

November 11, 2014

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City of Spokane Parks & Recreation
808 W. Spokane Falls Blvd
Spokane, WA 99201

Project: Carnation Garage Building on Cataldo Avenue between Washington and Howard Streets
Spokane, WA

Subject: Limited Visual Review of Structural Condition

Dear Juliet:

Thank you for contacting us to assist the City with the evaluation of the Carnation Garage. Per your request we have made a visit to the site to conduct a limited, visual inspection of the primary structural elements. We understand the City is in the process of doing some master planning and has been considering this facility for potential adaptive reuse. The intent of this report is to give a general sense of the structural condition and provide comment on suitability for future uses.

We visited the site on January 3, 2014 and walked through the facility with the assistance of City personnel. We toured the basement and main floor levels, as well as walking around the full perimeter on the exterior.

The approach was to get a sense of the overall type of construction and form an opinion about the general structural condition. It should be noted that no attempt was made to make a detailed, close visual inspection; perform material testing; or to do detailed structural calculations. The review was also limited to areas that were readily visible from the floor level of easily-accessible areas. Drawings or original design documents were not available at the time of this report and all estimated areas should be considered rough estimates only.

It should also be noted that this report is generic in nature. No attempt was made to predict the specific types of future uses or adaptive remodels that may be considerations for the property. This report is intended to offer an overall, general condition assessment of the building's structural components only.

BUILDING ARRANGEMENT AND CONSTRUCTION

For the purposes of this report, a simplified description will be used to aid in the discussion of the spaces as there are some observations that apply specifically to the type of construction and condition of each. Rough-order approximations of total area are included for reference only. Without any available documentation, web-based maps were used to approximate plan areas of each building portion.

The building could be organized into three general areas. The southwest corner is a two-story space that has a relatively flat roof and is where vehicle access occurred via two roll-up garage doors. This southwest portion is approximately 25' wide by about 85' long, for a total of roughly 2125 square feet

(sf) in plan area. The narrow end faces south along Cataldo and it appears that the main street level and the basement level are the same size.

Immediately adjacent to this area in the southeast corner is a larger, open area supported by large wood trusses. This southeast corner is a two-story building that is roughly 50' x 85' deep (4250 sf), matching the length of the southwest area noted above. Both street and main levels appear to be this same dimension. The narrower 50' end also faces south on Cataldo and has a single garage door facing the street. This space is not currently used due to the condition of the roof.

The northern half of the building is a large area with curved steel "bowstring" trusses clear-spanning full width. These trusses are supported on bearing walls along the east and west sides of the building. This building is approximately 75' wide x 110' long for an approximate plan area of 8250 sf on each of two levels. It is also a two story space. This northern building matches the combined width of the southwest and southeast portions, with this 75' width extending north to Dean Avenue.

Exterior walls appear to be mainly unreinforced brick masonry with the possible exception of the north and west walls. The north and west walls appear to be concrete or concrete masonry. The walls on the north half of the building appear to have concrete column elements supporting the primary, clear-span trusses with masonry infill between columns. The north end wall has an unreinforced masonry parapet extending up from the building wall.

Foundations in the southern areas of the building generally appear to be constructed with fractured basalt rock and mortar at the perimeter walls. This may have been the first part of the building if constructed in phases. This style of foundation construction is common in the area for the type and age of construction. In this area it appeared to have been constructed as part of a vehicle maintenance operation. There were several rooms separated by walls, vehicle drive ramps, and some mechanical spaces.

The northern half of the structure utilizes fairly heavy concrete construction and very likely has cast-in-place concrete foundations. This larger basement area to the north was generally open with a few areas separated by interior walls.

It should also be noted that an adjoining building is in operation at the northeast corner of the site. This building is a taller, attached, office-style building of typical brick exterior with wood in-filled floors. This building was not included in this survey as directed by Parks and Recreation.

