Tech Report 1

The Duffy School

Jeremy Drummond

Construction Management

Anumba

The Duffy School

Florence, NJ

9/19/2014

Executive Summary

Client Information

The owner of The Duffy School renovation and addition is a joint venture between Conifer Realty and LeChase Construction to form Conifer-LeChase Construction. Conifer Realty has over twenty years of experience in building affordable homes, while LeChase Construction is a full service construction management firm and general contractor. Together Conifer-LeChase Construction delivers high quality, value-driven housing projects with excellent service and support.

The Marcella L. Duffy School was first opened in the 1870's and served as the first public school in the community. The school was closed down in 2008 due to the expensive costs of the outdated heating, ventilation and air-condition systems. The Duffy School addition and renovation with turn the original school into an affordable senior citizen apartment complex. The original school building will be turned into 35 apartment units. The addition, which will be on the east side of the school, will add another 18 units. In addition to the 53 apartment units there will also be a community room, fitness center, craft room, library, and an entertainment facility.

The overall expectations that Conifer-LeChase Construction has for the project are:

- *Cost*- $9,290,265
- *Schedule*- The abatement and demolition to be completed by June 24th, 2014. The existing building to be complete by April 30, 2015 and the addition to be completed two weeks earlier on April 13, 2015. Conifer-LeChase has accepted the schedule and expects all sequences to be executed on time.
- *Safety*-Conifer-LeChase is constantly striving to improve their safety record and improve accident prevention. This is done by issuing required documents including a site specific quality control plan, a site specific safety plan, task hazard analysis instructions, and subcontractor safety responsibilities.

Existing Conditions Site Plans & Local Conditions

On the site for The Duffy School addition and renovation sits the original Marcella L. Duffy School. To the east of the school there is a parking lot and a small unoccupied house. To proceed with the addition to the school the parking lot and small unoccupied house had to be demolished. To the west of the school there is a blacktop that was used for outdoor sports including basketball and four square. South of the school is W. Second Street which is a two lane, two way road and to the north is a small one way alley. On the other side of the alley are residences in which the work shall in no way impede the use and occupancy of those properties and must be coordinated with the property owners.

All the streets surrounding the site do not get heavy use, so the entrance to the site is off of W. Second Street and the exit is onto the small alley to the north. Parking and trailers are on site to the west where the old blacktop sits.

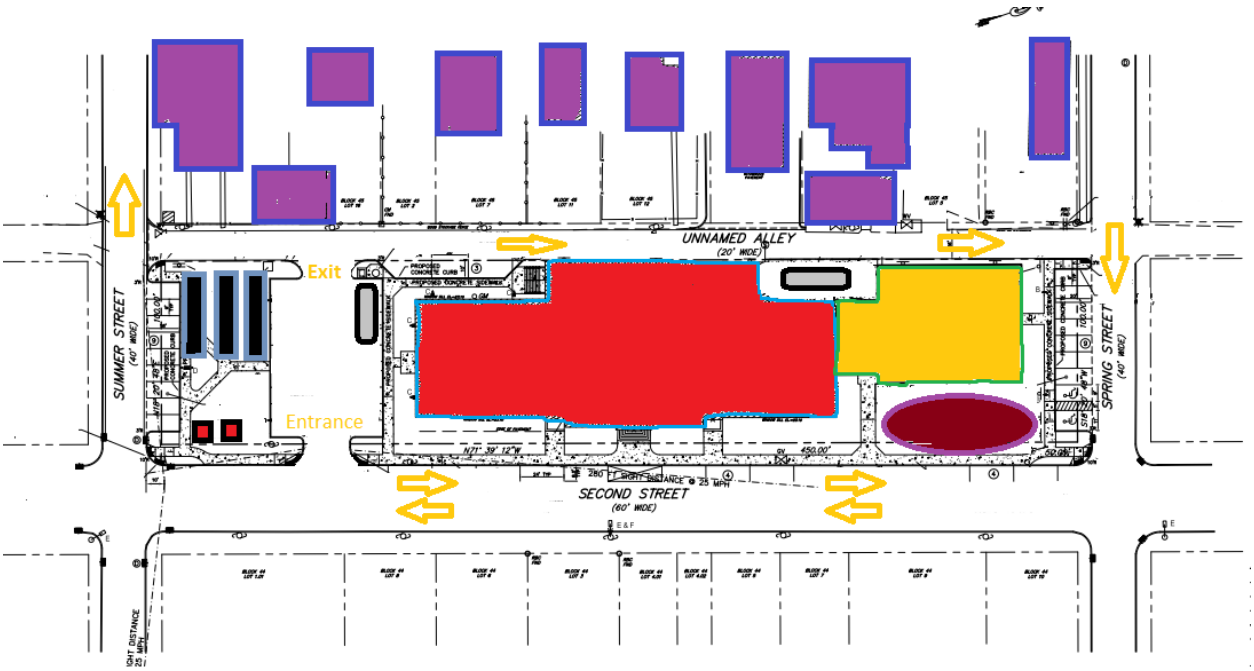


Figure 1: Construction Site Plan (Property of Jeremy Drummond)

