TIMELINE FOR CURRENT TERMINAL BUILDING

This document is an in-depth review of the steps taken to reconstruct the current terminal building and the Board of Directors decision to stop moving forward with the current terminal building and research options for the District

Summer 2015 Initial Study by PARTNER

Fall of 2016 – May 2017, Concept and Budget Report

June 2016 – October 2017 Schematic Design

November 2017 – February 2018 Design Development

March- 2018 – June 2018 – Construction Documents

June 2018 – Permit Set

July 2018 – Bid Set

August 21, 2018- Bid Received

Dec 18, 2018 -Board of Directors directed staff to stop all improvements to current terminal building.

Initial Study

An Initial study was conducted by 3rd party firm to address the rehabilitation requirements and costs for the building. The report did not include new program or interior remodeling, though it did acknowledge accessibility issues which usually trigger increased space demands for larger restrooms and circulation. Two reports were issued:

June 16, 2015 – Limited Geotech evaluation by PARTNER – no signs of soil related distress.

June 18, 2015 – Property Condition Report by PARTNER. The report outlined building repair costs as follows:

Immediate Repairs	$739,650
Long-term Cost Opinion	$279,581
Total	$1,019,231

Mead & Hunt encouraged studying construction of a new smaller terminal project over rehabilitating the existing facility. The airport board elected to proceed with rehabilitation of existing terminal.

Concept and Budget Report

The preliminary scope and budget were established through a series of meetings with the airport and board. Preliminary site assessments for architectural and mechanical systems were performed, with reports included in the concept and budget report. The Revit building model was created based on existing conditions, and as-built drawings provided by the airport.

February 4, 2017

After numerous design studies and iterations, a preferred alternate was selected by the board of directors. The preferred alternate focused on renovating the building within the existing roofline(with the exception of the front canopy and rear vestibule) as a means to limit the structural impacts on the existing facility. At that time a local contracting firm provided a construction estimate. Construction costs were anticipated at that time to be $5,400,000 (construction costs). The Board asked how to limit the scope to $3,500,000 (project costs).

May 20, 2017

In an effort to define a project that could fit within the Board's goal of $3,500,000, the scope of the concept design was reduced and broken into two phases

Phase 1 - $3,100,000 (project costs) Engineer's Estimate

Phase 2 - $3,200,000 (project costs) engineer's estimate

These estimations are based on construction and all other costs associated with each phase.

A noticed to proceed into design and construction documents was given by the board.

Schematic Design

The schematic design was developed to provide a detailed plan layout of program spaces. A preliminary structural condition assessment was performed. (see structural summary below). At this time, the rot and cracking of structural members were identified and contributed to the cost increase. Initial mechanical, electric and plumbing (MEP) engineering was developed to establish primary systems and space requirements.

November 2, 2017 SD Estimate

Phase 1 – $2,600,000 construction ($3,100,000 project costs)

Phase 2 - $3,000,000 construction ($4,000,000 project costs)

Design Development

During the DD phase, the architectural plans were developed. MEP engineering was advanced for equipment selection and layout. Beyond the structural issues identified during the schematic phase (rot and checking in key structural members) the building structural systems was analyzed. Difficulties of meeting current snow load requirements with existing structure became evident, causing increased budget increases for structural improvements.

April 11, 2018 DD Estimate (estimate provided by 3rd party estimating firm)

Phase 1 – $ 3,000,000 construction ($4,000,000 project costs)

Phase 2 – $3,600,000 construction ($4,900,000 project costs)

Construction Documents – Bid documents completed and permit received for building construction.

During the CD phase, the continued structural deficiencies of the existing building (see below) caused additional escalation in the scope and costs. Redesign efforts were made by M&H to reduce the construction costs, including: relocating mechanical space to the ground floor to reduce structural loads, removing the dormer at the board room, redesigning the restaurant and other areas to reduce necessary structural modifications, redesigning restrooms, simplifying the roofing insulation system and other value engineering items. The relocation of the mechanical system to the lower level increased construction costs due to additional distribution (duct work) and a remote condensing unit. The Airport added an external vestibule north of the building which further increased costs.

June 1, 2018 70% CD estimate - (estimate provided by 3rd party estimating firm)

Phase 1 - $2,700,000 construction ($3,700,000 project costs)

Phase 2 - $3,600,000 construction ($4,300,000 project costs)

Bidding and Permitting

Bidding and permitting services were completed for phase 1. Conditional and land use permits were received for the entire project.

