APPENDIX

Piuraagvik Recreation Center
Utqiagvik, Alaska

Structural Inspection Services
Final Report

1.0 Executive Summary

Trident Engineering and Inspection (TEI) has performed a field visit to review the floor damage within the weight room and the facility framing under the restrooms at the Piuraagvik Recreation Center, Utqiagvik, Alaska. TEI is a subcontractor to Kuna Engineering under Kuna project number 165.030530. Our field efforts were performed on July 14 through July 15, 2022.

The purpose of this inspection is to assess structural members of the facility in its present condition and report on any other conditions that may affect safety and operability. The inspection includes, as appropriate, measurements of member sizes and thicknesses. Testing of structural members, structural analysis, or assessment of the existing structure to sustain design loads as prescribed by modern codes are limited to the areas investigated only.

TEI has performed the level of inspection and analysis appropriate to achieve the objectives of this investigation. TEI is not responsible for identifying or assessing elements inaccessible for visual inspection, or otherwise undetectable by the standard visual inspection methods without destructive testing.

2.0 Facility History

Piuraagvik Recreation Center was constructed in 1984 as a wood framed structure in accordance with the building code in affect at the time, presumed to be either the 1979 or 1982 Uniform Building Code (UBC). Repairs to the facility and modernization were designed between 2011 and 2012 under phase 1. Phase 2 repairs included a steel framed addition that is outside the scope of this report. As part of the phase 1 repairs, the original racquetball courts were reconfigured to weight and storage rooms, and the lobby, office, and restroom areas were reconfigured.

Original as-builts for the facility were not available and design drawings from the phase 1 package were reviewed prior to arrival on site. The phase 1 drawings called for the replacement of restroom area subflooring, floor trusses, soffit sheathing, soffit trusses, insulation, and vapor retarder (demolition keynotes F and G on BDS Main Level Demo Plan A0.1, dated March 3, 2011).

2.1 General Floor Construction

The main floor construction of the facility between Grids 1 and 2 is comprised of 14" deep, top chord bearing manufactured trusses with a 23/32 tongue and groove subflooring, see photo 1. Trusses are spaced at 2'-0" on center and span 12'-0" between Grids B and J, reference Figure 1. Architectural floors were constructed above the subflooring based on the intended usage. A soffit floor was present below the trusses in this area provided a crawlspace area for plumbing, electrical and storage. The soffit floor assembly was not determined as part of this visit.

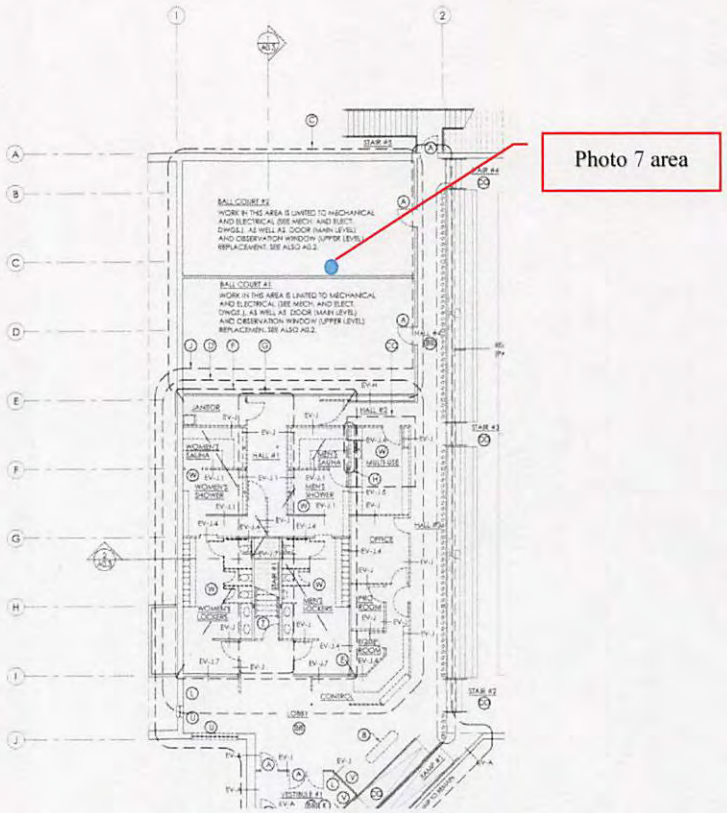

Figure 1: Facility Layout snip from 2011 BDS Drawings

The only markings found on the main floor trusses identified them as Truss-Span from Auburn, Washington and being constructed in accordance with UBC Standards, see photo 2. This company is no longer in business and calls to other major floor truss manufacturers resulted in no information being available as to original load tables.

