

URD TASK ORDER #DTN18-001
CITY OF BOZEMAN | APRIL 2019





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Section 1 INTRODUCTION

01 INTRODUCTION

Scope of Work

This project consists of the Schematic Design and Feasibilty study for the expansion of the existing parking garage to add up to two (2) parking levels and a roof to the existing structure. The structural systems for the additional parking levels to be considered will be post-tensioned concrete to match the existing structural system already in place. The original structural Construction Documents did account for the potential of a future expansion of the parking garage for an additional 1-1/2 levels of parking. Within the scope of our work, we also addressed the addition of light-framed steel roof with solar panels.

The consultant project team was led by Sanderson Stewart with A&E Architects, DCI Engineers, and CDS Engineering. Martel Construction was the General Contractor for the Original Parking Garage, and they have provided the schematic cost estimate and construction schedule for the options outlined in the following report. The project team worked closely with the Downtown Business Partnership and the City of Bozeman Economic Development to develop the final options for consideration with the factors outlined in this study.

Meet the Project Team

The **Bridger Park Garage Expansion Feasibility Study** located in **Bozeman, Montana** consists of a team of partners who analyzed the expansion of the existing parking garage.

The project team includes:

Project Management: Danielle Scharf Sanderson Stewart Principal in Charge: Jami Lorenz, PE **DCI Engineers** Structural Project Manager: Alex Smith, PE **DCI Engineers Architect: Brad Doll** A&E Architects Mechanical/Electrical Engineer: Curtis L. Smit **CDS Engineering** Scott Elders **CDS** Engineering Contractor: Tony Martel Martel Construction **Martel Construction** Tyler Ragen

Executive Summary

As addressed in the following detailed report, the team analyzed a variety of expansion options to meet the needs of the owner within the structural limitations of the existing building. The final options that were deemed feasible were the "Roof Only" option, and expansion options 2, 2b, and 2c. A summary of each of these is outlined below for your reference; please see the detailed report for expanded information for each discipline.

In the Construction Cost Summary (Section 8), the first page provides a comparative cost per parking space for recent parking garage projects throughout the Gallatin Valley. In addition, the following other "add-alternate" options are provided for consideration.

Add-Alternate Options

New North Elevator at Existing Shaft = \$226,670 Snowmelt System for Option 2b only = \$922,506 50KW Photovoltaic System at New Roof = \$74,195

Roof Only Option

Roof Height = under 70'-0".

Additional Parking Stalls = None (Winter Protection of Top Floor)

Construction Cost = \$1.25 Million

Construction Duration = 12 weeks

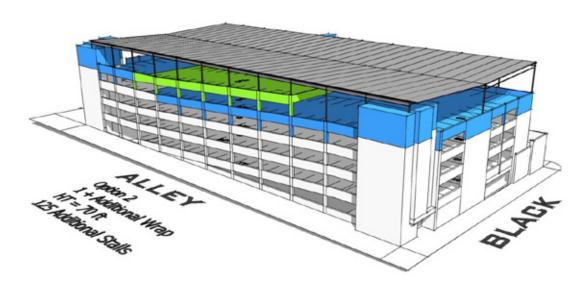
Option 2: Expansion + Roof

Roof Height = 70'-0".

Additional Parking Stalls = 125

Construction Cost = \$4.74 Million, Cost per Space = \$37,903

Construction Duration = 26 weeks



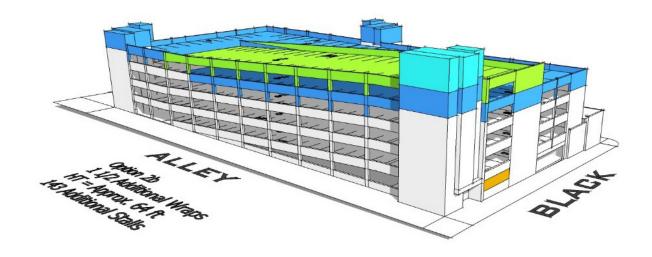
Option 2b: Expansion, No Roof

Roof Height = 64'-0".

Additional Parking Stalls = 143

Construction Cost = \$3.93 Million, Cost per Space = \$27,511

Construction Duration = 20 weeks



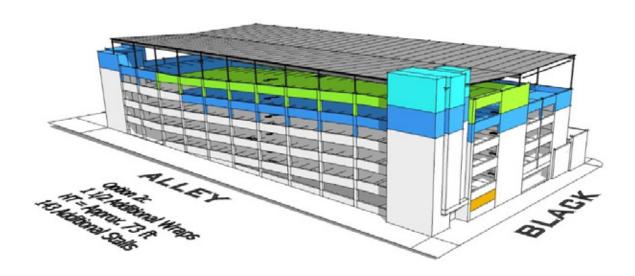
Option 2c: Expansion + Roof

Roof Height = 73'-0".

Additional Parking Stalls = 143

Construction Cost = \$5.17 Million, Cost per Space = \$36,180

Construction Duration = 30 weeks



Section 2 ARCHITECTURAL



02 ARCHITECTURAL

Unified Development Code Analysis

The Bridger Parking Garage is located in the B-3 – Downtown Business District and is located outside the "core area" of this district. The "core area" extends Main Street from Grand to Rouse and one half block North and South of Main Street (38.300.110.D). The Bridger Parking Garage is located on Mendenhall between Black and Tracy with an alley between it and the adjacent buildings on Main Street.

Per 38.320.020.E Building Height Standards, the maximum height for the parking garage is allowed to be 70'-0" outside of the "core area."

Elevator and stair penthouses, water tanks, monitors and scenery lofts are exempt from height limitations otherwise established in this chapter, provided that no linear dimension of any such structure exceeds 50 percent of the corresponding street frontage line. (38.350.050.D) Setback and Height Encroachments, Limitations, and Exceptions.

Existing Square Footage

Basement = 34,221 SF

First Floor = 43,468 SF

Second Floor = 35,440 SF

Third Floor = 34,306 SF

Fourth Floor / Roof = 29,835 SF

Total = 177,270 SF

Proposed addition is approximately 51,459 SF. This area increase would trigger a Level II Design Standard Improvement per 38.500.20 as it is over a 20% area increase but under the 50% area increase. Level II Improvements include all improvements commenced within a three-year period (based on the date of permit issuance) that increase the building's area by more than 20 percent, but not greater than 50 percent. All standards that do not involve repositioning the building or reconfiguring site development apply to Level II Improvements.

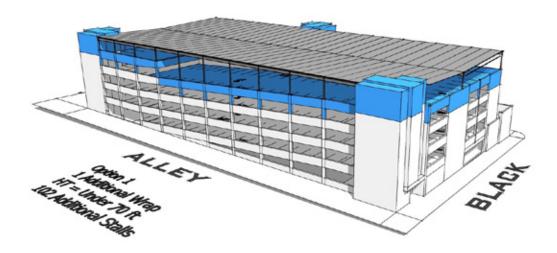
- The location and design of the addition/remodel must be consistent with the block frontage standards (division 38.510), which address building frontages, entries, parking lot location, and front setback landscaping. For such developments seeking additions to buildings where off-street parking location currently does not comply with applicable parking location standards, building additions are allowed, provided they do not increase any current nonconformity and generally bring the project closer into conformance with the standards (see division 38.550, Parking).
- Compliance with applicable site planning and design elements (division 38.520).
- Compliance with all building design provisions of division 38.530, except architectural scale and materials
 provisions related to the existing portion of the building where no exterior changes are proposed. The
 entire building must comply with building elements/details, materials, and blank wall treatment standards
 of section 38.540.070.
- Compliance with the off-street parking, landscaping, signage, and lighting provisions of divisions 38.550-580 that relate to proposed improvements.

Bridger Parking Garage Expansion Options

As outlined in our task order, our charge was to provide a variety of options to expand the existing garage with additional parking decks on the existing building that satisfied the height requirement of B-3 Zoning and also maximized the amount of parking spaces. Following are all of the expansion options considered in our initial analysis study. Based on feasibility, the team then narrowed down the final expansion options to 2, 2b, and 2c as discussed below.

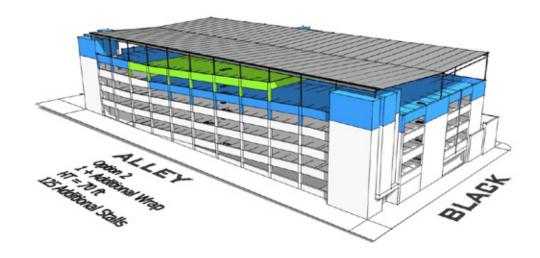
Option 1

Option 1 incorporates one additional wrap (blue) of parking stalls with a new roof to accommodate snow. The roof would be under the 70-foot requirement and would add approximately 102 additional parking stalls.



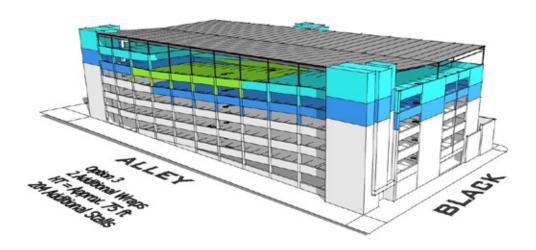
Option 2

Option 2 sets the new roof at 70'-0" and works the additional parking backwards from there as a way to satisfy the height requirement while maximizing as many additional parking stalls as possible and keeping clearances for cars to maneuver within the structure. The extension (green) is in addition to the single wrap (blue). The roof would be at the 70-foot requirement and would add approximately 125 additional parking stalls.



