



**Advanced Architectural Stone
(AAS – formerly Advanced Cast Stone) GFRC Case Study**

GFRC can match the visual look of cast stone or architectural precast. In this project GFRC was chosen because it is 50% lighter in weight.



Project	Dry Creek Elementary School
Location	Lehi, Utah
Architect	Sandstorm Architecture
Contractor	Westland Construction
Material	Glass Fiber Reinforced Concrete (GFRC)

VISION

Dry Creek Elementary School is a new school in Lehi, UT. It opened in August, 2014. The Architect for the project, Sandstorm Architecture, wanted to create an experience for elementary school kids and families that would blend with the Lehi township cultural backdrop and lifestyle.

The architect had specified GFRC (Glass Fiber Reinforced Concrete) for the high elevation cladding and school name sign. With much lighter weight, GFRC not only cut down required structural support, but also simplified the installation.

The initial rendering used West Lehi Elementary School in recommended signage as the school is located in Lehi Township in Utah. While in construction phase, the final name for the school was modified to Dry Creek Elementary School.

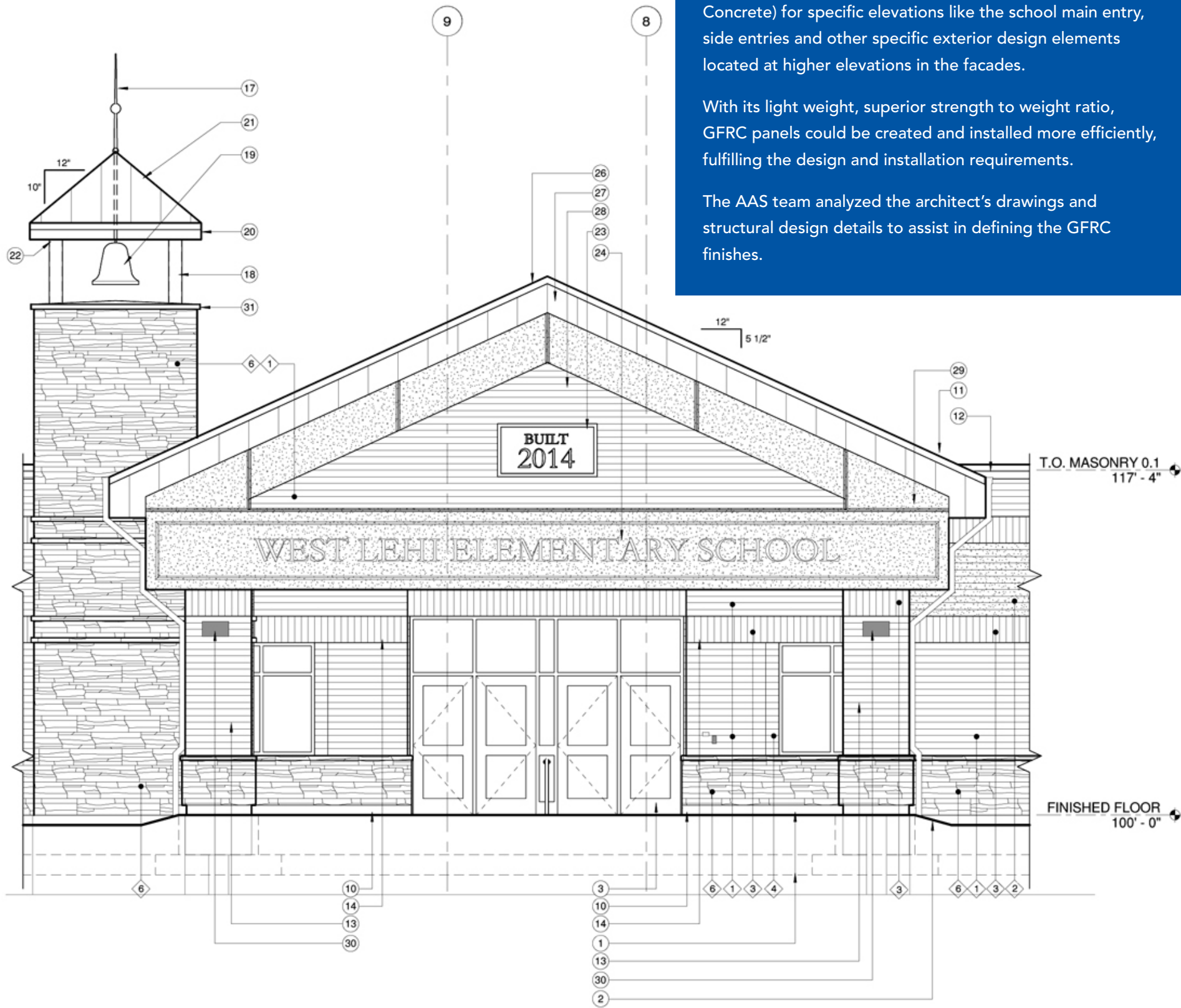


PROCESS

The architect selected GFRC (Glass Fiber Reinforced Concrete) for specific elevations like the school main entry, side entries and other specific exterior design elements located at higher elevations in the facades.

With its light weight, superior strength to weight ratio, GFRC panels could be created and installed more efficiently, fulfilling the design and installation requirements.

The AAS team analyzed the architect's drawings and structural design details to assist in defining the GFRC finishes.



ENLARGED FRONT ENTRY ELEVATION
SCALE: 1/4" = 1'-0"

3

GENERAL NOTES

- A. PROVIDE PRE-FINISHED METAL RAIN GUTTERS AND RAIN GUTTER DOWNSPOUTS AT ALL CANOPIES AS SHOWN ON SHEET A2.4.

SHEET NOTES

- 1 CONCRETE FOOTING AND FOUNDATION. EXPOSED FOUNDATION WALLS TO RECEIVE RUBBED FINISH.
- 2 APPROXIMATE GRADE LINE SEE CIVIL DRAWINGS.
- 3 ALUMINUM WINDOW/ENTRANCE SYSTEM. SEE DOOR AND WINDOW SCHEDULE.