OBSERVATIONS

Portions of the building are in reasonable condition considering the age and type of construction. However, there were several areas of concern, including significant concern regarding the structural integrity of the southeast area roof construction. The following is a general overview:

Southeast Area Roof:

This is the area of greatest concern and we recommend the City consider blocking off all access at the main floor level until remediation efforts can be completed. The large wood trusses that span this area have decayed significantly. The decay and failure is likely due to long-term exposure to water through leaks at the roof. One primary truss in this area has nearly completely failed both at the top and bottom

chord levels and is in danger of collapsing. Large holes in the roof are visible and multiple leaking areas were evident.

Northern Area Roof:

The roof is supported on clear-span steel trusses that are built up with steel angle shapes, and appears to be in generally good condition. However, the wood decking and joists shows signs of decay due to moisture penetration, likely resulting in dry rot and compromise of the structural integrity. Water staining and damp areas were visible throughout much of this area.

Exterior Walls:

Many areas where the exterior walls were brick masonry were in need of attention. Large areas would require clean up and restoration of mortar and replacement of bricks. Areas of particular attention would be at the corners and parapets.

In one area of basalt foundation wall, in the southeast portion of the building, the wall had failed and was shored with some plywood supported by braces. Along the east side, it also appeared that what might have originally been constructed as window wells to the basement level had been infilled. The failed basement wall could be one of these locations and would require repair to restore the exterior wall.

Main Floor:

The main floor in the northern half of the building generally appeared to be in very good condition. Roof leaks do not appear to be significant enough to have caused deterioration of the floor level. From below the structural elements appear to be of a size that suggests design for traffic loads. This is consistent with our estimation of the originally-intended use.

The main floor in the southern portion of the building was not in as good of shape. Contributing factors may be the traffic in this area or the substantial roof leaks. Significant corrosion was seen in exposed steel elements as well as areas of corroded reinforcing steel in slabs.

RECOMMENDATIONS

The purpose of this report was to offer professional opinion regarding the general suitability of the building for adaptive reuse, and is based on a limited visual survey. At this preliminary stage, in our judgment the cost of strengthening and repair to make the building suitable for public use may likely be in excess of the value or the cost of alternative options. It is our opinion that the building would require extensive remediation in order to comply with the appropriate code-required design loads and to meet recommended standards. Some key factors in this finding are the following:

1. As noted above, the southeast area roof is likely in need of complete replacement. This should be addressed in the short term by blocking access to this space and then followed by consideration of long-term solutions.
2. The north area roof is in much better shape. However, even in this area there is evidence of extensive water damage that would likely require the replacement of significant portions of the roof deck and joists. In addition, the design criteria used when the building was originally constructed are likely not compliant with current code-required snow load capacity or lateral

forces. Examples include consideration of unbalanced snow loading on a curved roof, snow drift loading, and roof diaphragm attachments. A use change and renovation would trigger required upgrades to new standards. The likely outcome would be the necessity of structural strengthening of the steel trusses, replacement or addition of roof joists, the possible addition of plywood sheathing to create a better roof diaphragm, and the addition of ties between the roof deck and the exterior walls.

3. Exterior walls would require fairly extensive restoration, which would include the demolition and/or bracing of parapets, re-pointing mortar joints, and brick replacement in several areas.
4. The addition of heating or cooling of the interior, energy code compliance (if necessary), etc., could require significant upgrade to the exterior envelope. The likely impacts would include glazing replacement and insulation of roofs and walls. (Please note the intent of this report is to comment on structural condition only; this comment is offered for general reference only.)
5. The main level floor would require some fairly extensive remedial work to repair or replace areas damage by exposure to moisture or other damage. This is largely isolated in the southern half of the building. Floor capacity, especially at the northern half of the building, is likely adequate for a variety of possible uses.

This overall assessment is offered to assist the City in determining the best alternatives for future use of the facility. While preservation of our buildings is often the most desirable outcome for many reasons, this particular building presents several significant challenges. Restoration for public use would likely require significant capital expense that may or not make sense.

