CONCEPT DESIGN
MASTER PLAN
for
BLOCKS 32 & 33
URBAN MIXED-USE DEVELOPMENT
in
OLD TOWN/CHINATOWN
PORTLAND, OREGON

Sockeye Development, LLC
Goldsmith Holdings, LLC
Portland Development Commission

May 2008
GBD ARCHITECTS Incorporated
“Fortune Favors The Daring.”
- Virgil
EXECUTIVE SUMMARY

Portland’s Old Town/Chinatown is currently in a state of transition. Important new uses are moving into the neighborhood, including the University of Oregon’s Portland Center and the Mercy Corps World Headquarters. Burnside Street, which has divided the city for decades, will be bridged by redevelopment and transit improvements in order to tie Old Town/Chinatown back into the fabric of the city. At the same time, the area’s focus on social services and low income housing continues with public investments in new facilities and improvements to existing facilities. The district’s building height restrictions, relationship to mass transit, and historical designations are only some of the complexities which make this a challenging and exciting neighborhood for new development.

The proposed Mixed-use Development on Blocks 32 & 33 will provide mixed-income housing, office, and retail options anchored by the Uwajimaya Asian Super Market. The site sits in a strategic location within Old Town/Chinatown; close to the central city but also easily accessible from the Pearl, Portland’s successful mixed-use district. This report focuses on two separate aspects of this development opportunity: 1) a two-block master-plan study, related to the large-scale site circulation and development issues; and 2) a further study and conceptual design of the urban housing and retail components of Block 33.

MASTER PLAN - The two blocks are being studied together in order to identify opportunities to maximize development potential, mitigate potential access issues and to ensure the blocks work together as a catalyst for future development in the neighborhood.

BLOCK 33 - Emphasis has been placed on Block 33 for a number of reasons. First and foremost, a potential anchor tenant has been identified for this site. Uwajimaya has expressed interest in locating a new store in Old Town/Chinatown, and this site meets a number of their development goals. Secondly, the current use of the site as a surface parking lot offers the best opportunity for immediate development with minimal encumbrances. The conceptual plan for Block 33 calls for 2-3 levels of underground parking, a ground level grocery store and associated retail space, with work lofts and apartments above.

BLOCK 32 - Block 32 has unique challenges associated with it due to existing structures, uncertainty about the proposed Burnside-Couch Couplet and streetcar route, and the reduced size of the block (180’ x 200’). The program for Block 32 is also less firmly established and will change as market influences dictate. However, its importance as a district gateway site (Portland’s Chinatown Gate is located at the southeast corner of the site) and impact on the adjacent block justify its inclusion in this study. Block 32’s program, while less certain, is dedicated to office and retail uses for the purpose of this study.

DEVELOPMENT INFLUENCES - This study will look at the influences from current and proposed planning and public infrastructure projects. It will take an in-depth look at the physical issues that potentially limit an interconnected two-block development. Vehicular access and restrictions on each of the blocks is a crucial factor in the configuration of building uses, particularly underground. A variety of parking concepts will be studied, to include options for connected two-block parking, potential public parking and even automated parking systems.

The conceptual plan outlined above is the result of consolidating the development influences with the needs of the potential anchor tenant and the neighborhood’s need for middle income and market rate housing. By understanding the unique cultural, technological and historical influences which exist in this neighborhood, the hope is to conceptualize a development that references the past, while beginning to look toward the future.
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EXISTING CONDITIONS
The aerial map on the adjacent page shows the neighborhood surrounding Blocks 32 & 33 in relation to the Central City core of Portland. The images on this page correspond to the numbers on the map:

1. Steel Bridge
2. West Burnside Street
3. Brewery Blocks
4. Union Station
5. Pioneer Courthouse Square
6. Tom McCall Waterfront Park
7. Portland Saturday Market
8. Fremont Bridge / I-405
9. Powell’s Books
10. Portland State University
11. Portland Mall Light Rail (Opens 2009)
Blocks 32 and 33 are located between NW 4th and 5th Avenues, bordered by West Burnside Street to the south and NW Davis Street to the north. The site is within walking distance to the North Park Blocks and Tom McCall Waterfront Park and sits at the ceremonial gateway to Old Town/Chinatown.

Old Town/Chinatown improvement has been gathering momentum for the past several years. TriMet and the City of Portland are currently making a significant investment in improving the Portland Mall, by adding new light rail service and catalyzing new development. The neighborhood is now on the verge of more rapid change. As Old Town/Chinatown, the Heart of Portland, becomes more familiar, the potential for a unique neighborhood identity is created—one with a personality unlike any other area in the city.

Development has been making inroads into Old Town/Chinatown as the adjacent Pearl and River Districts expand and the Ankeny/Burnside area transforms. However, the character is very different from these neighborhoods. It has an urban grit, a youthful exuberance, a creative streak that doesn’t always play by the rules. Conventional thinking is constantly being challenged. Portland is attracting a great number of young new residents, and this is where they want to be.