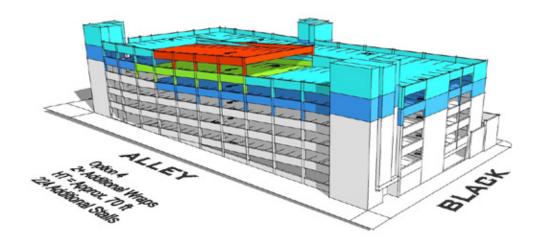
Option 3

Option 3 studies what would happen if two additional wraps were incorporated with a new roof without trying to satisfy the height requirement of 70′-0″. This additional wrap (green and teal) to the first wrap (blue) would accommodate approximately 204 additional parking stalls and would be roughly 75-feet tall.



Option 4

Option 4 studies what would happen if parking stalls were maximized all the way up to the 70′-0″ height limit without any roof. As shown below, the extension (red) from Option 3 without the roof would stop at 70′-0″. This would add approximately 224 additional parking stalls.

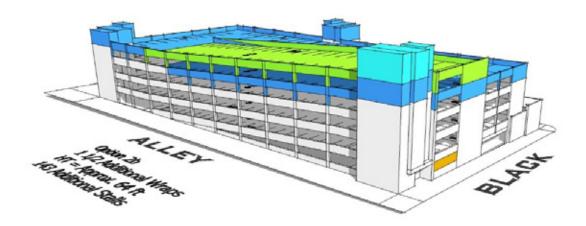


Narrowed Options Based on Option 2 for Further Exploration

As further structural investigation occurred through this process, it was determined that the existing structural components would not be able to support more than an additional 1-1/2 wraps of parking decks. From this information the team focused its efforts on expanded options based on Option 2. Refer to the structural analysis for more information.

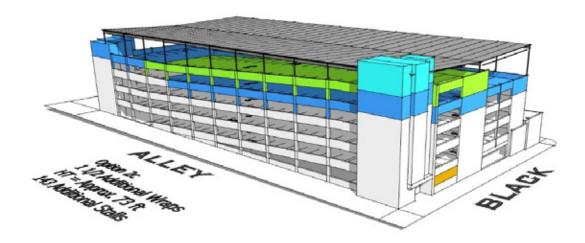
Option 2b

Based on the structural analysis, this option illustrates an additional one and half wraps that would be able to be accommodated structurally. This would be approximately 64-feet tall with a one story addition to two of the elevator and stair towers and a two story addition to the southwest elevator and stair tower. An additional 143 parking stalls could be incorporated in this option. Based on the structural analysis of this project, a shear wall would need to be added at the ground level on the east and west sides of the structure (orange) as well provided at the top level in line with the existing shear walls on the east and west sides.



Option 2c

Based on the structural analysis, this option illustrates an additional one and half wraps that would be able to be accommodated structurally as well as a roof. The roof would be approximately 73-feet tall and would not satisfy the current 70′-0″ code requirement. A one-story addition to two of the elevator and stair towers and a two-story addition to the southwest elevator and stair tower would need to be accommodated as well. An additional 143 parking stalls could be incorporated in this option. Based on the structural analysis of this project, a shear wall would need to be added at the ground level on the east and west sides of the structure (orange) as well provided at the top level in line with the existing shear walls on the east and west sides. A braced frame would also need to be provided in support of the roof on the north and south sides of the structure.



Expansion Conclusion

Options 2b and 2c will maximize the additional parking stalls while not jeopardizing the structural integrity of the existing structure. Option 2c exceeds the 70-foot height limit in order to accommodate clear heights for cars to maneuver within the facility.

Design Aesthetic

In all of the options, the team has assumed continuation of the exterior façade treatments with the increased height to maintain the overall aesthetic. Concrete parapet walls would be provided as the guardrail as presently occurring as well as extending the tan brick walls in the same manner. The same clear anodized aluminum storefront and glazing would be extended at the stair and elevator towers to provided design consistency. Infill panels or fencing at some of the openings would need to be considered to control users as well as deter access to roofs below some of the retail spaces.

The structural improvements to increase the height of the structure will require some additional shear walls around the perimeter of the wall. The exterior aesthetic of these shear walls would infill some of the existing openings that would need to be evaluated aesthetically to ensure a harmonious with the existing aesthetic. The same LED lighting fixtures would be utilized within the interior. Based on our conversations with the elevator installer, the elevators would need to be upgraded to new traction elevators on the east and west sides of the buildings.

The roof is based on the alternate design from the original design. This is a standing seam metal roof that slopes to the interior. The intent would be to maintain snow on the roof with drainage to the middle of the structure to tie-in with existing drainage systems.

Traffic circulation within the expanded garage would remain the same.

Section 3 STRUCTURAL



03 STRUCTURAL

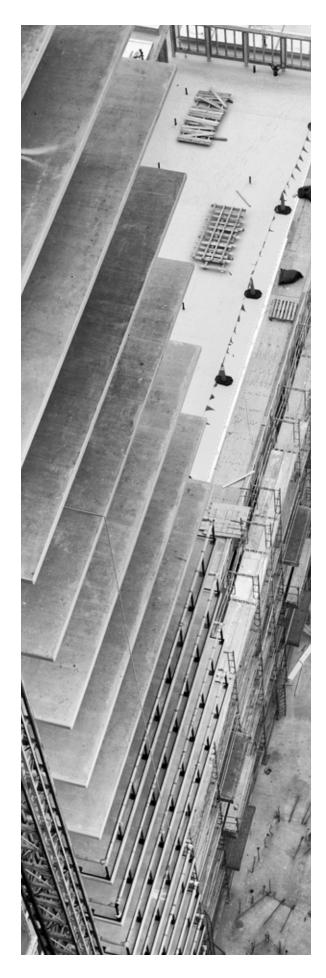
The following design narrative provides a general overview of the structural design including project overview, design criteria, and structural framing descriptions.

Overview

The Bridger Park Garage is an existing parking garage located in Bozeman, MT. The current structure was constructed in 2006. The original structural design was completed in 2005 and fell under the jurisdiction of the 2003 International Building Code (IBC).

The building is comprised of repetitive parking floors constructed of post-tensioned concrete with integral cast-in-place concrete beams. These beams are supported by cast-in-place concrete columns that terminate on concrete spread footings below grade. The building's lateral system consists of orthogonal concrete shear walls extending the full height of the structure.

We have been asked to explore the structural feasibility of expanding the existing parking garage vertically to allow for additional parking spaces as outlined above in the architectural section. As outlined in the Architectural section of this report, we are addressing the structurally feasible options 2, 2b and 2c as well as the "roof only" option. This narrative outlines the effects of the additional levels as well as the effects stemming from the change in relevant building codes.



Original Building Code

- 2003 International Building Code (IBC)
- ASCE 7-02 Minimum Design Loads for Buildings and Other Structures

New Building Code

- 2018 International Building Code (IBC)
- ASCE 7-16 Minimum Design Loads for Buildings and Other Structures

Expansion Options

Roof Only Option

The "Roof Only" option proposes a steel framed roof to be added to the top level of the existing garage with no additional concrete floor wraps (see Appendix).

Option 2

Option 2 proposes an additional full wrap of concrete P-T parking levels plus a small additional wrap (See Appendix). In addition to the floor wraps, this option includes a steel framed roof.

Option 2-B

Option 2-B proposes an additional 1.5 wraps of concrete P-T parking levels (See Appendix). This option does not include any sort of roof to be added.

Option 2-C

Option 2 proposes an additional 1.5 wraps of concrete P-T parking levels (same as Option 2-B) plus a steel framed roof (See Appendix).

Summary of Required Retrofits

Each expansion option was investigated to see what effects it would have on both the gravity system (beams, columns, and foundations) and the lateral system (diaphragms and shear walls). It was understood that the previous design had accounted for the possibility of future expansion, but the full extent was unclear at the time of this investigation. Similarly, since the time of original design/construction, the governing building code has undergone several upgrade cycles which impact the design loads that the structure must resist for seismic earthquake loading. The 2018 IBC will likely be adopted by the State of Montana in the spring of 2019, and as such was used in our analysis of the new options as outlined above.

Under preliminary analysis of the gravity system, it appears that all proposed options require no retrofit to the existing gravity systems (columns/beams) to support the additional levels. New columns will be spliced to the existing concrete columns per detail 11/S5.4 of the original structural drawings (see Appendix).

The weight of the additional levels increases the amount of lateral load that is imparted on the structure during a seismic event. This seismic load must be resisted by the lateral system – in this case, the existing Special Reinforced concrete shear walls. Although these walls may have been designed for additional future levels, the preliminary lateral analysis shows that any of the proposed expansions will require structural retrofits to the building lateral system.

