

Grand Forks Fire Station No. 5

Grand Forks, North Dakota

Architect, Cost Estimator, Structural, Mechanical & Electrical Engineer

EAPC Architects Engineers

The City of Grand Forks, North Dakota, has recently experienced rapid growth and development on the city's south side. This was beginning to affect the fire department's response time to emergency situations from their current facilities.

Fortunately, the city had anticipated this growth, and had set aside a parcel of land for a new fire station that was ideally located to minimize response time. Unfortunately, the residential growth around this empty parcel resulted in this green space being used for a neighborhood park.

Instead of displacing this green space, the city elected to evaluate the parcels available a few blocks west of the original site, in a more commercial portion of the city. Three acres of land were selected on a site that bordered a residential neighborhood and a large public hockey arena.

The primary focus of the new fire station was to improve response time and help bridge the design gap between these two vastly different building types. City council members and the fire department were especially concerned about adversely affecting the adjacent residential properties.

The overall site design utilizes the following measures to reduce impact on the existing areas:

- Operational functions, such as the apparatus bays, were placed closer to the public arena, while more private functions, like the living quarters, were positioned next to the residential area. In addition, the primary entrance drive was positioned even further west of the station and the residential areas.
- The apparatus bay was positioned back from the street to diminish its scale.
- The entrance to the living quarters was pulled out to a typical setback line, and given a more residential "front porch" design style. This configuration also serves as a buffer to the neighborhood when work is being done in front of the apparatus bay or when the engines are responding to a fire.
- A line of evergreen trees was provided along the shared property line with residential neighbors to serve as a visual/acoustic buffer to the neighborhood.

The building design and plan configuration further emphasizes the focus of the design by working to balance the civic and residential aspects as follows:

- The plan is laid out to separate public and private functions along a main circulation path. The elevations emphasize



Photos Courtesy of Shelby Hartung



this separation as shown by changes in volume and scale.

- The exterior is clad in brick, which is used in both commercial and residential applications, to provide continuity for the overall design.

This station also takes steps towards integrating multiple city departments into a more collaborative facility, through the addition of a "police mobile office" and fuel depot for city vehicles. These additions will save time and money for the city by reducing travel north to the main stations.

Every decision made during the design process strives to promote integration, to reduce impact on adjacent properties, and to be a "good neighbor" to the existing community.

The final design was a successful blend of commercial and residential influences, and creates an ideal bridging facility for the City of Grand Forks.

Product Information

Building Envelope: Hebron Brick Company, Firestone Building Products

Roofing: Firestone Building Products

Windows: U.S. Aluminum, Manko Window Systems, Inc.

Entrances & Storefronts: U.S. Aluminum
Interior: CertainTeed, Rockfon, Johnsonite, Hirschfield Paint

Flooring: Philadelphia Commercial, Kate-Lo Tile & Stone, RBC Tile & Stone, **Everlast Fitness**

Lighting: Lithonia



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EAPC Architects Engineers
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Project Team

General Contractor

Peterson Construction Company, Inc.
3253 N. Washington Street, Grand Forks, ND 58203

Mechanical Contractor

Custom Aire, Inc.
5525 1st Avenue, N., Grand Forks, ND 58203

Electrical Contractor

Bergstrom Electric, Inc.
3100 N. Washington Street
Grand Forks, ND 58203

Project General Description

Location: Grand Forks, North Dakota

Date Bid: Dec 2014

Construction Period: May 2015 to Mar 2016

Total Square Feet: 9,091

Site: 3 acres.

Number of Buildings: One.

Building Sizes: First floor, 8,498; second floor, 593; total, 9,091 square feet.

Building Height: First floor, varies 9' to 34'; second floor, varies 9' to 12'8"; total, 36'.