- 4 HOLLOW METAL DOOR AND FRAME (PAINTED).
- 5 RAKED JOINT.
- 6 CONTROL JOINTS @ 30'-0" O.C. MAX.
- 7 BRASS SCUPPER. SEE PLUMBING SHEETS.
- 8 MASONRY ENCLOSURE WITH METAL MATCHING PARAPET CAP FLASHING.
- 9 GAS METER. SEE MECHANICAL PLANS FOR LOCATION.
- 10 CONCRETE FOUNDATION BASE, SEE DETAIL AND STRUCT.
- 11 PROVIDE ICE & SNOW STOPS @ METAL ROOFING.
- 12 PRE-FINISHED METAL PARAPET CAP FLASHING.
- 13 BRICK VENEER OVER STUD FRAMING SEE SECTIONS.
- 14 SOLDIER COURSE.
- 15 MECHANICAL LOUVER. SEE MECHANICAL DRAWINGS & SPECS.
- 16 SPEAKER WITH CAGE. SEE ELECTRICAL SHEETS.
- 17 LIGHTNING ROD PROTECTION BI-METALLIC BONDING INSTALLED FOR CONNECT CABLE TO ALUM/STEEL COMPONENTS, SEE ELECTRICAL PLAN.
- 18 8"x8"x 1/4" 6061 T6 ALUMINUM TUBE COLUMNS. KYNAR 500 FINISH TO MATCH STANDING SEAM ROOF. (COLOR BY ARCHITECT). NOTE: ALL DISSIMILAR METALS TO BE ISOLATED WITH FIBROUS ASPHALTED PRODUCTS.
- 19 PROVIDE PRE-FABRICATED FIBERGLASS ARCHITECTURAL BELL SHELL (COLOR BY ARCHITECT).
- 20 10" ALUMINUM FASCIA PERIMETER WITH 3" FASCIA FLASHING (COLOR BY ARCHITECT).
- 21 1" STANDING SEAM METAL ROOFING OVER ICE & WATER SHEILD MEMBRANE OVER EXTERIOR GRADE PLYWOOD SHEATHING, (COLOR BY ARCHITECT).
- 22 VENTED PRE-FINISHED METAL SOFFIT PANEL, FASTEN TO ALUMINUM ANGLE FRAME, COLOR TO MATCH BELL CUPOLA AS SELECTED BY ARCHITECT.
- 23 30"x60"x4" GFRC PLAQUE.
- 24 NEW SCHOOL NAME TO BE 1'-6" TALL X 1 1/2" DEEP, INCISED IN EIFS BY EIFS SUBCONTRACTOR. FONT TO BE NEW TIMES ROMAN IN CONTRASTING COLOR FOR READABILITY.
- 25 PROVIDE 9"x1" DEEP ALUMINUM ADDRESS NUMBERS, VERIFY LOCATION WITH DISTRICT. PROVIDE 8 NUMBERS FOR ADDRESS.
- 26 PRE-FINISHED METAL ROOFING & FLASHING.
- 27 PRE-FINISHED ALUMINUM FASCIA AND SOFFIT PANEL SYSTEM WITH MATCHING FLASHING.
- 28 MASONRY WALL. SEE FLOOR PLANS AND WALL TYPES ON SHEET A1.2.
- 29 GFRC PANEL, COLOR AS SELECTED BY ARCHITECT.
- 30 EXTERIOR LIGHTING. SEE ELECTRICAL SHEETS.
- 31 ROOF SKIRT OVER ICE & WATER SHEILD MEMBRANE OVER EXTERIOR GRADE PLYWOOD, OVER 1-1/2" ALUMINUM ANGLE FRAME. SUPPORT WITH 4" SKIRT FLASHING OVER STONE. PROVIDE WATER TIGHT FLASHING FLANGE AT COLUMN TO METAL ROOF SKIRTING. (COLOR BY ARCHITECT).