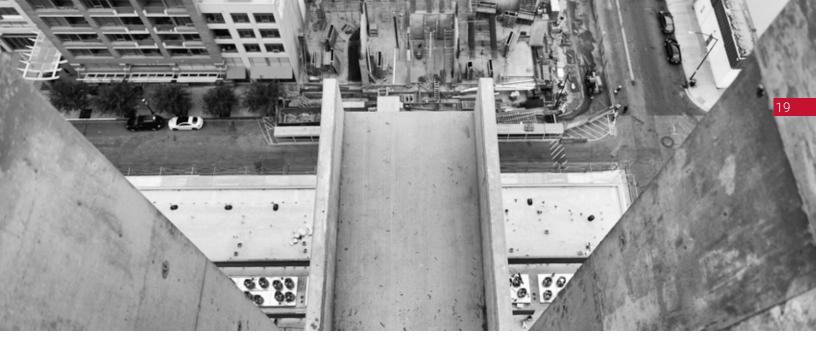
The required lateral retrofits are laid out in the Appendix and summarized here. For expansion options, the existing concrete shear walls will need to extend vertically to the highest new level, tying in at each level. These new shear walls will match the reinforcing of the existing walls and we will need to provide dowels drilled and connected to the existing shear walls below. For all options with a new metal roof, additional steel braced frames will be required on the North and South sides of the upper story in conjunction with the shear walls continuing to the roof.

Analysis of the existing shear walls under the expansion options (other than the Roof Only Option) shows that they do not have sufficient capacity to accommodate the increased lateral load. As shown in the Appendix, we propose providing additional concrete shear walls along the East and West sides of the building to supplement the existing shear walls. These walls would begin atop the 12" concrete basement walls (doweled into the existing wall) and would extend up one level to the first elevated parking platform. These would then connect to the bottom of the existing concrete beam at this elevated level as shown in the sketches in the Appendix. For Option 2, we would require a 12'-0" long wall on each side, while Options 2-B and 2-C would require a longer 20'-0" wall. Option 1 would not require additional concrete walls at the ground floor, just additional braced frames at the upper level and the extension of walls up to the roof.

Conclusion

The Roof Only Option is the only option that does not require a structural retrofit beyond the extension of the existing concrete shear walls at the new levels. Option 2b and 2c maximize the additional parking spots without exceeding the foundation capacity of the building, but require structural retrofits with additional concrete shear walls at the lower levels. Any levels above Option 2c would not be feasible for construction because they would exceed the gravity structure and foundation capacity of the building. Please see the Appendix section, which further outlines the structural requirements for these final options.

Section 4 MECHANICAL



04 mechanical

Existing Mechanical Conditions

Heating, Ventilation, Air Conditioning (HVAC)

Limited HVAC systems are installed in the building.

The retail/office spaces around the ground level perimeter of the building and second level are heated and cooled with roof top units (RTU's). The RTU's are gas fired with mechanical cooling and economizers. The units are ducted to each retail or office space.

The parking garage office is heated and cooled with a separate RTU.

The basement and portions of the ground level parking areas are exhausted with sidewall exhaust fans discharging in the alley.

Elevator machine rooms and the basement water service room are heated with electric space heaters.

Elevator machine rooms are exhausted with inline exhaust fans to keep elevator equipment at operational temperatures.

Plumbing

Sanitary waste piping is installed from the various retail and office spaces to the city mains. A separate grease line is installed from the west restaurant site through a grease interceptor to the city main.

Storm water drainage systems are installed in both the covered retail/office areas and throughout the parking garage areas. A 10" storm drain line is installed on the southwest side of the building. This line carries the parking garage drains and the west side roof drains. A sand/oil interceptor installed at the southwest side of the building for this line. (5) 6" area drains are installed on each level with the garage floors sloped to these drains. The main lines are insulated and heat taped to prevent freezing.

A 6" storm drain line is installed on the east side of the building. This line carries the north roof drains as well as the discharge line from the elevator sump lines. The elevator sump lines are installed to drain through an oil interceptor located in the basement mechanical room.

A 2" domestic water service is installed to the building basement mechanical room. The service extends to the retail/office spaces. The line is buried below the north drive exit to prevent the line from freezing.

Natural gas service is installed on the south wall near the west stair tower. 8 gas meters are installed to serve the individual retail/office spaces.

Fire Protection

A 6" fire service line is installed in the basement mechanical room. The fire service extends to a dry fire sprinkler system in the basement areas of the parking garage and to fire standpipe systems serving the stair/elevator shafts. The fire sprinkler system is not installed on above grade levels. Fire stand pipes with hose connections are installed in the stair towers with hose connections at each stair landing. Fire department connections and a horn strobe are installed on the east side of the building.

Proposed Mechanical Expansion Items

Heating, Ventilation and Air Conditioning (HVAC)

Since the expansion being considered does not have spaces that require new HVAC no systems are proposed at this time expansion unless a mechanical snowmelt system is installed. See snowmelt discussion below.

Plumbing

New sanitary sewer piping is not required in the expansion unless a mechanical snowmelt system is installed. See snowmelt discussion below.

Storm drainage will be required to be extended to the new expanded parking levels.

Domestic water will not be required in the expansion, unless a mechanical snowmelt system is installed. See snowmelt discussion below.

Extension of the existing natural gas service is not required unless a mechanical snowmelt system is installed. See snowmelt discussion below.

Snowmelt System

A snowmelt system for the top level of parking is a possible solution to snow removal on this level and thus eliminating a need for a new roof. Using an approximate area of 30,000 square feet of exposed top level parking, 5,000,000 BTU/hr boiler capacity would be required along with tubing, pumps and all system accessories. Tubing would be installed in the top level and connected via manifolds to the boiler system. Either on an automatic call for snowmelt from a sensor in the concrete or via manual control, the slab would be heated to the point of melting the snow and ice on the top level.

Insulation would be required below the top deck to help direct the heat upward. A mechanical room approximately 300 square feet will be required for the system.

A domestic line, for filling the system will be required. This line will need to be freeze protected or will need to have the ability to be winterized annually.

A drain line for the boiler drains will need to be installed and will need to be freeze protected.

Gas piping and a new rotary style gas meter will be required for this snowmelt system.

Fire Protection

Fire sprinkler stand pipes will need to be extended to the new levels in each stair tower. Water pressure will need to be evaluated for the increase in building height. Due to the high water pressure in the downtown area, it is anticipated that the fire service pressure will be adequate for the new areas. This will need to be confirmed during design.



Section 5 ELECTRICAL

05 electrical

Adjacent Overhead Electrical Utility Power Lines

- The existing overhead electrical lines, to the South of the parking garage in the alley, will need to be worked around. After meeting with Northwestern Energy it was determined that either one of the following scenarios would need to take place for the Parking garage to be expanded.
- Scenario A: If clearances can be reached moving the overhead lines South on the existing H-frame(s) Northwestern Energy estimates a cost of \$50,000 \$60,000 to the project.
- Scenario B: If clearances cannot be met with the existing H-frame(s) then they will need to be raised to an elevation that can allow the required clearance(s) adjacent to a taller building. Northwestern Energy estimates a cost of \$200,000 to the project for this work.
- In addition to relocating the overhead lines Northwestern Energy would need to 'turn off' section(s) of the overhead lines to allow construction activity adjacent to the overhead lines while maintaining service to the Main street customers.
- Northwestern Energy will not know what Scenario will need to be included in the project until further investigation is completed with the final parking garage design.

Existing Electrical Service

- The existing electrical service supporting the parking garage is a 2500A, 208Y/120V, 3 Phase, 4 Wire. The Main Switchboard contains eight (8) different utility meters; the parking garage and the tenants around the perimeter.
- The parking garage is supported by a 1600A section within the switchboard and contains ten (10) fusible disconnects. Eight (8) of the fusible disconnects feed existing branch circuit panels and elevators, two (2) 200A fusible disconnects are remaining as spares.
- Northwestern Energy Peak Demand information shows that the highest load the parking garage meter has read in the last 12 months is 42 kw, or 146 amps at 208Y/120V, 3 Phase, 4 Wire. The electrical capacity to serve the expansion is available with the existing electrical service equipment.
- A future photovoltaic solar array may tie-in to the electrical distribution at one of the spare 200A fusible disconnects mentioned above. No PV infrastructure will be included in the estimate for a photovoltaic solar system. The same amount of work will be required in a future dedicated PV project. A roof designed for the parking garage will be able to support a future array.

Power

- The two (2) existing elevators have 25HP motors and are fed with a 175A electrical feeder(s).
 - The elevators are to be removed and replaced with traction type elevator(s). It is safe to assume a traction type elevator will require a smaller electrical feeder than the current hydraulic type elevator(s). Existing feeders may be re-used and the appropriate fuse will be provided in the existing fusible disconnects.
 - The North elevator will be priced as an alternate and the second 200A spare fusible bucket may be utilized to feed the elevator if needed.
- The common building tower(s) will be constructed to a complete level with mechanical and building equipment connections as well as general convenience receptacles throughout the space(s) to match the existing floor(s).

Lighting

Light Fixture(s):

- The existing pole mounted light fixtures on the top level will be removed and provided to the City of Bozeman to be re-used.
- The common building tower(s) will be constructed to a complete level and be provided with surface mount light fixtures and exit signs similar to the levels below.
- LED Parking garage canopy lighting will be provided, the lighting layout will match the existing. The existing layout will be extended throughout the new parking garage area.
 - Existing Parking Garage Light Fixture: Gardco 'G3-5-1-3BLA-1670-NW-UNIV-NP-QDM'.

