

SPEC-BRIK® WCT™ GUIDE SPECIFICATION

SECTION 04 22 23 ARCHITECTURAL CONCRETE MASONRY

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes architectural concrete masonry work as shown and specified
Work includes:

1. Architectural concrete masonry exterior wall veneer facing.
2. Architectural concrete masonry exterior single wythe walls.
3. Special shapes.
4. Installation of anchors, reinforcement and ties furnished under Section 04 05 19 -Masonry Anchorage and Reinforcing.
5. Installation of embedded masonry flashing [, loose masonry fill insulation] and related masonry accessories furnished under Section 04 05 23 – Masonry Accessories.
6. Installation of anchor bolts, bearing plates and loose steel angle lintels furnished under Section 05 12 00 - Structural Steel Framing.
7. Installation of wood blocking and nailers furnished under Section 06 10 00 – Rough Carpentry.
8. Installation of sheet metal flashing furnished under Section 07 60 00 Flashing and Sheet Metal.

B. Related Sections:

1. Section 04 05 15 Masonry Mortar and Grout: Mortar and grout materials.
2. Section 07 21 19 Foamed-In-Place Insulation: Foamed-in-place insulation materials and installation.

1.2 REFERENCES

A. Reference standards:

1. American Concrete Institute (ACI):
 - a. ACI 530-05/ASCE 5-05/TMS 402-05 “Building Code Requirements for Masonry Structures”
 - b. ACI 530.1-05/ASCE 6-05/TMS 602-05 “Specification for Masonry

Structures”

2. American Society for Testing and Materials (ASTM):
 - a. ASTM C 33 Specification for Concrete Aggregates .
 - b. ASTM C 330 Specification for Lightweight Aggregates for Structural Concrete
 - c. ASTM C 331 Specification for Lightweight Aggregates for Concrete Masonry Units
 - d. ASTM C 90-06b Load bearing Concrete Masonry Units.
 - e. ASTM C 150-04 Portland Cement.
 - f. ASTM C 595 Specification for Blended Hydraulic Cements
 - g. ASTM C 618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - h. ASTM C 989 Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
 - i. ASTM C 1157 Performance Specification for Hydraulic Cement
 - j. ASTM C 1209 Terminology of Concrete Masonry Units and Related Units
 - k. ASTM C 1232 Terminology of Masonry
 - l. ASTM C 1314 Test Method for Compressive Strength of Masonry Prisms
3. Masonry Industry All-Weather Council (IMIAWC).
 - a. “Recommended Practices & Guide Specifications for Cold Weather Masonry Construction – 1993.
4. National Concrete Masonry Association (NCMA).
 - a. TEK Manual for Concrete Masonry Design and Construction, TEK Bulletins.
5. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA):
 - a. SMACNA “Architect and Sheet Metal Manual - 2003.”

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer’s product data for masonry units [water repellent admixture and masonry insulation.]
- B. Samples: Submit three full size units of each type/color of exposed architectural concrete masonry unit for review of color and texture. Provide the maximum color and texture variation range expected in the finished work.

- C. Certificates: Submit manufacturer's certification that architectural concrete masonry units comply with specified requirements, including type, grade, curing, moisture content and performance requirements.
- D. Qualification Data: Submit qualification data demonstrating masonry installer's capabilities and experience. Include list of completed projects with project names, addresses, telephone numbers, names of Architects and Owners, and other information as requested.
- E. Submit written plan for cold and hot weather construction and masonry cleaning procedures.

1.4 QUALITY ASSURANCE

- A. Unit masonry standards: Maintain one copy of the referenced masonry standards in project field office during construction.
 - 1. Building Code: ACI 530-05/ASCE 5-05/TMS 402-05 "Building Code Requirements for Masonry Structures"
 - 2. Specifications: ACI 530.1-05/ASCE 6-05/TMS 602-05 "Specification for Masonry Structures"
- B. Unit Masonry Producer Qualifications: A member in good standing of the National Concrete Masonry Association (NCMA).
- C. Integral Water Repellent Concrete Masonry Producer Qualifications: A firm certified in writing by water repellent manufacturer as a licensed or approved applicator.
- D. General: Appoint at least one experienced and skilled supervisory mason who shall be present at all times and direct work performed under this Section. Supervisor shall be thoroughly familiar with design requirements, type of materials being installed, referenced masonry standards, and other requirements.
 - 1. Use skilled masons for cutting and placing of architectural concrete unit masonry.
 - 2. Comply with applicable codes, regulations, and standards.
- E. Consult other trades and make provisions to permit installation of their work in a manner to avoid cutting and patching. Build in work specified under other Sections, as necessary, and as work progresses.
- F. Pre-Construction Conference: Before commencing masonry construction and associated work, meet at project site, or other mutually agreed location, with Installer, installers of related work, and other entities concerned with masonry perfor-