Photo 1: Truss configuration from centerline

Photo 2: Truss marking

Review of both the 1979 and 1982 UBC's determined that the floor should have been designed for a 100 psf live load in accordance with assembly loading as defined by Table 23-A footnote 4. This original live load rating is in compliance with current State of Alaska design code requirements for gymnasiums (ASCE 7-10 Table 4-1). Weight rooms generally fall under

the gymnasium classification; however, some designers will use a light storage live load of 125 psf to accommodate any stored weight racks that may be present.

2.2 Weight Room Flooring

The structural flooring under the original ball courts do not show visual signs of distress. The architectural flooring is visually distressed due to the current loading and has been damaged by a dropped weight (photos 3 through 6). Significant damage within the weight room is limited to a 9" x 20" area; however, the unloaded bench press seen in photo 4 is on mats to keep it level as the hardwood flooring is visibly deflected. Photo 7 shows the underside of the ball court flooring, clarifying the construction as being 1/4" thick hardwood over 2x4 spacers on rubber pads. Based on the nailing pattern in the flooring itself, it appears that the 2x4 spacers are located approximately 13" on center. Currently, the equipment bearing directly on the hardwood flooring is causing visible deflections that will eventually lead to further material breakage.

Photo 3: Ball Court 2 / Storage Overview

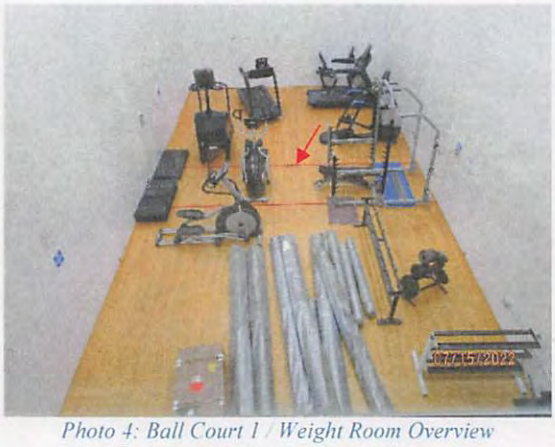

Photo 4: Ball Court 1 / Weight Room Overview
(Note: arrow points to damaged area)

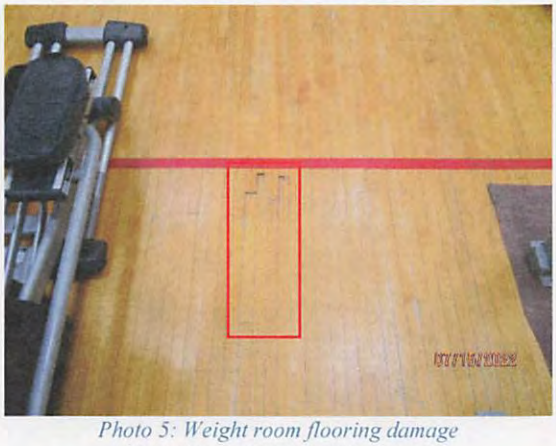

Photo 5: Weight room flooring damage
(Note: box outlines damaged area)

Photo 6: Weight room flooring damage

Photo 7: Ball court flooring construction

It is recommended that the architectural flooring assemblies in both of the ball courts be removed to the subfloor plywood and replaced with appropriate flooring, likely weight room style mats capable of properly supporting the weight room equipment and stored materials. Any areas of missing subflooring, as seen in photo 7, shall be repaired to restore floor live load capacity.

2.3 Women's Lockers

This locker room includes the women's shower, toilet facilities, lockers, and sauna. Showers, lockers, and sauna are located behind a separate door that can be closed and secured to prevent access. Floor finishes have reached the end of their service life and damage was noted at most corners and around drains. Within the shower, locker room and sauna area, the flooring is visibly sloped and spongy away from drain areas. Restroom, shower, and locker room flooring appears to be a poured epoxy system. Sauna flooring appears to be an adhesive style vinyl that has bubbled in several areas due to the heat and humidity of a sauna, followed by excessive amounts of water being used on the rocks (see photos 8-11). No active leaks were found during the investigation.

Photo 8: Corner damage

Photo 9: Cracked finish near shower entry

Photo 10: Women's sauna flooring

Photo 11: Women's sauna flooring at wall

Review of the flooring construction within the crawlspace area showed significant water damage that has occurred either from original construction or when phase 1 repairs were completed. Four trusses between the exterior wall and edge of the locker area also showed signs of water damage and did not appear to have been replaced as part of the phase 1 repairs. It is expected that the top chords have significant rot present where contacting the floor sheathing that will not be fully uncovered until the sheathing has been removed. These trusses could remain in place if top chord deterioration is not found during demolition. The soffit sheathing itself showed water staining, both on the interior and exterior of the structure (see photos 12 to 17).

Photo 12: Crawlspace area under women's shower & sauna

Photo 13: Underside of sub-floor at women's sauna