- Emergency egress lighting will be provided by either equipping pre-determined LED light fixtures with emergency battery ballasts or by feeding pre-determined LED light fixtures from a lighting inverter(s).
- Exit signs will be provided to mark the path(s) of egress.

Lighting Controls Design:

- LED parking garage canopy light fixture(s) will be provided with integral occupancy sensor(s).
- Light fixtures within the tower(s) will be on 24/7 consistent with the existing design.

Special Systems

Fire Alarm Design:

- The existing digital addressable fire alarm system will be extended throughout the tower(s) for the additional level(s).
- Elevators Door(s) are to be provided with magnetic hold opens and the respective smoke detector(s).
- Fire alarm notification shall be provided for each elevator lobby.

Closed-Circuit Television System:

- The existing CCTV system is to be extended.
- A camera shall be located within each stair/ elevator tower(s) on each level, to match the existing layout.
- A camera shall be provided over the door(s) entering each stair/elevator tower(s) on each new level, to match the existing layout.

Section 6 SCHEMATIC CONSTRUCTION COST SUMMARY



O CONSTRUCTION COST NARRATIVE

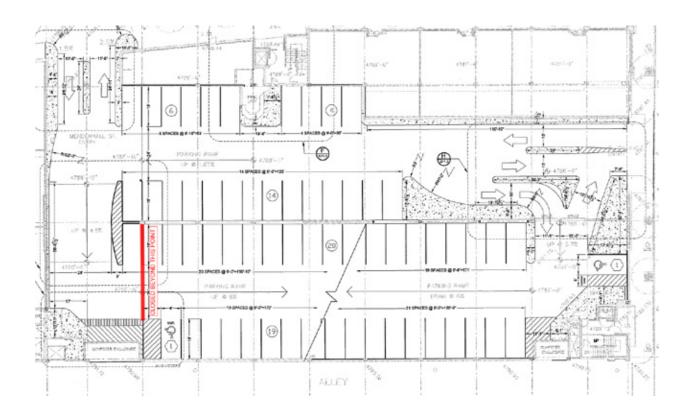
Roof Only Option

Adding a steel roof structure to the existing parking garage has an estimated construction cost of \$1.25M, with a construction duration of 12 weeks. For the 12-week construction period, the upper level of the parking garage would be closed to public use. This would reduce the capacity of the garage by 108 spaces. Refer to the cost control summary for total project cost.

In addition, the section of North Black Street which fronts the east side of the garage would be closed to receive materials and hoist them to the roof. During construction material deliveries, the north entrance to the garage, along Mendenhall, would remain open. To ensure the safety of pedestrians, the sidewalk along the east side of the garage would be closed, and pedestrians would be directed to use the sidewalk on the east side of Black Street. Traffic in the alley to the south of the garage would be limited to deliveries required to keep the adjoining businesses operational.

Option 2

Adding one full wrap, plus 5 additional bays of post-tensioned parking deck, a steel roof structure, and extending all three circulation towers up by one level has an estimated construction cost of \$4.74M, with a construction duration of 26 weeks. At completion, this option provides 125 additional parking spaces. For 18 weeks, the garage would be closed to the public at the ground floor near grid line 3. This closure is necessary to accommodate re-shoring of the existing parking decks on order to carry the load of the concrete formwork and liquid concrete above. This closure would leave 126 spaces remaining for public use during concrete deck construction. For the remaining 8 weeks, the upper floor of the garage would remain closed to the public while the installation of the roof structure takes place. During roof construction, the garage would have 108 spaces less than the final design provides but would have 17 more spaces than are currently available.



North Black Street would be closed from the alley to Mendenhall for the duration of the project to accommodate deliveries and hoisting. The north entrance to the garage, along Mendenhall would remain open as would the sidewalk along the east side of Black Street. The alley to the south of the garage would be limited to deliveries required to keep the adjoining businesses operational.

Option 2 also requires that a shear wall be added to the northwest corner of the garage, at ground level. This would require temporary partitioning of the existing lease space, and coordination with the tenant to ensure construction impacts are minimized.

Option 2b

Adding one- and one-half additional wraps of post-tensioned parking deck, with no roof structure, and extending the west and north circulation towers up one level, and the east tower up two levels has an estimated construction cost of \$3.93M, with a construction duration of 20 weeks. At completion, this option provides 143 additional parking spaces. For the 20-week construction period, the garage would be closed to the public at the ground floor near grid line 3. This closure is necessary to accommodate re-shoring of the existing parking decks on order to carry the load of the concrete formwork and liquid concrete above. This closure would leave 126 spaces remaining for public use during construction. Refer to option 2 for a graphic showing the location of the proposed closure.

North Black Street would be closed from the alley to Mendenhall for the duration of the project to accommodate deliveries and hoisting. The north entrance to the garage, along Mendenhall would remain open as would the sidewalk along the east side of Black Street. The alley to the south of the garage would be limited to deliveries required to keep the adjoining businesses operational.

Option 2b also requires that a shear wall be added to the northwest corner of the garage, at ground level. This would require temporary partitioning of the existing lease space, and coordination with the tenant to ensure construction impacts are minimized.

Option 2c

Adding one- and one-half additional wraps of post-tensioned parking deck, a steel roof structure, and extending the west and north circulation towers up one level, and the east tower up two levels has an estimated construction cost of \$5.17M, with a construction duration of 30 weeks. At completion, this option provides 143 additional parking spaces. For 22 weeks, the garage would be closed to the public at the ground floor near grid line 3. This closure is necessary to accommodate re-shoring of the existing parking decks on order to carry the load of the concrete formwork and liquid concrete above during construction. This closure would leave 126 spaces remaining for public use during concrete deck construction. Refer to option 2 for a graphic showing the location of the proposed closure. For the remaining 8 weeks, the upper floor of the garage would remain closed to the public while the installation of the roof structure takes place. During roof construction, the garage would have 108 spaces less than the final design provides but would have 35 more spaces than are currently available.

North Black would be closed from the alley to Mendenhall for the duration of the project to accommodate deliveries and hoisting. The north entrance to the garage, along Mendenhall would remain open, as would the sidewalk along the east side of Black Street. The alley to the south of the garage would be limited to deliveries required to keep the adjoining businesses operational.

Option 2c also requires that a shear wall be added to the northwest corner of the garage, at ground level. This would require temporary partitioning of the existing lease space, and coordination with the tenant to ensure construction impacts are minimized.

See Section 8 Appendix—Construction Cost Estimate

APPENDIX - STRUCTURAL PLANS

07 APPENDIX

Bridger Parking Garage Final Expansion Options

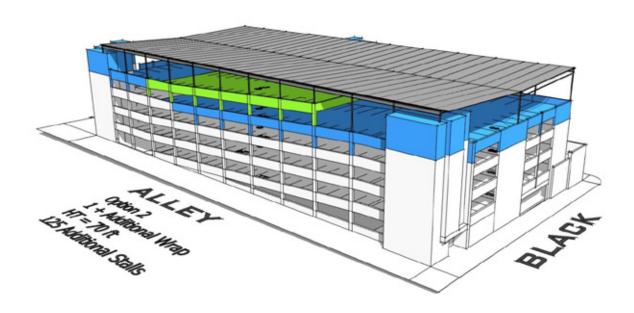
Roof Only Option

- Steel framed roof on top of existing structure
- No additional stalls, more available parking in the winter
- Under 70'-0" height limit

Option 2

- 1+ Additional Wrap with Roof
- 70'-0" to Top of Roof
- 125 Additional Stalls

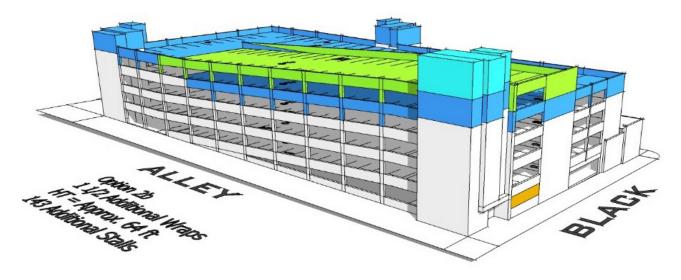
This option is the maximum number of spaces (qty. 125) with a roof that conforms with the current zoning height limit.



Option 2b

- 1 ½ Additional Wrap without Roof
- 64'-0" to Top of Roof
- 143 Additional Stalls

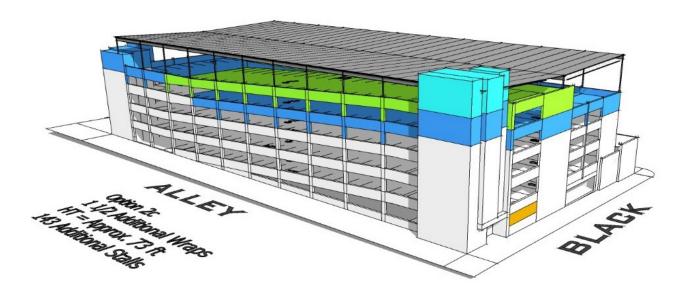
This option is the maximum number of spaces (qty. 143) without a roof that conforms with the current zoning height limit.