mance, including (where applicable) Architect and Owner's representative. Record discussions and agreements and furnish copy to each participant. Provide at least 72 hours' advance notice to participants prior to convening pre-construction conference.

- G. Concrete unit masonry construction: Comply with National Concrete Masonry Association (NCMA) "TEK Bulletins," and as specified.
1. NCMA TEK Bulletin 3-1C "All Weather Concrete Masonry Construction."
 2. NCMA TEK Bulletin 3-2A "Grouting for Concrete Masonry Walls."
 3. NCMA TEK Bulletin 3-3A "Reinforced Concrete Masonry Construction."
 4. NCMA TEK Bulletin 8-2A "Removal of Stains from Concrete Masonry Walls."
 5. NCMA TEK Bulletin 10-1A "Crack Control in Concrete Masonry Walls."
 6. NCMA TEK Bulletin 10-2B "Control Joints for Concrete Masonry Walls."
 7. NCMA TEK Bulletin 14-4A "Strength Design of Concrete Masonry."
 8. NCMA TEK Bulletin 19-4A "Flashing Strategies for Concrete Masonry Walls."
 9. NCMA TEK Bulletin 19-5A "Flashing Details for Concrete Masonry Walls."
- H. Sample panels: Before starting masonry work build sample wall panel(s) for Architect's inspection and acceptance. Build panel(s) on a firm foundation, in location acceptable to the Architect. Panel(s) shall be L-shaped, with long side a minimum of 5'-4" long x 4'-0" high and with one corner return at least 2'-0" long. Construct sample panel(s) full thickness, installing wall reinforcement, anchors, ties and other requested accessories. Provide special features as directed for control joints. Panel(s) shall show color range and texture of masonry units, bond, mortar joints and workmanship.
1. Build sample panels for [each type of exposed unit masonry construction] [typical exterior wall] [typical interior wall] [typical exterior and interior walls]
 2. Clean one-half of each sample panel using approved masonry cleaning materials and methods to represent final cleaning. Remaining one-half to remain without final cleaning for comparison purposes.
 3. Retain sample panels during construction as a standard for judging completed masonry work. Do not alter, move, or destroy sample panels until work is completed or removal is authorized.
- I. Provide each type of masonry unit from a single manufacturing source to ensure uniform texture and color for continuous and visually related items.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver architectural concrete masonry units to the job site on wood pallets, [shrink wrapped with hard plastic cover on top of pallet] with manufacturer's recommended unit protective covers.
 - 1. Inspect architectural concrete masonry units upon delivery to ensure color match with required materials and accepted sample mock-up panel.
 - 2. Stack masonry units in a dry place off the ground on pallets or a prepared plank platform. Method of stacking shall be acceptable to the Architect. Protect with non-staining waterproof tarpaulin coverings arranged to allow air circulation around and above masonry units.
- B. Exercise particular care in the storage, handling and installation of masonry units. Exposed architectural concrete unit masonry is utilized as a "finish material." Do not build soiled or damaged masonry units into the work.

1.6 PROJECT CONDITIONS

- A. Do not use metal reinforcements or ties coated with loose rust or other coatings, including ice, which will reduce or destroy bond.
- B. Protect partially completed architectural concrete masonry against weather damage and moisture at end of each day or shutdown and when work is not in progress.
 - 1. Cover tops of walls with a strong, waterproof, non-staining membrane. Extended membrane at least 2'-0" down both sides of walls and hold securely in place.
 - 2. Cover tops of walls with a prefabricated rigid PVC plastic channel shaped cap.
 - 3. Rotate and flip scaffolding boards each day to prevent mortar staining.
- C. Brace unsupported and newly-laid masonry walls. Maintain bracing in place until building structure provides permanent bracing.
- D. Cold Weather and Hot Weather Construction: Comply with ACI 530 and IMI-AWC recommended practices and guide specifications for cold weather and hot weather masonry construction.
- E. Construction Tolerances: Comply with masonry construction tolerances as required by ACI 530.1.
- F. Load application after building masonry columns, piers or walls:

1. Apply uniform design floor or roof loading as per ACI 530.1-05/ASCE 6-05/TMS 602-05, 1.8 — Project conditions.
 2. Do not apply concentrated loads for at least three days.
- G. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar, and soil that comes in contact with such masonry.
1. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
 2. Protect sills, ledges, and projection from mortar splatter and dropping.
 3. Protect surfaces of windows and door frames; as well as similar products with painted and integral finishes from mortar splatter and dropping.
- H. Split masonry coursing at heads and sills of openings and cut concrete masonry coursing less than 4" in height not permitted.

PART 2 – PRODUCTS

2.1 ARCHITECTURAL CONCRETE MASONRY MATERIALS

- A. Aggregate: ASTM C33 normal weight aggregate.
1. Washed [_____] coarse aggregate and washed [_____] sand.
- B. Cement: ASTM C 150, Type required.
1. Color: White/Grey
- C. Water Repellent Admixture: Integral polymeric water repellent admixture for concrete masonry units used in masonry exposed to the exterior.
1. Performance requirements:
 - a. Water resistance: ASTM E 514.
 - b. Flexural Bond Strength: Pass for full wall; ASTM E 72 or C 1072.
 - c. Fully dispersible in water.
- D. Color Pigments: Lightfast, alkali-resistant, weather-resistant natural or synthetic iron oxides manufactured specifically for use in concrete masonry units.

- E. Masonry Cleaning Materials: Standard-strength proprietary masonry cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new concrete masonry without discoloring or damaging masonry surfaces. Provide cleaning product expressly approved for intended use by cleaner manufacturer and manufacturer of concrete masonry units being cleaned.
 - 1. Single Wythe Masonry Sealing Materials: Provide cleaning material manufacturer's compatible masonry sealer coating for all single wythe concrete masonry exterior walls.

2.2 ARCHITECTURAL CONCRETE MASONRY UNITS

- A. Architectural Concrete Masonry Units: "Spec-Brik™ WCT™" manufactured by a member of the Concrete Products Group, tel: (800) 789-0872, internet www.concreteproductsgroup.com. [manufactured by Midwest Products Group, Bridgeton, MO, www.kirchnerblock.com; Midwest Products Group, Kansas City, MO, www.midwestblock.com; Block USA, Birmingham, AL, www.blockusa.com; Block USA, Lawrenceville, GA, www.blockusa.com; Block USA – Golf Coast Division, Theodore, AL, www.blockusa.com; Oberfield's Inc., Delaware, OH, www.oberfields.com; Oberfield's LLC, Lima, OH, www.oberfields.com; Basalite Concrete Products, LLC, Dixon, CA, www.basalite.com; Basalite Concrete Products, LLC, Denver, CO, www.basalite.com; Amcon Block, St. Cloud, MN, www.amconblock.com; A. Jandris & Sons, Inc., Gardner, MA, www.ajandris.com; Orco Block Co., Inc., Stanton, CA, www.orco.com; Headwaters Construction Materials, Houston, TX, www.headwaters.com; Fizzano Bros. Concrete Products, Inc., Crum Lynne, PA, www.fizzano.com; Barnes & Cone, Syracuse, NY, www.barnesandcone.com; Allied Concrete Products. LLC, Chesapeake, VA, www.alliedconcreteusa.com.
- B. Spec-Brik® WCT™ Units
 - 1. Smooth exposed face normal weight architectural concrete masonry units with Water Control Technology drainage zones meeting all ASTM C-90 testing requirements and containing integral mixed color pigments.
 - 2. Size: Nominal 4" [8", 10", or 12"] width x 4" [8"] height x 16" [8"] length
 - 3. Linear shrinkage: Not to exceed 0.065 percent, ASTM C426.
 - 4. Color(s): Selected by Architect from manufacturer's standard colors/ Custom color(s) matching Architect's sample color.
- C. Special shapes:
 - 1. Provide closures, jamb units, headers, lintels, bond beams and other special shapes as indicated.
 - 2. Provide standard manufactured sizes or cut full size units for fractional course height and lengths.
 - 3. Provide two-core type masonry units where required to receive vertical reinforcing

and grout/ masonry insulation.