Building Systems Summary

Construction- The Duffy School is being delivered as a design-bid-build project. There was extensive demolition and removal of selected portions of the building and selected site elements. All existing mechanical systems were removed in their entirety including but not limted to the boiler system, piping, coils, valves, air handlers, etc. All the demolished materials were recycled wherever possible and any hazardous materials were disposed of in a safe manner. All existing plumbing systems were also removed in their entirety. The power and electrical systems remained active and had to be modified wherever needed. Due to the age of the school there were also numerous historical guidelines that needed to be followed according to the Duffy Urban Renewal Program and by Florence Township. All the black slate chalkboards and historical trim must be removed and carefully stored for reinstallation throughout the new building. All the historic tin ceilings and their patterns needed to be fully documented where they exist prior to any work. A piece of the cornice band, a piece of the border and a minimum of two square panels per room must be labeled and saved to be reproduced in the new building. The lobby columns and pediment vestibule also needed to be saved and protected during construction. This included completely covering the piece and not being able to work within a one foot radius of the historic piece.

Structural- The primary structure of the Duffy School is wood framing. The shear walls will have 2” x 18 metal fastened straps at each stud. The walls will also use Simpson Hold Down Anchors between each floor and between the bottom level and slab-on-grade. The building enclosure is wood stud with a brick veneer. For the existing building the brick façade was repaired/restored and the exisiting wall construction remained the same. The roofing system is a white EPDM roof system. The EPDM roof sits ontop of R-25 resnet grade 1 insulation. Under the R-25 insulation is a 2.5” layer of spray foam insulation and R-38 total roof insulation. The building will also have foundation walls constructed of 3000 psi normal weight concrete and the slab-on-grade uses 4000 psi normal weight concrete.

Mechanical- The Duffy School is cooled by six VAV packaged rooftop units and eight air handling units. The rooftop units are Mitsubishi MXZ8B48 4 ton, 48,000 BTU capacity with 208V/ 1 phase. The units provide conditioned air through the use of standard grille, register and diffuser terminals. Wall mounted thermostats with occupancy control need to be provided and must be fully programmable and interlocked with the roof top units.

The rooftop units also provide heating with the use of natural gas. Thirty six gas mains enter the building on the north west side of the building from gas meters on the exterior of the building.

The building will also be equipped throughout with an automatic sprinkler system with quick response sprinkler heads

Lighting/Electrical- The electrical utility service enters the building on the north side into the utililty transformer located in the vault. The service than travels to the main distribution panel at 800A, 208/120V, three phase, four wire. There is also a 60KW outdoor diesel emergency generator incase of outages. The main lighting in the resident apartments is fluorescent fixtures, while shared spaces use 33" pendant fixtures and exterior lights are LED architectural sconces. The main electrical room is located on the west side of the building on the ground floor.

Project Delivery System

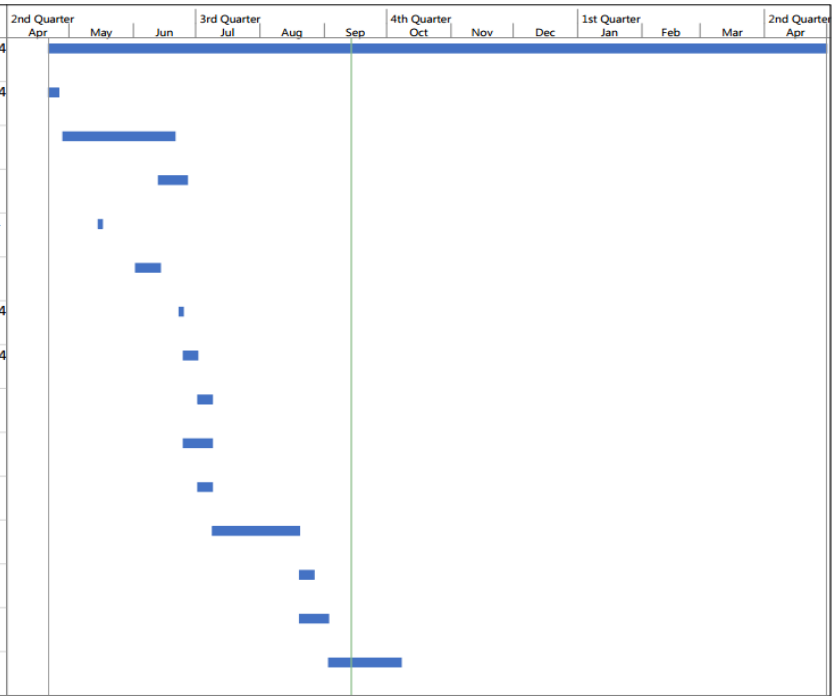
The Duffy School renovation and addition is a design-bid-build project. The owner, Conifer-LeChase Construction, chose Gary Gardner Construction to be the general contractor. Gary Gardner Construction holds all the contracts with the subcontractors. Subcontractors were selected based on a competitive bid process for some and negotiated sum for others. All contracts with subs are lump sums. No bonds were required from the subs but general liability and workman' s compensation insurance were required.