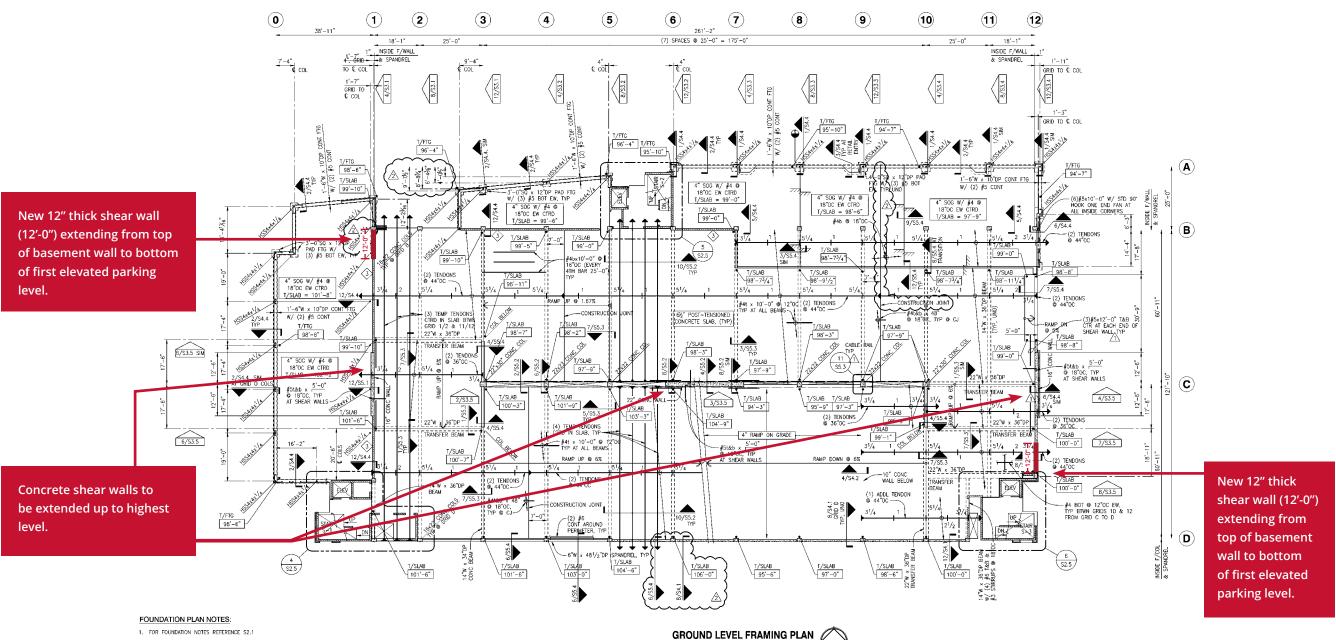
Option 2c

- 1 ½ Additional Wrap with Roof
- 73'-0" to Top of Roof
- 143 Additional Stalls

This option is the maximum number of spaces (qty. 143) with a roof but exceeds the current zoning height limit.



Required Shearwall Additions for Option 2



MILD REINFORCING PLAN NOTES:

- 1. FOR STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND, REFERENCE \$1.1 AND \$1.2.
- 2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS.
- CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND STAGING OF ALL SHORING AND RESHORING, SHORING PLACED BENEATH SLAB CLOSURE POURS SHALL NOT BE REMOVED UNTIL CLOSURE POUR CONGRETE HAS REJORDED SPECIFIC STRENGTH.
- 4. STRUCTURAL SLAB THICKNESS AND TOP OF STRUCTURAL SLAB ARE AS SHOWN ON PLAN.
- COLUMN OR WALL OVER-POURS INTO POST-TENSIONED SLABS SHALL NOT BE GREATER THAN 1/2" MAXIMUM REMOVE ANY EXCESSIVE COLUMN OR WALL OVER-POURS PRIOR TO PLACING REINFORCING BARS AND POST-TENSIONED TENDODS.
- 6. DO NOT INSTALL EPOXY AND EXPANSION ANCHORS IN THE POST—TENSIONED SLAB, DRILLING INTO POST—TENSIONED SLAB WITHOUT APPROVAL FROM THE STRUCTURAL BUNDINGER OF RECORD IS NOT PERMITTED. ALL BULDING SYSTEMS: MECHANICAL, ELECTRICAL, PILUMENS, FIRE PROTECTION SHALL PLACE DUCTS, CHASES PIPES OF PIPE SUPPORTS, CONDUIT SLEEVES AND HANGER INSERTS, ETC INTO THE POST—TENSIONED SLAB PRIOR TO POURING THE CONCRETE.
- 8. PROVIDE 11/2" CLEAR COVER TO TOP REINFORCING AND 1" CLEAR COVER TO BOTTOM REINFORCING.
- CONTRACTOR TO COORDINATE EMBED PLATES REQUIRED FOR STAIRS, GUARDRAILS, INTERIOR AND EXTERIOR WALLS, WINDOW WASHING ANCHORS, ETC.

10. REFERENCE TYPICAL DETAILS AS FOLLOWS:

TYPICAL POST—TENSIONED DETAILS
TYPICAL COLUMN ELEVATIONS
TYPICAL SHEAR WALL AND BASEMENT WALL ELEVATIONS
TYPICAL SLAB OPENING REINFORCEMENT

POST-TENSIONED SLAB PLAN NOTES:

- 1. FOR STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND, REFERENCE S1.1 AND S1.2.
- 2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS.
- CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND STACING OF ALL SHORING AND RESHORING SHORING PLACED BENEATH SLAB CLOSHRE POURS SHALL NOT BE REMOVED UNTIL CLOSURE POUR CONCRETE HAS REACHED SPECIFICED STRENGTH.
- 4. STRUCTURAL SLAB THICKNESS AND TOP OF STRUCTURAL SLAB ARE AS SHOWN ON PLAN.
- 5. COLUMN OR WALL OVER-POURS INTO POST-TENSIONED SLABS SHALL NOT BE GREATER THAN $V_2{}^{\ast}$ MAXIMUM. REMOVE ANY EXCESSIVE COLUMN OR WALL OVER-POURS PRIOR TO PLACING REINFORCING BARS AND POST-TENSIONED TENDONS.
- 6. DO NOT INSTALL EPOXY AND EXPANSION ANCHORS IN THE POST—TENSIONED SLAB. DRILLING INTO POST—TENSIONED SLAB WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER OF RECORD IS NOT PERMITTED. ALL BUILDING SYSTEMS: MECHANICAL, ELECTRICAL, PLUMBING, RIFE PROTECTION SHALL PLACE DUCITS, CHASES, PIPES OR PIPE SUPPORTS, CONDUIT SLEEVES AND HANGER INSERTS, ETC INTO THE POST—TENSIONED SLAB PRIOR TO POURING THE CONCEPTE.
- ADDITIONAL SHAFTS MAY BE LOCATED AFTER THE SLAB IS POURED IF APPROVED BY THE STRUCTURAL ENGINEER
 OF RECORD AND COORDINATED WITH THE GENERAL CONTRACTOR.

- HORIZONTAL SWEEP OF THE TENDONS SHALL NOT BE GREATER THEN 1:6. TENDONS WITH HORIZONTAL SWEEP GREATER THAN 1:6 SHALL BE REDIEVED BY THE ENDIEVER-OF-RECORD FOR TENDON SPACING AND ADDITIONA REINFORDING REQUIENCEMEN PRIOR TO PLACING CONCRETE.
- PROVIDE FULLY ENCAPSULATED SYSTEM OF THE POST—TENSIONED TENDONS AND ANCHORS AT ALL LEVELS. REFERENCE S1.1 AND S1.2 FOR ADDITIONAL INFORMATION.
- 11. REFERENCE TYPICAL DETAILS AS FOLLOWS:

TYPICAL POST-TENSIONED DETAILS.
TYPICAL POST-TENSIONED ANCHOR DETAILS.
TYPICAL SLAB OPENING AT POST-TENSIONED FLOOR.
TYPICAL SLAB TENSION PROFILE.
TYPICAL POST-TENSIONED CONSTRUCTION JOINT DETAILS.

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DAMATO CONVERSANO INC.

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FORTE WIND-PROFITS CO.

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SOMEWINGER SING. (SWISS-4488)

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BRIDGER PARK GARAGE EXPANSION | FEASIBILITY STUDY

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DAMATO CONVERSANO INC.

