Comparison of Various Masonry Materials

Feature	Cast Stone	Limestone	Architectural Precast Concrete	GFRC	Calcium Silicate
Specification division	04720	04423	03450	03490	04230
Composition	Portland cement, coarse and fine sand. Inorganic iron oxide pigments	Calcium Carbonate ($CaCO_3$) & Magnesium Carbonate ($MgCO_3$)	Coarse and fine sand, cement, large aggregates	Portland cement, fine sand, alkali-resistant glass fibers, polymers	Lime and silica based sand
Typical uses	Architectural ornamentation, veneer, or trim: window/door surrounds, bands, coping, columns, balustrades, etc.	Architectural ornamentation, veneer, or trim: window/door surrounds, bands, coping, columns, balustrades, etc.	Architectural concrete structural pieces and non-structural panels, etc.	Lightweight panels, complex architectural elements, façade systems, decorative features	Variety of sizes and shapes is limited. Architectural applications, including exterior and interior masonry veneer.
Structural use	Can be reinforced, but has limited structural applications	Cannot be reinforced, used primarily as non-structural veneer	Structural or non-structural	Non-structural, but high flexural strength	Non-structural. Not to be used at grade.
Colors available	Almost unlimited	Buff, grey & variegated	Almost unlimited	Almost unlimited	Limited to earth tones
Size of aggregate	3/8" or less	None	3/8" to 3/4"	Fine aggregates only (typically less than 1/8")	3/8" or less
Compressive strength	6,500 PSI minimum ASTM C1194	4,000 PSI minimum ASTM C170	5,000 PSI minimum ASTM C39	5,000-10,000 PSI ASTM C39	5,500 PSI minimum ASTM C73-99A
Water absorption	6% maximum ASTM C1195	7.5% maximum	7% maximum	6-10% maximum	8.8% maximum ASTM C73-99A
Weight/cubic foot	140 lbs	144 lbs	145 lbs	100-120 lbs	129 lbs
Surface texture	Fine grain to simulate natural stone, textures: bush hammered, any other finish available on natural stone or terra-cotta	Fine grain, with directional grain lines	Architectural finishes such as smooth, exposed aggregate, or sandblasted: not intended to simulate natural stone	Extremely versatile: smooth, textured, profiled, embossed; can simulate various materials	Fine grain to simulate natural stone

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Method of forming into shapes	Zero-slump matrix rammed into rigid formwork until densely compacted and demolded immediately	Mined, cut, and fabricated	Pouring measurable slump concrete mix into form, vibrating, and removing forms the following day	Spray-up or premix methods with fiber reinforcement in thin shells (typically 1/2" to 3/4")	Matrix pressed into steel molds under high pressure and demolded immediately
Bug holes or air voids	No bug holes, guaranteed	Dependent upon grade of material selected	Yes	Minimal to none	No
Anchors supplied by manufacturer	Supplied by Corinthian Cast Stone (Optional)	Supplied by Corinthian Cast Stone (Optional)	Supplied by Corinthian Cast Stone (Optional)	Typically supplied by manufacturer	Usually supplied by on-site erector
Method of anchor attachment to stone	Anchor fastens to cast or cut anchor slots and dowel holes. Engineered by CCS	Anchor attaches to cut anchor slots and dowel holes. Engineered by CCS	Inserted in piece as it is poured at manufacturing facility or installed separately at the job site. Engineered by CCS	Embedded anchors, flex anchors, or mechanical fastening systems	Anchor fastens to cut anchor slots and dowel holes
Metal reinforcing	Galvanized, epoxy, stainless steel or FRP	No	Galvanized, epoxy, stainless steel or FRP	AR glass fibers with optional secondary steel reinforcement	No
Industry association	Cast Stone Institute	Indiana Limestone Institute of America, Inc.	Architectural Precast Association	GFRC Manufacturers Association, Precast/Prestressed Concrete Institute	None
Keys to optimum economy	Profile repetition, average size 2.0 cu. ft., one flat unexposed surface	Pieces with simple profiles, short distance of job site from mines	Ideal for larger structural pieces such as large panels or precast lintels	Thin sections (1/2" to 3/4"), lightweight for reduced shipping and installation costs	Manufactured only in specific sizes
Special advantages	High detail capabilities, durable, historically accurate	Natural material, consistent appearance	Structural capability, large panel sizes	Lightweight, complex shapes possible, high strength-to-weight ratio	Cost-effective for standard sizes
Limitations	Weight constraints for larger pieces	Limited color range, potential for staining	Heavier weight, transportation challenges	Higher initial cost, specialized production process	Limited size and shape options