



**BLUEFIELD FREIGHT STATION
FEASIBILITY STUDY**

MAY 3, 2011



SCHOOL OF ARCHITECTURAL ENGINEERING & TECHNOLOGY

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ARET 402 – Senior Design Studio

RE: Design Proposal for Bluefield Freight Station

DATE: May 3, 2011

We would like to thank the City of Bluefield for allowing us (Bluefield State) students to share our thoughts and opinions on the future usage of the old transit building. It has been a great learning experience and allowed us to attain valuable skills that may help us in future endeavors.

As Bluefield State future graduates in the Architectural Engineering major, students will be provided the opportunity to analyze the role of architecture in the building construction industry. Course work will involve skills in basic graphics and drafting, building design, and basic engineering of architectural structures. This course in particular is the ARET Department's "Capstone" course, intended to provide an arena to apply the skills and techniques gained in the course work of the entire program. It is a continuation of ARET 301 - Institutional Design, and will expose the student to projects involving more complex programs and special requirements. Building design problems will involve commercial buildings and larger scale mixed use developments. Projects shall develop skills in programming, design composition, structural determinations, and material selection. Design problems assigned during the semester will require building code analysis and research addressing specific and nonspecific design criteria.

Intentions for the project are to analyze the old transit site and derive a proposal for future usage of the building. This proposal shall include but not be limited to: photos of the existing conditions of the building, floor plan drawings of the existing conditions of the building, a spatial analysis of the building itself for proposed future use, an approximate estimate, a 3D rendering of proposed use, as well as a new site plan for the existing land.

The four students responsible for this project are: Jason Hairston, Stephanie Suratos, Jason Duncan, and Sherrick Dews all of whom are seniors in the Architectural Engineering Technology program.

History of the Building

The original name for the building was the Norfolk and Western Freight Station and its intended usages were as a distribution center, a venue for community events and office space. The original structure (Brick Building) was constructed between the years of 1910 and 1920 with the remainder of the building being completed before the 1930's.

Since the early 1900's, the owners and usage of the building have changed from warehouse space, a janitorial supply company to a manufacturer of jail cell doors. The Freight station was one of the first locations for the Southern Appalachian Industrial Exposition which was a predecessor to the present day Coal Show. The coal show has national recognition for being one of the only two coal shows in the country. The original event is an essential piece of coal mining history in southern West Virginia.

Another event that took place at the freight station was the introduction of the J class steam locomotive. Only 14 of the locomotives were manufactured before they were replaced by diesel locomotives in the 1950's. The locomotives were manufactured and designed by Norfolk and Western employees and were used strictly for passenger transportation and pulled trains such as the Powhatan Arrow, the Pocahontas, and the Cavalier. At the time, these trains were the best on the market as well as the heart and pride of Norfolk and Western.

Bluefield, W. Va.



7885

In the buildings prime, the building was owned by a company called Railway Express Agency, a company that was basically the "Fed Ex" of their time. They transformed the freight station into a gateway for shipping and receiving goods throughout the greater Bluefield area. This distribution center created a steady flow of necessary goods that greater Bluefield area would've never received without the distribution center.



Bluefield, W. Va.
1889

Interior Existing Conditions

The current condition of the entire building, interior and exterior requires major restoration. The interior of the Federal News building and the Historic Brick building are in the worse conditions interior wise. Current interior conditions of the bays appear to be in good shape.

The Federal News building is the smaller of the buildings and probably will require the most work to the interior. The building has a large room centralized with columns surrounding it. There is a hall way wrapping around the central room with smaller rooms located on the outskirts of the building. A small bathroom is located near the entrance. There are numerous amount of electrical outlets spread through the building. The walls of the building appear to be falling apart with insulation exposed, and large holes in some of the walls. The following pictures show interior conditions for the federal news building.

Interior view of small room inside of the old Federal News Building (Bay 4)



Attic view inside of Federal News Building (Bay4)

Entrance to inside of Federal News building. (Existing Walls)



The Historical Brick building has three floors with an entrance on the first floor. The main area of the first floor of the brick building is rather large but is limited due to sets of columns running directly through the middle of the area. The columns run the same route on the second floor of the building as well. The building has bathrooms located on both floors but they are not in working condition. The second floor also has a stage area that's located above the federal news building. The stage itself appears to be in good shape but the wood floor has started to dry rot and is not safe to walk on. In this area, exposed columns show that column to joist connections have rusted as well. There is currently no ADA access in the building. The following pictures show current interior conditions in the brick building.