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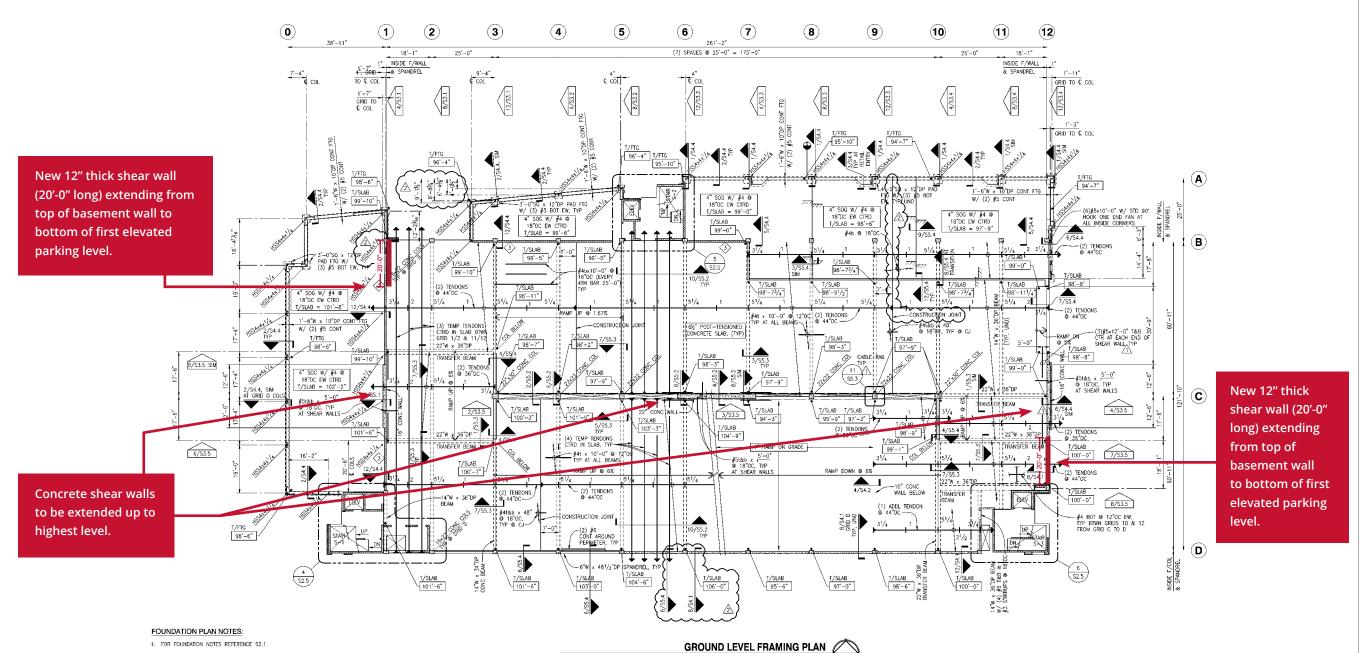
INTERMODAL

OZEMAN

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BOZEMAN,

Required Shearwall Additions for Option 2b & 2c



MILD REINFORCING PLAN NOTES:

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TYPICAL POST-TENSIONED ANCHOR DETAILS.
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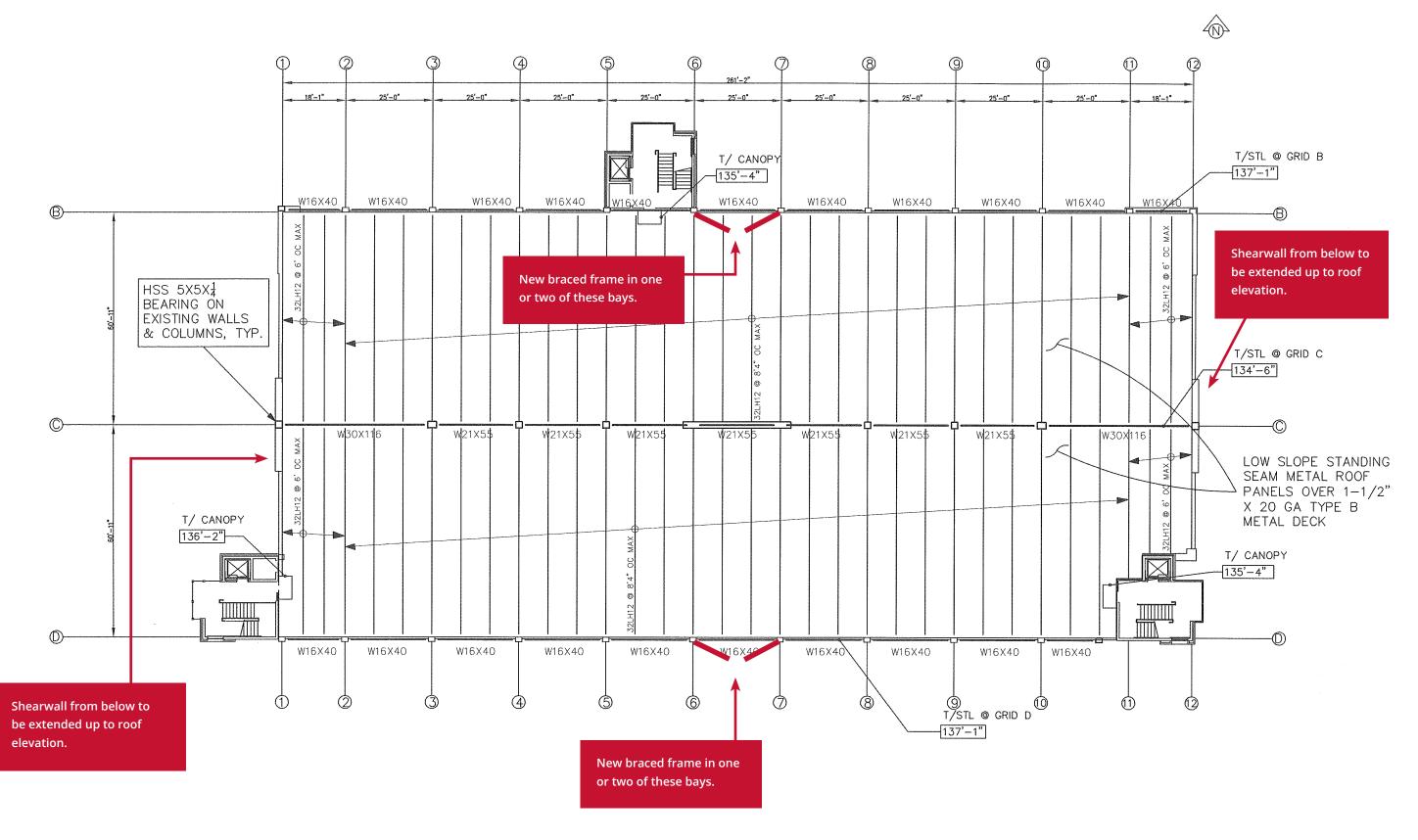
TYPICAL POST—TENSIONED CONSTRUCTION JOINT DETAILS.

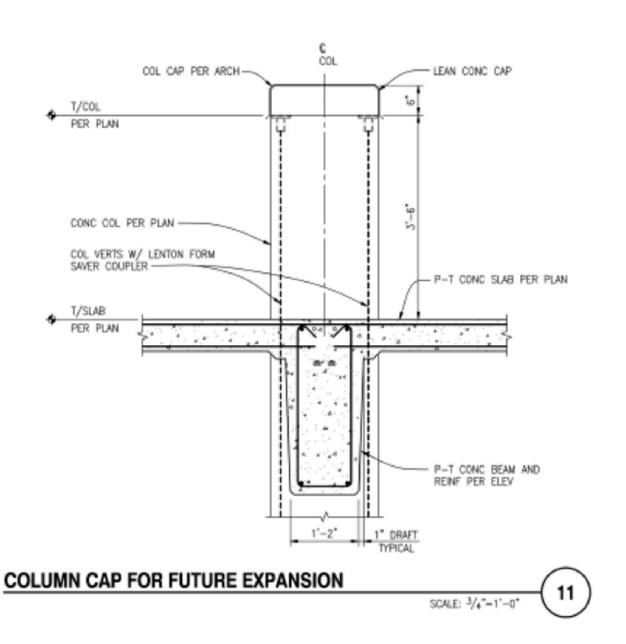
S2.2

GROUND LEVEL FRAMING PLAN

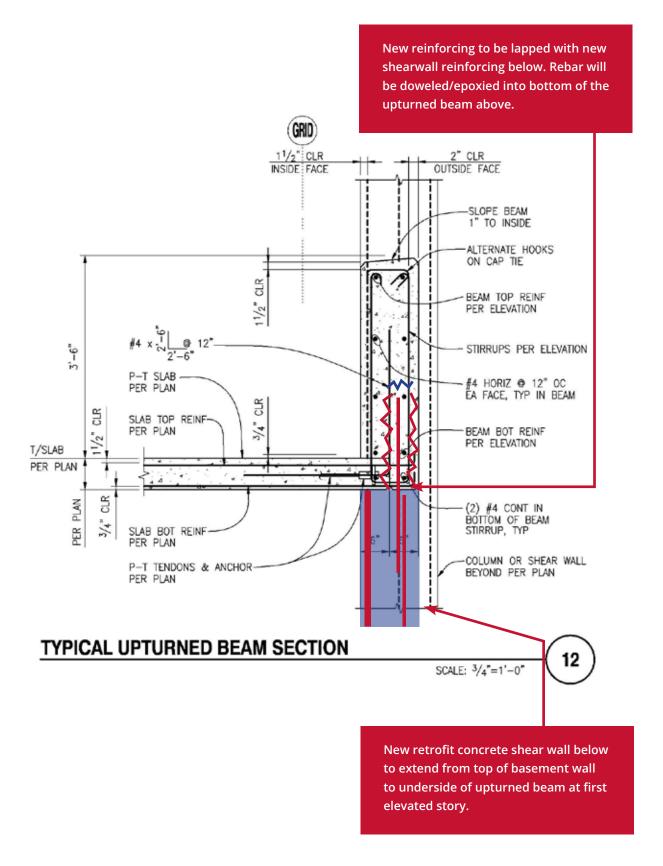
BRIDGER PARK GARAGE EXPANSION | FEASIBILITY STUDY

Preliminary Roof Framing Option (for Options 1, 2, & 2c





Detail 11/S5.4 from original structural drawings - for reference for splicing on future columns.