- D. Integral Water Repellent Concrete Masonry Units: Provide all exterior wall architectural concrete masonry units, including single wythe walls and facing units, manufactured by a qualified producer using normal weight aggregates that comply with ASTM C 33 and meet requirements of ASTM C 90, and contain the manufacturer's recommended amount of an integral polymeric water repellent admixture.
 - 1. No other admixtures or additives shall be used with the integral water repellent masonry units, except with the written approval of the manufacturer and Architect.
- E. Pre-Insulated Masonry Units: manufactured and distributed by Concrete Products Group.
 - 1. Provide Korfill Hi R concrete masonry units factory insulated with individual molded expanded polystyrene inserts that comply with ASTM C 578, Standard Type 1, have a minimum density of 1.0 PCF and a maximum water vapor transmission rate of 1.4 perms.

2.3 MASONRY MORTAR AND ACCESSORIES

- A. Mortar and grout: Comply with Section 04 05 15 requirements.
 - 1. Water Repellent Mortar Admixture: Krete Industries "Admix-Krete Gard Mortar Mix"; Grace Construction Products "Admix-Dry Block"; ACM Chemistries "Admix-Rainbloc"; BASF Admixtures, Inc. "Admix-Rheopel"
 - a. Comply with manufacturer's instructions for mixing and mortar preparation.
- B. Anchors, reinforcing and ties: Comply with Section 04 05 19 - Masonry Anchorage and Reinforcing requirements.
- C. Flashing [, loose masonry fill insulation] and accessories: Comply with Section 04 05 23 requirements.

PART 3- EXECUTION

3.1 EXAMINATION

- A. Examine substrates, structure and installation conditions. Do not proceed with architectural concrete masonry work until unsatisfactory conditions have been corrected.

- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.2 PREPARATION

- A. Do not wet concrete masonry units.
- B. Establish lines, levels and coursing. Verify anchors and flashings are correctly located and installed.
- C. Coordinate masonry work with installation of _____
_____ provided under Section _____ work. Build in _____ occurring within masonry walls as work progresses.

3.3 INSTALLATION

- A. Layout walls in advance for accurate spacing of surface bond patterns, with uniform joint widths and to properly locate openings, movement type joints, returns and offsets. Avoid the use of less than half-size units at corners, jambs and other locations.
- B. Lay up walls plumb and true to comply with specified tolerances. Provide square corners, except as otherwise indicated, with courses level, accurately spaced and coordinated with other work. Use double lines at multiple wythe walls.
- C. Pattern bond: Lay exposed concrete unit masonry in running bond with vertical joint in each course centered on units in courses above and below. Bond and interlock each course of each wythe at corners. Do not use units with less than 4" of horizontal face dimensions at corners or jambs.
 - 1. Install special shape units where indicated.
- D. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings, load bearing walls, all courses of piers, columns and pilasters and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. Maintain 3/8" joint widths, except as necessary at base course bed joints, and except for minor variations required to maintain bond alignment.
- E. Lay solid concrete masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
- F. Compress and cut joints flush for masonry walls that are below grade, concealed

or covered by other materials.

- G. Tool joints in all exposed masonry work to a concave joint, unless plans indicate otherwise
- H. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- I. Step back unfinished work adjoining new work. Rack back 1/2 unit length in each course; do not tooth. Clean exposed surfaces of set masonry and remove loose masonry units and mortar before laying fresh masonry.
- J. Provide interlocking masonry bond in each course at corners and intersecting walls, unless otherwise indicated on plans such as for stack bond.
- K. Load-bearing walls: If carried up separately, provide rigid steel anchors spaced not more than 2'-0" on center vertically. Embed ends in mortar filled cores. : Build full height of story to underside of structure. Grout juncture with structure solid with grout.
- L. Nonload-bearing walls: Build full height of story to underside of structure, except as otherwise shown. Terminate full height nonload-bearing walls one joint thickness below the structure to allow for deflection of the structural element without loading the wall. Provide an open joint for application of joint sealant [firestopping].
- M. As the work progresses, build in items specified under this and other Sections of the specifications. Fill in solidly with masonry around built-in items.
 - 1. Bed hollow metal frame anchors in mortar. Align anchors with joint coursing. Draw anchors tight and fill space between hollow metal frames and masonry solid with fine mortar grout.
 - 2. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath or other approved material, in the joint below and rod grout into core.
 - 3. Provide solid masonry bearing for all lintels, beams, joists, plates and load-bearing members.
 - a. Provide solid masonry units or hollow units filled solid.
 - b. Minimum one block course under steel angle lintels and steel joists not bearing on bond beams.
 - c. Minimum two block courses under steel beams and steel beam lintels. Where beams and lintels are parallel with wall, extend solid bearing to walls, extend solid bearing 16" each