Second floor of Historic Brick Building





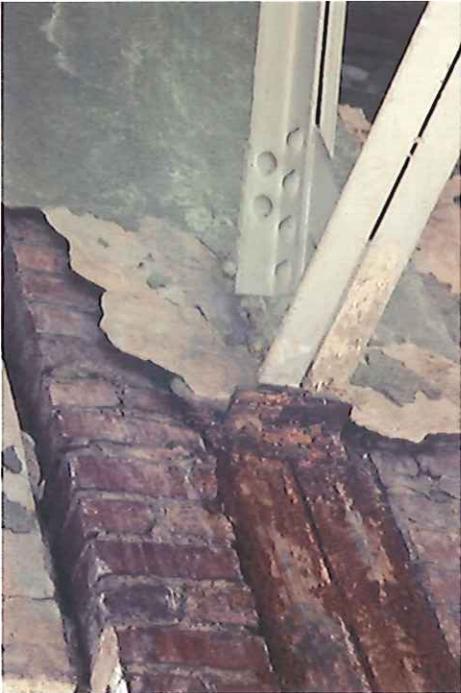
Stage/Ballroom area of Historic Brick Building
(Upper Floor)

Second floor stair of brick building



1st floor entrance of brick building

First floor of Historic Brick Building.
Column layout on bottom floor



Rusted column to joist connection on 2nd floor of brick building

2nd floor bathroom of brick building



All four of the bays are the same size. Essentially all of the bays are wide open except for non-load bearing walls in bays one, two and three that are currently being used for office space. Bay four has a wooden mezzanine in the far corner for supervision. Bay 1 has a hydraulic lift that's currently used by the Bluefield Area Transit company.

Interior View of Bay 4



Interior View of Bay 4

Current HVAC equipment in bay 4



Exterior Existing Conditions

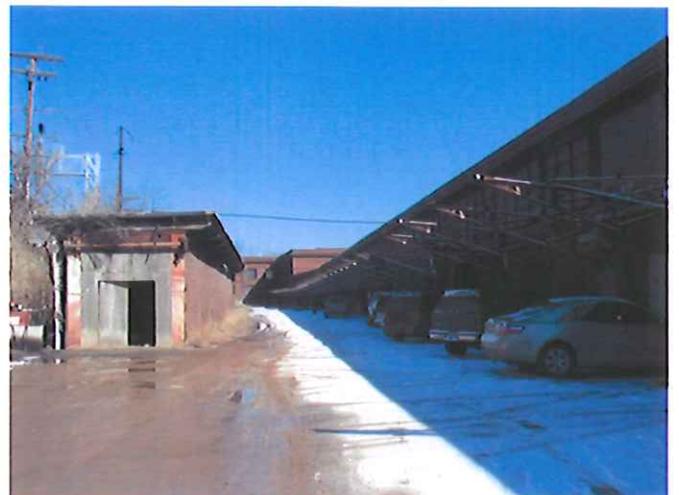
Considering most of the building is 60+ years old the exterior of the building isn't too bad. The windows all over the building need to either be replaced or repaired since they all are either hanging off the hinges or broken. The current brick located throughout the building appear to be in good shape just need cleaning. Metal sheeting covers the current brick on all of the bays.

Front of building near Transit entrance



Rear view of building looking East

Rear view of building looking West



Roof of brick building



Rear of brick building



Rear of Historic brick/Federal News building



Front entrance to Historic Brick building



Side yard of brick Historic Brick building

Work to be done by Grant Application

Funds received from the grant would allow the City of Bluefield to return the brick building back to its original historical appearance. By removing the brown sheet metal that's currently in place the original brick can be shown as well as existing windows. With a majority of the windows being broken or damaged the funds will help aid in the repair or replacement of the windows that currently pose as a security threat to the building. Also the funds will help in fixing the drainage system where it's needed as well as painting throughout the building.