EXT. MASONRY LEGEND

#	TYPE	BOND	FINISH	COLOR
1	ATLAS	RUNNING	MATTE	DESERT SAND
2	ATLAS	RUNNING	RUFF	DESERT SAND
3	ATLAS	SOLDIER	MATTE	COPPERSTONE
4	ATLAS	ROWLOCK	MATTE	COPPERSTONE
5	ATLAS	STACKED	MATTE	COPPERSTONE
6	STONE	DRY STACK	MATTE	BY ARCHITECT

NOTE: ALL MASONRY IS SPECIFIED AS PRODUCTS FROM INTERSTATE BRICK COMPANY. IF OTHER MANUFACTURER IS CHOSEN, USE MATCHING COLOR BRICK AND COLORS. SAMPLE TO BE PROVIDED FOR APPROVAL.



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ARCHITECTURE, P.C.

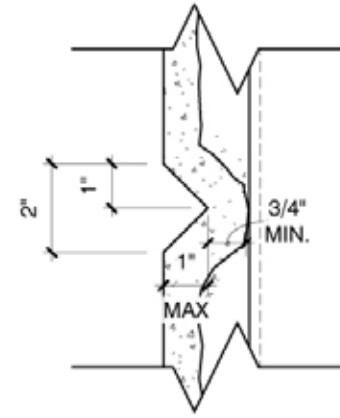
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The construction details of the Dry Creek Elementary School project were reviewed by the AAS team. Various suggestions were incorporated to make sure that the structural supports were sound. The location and spacing of the anchors were also confirmed ahead of time.