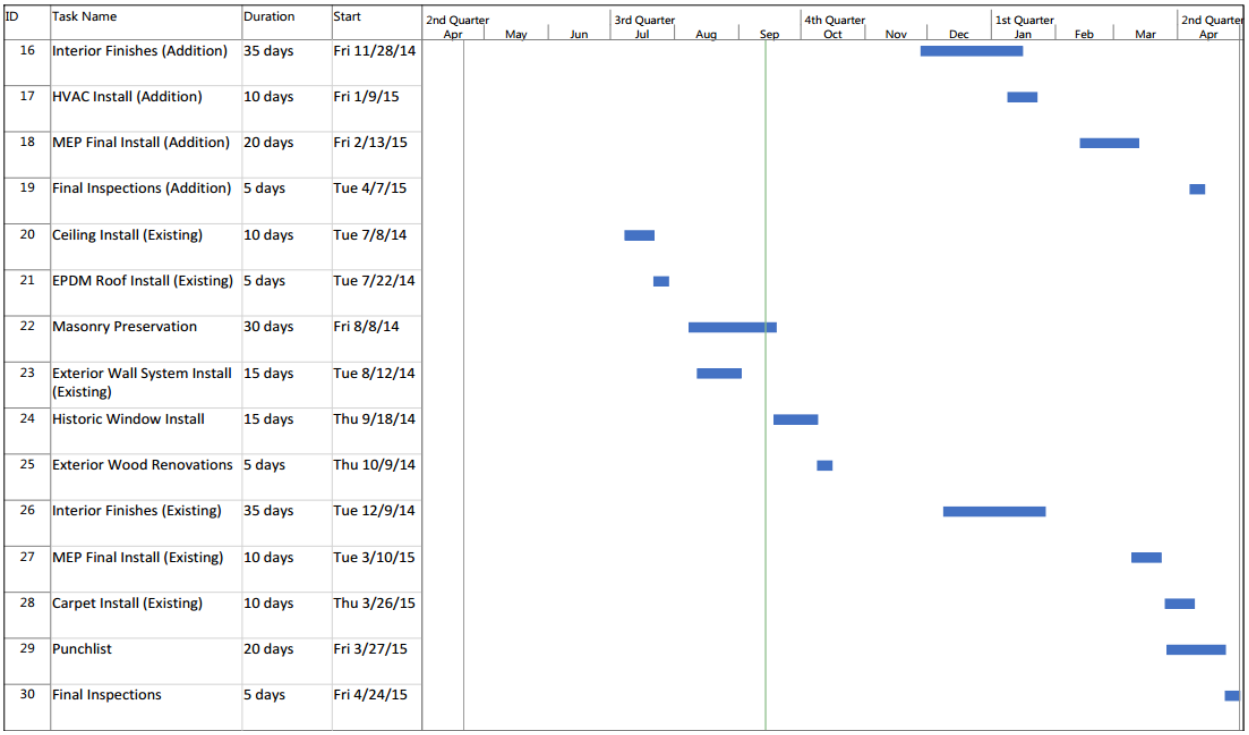
Staffing Plan

The general contractor, Gary Gardner Construction, has representatives on site five days a week. John Abele is the project manager and is on site for the the regular meetings which occur every first and third Tuesday of the month. Dominic DiSantis is the supervisor on site and reports directly to Mr. Abele if needed. The superintendent, Mike Fisher, is on site full time and is incharge of daily tasks including quality control and quality assurance operations. Also on site is the field administrator, Alex Medvesky, who is in charge of taking pictures and documenting anything needed for historic concerns. Not on site is the project administrator who attends the monthly meetings as well.