side of centerline of beam.

4. Take particular care to embed all conduits and pipes within concrete masonry without fracturing exposed shells and to fit units around switch, receptacle and other boxes set in walls. Where electric conduit, outlets, switch boxes and similar items occur, grind and cut units before building in services.
5. Install anchors and reglets for flashing and related work built into masonry work.
6. Install reinforcing steel and grout where indicated. Comply with drawing details for reinforcing steel size and spacing.

N. Cavity walls:

1. Maintain cavity clean of mortar droppings during construction. Strike joints facing cavity flush.
2. Masonry walls: Tie exterior masonry veneer wythe to masonry back-up with adjustable metal ties secured to joint reinforcement built into masonry back-up walls [individual metal ties secured to concrete masonry back-up].
3. Concrete walls: Tie exterior masonry veneer wythe to concrete back-up with individual metal ties secured to dovetail anchor slots cast in concrete back-up [secured to concrete back-up].
4. Space ties 16" on center vertically and horizontally.
5. Install cavity wall insulation as work progresses. Bond with adhesive to exterior face of interior walls. Seal vertical and horizontal joints with adhesive.

O. Veneer walls:

1. Masonry walls: Tie exterior masonry veneer wythe to masonry back-up with individual metal ties built into masonry back-up walls.
2. Concrete walls: Tie exterior masonry veneer wythe to concrete back-up with individual metal ties secured to dovetail anchor slots cast in concrete back-up.
3. Wood framed walls: Tie exterior masonry veneer wythe to back-up with individual metal ties nailed to wood stud wall framing.
4. Metal framed walls: Tie exterior masonry veneer wythe to back-up with individual metal ties screwed to metal wall framing.
5. Space ties 16" on center vertically and horizontally.

- P. Loose masonry fill insulation: Install loose masonry fill insulation materials in exterior concrete unit masonry walls as work progresses. Fill cores of walls solid with insulation. Maintain inspection ports to show presence of insulation at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of insulation to 1 story in height, but not more than 20'-0".

- Q. Foamed-in-place masonry insulation: Coordinate exterior wall masonry construction with installation requirements of foamed-in-place masonry insulation provided under Section 07 21 19: Fill installation holes after completion of insulation.
- R. Horizontal joint reinforcing: Provide continuous joint reinforcing at all single wythe and back-up concrete masonry walls as follows:
1. In every second block course, 16" on center vertically, full height of wall and every block course where shown on the drawings.
 2. Unless horizontal reinforcement is to be placed within 16", in the first two bed joints immediately above and below all openings so that it extends a minimum of 24" beyond opening each way.
 3. Unless horizontal reinforcement is to be placed within 16", in the bed joints of the first and second courses below the bearing line in bearing walls when wall receives uniformly distributed floor or roof loads.
 4. In bed joints 16" below bond beams.
 5. In parapet walls 8" on center vertically, beginning at a point not less than 12" below the ceiling line of the heated space below the roof slab.
 6. Lap reinforcement a minimum of 6" and full width at corners and intersections or use special fabricated sections.
 7. Cut or interrupt joint reinforcement at vertical movement (control or expansion joints), unless otherwise indicated.
 8. Prefabricated metal joint reinforcement shall not be used as wall ties in multiple wythe walls, except for composite wall construction and two adjacent tiers of concrete block.
 9. Fully embed side rods in mortar
- S. Anchoring masonry work: Provide anchoring devices of the type shown and specified.
1. Anchor masonry to structural members where masonry abuts or faces such members to comply with the following:
 - a. Provide an open space not less than 1/2" width between masonry and structural member. Keep open space free of mortar or other rigid materials.
 - b. Anchor masonry to structural members with metal ties embedded in masonry joints and attached to the structure. Provide anchors with adjustable tie sections. Space anchors not more than 24" on center vertically and 36" on center horizontally.
 2. Anchor veneers to concrete structural members with dovetail anchors.
- T. Provide control joints for exterior masonry construction In accordance with