Bids

August 21, 2018 4 bids were received for phase 1. Apparent low bidder for phase 1 was Kemcorp $4,395,000

Other bids are as follows:

AMG & Associates $5,379,000

Jergensen Construction $ 5,404,700

RC Construction $6,801,390

National construction trends over the last year have risen dramatically. While this was acknowledged in the estimating and design process, the renovation costs of over $400/sf were not anticipated. As the extent of the structural remediation work continued to be revealed during the construction document phase, the cost estimate did not properly escalate. Other probable contributing factors to the high bid prices were: abundance of construction activity in the area allowing contractors to be selective and charge high rates for their services, the remote location of the site, the complexity of renovating a building with severe structural, mechanical, electrical issues, and the phasing of a renovation of a building during continual occupancy.

Summary on Design Elements

Architectural

The project centered on three key design elements: the creation of a central atrium, the restoration of 2nd floor spaces, and the expansion of the restaurant and aviation tenant spaces.

The central atrium was designed to unite the three suites located on the ground level. Each suite is located at a different grade level, requiring interior ramping and stairs. An entry canopy was added to make the building entrance more pronounced. Heavy timber construction was selected to promote a mountain architectural theme.
Accessible restrooms were added to the atrium to serve the ground floor tenants. Skylights and a fire pit gathering space were designed to allow the atrium to act as a gathering space.

The second floor was planned to be refurbished into the airport administrative suite, the board room, and an event space. New accessible restrooms were planned to serve these spaces. A new exit stair leading from the second floor to the airside was added to meet egress issues at the 2nd floor.

The existing spaces on the ground floor currently occupied by airport administration and the board room were redesigned to allow for an expansion of the restaurant and a large public terminal space for charter and transient activities.

Interior upgrades to finishes were planned for all impacted spaces (all areas except suites A and B).

Exterior

The project included a replacement of the roof system. Starting at the existing structural deck, rigid insulation was planned to improve the thermal performance of the building and add the attic space to the thermal envelope. A new class A asphalt shingle roof was specified. An ice and water shield underlayment was planned around the perimeter and over unconditioned deck spaces to eliminate current ice dam issues. Gutters and downspouts with an ice melt system were specified over building entrances.

New insulated double paned fiberglass windows were specified throughout the exterior of the project. A curtain wall glazing system was added at the 2nd floor atrium and the north egress stair.

The existing cedar siding and stone were planned to be replaced. An air barrier was to be added around the building to meet code and reduce air leakage. Cementitious siding and shingles were specified to replace the existing wood siding. Simulated stone was specified to replace the existing rose quartz.

Accessibility

The existing building has multiple accessibility violations, including site parking and signage. Currently none of the restrooms meet accessibility standards, and there is no accessible route to and throughout the building. All spaces throughout the building and site were designed to meet current California Building Code Title 24 (CBC) Chapter 11 accessibility requirements. This had a significant impact on the design of all spaces, especially the relocation and upsizing of the restrooms.

Fire suppression

The original building fire suppression was designed as a wet pipe system. Due to fire lines being run in the unconditioned attic, pipes froze and ruptured. The system was then converted to a dry pipe system.

This project provided insulation above the attic to allow above-freezing temperatures to be maintained in the attic. The fire suppression system was then planned to be converted back to a wet pipe system. Primary riser lines were planned to be reused. Connections and distribution lines in renovated and new spaces were to be new. New fire alarm control systems were to be installed.

Electrical

CBC Electrical and Energy Codes required multiple upgrades for the renovated spaces, primarily revolving around LED lighting and motion sensors. These elements involved new wiring from the breakers to the fixtures, as well as new fixtures and controls.

Plumbing

All new plumbing fixtures were planned. A new grease interceptor was located to the west to alleviate existing maintenance issues. New sewer lines were planned to the east and west. New supply and sewer lines were set for the relocated kitchen.

Mechanical

A complete new mechanical system was planned for the atrium, ground floor suite C and 2nd floor spaces. The old system was located in the attic, adding significant weight issues to the structural system, as well as maintenance problems. A new air handler was to be moved to the ground level. The condenser was also to be located on the ground level, reducing need to access the mechanical loft on the roof. New air condenser units were planned to replace the existing units serving suites A and B. All mechanical upgrades were designed to meet current California Title 24 energy codes, which would have resulted in significant improvement in efficiency of the system.

Structural

Built in 1981, the building is wood-framed composed of an unconventional system of wood-framed bearing walls, wood columns and glue-laminated roof beams. Following an earthquake, a seismic-retrofit was done in 1993.

Plans were provided to Mead & Hunt for both the original construction and the 1993 post-earthquake seismic retrofit.

When the building was originally constructed, the code required snow loads was 30 pounds per square foot (psf) on the roof.

The current building code requirement for snow loads on new buildings in Big Bear is now 100 psf, which is significantly higher than when the building was initially constructed. Current building code requirements for seismic resistance have also increased relative to when the building was originally constructed.