Project Summary Schedule

ID	Task Name	Duration	Start
1	Site Work Start	269 days	Mon 4/21/14
2	Site clearing and Grubbing	5 days	Mon 4/21/14
3	Abatement and Demo of Existing School Building	40 days	Mon 4/28/14
4	Existing Building Concrete Cutting	10 days	Fri 6/13/14
5	Survey and Layout	2 days	Thu 5/15/14
6	Underpinning Existing Foundations	10 days	Mon 6/2/14
7	Floor Slab Insulation	2 days	Mon 6/23/14
8	New Elevator Footings	5 days	Wed 6/25/14
9	Building Link Slab and Stairs	5 days	Wed 7/2/14
10	First Floor Building Frame (Addition)	10 days	Wed 6/25/14
11	Building Link Steel Installation	5 days	Wed 7/2/14
12	2nd and 3rd Floor Frame (Addition)	30 days	Wed 7/9/14
13	Roof Installation (Addition)	5 days	Wed 8/20/14
14	Window and Door Install (Addition)	10 days	Wed 8/20/14
15	Exterior Finishes (Addition)	25 days	Wed 9/3/14





ID	Task Name	Duration	Start
16	Interior Finishes (Addition)	35 days	Fri 11/28/14
17	HVAC Install (Addition)	10 days	Fri 1/9/15
18	MEP Final Install (Addition)	20 days	Fri 2/13/15
19	Final Inspections (Addition)	5 days	Tue 4/7/15
20	Ceiling Install (Existing)	10 days	Tue 7/8/14
21	EPDM Roof Install (Existing)	5 days	Tue 7/22/14
22	Masonry Preservation	30 days	Fri 8/8/14
23	Exterior Wall System Install (Existing)	15 days	Tue 8/12/14
24	Historic Window Install	15 days	Thu 9/18/14
25	Exterior Wood Renovations	5 days	Thu 10/9/14
26	Interior Finishes (Existing)	35 days	Tue 12/9/14
27	MEP Final Install (Existing)	10 days	Tue 3/10/15
28	Carpet Install (Existing)	10 days	Thu 3/26/15
29	Punchlist	20 days	Fri 3/27/15
30	Final Inspections	5 days	Fri 4/24/15

Figure 2: The Duffy School Summary Schedule (Property of Jeremy Drummond)

The project was started on April 21, 2014 with the site clearing and grubbing. The next week was the major start of the project with the abatement and demolition of the existing school building. This task took the longest due to the hazardest conditions (lead paint and asbestos) and due to the histrocial restraints which added extra time for safe care, transportation and storage. The next step for completion was to get one crew to completely frame out the first floor of the addition and to complete the building link. Once the first floor is framed a second crew will start to work on the existing building while the other crew will continue with the addition. The addition will be completed first on April 13, 2015 while the existing building will be finished a couple weeks later on April 30, 2015.

Project Cost Evaluation

Actual Building Costs for The Duffy School		
	Construction Cost	Cost/SF
Building Construction Cost	$7,512,223	$105.79
Total Project Cost	$9,290,265	$130.83
MEP/FP Systems Cost	$2,416,632	$34.03
Structural Systems Cost	$698,243	$9.83

Figure 3: Actual Building Construction Costs

Square Foot Estimate for The Duffy School	
Gross Floor Area	70,593
Average Floor Height	9’8”
Perimeter	875
Final CC/SF	$130.44
Additives	$196,349
Final Total Cost	$9,208,000

Figure 4:Square Foot Estimate

The actual building construction cost (not including land costs, site work, permitting, etc.) and the construction cost per square foot are respectively $7,512,223 and $105.79/SF. This is based on the total gross floor area of 70,593 SF. The total project cost is $9,290,265 with $130.83/SF.

The MEP/FP systems total cost is $2,416,632 and $34.03/SF. The MEP/FP systems are the most expensive systems in the new building and addition. The structural systems cost is low at only $698,243 and $9.83/SF.

The sqaure foot estimate was produced using RS Means Online following these parameters:

- 70,593 GSF
- Average floor height=9’8”
- 875 ft perimeter
- Apartment 1-3 story (no basement) with brick veneer on a wood frame
- Pricing data from Vineland, NJ (town near by)

The slight difference in the RS Means value and the actaul cost could be attributed to several things. The Duffy School was compared to building a brand new 3 story apartment building, which is not what is happening because most of the building is a renovation. Another difference could be in the additives that were selected. The appliances selected for each apartment were not top of the line ones like the actual building will have. The new building will be equiped with high effiencey energy start rated products and appliances which cost more.