APPENDIX - CONSTRUCTION COST ESTIMATES

APPENDIX: CONSTRUCTION COST ESTIMATES

Bridger Park Garage Expansion Feasibility Study

	So	hematic Estima	nte	
	Martel	Construction, Inc.	3.25.19	
OPTION	ROOF ONLY	OPTION 2	OPTION 2B	OPTION 2C
Description	Steel framed roof on top of existing structure	1+ additional wrap without roof	1-1/2 additional wrap without roof	1-1/2 additional wrap with roof
Number of Added Stalls	0	125	143	143
Budget	\$1,251,515.00	\$4,737,884.00	\$3,934,191.00	\$5,173,645.00
Cost per Space	Cost per Space N/A		\$27,511.83	\$36,179.34
Estimated Duration	12 weeks	26 weeks	20 weeks	30 weeks

Recent Pai	king Garages (For R	eference, \$/Space)	
PROJECT	SPACE COUNT	\$/SPACE AT BID	\$/SPACE ADJ. TO 2019
Montana State University Parking Garage	550	\$19,557.00	\$21,690.07
Bozeman Yellowstone Int'l Airport Multi-Use PG	1100	\$25,591.00	\$26,462.18
Whitefish Parking Garage	212	\$36,752.00	\$40,625.70
Bridger Park Garage - Bozeman	435	\$22,822.00	\$31,731.05

Cost Control Summary PROJECT COSTS	Add Roof to Existing Structure	Option 2 - Add 1+ Wraps of Parking Deck and Roof	Option 2b - Add 1-1/2 Wraps of Parking Deck and No Roof	Option 2c - Add 1-1/2 Wraps of Parking Deck and Roof	Add North Elevator to Existing Shaft, Including One Additional Stop	Add Snowmelt System to Option 2b	Add 50KW Photovoltaic System
Building & Sitework	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Preconstruction Services	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction Budget	\$1,251,515.00	\$4,737,884.00	\$3,934,191.00	\$5,173,645.00	\$226,669.00	\$922,506.00	\$74,195.00
Total Construction - BUDGET	\$1,251,515.00	\$4,737,884.00	\$3,934,191.00	\$5,173,645.00	\$226,669.00	\$922,506.00	\$74,195.00
Design Fees	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Architectural	\$125,152.00	\$473,788.00	\$393,419.00	\$517,365.00	\$22,667.00	\$92,251.00	\$7,420.00
Site Civil	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
Structural	Included Above	Included Above	Included Above	Included Above	Included Above	Included Above	Included Above
Mechanical & Plumbing	Included Above	Included Above	Included Above	Included Above	Included Above	Included Above	Included Above
Electrical	Included Above	Included Above	Included Above	Included Above	Included Above	Included Above	Included Above
Acoustical	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
Food Service	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
LEED	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
Other Consutants	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
Architectural Reimbursable BUDGET	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Geotech Report	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
Total	\$125,152.00	\$473,788.00	\$393,419.00	\$517,365.00	\$22,667.00	\$92,251.00	\$7,420.00
Owner Project Expenses	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Furniture	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment - Parking Pay Stations	\$0.00	\$45,000.00	\$60,000.00	\$60,000.00	\$0.00	\$0.00	\$0.00
Electronic Locks/Door Security	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
IT, DATA & Computers	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Moving Expenses	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Land Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Owner Representative	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$0.00	\$45,000.00	\$60,000.00	\$60,000.00	\$0.00	\$0.00	\$0.00
Permits and Fees	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
City of Bozeman Impact Fees	\$0.00	\$70,000.00	\$76,000.00	\$76,000.00	\$0.00	\$0.00	\$0.00
County Health (Food Service)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Plan Check Fee	\$3,755.00	\$14,214.00	\$11,803.00	\$15,521.00	\$680.00	\$2,768.00	\$223.00
Building Permit Fee	\$3,755.00	\$14,214.00	\$11,803.00	\$15,521.00	\$680.00	\$2,768.00	\$223.00
NW Energy Costs	\$200,000.00	\$200,000.00	\$200,000.00	\$200,000.00	\$0.00	\$250,000.00	\$0.00
Voice/Data/Fiber Optics Allowance	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Other	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$207,510.00	\$298,428.00	\$299,606.00	\$307,042.00	\$1,360.00	\$255,536.00	\$446.00
Testing & Inspections	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Special Inspections	\$10,000.00	\$50,000.00	\$60,000.00	\$60,000.00	\$0.00	\$0.00	\$0.00
SWPPP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Commissioning	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$10,000.00	\$5,000.00
Total	\$10,000.00	\$50,000.00	\$60,000.00	\$60,000.00	\$0.00	\$10,000.00	\$5,000.00
Bidding, Advertising & Printing	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Project Advertising	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$0.00	\$0.00	\$0.00
Dublic Information Condess	40.00	60.00	40.00	60.00	60.00	40.00	60.00

\$0.00

\$0.00

\$2,000.00

\$6,000.00

\$9,000.00

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Page 1 of §8,500.00

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\$0.00

\$0.00

\$0.00

\$1,000.00

\$4,000.00

\$6,000.00

Public Information Services

Project Management Software

Other/additional categories

Printing

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Project Cost Control Summary Add North Elevator to Option 2 - Add 1+ Option 2b - Add 1-1/2 Option 2c - Add 1-1/2 Add Roof to Existing Existing Shaft, Add Snowmelt System Add 50KW Wraps of Parking Deck Wraps of Parking Deck Wraps of Parking Deck Structure **Including One** to Option 2b Photovoltaic System and Roof and No Roof and Roof **Additional Stop** PROJECT COSTS AMOUNT **Project Contingencies** AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT Owner Contingency - Construction Phase - 5% \$62,576.00 \$236,894.00 \$196,710.00 \$258,682.00 \$11,333.00 \$46,125.00 \$3,710.00 Design Contingency - Design Phase 5% \$62,576.00 \$236,894.00 \$196,710.00 \$258,682.00 \$11,333.00 \$46,125.00 \$3,710.00 GC/CM Contingency - 5% In Budget Total \$125,152.00 \$473,788.00 \$393,420.00 \$517,364.00 \$22,666.00 \$92,250.00 \$7,420.00 SOURCES OF FUNDS AMOUNT AMOUNT AMOUNT Construction Bond AMOUNT AMOUNT AMOUNT AMOUNT \$0.00 Total Other Financing AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 Total \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 LOANS AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT AMOUNT \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 Total \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 SUMMARY STATEMENT SOURCE OF CAPITAL TOTALS TOTALS TOTALS TOTALS TOTALS TOTALS TOTALS \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 Construction Funding \$0.00 **Total Source** USE OF CAPITAL TOTALS TOTALS TOTALS TOTALS TOTALS TOTALS TOTALS Building & Sitework \$1,251,515.00 \$4,737,884.00 \$3,934,191.00 \$5,173,645.00 \$226,669.00 \$922,506.00 \$74,195.00 Design Fees \$125,152.00 \$473,788.00 \$393,419.00 \$517,365.00 \$22,667.00 \$92,251.00 \$7,420.00 Owner Project Expenses \$45,000.00 \$60,000.00 \$0.00 \$0.00 \$0.00 \$0.00 \$60,000.00 \$298,428.00 Permits and Fees \$207,510.00 \$299,606.00 \$307,042.00 \$1,360.00 \$255,536.00 \$446.00 **Testing & Inspections** \$10,000.00 \$50,000.00 \$60,000.00 \$60,000.00 \$0.00 \$10,000.00 \$5,000.00 Bidding, Advertising & Printing \$6,000.00 \$9,000.00 \$8,500.00 \$9,500.00 \$0.00 \$0.00 \$0.00 **Project Contingencies** \$125,152.00 \$473,788.00 \$393,420.00 \$517,364.00 \$22,666.00 \$92,250.00 \$7,420.00 **Total Use** \$1,725,329.00 \$6,087,888.00 \$5,149,136.00 \$6,644,916.00 \$273,362.00 \$1,372,543.00 \$94,481.00 -\$5,149,136.00 **BALANCE OF FUNDS AVAILABLE** -\$1,725,329.00 -\$6,087,888.00 -\$6,644,916.00 -\$273,362.00 -\$1,372,543.00 -\$94,481.00 NUMBER OF SPACES 0 125 143 143 0 COST PER SPACE N/A -\$48,703.00 -\$36,008.00 -\$46,468.00 N/A N/A N/A