Our first structural site visit was a condition assessment performed on September 26, 2017. The assessment identified large check cracks through primary members, and significant rot through the exposed glue-laminated beams (GLBs). These items were then identified to be replaced in all future design submittals.

During the detailed structural design, we determined that clarification was needed with the building code Authority-Having-Jurisdiction (AHJ) regarding their interpretation as to the proper application of the much higher current code snow loads to renovated areas.

Mead & Hunt met with the AHJ on March 1, 2018 and was directed to use 100 psf snow load for designing all vertical members in new construction areas and that most of the remaining roof framing work could be considered a “re-roofing” project and would not need to be evaluated or upgraded for the new higher snow loading. The AHJ also required that any members that were replaced on the ground floor (e.g. walls being replaced with beams and columns) needed to be evaluated for the higher snow load. The AHJ also required that any lateral force resisting system changes (shear walls and cross bracing) needed to be evaluated for an increased seismic load resulting from a higher snow loading.

For the proposed new infill areas with new roofs, we evaluated the existing structure down to the foundation for the 100 psf snow loading, but the existing unconventional framing was not adequate for additional loading. This led us to frame the infills independent of the existing structure to avoid overloading and having to make extensive reinforcements to the existing building. It became a complicated structural framing system to provide the infill areas, while keeping the framing separated vertically, but connected laterally.

Since the lateral forces for a seismic event include 20% of the snow load with current code, this was a large impact to the evaluation of the building's seismic performance and compliance. We had to look at the entire building for the lateral load changes with the added loading of the canopy and the removal of the walls on the first floor in the restaurant space.

As we further evaluated the lateral load and the existing drawings, we discovered additional issues with the as-built condition of the building. We found new braced frames that were designed as part of the seismic retrofit were never installed. In addition, the wood braced frame that was installed as part of the seismic retrofit was not installed per the drawings and would not perform as intended in an earthquake. Through further investigation and study, we found that the original structure was not built as shown on the original construction drawings.

Due to the number of items noticed from the original construction drawings and seismic retrofit drawings that were not completed, we then also needed to provide new lateral framing for the building.

Ultimately, a series of unforeseen conditions, progressively required more structural analysis, design and upgrades/renovations. These conditions include material degradation, construction that wasn't performed in accordance with original plans, insufficient seismic upgrades and unconventional upgrades due to significant snow-load changes.

Future Considerations

The existing terminal is approximately 27,900 square feet (sf). Of this space, the airport is actively using approximately 5,000 sf for aviation – (administration, pilot lounge, board room, restaurant, charter services, waiting area). For the expansion, this same program was designed to occupy 12,000 sf. The total renovated and new building square footage (with atrium) would have occupied 28,700 sf. The total building square footage without areas A and B (areas excluded from scope, other than siding and roof repairs) would have occupied 19,900 sf.
The low bid for phase 1 was $4,315,000. This was approximately 43% of the total project scope.

Assuming the phase 1 bid prices are reflective of the future bidding of phase 2 – this puts the construction costs at approximately $10,000,000 for the project. This places the renovation costs at $350/sf for the complete building, and approximately 500$/sf for the impacted areas. (all areas except for suites A &B). The average renovation cost is $425/sf.

While the planned building renovation includes upgrades to structural, electrical, plumbing, mechanical, fire suppression, and architectural systems, they are tied to a 40-year-old building with significant existing deficiencies. As not all of these existing problems are accessible or planned to be upgraded in the renovation, they will continue to cause problems for building maintenance.

The renovated building would have resulted in a structure that was over sized to meet the airport's aviation related functions. It would also have multiple ingrained structural, mechanical, electrical, plumbing and building envelope issues that would continue to cause a high level of ongoing maintenance. This combination of a high cost of maintenance and an oversized structure would continue to burden the airport with a high operations cost.

If a new building were to be constructed to meet the airport's aviation uses, it could be delivered between the existing 5,000 sf and the planned 12,000 sf of aviation related program. A single-story building of approximately 10,000 sf could easily meet the airport's program needs. At a cost of $500/sf, this would be $2,500,000 – $8,000,000. Not only would a new building be less costly to construct, but maintenance and operations on it would be far less, and further contribute to the overall savings of a new structure.

Based on the high cost of renovation, the excess of program in the existing facility, and the high cost of future maintenance associated with the existing building, Mead & Hunt recommends that the airport identify what a new, right-sized new terminal and administrative building would be. Given the cost and complexities of renovating the existing building, it is not viable as compared to smaller structure properly constructed to current codes. We believe that a new facility would provide the lowest total cost to the airport.