Proposed Uses

With there being a lack of family entertainment in the community, the proposed usage of the building is to turn it into a sports/entertainment complex. The idea behind the complex is to help get the youth of the surrounding area active. This program was developed by working with the Indoor Recreation Committee Members, Andy Merriman, Mayor Linda Whalen, Pete Sarver, Through a series of meetings throughout the semester with the members of the committee we have developed a proposed plan. While giving many suggestions, the Recreation Committee Members have chosen the following ten activities that will be implemented into the project at the Freight Station:

- ❖ Car/Boat/RV Storage
- ❖ Playground
- ❖ Concession Area
- ❖ Skate Park
- ❖ Multi-sport Facility
- ❖ Laser Tag
- ❖ Rock Climbing Wall
- ❖ Conference Room/Ball Room/Reception Area
- ❖ Indoor Batting/Golf Cages
- ❖ Shuffle Board

Research conducted shows that the above activities would be appealing to the youth in the area. With the activities combined into one facility, this would allow the young occupants and parents to enjoy their experience and continue to return multiple times.

Bay 1

Due to the openness and layout of the two bays, our proposed usage is an indoor arcade/playground. Bay 1 could be the arcade side of the building with gaming arcade systems, small electronic rides, and things of that nature. Gaming units could give tickets and prizes won based on ticket amounts.

Bay 2

Bay 2 would be in conjunction with Bay 1 and would contain the indoor playground as well as a concession stand. The playground could be organized into two groups based upon age to help ensure the safety of the smaller children. This area would also be the concession area in which it could also serve as a lobby for parents.

For both areas, existing non-bearing walls will need to be removed to open up the space. More electric outlets will need to be added to provide power in the concession/kitchen area as well as for the arcade systems. New flooring will be needed for both bays as well, including special padded flooring for safety of younger children in the playground area.

Staffing will be needed for this area. Three or four people will be needed at the concession area at all times to cook and take orders. A ticket counter/booth would be needed in the arcade area and one or two people would be needed based on hours of operation. One or two people would also be needed to provide janitorial services during hours of operation.

This part of the building will probably be the most expensive to occupy based on equipment needed and building renovations (HVAC, insulation, floor padding, etc.) needed, but it will probably bring in the most revenue. With nothing of this sort in the Mercer County area, it will easily serve as a weekend hangout for parents to take their children as well as a "birthday party destination."

Bay 3 and Loading Dock

The current loading dock area of this building is centralized and based upon its size; our proposed usage is a main office space for the building. All of the accounting and payroll processes would take place in this building, security monitors, and perhaps an employee break room.

The area also has adequate space to complete construction of a skate park. Studies completed of other skate parks in the nearby area show that this could draw in the biggest crowd of youth inspiring to be skate boarders. It would be a great revenue generator, as well as accommodate some of the youth in the area and create a safe habitat for this activity to take place. The majority of the building would consist of skating ramps, half pipes, and railing with a portion of the building being set up as a skate shop in which customers could purchase clothing, skate board parts, etc. With the closest skate park being in Richland's, VA we believe a skate park will also be a big attraction for the Mercer County area.

For this area, existing non-bearing walls, offices, and ramp systems will need to be removed that are currently in use by Fed Ex. In addition, new office space will need to be created for the loading dock area for the building. Electrical outlets may need to be added along the shop portion of the bay, but will not be needed for the skate park portion. The current floor could be used for the skate park but may need to be refinished to ensure that it has a smooth finish. Wooden or concrete ramps would not need to be built as long as metal railing is placed throughout the park.

Staffing in this area will be minimal with one or two needed to cover the skate park as well as maintain the shop operations. As for the loading dock/ new office area, staffing will also be minimal as well, mostly consisting of managers/supervisors.

Bay 4

This area is also one of the larger areas and due to its size would make a good multi-sport gym. Basketball, volleyball, shuffleboard, and other “gym like” activities could be held here. Even with other activities being built, there will still be a lot of open space that could be used for other activities, such as dance practices and gymnastics.

This bay alone is almost empty as it appears to currently be used for storage. With concrete flooring currently in place, new flooring could be installed over top of the existing concrete. The new flooring will need to be painted and laid out to support the proposed sports and activities. Staffing would be very minimal here. This area alone will not be a major revenue generator but at the same time it will probably be the least expensive to update and furnish and give an alternate play area for these types of sport activities.

Federal News/Historic Brick Building

Compared to the other areas, this building is rather small in size. Due to interior column spacing, we believe this would be a good area for an indoor batting cage/ mini driving range. Safety nets could be hung in between columns, which should still give adequate room for batting practice. The wall along the entrance of the building could also be used for rock climbing. The entry into this building could be kept, just remodeled somewhat for future use. We believe this area not only will be used by the general public but would be an excellent indoor practice facility for Bluefield State College students.

