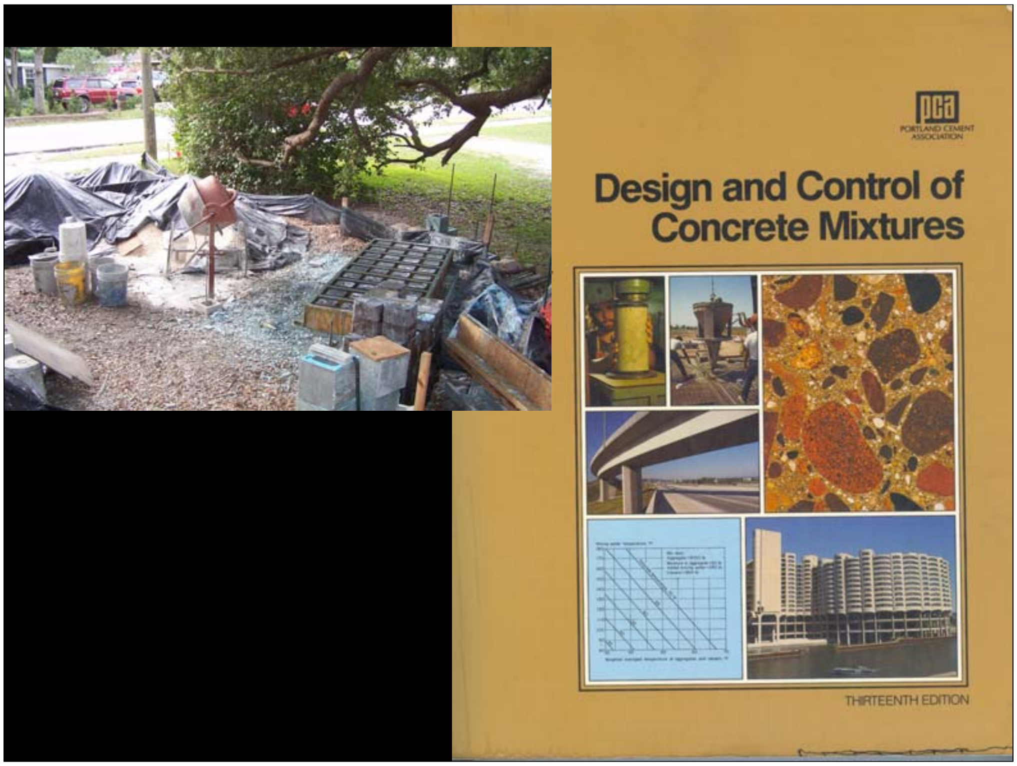

PORTLAND CEMENT ASSOCIATION
Design and Control of Concrete Mixtures
THIRTEENTH EDITION

Table 7-15. Proportions by Weight to Make One Cubic Foot of Concrete for Small Jobs

Maximum-size coarse aggregate, in.	Air-entrained concrete				Non-air-entrained concrete			
	Cement, lb	Wet fine aggregate, lb	Wet coarse aggregate, lb*	Water, lb	Cement, lb	Wet fine aggregate, lb	Wet coarse aggregate, lb*	Water, lb
3/8	29	53	46	10	29	59	46	11
1/2	27	46	55	10	27	53	55	11
3/4	25	42	65	10	25	47	65	10
1	24	39	70	9	24	45	70	10
1 1/2	23	38	75	9	23	43	75	9

*If crushed stone is used, decrease coarse aggregate by 3 lb and increase fine aggregate by 3 lb.
Reference 7-1.

Table 7-16. Proportions by Volume* of Concrete for Small Jobs

Maximum-size coarse aggregate, in.	Air-entrained concrete				Non-air-entrained concrete			
	Cement	Wet fine aggregate	Wet coarse aggregate	Water	Cement	Wet fine aggregate	Wet coarse aggregate	Water
3/8	1	2 1/4	1 1/2	1/2	1	2 1/2	1 1/2	1/2
1/2	1	2 1/4	2	1/2	1	2 1/2	2	1/2
3/4	1	2 1/4	2 1/2	1/2	1	2 1/2	2 1/2	1/2
1	1	2 1/4	2 3/4	1/2	1	2 1/2	2 3/4	1/2
1 1/2	1	2 1/4	3	1/2	1	2 1/2	3	1/2

*The combined volume is approximately 2/3 of the sum of the original bulk volumes.
Reference 7-1.

Design and Control of Concrete Mixtures

PLASTOL 5700

High Range Water Reducing Admixture

Euclid Concrete Admixtures

Description

PLASTOL 5700 is a ready to use high range water reducing admixture for concrete specifically engineered to provide maximum water reduction, slump flow, and high strengths in precast concrete applications. PLASTOL 5700 is capable of reducing water demand by up to 40%. Use in high performance concrete applications or self-consolidating concrete. PLASTOL 5700 does not contain any added chlorides or chemicals known to promote corrosion of steel.

Primary Applications

- High performance concrete
- Self-consolidating concrete
- Precast/prestressed concrete
- Low water/cement ratio concrete
- High early strength applications

Features/Benefits

- Improved appearance with SCC mixes
- Higher strengths at all ages
- Maximized efficiency for slump or flow increase
- Reduced discharge time in forms
- Enables cement reduction
- Efficient use of labor, materials and equipment

Technical Information

Typical Engineering Data

The following results were developed under laboratory conditions. This data reflects ASTM C-494 Type F performance with 517 lbs cement per cubic yard (307 kilogram per cubic meter).