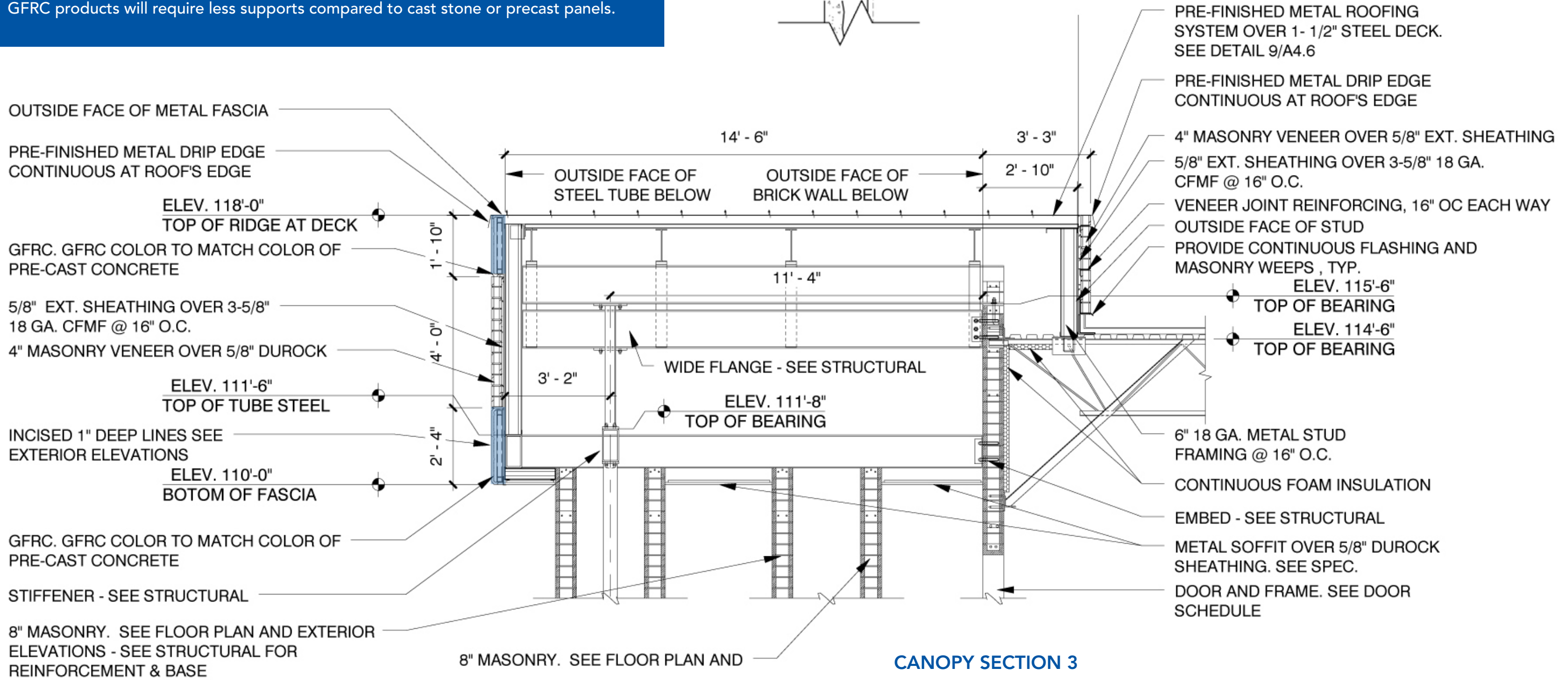
When required, the AAS team is also able to guide customers with the design of the structural supports for the GFRC panels.

GFRC products will require less supports compared to cast stone or precast panels.



**ENLARGED
GFRC CHANNEL**

Scale: 3" = 1'-0"



CANOPY SECTION 3

Scale: 1/4" = 1'-0"

The design of the school entry way cladding required that each GFRC panel had a unique shape. AAS team created unique molds to match geometry of every panel. The mold design also factored in stringent tolerance requirements. This facilitated smooth installation of panels without any hiccups.

Each panel needed custom designed hardware that was embedded in the panels. AAS team designed installation anchors and embedded them in the panels using precise pouring of the casting material. Flexibility of embedding installation support hardware within the panels simplified the installation process on the project.

The AAS team collaborated with the architect to review, and validate the fabrication details. Support locations were also confirmed to ensure proper spacing between the supports.

GFRC panels required much less support compared to cast stone or precast panels.



AAS Technology for Creating Customized Molds with Complex Shapes.



Pre-engineered panels with anchors embedded in the cast simplifies installation.

The color of the GFRC panels was very specific. The Advanced Architectural Stone (AAS) team selected the material composition and pigment to match the intended look and finish.





Although GFRC incorporates glass fibers within the concrete mix; it doesn't impact the visual appearance in any way. So, designer's aesthetic needs are easy to meet using GFRC.



The high strength to weight ratio of GFRC material allows for strong thin panels ideal for signage application.

The AAS team designed the panels using the drawings from the architect. The shop tickets were approved before the fabrication started. The team fabricated the panels to the approved specification. AAS team also provided the specified installation hardware. With all panels fabricated to precise geometry and tolerance requirements, the installer was able to take the panels and install them on the site without any issues.

“In so many cases, we have to go in and work out design and construction details with the architect as to how all structural and design elements fit together. In this project, the drawings from the architect were very precise. With a couple of rounds of revisions during the design and shop tickets, we were able to finalize the design of the panels fairly quickly” said Steve Adkins, production manager for this project.

Brad Buntrock, customer project manager, added, “The lettering on the panels is very specific in this project. Other cladding materials such as stucco or EIFS don’t work so well with the quality and detail requirements needed in this project. Our GFRC fabrication process gives you unique advantages – you can match color, customize finishes and create cladding solutions for any kind of project regardless of its complexity.”



RESULT

The GFRC panels successfully achieved the project design intent on time and within budget. The school opened in August of 2014 as scheduled.