This building currently has a lot of non-load bearing walls that will need to be torn down to allow for the nets and cages to be installed as well as to allow for the rock climbing wall alongside the brick portion of the building. There are still plenty of electrical outlets present and hardly any will probably need to be added just maybe some re-arranged. Staffing for this area will also be minimal and one to two people would be needed to check-in customers.

Historic Brick Building

Proposed activities for the first floor of the building would be laser tag. Due to the column spacing in the entire building a lot of activities will be hindered. The columns could be used for laser tag themes as bunkers, and there is still adequate room for “run around” space. The second floor of the brick building could still be rented out for small conferences but used for BINGO on a regular basis since there are not any BINGO locations in Bluefield. The basement of the facility could be used for storage. Storage would be needed for chairs, tables, stage equipment, etc.

The flooring here would have to be updated on certain parts of the building. On the first floor the existing tile would have to be demolished and reinstalled. On the second floor in the “Ball Room”, the floor would have to be taken out. In order to insure that the floor will be corrected, the sub-floor as well as the hardwood needs to be replaced. Also, at some of the column to joist connections there is a significant amount of rust. An engineer’s analysis would have to be assessed to ensure safety and stability of the structure. On the plus side, there are many electric outlets in the building that could be re-used, which would lower some of the cost of an Electrician. Staffing here would be minimal, but someone

would have to be trained to be familiar, able to operate, and distribute the laser tag equipment.

Site Plan

The site has been setup to provide as much parking as possible. With our proposed parking layout the parking lot should be able to accommodate around 140 cars. The parking layout is simply around the perimeter of the building. On the North side of the building is where the majority of the parking will take place. The conflict with the parking layout is circulation. There is narrow passage on the ends of the building. Since there will be multiple entrances to the facility, ADA accessibility must be stressed. With the land being on grade in the back of the building most of the ADA spaces will be located in the rear of the building. Designated parking areas will be assigned to accommodate all visitors of the facility.

Exterior design will be critical for the facility. The site will have to be appealing to the everyday passers on Bluefield Avenue. Landscaping, signs, etc. need to be emphasized heavily to accommodate the facility.

As far as drainage, the building site has an existing drainage layout, a new design would not be necessary.

Design Issues

Creating ADA access is probably going to be one of the most difficult parts of the project especially in the brick building. We have created a proposed new entrance that is large enough to add an elevator shaft as well as create a new vibrant entrance for the building. This is the first part of the building that is seen when traveling West on Bluefield Avenue. The new layout would make the building more appealing and may grab the attention of passing vehicles. This could also eliminate the possibility of a complete remodel of the existing entrance. There are no ramps, only stairs at the main entrance. This situation would lead to demolishing and updating the existing setup to ADA standards by a general contractor.

Toilet rooms will need to be added to some of the bays in the buildings and rearranged to meet ADA purposes in the brick building. The bathrooms are located on each floor and they are unisex or were designated for male or female on each floor. The existing bathroom setup on each floor would have to be demolished and redesigned. Each floor should have a facility for men and women, which would eliminate travel from floor to floor for bathroom usage.

ADA standards would have to be met in several parts of the facility. Ramps will need to be added for entrances into all of the bays and some of the bay doors may need to be converted to exits in order to meet requirements. The exits would also have to be setup to meet the standard egress system for this size of facility.

In conclusion, we feel that each building has a significant amount of potential, but each will take a large amount of work. The project can be phased to allow for the revenue generating buildings to be constructed first. With a constant flow of revenue, the other facilities can be constructed as the others are still in operation. The end result of this project can have a heavy influence on the youth in the area, and benefit the city of Bluefield in the long run.