Compressive Strength: psi (Mpa)

	Control Mix	PLASTOL 5700
1 day	1225 (8.4)	2313 (15.9)
3 day	2620 (18.1)	4560 (31.4)

Flexural Strength: psi (Mpa)

	Control Mix	PLASTOL 5700
3 days	516 (3.6)	734 (5.1)
7 days	645 (4.4)	850 (5.9)

Time of Set

	Control Mix	PLASTOL 5700
Initial Set	5:03	4:37
Final Set	7:09	6:17

PLASTOL 5700
High Range Water Reducing Admixture

Ma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Solomon Colors Team Login
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February 2 – 5, 2010
Las Vegas, NV
Concrete Décor Show
March 16 – 19, 2010
Phoenix, AZ
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Color Cards
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CSI 3-PART SPECS
INDUSTRY LINKS
SOLAR REFLECTANCE INFORMATION
Dry Pigment Color Card - BRMD180
*Colors as viewed on monitors or individual printers are NOT accurate. Please use web-ready color cards for general color reference only. To order a color card with color swatches, use the Request Information form, or call us toll free at 1-800-624-0261.
Printer Friendly
Click to download a pdf of the Color Card and the Technical Specifications (not color accurate)
See Related Links below for Technical Specifications information.
KOVER KRETE™ SYSTEMS
Where There's Concrete There's Kover Krete
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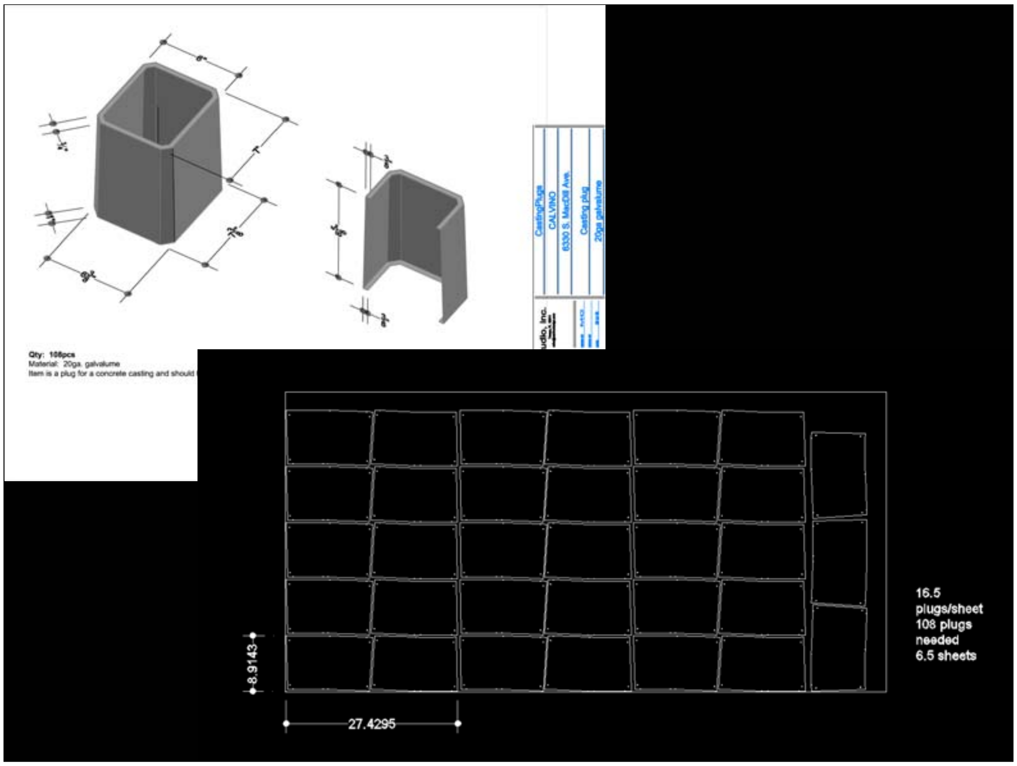
PRESS RELEASE: October 19, 2009
John Gideon owner of Florida Kover Krete™ Systems, LLC announces the availability of all Kover Krete™ Products. General Manager, Marlena Phelps, will continue to help you with all of your Decorative Concrete needs, Monica Stamper will be working with Florida Kover Krete™ Systems, LLC as an independent consultant. She can be reached at 321-217-5322 or monica@koverkrete.com . Orders can be sent to marlena@koverkrete.com or faxed to 352-242-4619.
Florida Kover Krete™ Systems, LLC –
PO Box 121189, Clermont, Florida 34712
Office – 352-394-5350 Fax – 352-242-4619
Links
Industry
National Plasterers Council
The Concrete Network
Tools
before
after
Finally, a concrete finish that combines beauty, durability and economy all in one. Kover Krete™ is designed to cover new or old concrete with a strong, long-lasting decorative protection. Ideally suited for residential uses, it levels and restores old surfaces and adds years of life to new ones.
Besides having a tough finish, Kover Krete™ adds beauty to any working or living environment. Create your own design through a wide variety of available custom colors, styles, and methods of application. Kover Krete™ lets you enhance virtually any concrete surface at a fraction of the cost of replacement.
Since 1989, our Kover Krete™ Products have been proven effective world-wide to repair, protect and beautify existing surfaces.
The Kover Krete™ System is an acrylic cementitious coating & overlay system for commercial and residential pool decks, patios, walkways, entries, driveways and parking lots. It combines the durability of concrete with the


CastingPlugs
CALVINO
6330 S. MacDill Ave.
Casting plug
20ga galvalume
Qty: 108pcs
Material: 20ga. galvalume
Item is a plug for a concrete casting and should
8.9143
27.4295
16.5
plugs/sheet
108 plugs
needed
6.5 sheets