Spreadsheet ReportRoof Only Option

Martel Construction Inc

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Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	01-0000	GENERAL REQUIREMENTS	31,820.00 sf	45,557	6,276		10,890	1,110	2.01 /sf	63,833
	02-0000	EXISTING CONDITIONS	31,820.00 sf	2,687	37.				0.08 /sf	2,687
	03-0000	CONCRETE	31,820.00 sf	15,435	8,425		568	56	0.77 /sf	24,484
	05-0000	STEEL	31,820.00 sf		330,966	188,089			16.31 /sf	519,055
	06-0000	WOOD & PLASTICS	31,820.00 sf	19,980	59,875				2.51 /sf	79,856
	07-0000	THERMAL & MOISTURE PROT.	31,820.00 sf	4,741	2,100	263,420			8.49 /sf	270,261
	09-0000	FINISHES	31,820.00 sf		11	49,636			1.56 /sf	49,636
	10-0000	SPECIALTIES	31,820.00 sf	12,857	12,384				0.79 /sf	25,241
	22-0000	PLUMBING	31,820.00 sf	L P		19,500			0.61 /sf	19,500
	26-0000	ELECTRICAL	31,820.00 sf			70,000			2.20 /sf	70,000

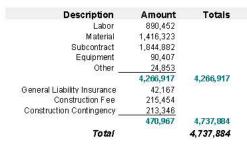


Spreadsheet Report Option 2

Martel Construction Inc

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Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	01-0000	GENERAL REQUIREMENTS	38,991.00 sf	173,789	18,342	5,399	23,670	19,650	6.18 /sf	240,850
	02-0000	EXISTING CONDITIONS	38,991.00 sf	16,251	1,486	7,667			0.65 /sf	25,404
	03-0000	CONCRETE	38,991.00 sf	625,277	826,911	216,398	66,737	5,203	44.64 /sf	1,740,526
	04-0000	MASONRY	38,991.00 sf	2,897	2,060	193,877			5.10 /sf	198,834
	05-0000	STEEL	38,991.00 sf	12,294	473,442	229,011			18.33 /sf	714,746
	06-0000	WOOD & PLASTICS	38,991.00 sf	27,241	66,300				2.40 /sf	93,540
	07-0000	THERMAL & MOISTURE PROT.	38,991.00 sf	5,616	2,549	341,686			8.97 /sf	349,850
	08-0000	DOORS & WINDOWS	38,991.00 sf	1,738	6,800	35,160			1.12 /sf	43,699
	09-0000	FINISHES	38,991.00 sf	12,157	4,825	84,084			2.59 /sf	101,066
	10-0000	SPECIALTIES	38,991.00 sf	13,192	13,609	10,000			0.94 /sf	36,802
	11-0000	EQUIPMENT	38,991.00 sf						/sf	
	14-0000	CONVEYING SYSTEMS	38,991.00 sf			390,000			10.00 /sf	390,000
	21-0000	FIRE SUPPRESSION	38,991.00 sf			8,000	,		0.21 /sf	8,000
	22-0000	PLUMBING	38,991.00 sf	L L		73,100			1.88 /sf	73,100
	26-0000	ELECTRICAL	38,991.00 sf			250,500			6.43 /sf	250,500



Spreadsheet Report Option 2b

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Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	01-0000	GENERAL REQUIREMENTS	42,720.00 sf	132,383	14,419	6,272	14,740	14,813	4.28 /sf	182,626
	02-0000	EXISTING CONDITIONS	42,720.00 sf	14,807	1,486	7,667			0.56 /sf	23,960
	03-0000	CONCRETE	42,720.00 sf	666,597	889,471	242,013	75,961	5,786	44.00 /sf	1,879,828
	04-0000	MASONRY	42,720.00 sf	3,688	2,568	242,045			5.81 /sf	248,301
	05-0000	STEEL	42,720.00 sf	14,662	184,880	52,263			5.89 /sf	251,806
	06-0000	WOOD & PLASTICS	42,720.00 sf	7,622	6,797				0.34 /sf	14,420
	07-0000	THERMAL & MOISTURE PROT.	42,720.00 sf	1,197	614	90,384			2.16 /sf	92,195
	08-0000	DOORS & WINDOWS	42,720.00 sf	2,055	7,800	49,956			1.40 /sf	59,811
	09-0000	FINISHES	42,720.00 sf	14,878	5,892	39,864		,	1.42 /sf	60,634
	10-0000	SPECIALTIES	42,720.00 sf	435	1,600	12,000			0.33 /sf	14,035
	11-0000	EQUIPMENT	42,720.00 sf						/sf	
	14-0000	CONVEYING SYSTEMS	42,720.00 sf			420,000			9.83 /sf	420,000
	21-0000	FIRE SUPPRESSION	42,720.00 sf			10,000			0.23 /sf	10,000
	22-0000	PLUMBING	42,720.00 sf	L L		60,500		,	1.42 /sf	60,500
	26-0000	ELECTRICAL	42,720.00 sf			225,000			5.27 /sf	225,000

Description	Amount	Totals
Labor	858,324	
Material	1,115,527	
Subcontract	1,457,965	
Equipment	90,701	
Other	20,598	
12-30 C (20)	3,543,115	3,543,115
General Liability Insurance	35,014	
Construction Fee	178,906	
Construction Contingency	177,156	
	391,076	3,934,191
Total		3,934,191

Spreadsheet Report Option 2c

Martel Construction Inc

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Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	01-0000	GENERAL REQUIREMENTS	42,720.00 sf	197,459	20,556	6,272	25,310	22,875	6.38 /sf	272,472
	02-0000	EXISTING CONDITIONS	42,720.00 sf	17,494	1,486	7,667			0.62 /sf	26,647
	03-0000	CONCRETE	42,720.00 sf	679,109	894,870	242,013	76,529	5,841	44.44 /sf	1,898,362
	04-0000	MASONRY	42,720.00 sf	3,688	2,568	242,045	2		5.81 /sf	248,301
	05-0000	STEEL	42,720.00 sf	14,662	513,557	240,023			17.98 /sf	768,243
	06-0000	WOOD & PLASTICS	42,720.00 sf	27,603	66,672				2.21 /sf	94,275
	07-0000	THERMAL & MOISTURE PROT.	42,720.00 sf	5,938	2,714	353,804			8.48 /sf	362,457
	08-0000	DOORS & WINDOWS	42,720.00 sf	2,055	7,800	49,956			1.40 /sf	59,811
	09-0000	FINISHES	42,720.00 sf	14,878	5,892	89,500			2.58 /sf	110,269
	10-0000	SPECIALTIES	42,720.00 sf	13,291	13,984	12,000			0.92 /sf	39,276
	11-0000	EQUIPMENT	42,720.00 sf						/sf	
	14-0000	CONVEYING SYSTEMS	42,720.00 sf			420,000			9.83 /sf	420,000
	21-0000	FIRE SUPPRESSION	42,720.00 sf			10,000	,		0.23 /sf	10,000
	22-0000	PLUMBING	42,720.00 sf	L A		77,250			1.81 /sf	77,250
	26-0000	ELECTRICAL	42,720.00 sf			272,000			6.37 /sf	272,000



Spreadsheet Report Add Elevator

Martel Construction Inc

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	Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
1		02-0000	EXISTING CONDITIONS	1.00 est	3,161	,				3,160.80 /est	3,161
2		14-0000	CONVEYING SYSTEMS	1.00 est			180,000			180,000.00 /est	180,000
3		26-0000	ELECTRICAL	1.00 est			20,000			20,000.00 /est	20,000

Description	Amount	Totals
Labor	3,161	
Material		
Subcontract	200,000	
Equipment		
Other _		
	203, 161	203,161
General Liability Insurance	2,017	
Construction Fee	11,333	
Construction Contingency _	10,158	
	23,508	226,669
Total		226,669

Spreadsheet Report Add Snow Melt System

Martel Construction Inc

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Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	03-0000	CONCRETE	30,000.00 sf	8,532	80,892	88,735	7,311	1,396	6.23 /sf	186,865
	04-0000	MASONRY	30,000.00 sf		504	24,960			0.85 /sf	25,464
	05-0000	STEEL	30,000.00 sf		1,638	2,365			0.13 /sf	4,003
	06-0000	WOOD & PLASTICS	30,000.00 sf	341	162				0.02 /sf	502
	07-0000	THERMAL & MOISTURE PROT.	30,000.00 sf	9,260	48,600	6,000			2.13 /sf	63,860
	08-0000	DOORS & WINDOWS	30,000.00 sf	395	1,675				0.07 /sf	2,070
	09-0000	FINISHES	30,000.00 sf			1,664			0.06 /sf	1,664
	22-0000	PLUMBING	30,000.00 sf			530,400			17.68 /sf	530,400
	26-0000	ELECTRICAL	30,000.00 sf			12,000			0.40 /sf	12,000



Spreadsheet Report Add PV System

Martel Construction Inc

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	Phase	Group	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
1		07-0000	THERMAL & MOISTURE PROT.	1.00 est			6,500	,		6,500.00 /est	6,500
2		26-0000	ELECTRICAL	1.00 est			60,000			60,000.00 /est	60,000

Description	Amount	Totals
Labor		
Material		
Subcontract	66,500	
Equipment		
Other _		
	66,500	66,500
General Liability Insurance	660	
Construction Fee	3,710	
Construction Contingency _	3,325	
	7,695	74,195
Total		74.195



for more information

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