Project: Re-design of Bluefield Area Transit Building
Location: Bluefield, WV

Note: All prices are approximate.
 WV Davis Bacon wage rate assumed.
 Labor Unit Price based on per hour rate
 (*) Indicates insulation is included

Bay 1 Car/Boat/RV Storage

<u>Line Item</u>	<u>Material/Activity</u>	<u>Price</u>	<u>Qty</u>	<u>Sub-Total</u>
1	Garage Doors	\$2,000	2	\$4,000
2	Labor to Install Doors	\$90	80	\$7,200
3	Alarm System	\$6,500	1	\$6,500
4	Electrician	\$84	20	<u>\$1,680</u>

Total: \$19,380

Bay 2 Playground/Arcade Equipment

<u>Line Item</u>	<u>Material/Activity</u>	<u>Price</u>	<u>Qty</u>	<u>Sub-Total</u>
1	Playground Equipment	\$35,000	2	\$70,000
2	Playground Floor Material	\$12	3900	\$46,800
3	Labor to install flooring	\$66	40	\$2,640
4	Arcade Equipment (Package)	\$35,000	1	\$35,000
5	HVAC (Labor Included)	\$50,000	1	\$50,000
6	Electrician	\$84	80	<u>\$6,720</u>

Total: \$211,160

Bay 3 Main Office/Entrance/Concession/Lounge

<u>Line Item</u>	<u>Material/Activity</u>	<u>Price</u>	<u>Qty</u>	<u>Sub-Total</u>
1	Existing Office Update (Incl. Labor)	\$10,000	1	\$10,000
2	Kitchen Equipment (Incl. Labor)	\$8,000	1	\$8,000
3	Frame Lounge (Incl. Labor)*	\$6,000	1	\$6,000
4	Finish Lounge Area	\$5,000	1	\$5,000
5	Skatepark Material	\$25,000	1	\$25,000
6	Labor for Installation (Carpenter)	\$74	120	\$8,880
7	Electrician	\$84	80	<u>\$6,720</u>

Total: \$69,600

Bay 4 Multi-Sport

<u>Line Item</u>	<u>Material/Activity</u>	<u>Price</u>	<u>Qty</u>	<u>Sub-Total</u>
1	Gym Floor	\$25,000	3	\$75,000
2	Labor to Install Gym Floor	\$15,000	3	\$45,000
3	Basketball Goals/Volleyball Nets	\$2,100	3	\$6,300
4	Labor to Install Basketball Goals	\$90	40	\$3,600
5	Install New Lighting	\$8,000	1	\$8,000
6	Electrician	\$84	50	\$4,200
7	Existing Office Update (Incl. Labor)	\$10,000	1	\$10,000
8	Removal of Existing Garage Doors	\$125	100	\$12,500
9	Replace Walls (Material)*	\$25,000	1	\$25,000
10	Labor/Mason	\$105	120	<u>\$12,600</u>

Total: \$202,200

Bay 5 Indoor Batting Cages

<u>Line Item</u>	<u>Material/Activity</u>	<u>Price</u>	<u>Qty</u>	<u>Sub-Total</u>
1	Batting/Golf Cages (Incl. Labor)	\$1,500	6	\$9,000
2	Existing Office Update (Incl. Labor)	\$10,000	1	\$10,000
3	Demo Existing Walls (Incl. Labor)	\$12,000	1	<u>\$12,000</u>

Total: \$31,000

Historic Brick Building

<u>Line Item</u>	<u>Material/Activity</u>	<u>Price</u>	<u>Qty</u>	<u>Sub-Total</u>
1	Exterior ADA Access (Demo)	\$20,000	1	\$20,000
2	Install New ADA Access (Material)	\$25,000	1	\$25,000
3	Labor to Install New ADA Access	\$75	120	\$9,000
4	Bathrooms (Demo Exist. Floors 1&2)	\$35,000	1	\$35,000
5	Install New Bathrooms w/ ADA Accessibility on Each Floor (Material)	\$15,000	1	\$15,000
6	Labor to Install New ADA Bathrooms	\$175	320	\$56,000
7	Plumber	\$190	160	\$30,400
8	Electrician	\$168	120	\$20,160
9	Laser Tag Equipment	\$40,000	1	\$40,000
10	Labor to Install Laser tag Equipment	\$70	40	\$2,800
11	Hardwood/Sub-floor Replacement	\$50,000	1	\$50,000
12	Labor for floor Replacement (Includes Demolition)	\$150	160	\$24,000
13	Elevator (Incl. Building Material)	\$250,000	1	\$250,000
14	Labor to Install Elevator	\$225,000	1	<u>\$225,000</u>

Total: \$802,360

**TOTAL FOR PROPOSED
LAYOUT FOR FACILITY: \$1,335,700.00**