NCMA-TEK Bulletins 10-1A and 10-2B. Provide sash blocks with premolded shear key. Rake out mortar, if any, and form continuous vertical joints in masonry construction to receive High Performance joint sealant at the locations listed below.

1. Locate control joints at points of natural weakness in masonry and at locations visually acceptable to the Architect.
- U. Install bond beams where indicated. Comply with drawing details for reinforcing steel size and spacing. Fill bond beam masonry units solid with concrete fill or coarse mortar grout.
- V. Lintels:
1. Install loose steel lintels furnished under Section 05 12 00 Structural Steel Framing where shown. Set lintels in full bed of mortar.
 2. Provide minimum bearing at each jamb of 4" for openings for less than 6'-0" and 8" for wider openings.
- W. Flashing and weeps:
1. Install concealed through wall masonry flashing at all cavity and veneer wall sills, masonry openings in exterior walls with masonry above head, over all horizontal steel members built into masonry and elsewhere as indicated. Comply with SMACNA "Architectural Sheet Metal Manual" Chapter 4 Flashing recommendations and with NCMA TEK Bulletins 19-4A and 19-5A details to ensure water resistant masonry construction.
 2. Install weeps in head joints of final course of exterior masonry wythe above flashing. Space weeps maximum of 24" on center horizontally with exterior ends and located to avoid door openings. Install weeps at head joints with outside face of weep material held 1/8" from the finish face of masonry unit.
 3. Install cavity fill on top of base flashing. Install a bed of mortar, conforming to the curve of the flashing, placed under the metal flashing.
 4. Install vents in head joints of final top course exterior masonry veneer wythe. Install at head joints with outside face of vent material held 1/8" from the finish face of masonry unit. Space vents 24" on center horizontally.
 5. Install compressible joint material at lintels and horizontal steel members. Build in joint fillers and seal with High Performance elastomeric joint sealant.

3.4 REINFORCED CONCRETE MASONRY

- A. Fill scheduled wall and column masonry work. Fill all cores solid with concrete

fill/coarse masonry grout.

1. Grouting: Comply with ACI 530.1 grout placement requirements. Consolidate grout at time of placement.
 - a. Low-Lift Grouting: Place concrete fill/coarse masonry grout in maximum 5'-0" vertical lifts.
 - b. High-Lift Grouting: Place concrete fill/coarse masonry grout in maximum 12'-0" vertical lifts (Recommend the use of super plasticizer with hi-lift grout).
 2. Recess top of grout fill minimum 1-1/2" below top of course to form a key with following lift.
 3. Where vertical reinforcing is required, install reinforcing before filling operation. Comply with drawing details for reinforcing steel size and spacing.
- B. Install bond beams where indicated. Install reinforcing before filling operation. Fill units solid with concrete fill. Comply with drawing details for reinforcing steel size and spacing.

3.5 REPAIR, POINTING AND CLEANING

- A. Clean and point exposed architectural concrete masonry at end of each working day. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged. Provide new units to match adjoining units and install in fresh mortar pointed to eliminate evidence of replacement.
- B. During the tooling of joints, enlarge any voids or holes, except weeps and completely fill with mortar. Point up all joints at corners, openings and adjacent work to provide a neat, uniform appearance. Remove line pins and fill all line pin holes.
- C. In Progress Cleaning: Wipe off excess mortar as the work progresses. Dry brush with bristle brushes exposed masonry at the end of each day's work. Remove mortar spatters and joint ridges.
- D. Final Cleaning: Reference www.concreteproductsgroup.com for CPG 2 Cleaning instructions.
- E. After cleaning allow units to dry and when required apply a sealer that is recommended by the local Concrete Products Group manufacturer.

END OF SECTION 04 22 23