If the City develops specific concepts for possible building uses it may be appropriate at that time to do further investigation and study. The building could be analyzed for specific occupancy types, functions, etc. to estimate floor loading capacities, required roof strengthening measures, etc. That work could support cost estimation in the event you desire further evaluation of adaptive re-use options and to get a better sense of probable costs.

The following pages include some photos for your general reference.



Photo 1: South Exterior Wall Facing Cataldo Avenue

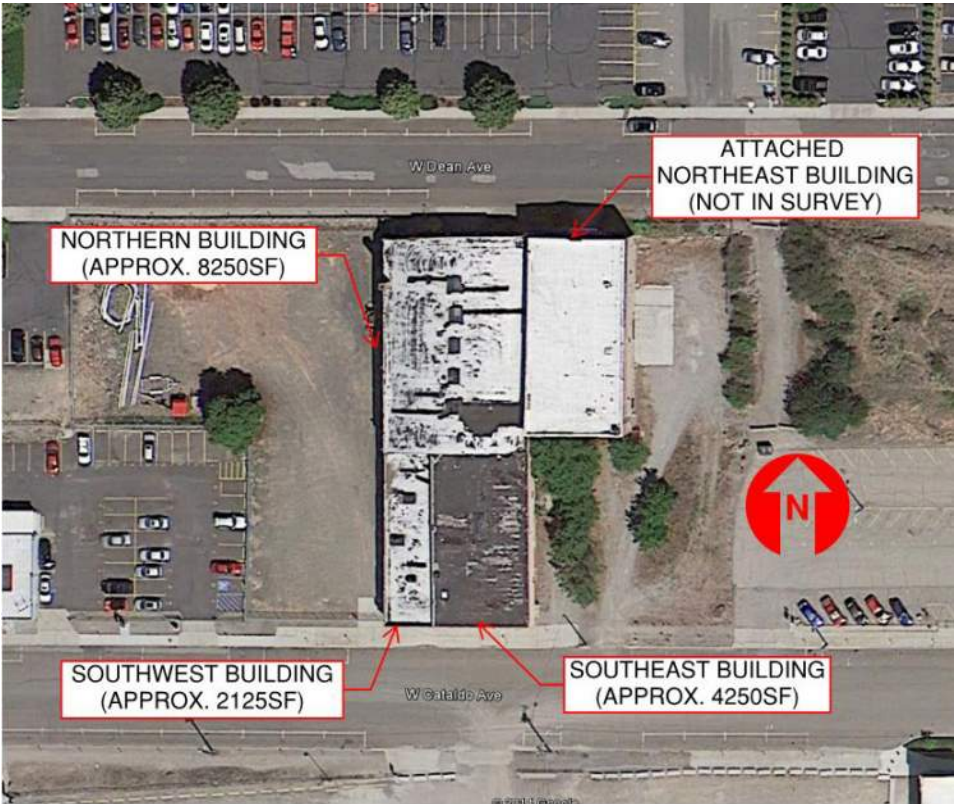


Photo 2: Aerial View of Building Site (Cataldo Borders the South Boundary)



Photo 3: North End Exterior Wall



Photo 4: West Side Exterior Wall



Photo 5: Southeast Corner Exterior Wall



Photo 6: Main Floor Framing at South End (from lower level)



Photo 7: Main Floor Framing at North End (from lower level)



Photo 8: Failed Roof Structure in Southeast Area



Photo 9: General Roof Framing at North End



Photo 10: Typical North Area Roof Moisture Damage

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Thank you for this opportunity to be of service to you. Please let us know if you have any questions or need any clarifications regarding this report. We would be glad to provide you with any further assistance.

Respectfully submitted,

COFFMAN ENGINEERS, INC.



Karl G. Kolb, P.E., S.E.
Principal, Structural Engineer