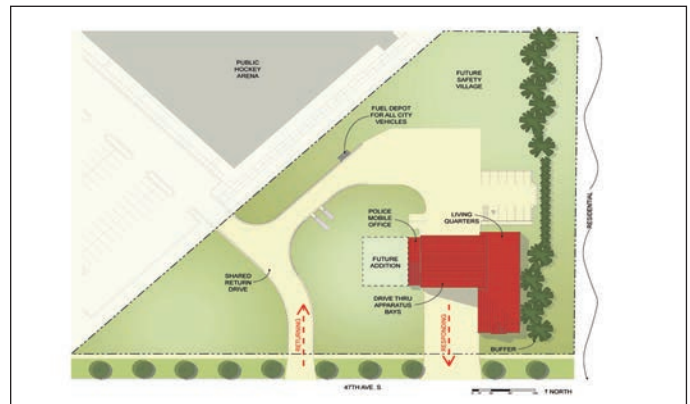
Basic Construction Type: New/5B.

Foundation: Cast-in-place, reinforced concrete, slab-on-grade.

Exterior Walls: CMU, brick, storefront.

Roof: Metal. **Floors:** Concrete.

Interior Walls: CMU, wood stud drywall.



DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	14,745	0.73	1.62	—
GENERAL REQUIREMENTS	83,000	4.09	9.13	—
CONCRETE	157,483	7.76	17.32	Forming & accessories, reinforcing, cast-in-place, cast decks & underlayment, grouting (concrete breakdown: cubic yards foundation, 80; cubic yards floors, 124; cubic yards walls, 133).
MASONRY	296,752	14.62	32.64	Unit.
METALS	191,840	9.45	21.10	Structural steel framing, joists, decking, fabrications.
WOOD, PLASTICS & COMPOSITES	140,605	6.93	15.47	Rough carpentry, finish carpentry, architectural woodwork.
THERMAL & MOISTURE PROTECTION	184,371	9.08	20.28	Thermal protection, weather barriers, steep slope roofing, roofing & siding panels, flashing & sheet metal, roof & wall specialties & accessories, fire & smoke protection, joint protection.
OPENINGS	116,990	5.76	12.87	Doors & frames, storefront, windows, hardware, glazing, louvers & vents.
FINISHES	116,337	5.73	12.80	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, painting & coating.
SPECIALTIES	16,835	0.83	1.85	Interior, safety.
EQUIPMENT	8,522	0.42	0.94	Residential.
FIRE SUPPRESSION	21,000	1.03	2.31	Water-based fire-suppression systems.
PLUMBING	146,788	7.23	16.16	Piping & pumps, equipment, fixtures.
HVAC	196,662	9.69	21.63	Piping & pumps, air distribution, central heating equipment, central cooling equipment, central HVAC equipment, decentralized HVAC equipment.
ELECTRICAL	297,589	14.67	32.73	Low-voltage transmission, facility electrical power generating & storing equipment, electrical & cathodic protection, lighting.
COMMUNICATIONS	28,300	1.40	3.11	Structured cabling, data, voice.
ELECTRONIC SAFETY & SECURITY	11,800	0.58	1.30	Detection & alarm.
TOTAL BUILDING COSTS	2,029,619	100.00	\$223.26	
EARTHWORK	199,909			Site clearing, earth moving, earthwork methods.
EXTERIOR IMPROVEMENTS	166,024			Bases, bollards & paving, site, irrigation, planting.
UTILITIES	196,728			Water, storm drainage, sanitary sewer.
TOTAL PROJECT COST	2,592,280			

UPDATED ESTIMATE TO DECEMBER 2016: \$241.97 PER SQUARE FOOT

Regional Cost Trends

This project, updated to December 2016 in the selected cities of the United States.

EASTERN U.S.			CENTRAL U.S.			WESTERN U.S.		
Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost	
Atlanta GA	\$274.83	\$2,498,474	Dallas TX	\$265.87	\$2,417,002	Los Angeles CA	\$355.49	\$3,231,721
Pittsburgh PA	\$346.52	\$3,150,249	Kansas City KS	\$358.47	\$3,258,879	Las Vegas NV	\$325.61	\$2,960,148
New York NY	\$442.12	\$4,019,284	Chicago IL	\$373.41	\$3,394,665	Seattle WA	\$355.49	\$3,231,721

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