The District has some distinct opportunities as well as challenges facing it. Most importantly, how does the neighborhood shed its current image bound up in social services and low income housing to integrate new housing types and magnet retail? This tension and struggle creates a strong foundation for new ideas. The neighborhood is in a position where new development can significantly enhance the uniqueness of the neighborhood.

The hurdles that for so long have hindered development north of Burnside are surmountable in the foreseeable future with the Portland Mall Revitalization Project which is in progress, the proposed Burnside-Couch Couplet and Portland Streetcar addition. The reality of housing for all income levels will be a key component of the District’s revitalization. This study aims to address that need with a mixed-income/mixed-use project that has the potential to be the stimulus for the District just as the Brewery Blocks were for the Pearl District.
Opportunities

- **Pedestrian Place**: become a unique destination for pedestrians, offering a variety of services, activities, and attractions for many different kinds of people
- **Converging Cultures**: bring together different ideas, technologies, new and historical building types unique to the city
- **Transit**: highly accessible via public transportation and improved connections across Burnside
- **Unique Neighborhood Identity**: continue to build on the existing qualities of the neighborhood to establish an accessible and diverse place
- **Textures, Patterns, Colors**: take advantage of the diversity in the neighborhood to create an architecture that is rich in textures, patterns and colors
- **Public Interest in Redevelopment**: the general public’s interest for renewal in this area should be embraced and engaged
- **Diversity**: the bringing together of existing and new activities to create a highly diverse environment
- **Enhanced Gateway**: re-establish the importance of the 4th and Burnside gateway as a significant entrance into Old Town/Chinatown

Challenges

- **Public Perception**: the perception of the district - higher crime and unsafe streets
- **Balance**: within the community, it’s important to keep balance of three major themes - social services, housing and commercial development, occupied by local businesses
- **Diversity**: promote diversity as positive changes for the community - historic buildings, Chinatown, artistic community and commercial activity
- **Housing**: lack of diverse housing; the need for development of additional workforce and market rate housing units; current lack of housing to support artist, ethnic and elderly at all economic levels
- **Crime / Safety**: lower instances of drug and crime activity will encourage more pedestrian traffic
- **Pedestrian Environment**: need for public restrooms, street lighting, resource access center and public art
- **Access to District**: access at Burnside needs improvement; one-way grid along Everett / Glisan streets restricts access; South / North Light Rail should improve circulation; additional bicycle access needed
- **Surface Parking Lots**: “missing teeth” and gaps in the urban fabric
- **Improve Street Environment**: new retail spaces will enhance the street environment and encourage more positive pedestrian activity at all hours of the day

Site Opportunities / Challenges
Site Opportunities / Challenges
SITE ANALYSIS
DEVELOPMENT CONTEXT

Several significant development projects exist within a close proximity to Blocks 32 and 33. Some are well-established landmarks in the city, while others are helping to shape a new identity for the area.

1. US Bancorp Tower
2. Classical Chinese Garden
3. Chinatown Gate
4. Whole Foods
5. Pacific NW College of Art (under development)
6. Chinatown Festival Streets
7. University of Oregon Portland Center
8. Hung Far Low Building
9. Mercy Corps new International Headquarters
10. DeSoto Block Renovation
SITE ANALYSIS

The map at left describes the site in relation to the immediate Old Town/Chinatown neighborhood. Several transit and building projects are occurring in the neighborhood which have a direct impact on Blocks 32 and 33.

The Chinatown Festival Streets are located at NW Davis and NW Flanders, between NW 3rd and NW 4th avenues. These streets are designed to accommodate a variety of street fairs, temporary markets, performances, and other activities. This project is completed.

Opening in 2009, the Portland Mall Light Rail expansion is currently under construction. The new MAX Green Line to Clackamas County and the existing Yellow Line to North Portland will run the length of the Portland Mall (along NW 5th & 6th avenues), connecting Union Station and Portland State University. All construction is projected for completion in Fall 2009. The existing Yellow Line will also connect the area to North Portland.

The Burnside-Couch Couplet is a proposed transportation project, which would convert West Burnside and NW Couch into two one-way streets. Key features include: widening sidewalks on W. Burnside; safer pedestrian crossings; new on-street parking on Burnside, between I-405 and NW 2nd Avenue; improved left turns for access into downtown and Old Town/Chinatown; additional bike parking; street trees and storm water management; public art. While project funding is still uncertain, the project could be completed as early as 2012.

Portland Streetcar is proposed to serve the entire length of the Burnside-Couch Couplet (if the Couplet proceeds), from NW 2nd Avenue to NW 24th Place. Project timeline is unknown, as the Burnside-Couch Couplet is not yet approved.
Zoning Summary
Development and Zoning Summary

Block 33 is a typical Portland block, 200 feet x 200 feet with 40,000 gross square feet, while Block 32 was reduced to 180 x 200 when, in 1956, 20 feet was dedicated to the public right of way in order to widen West Burnside Street.

Blocks 32 and 33 are in the Central Commercial Zone (CXd) and are subject to the Central City Plan District Design Guidelines, the River District Design Guidelines and to Portland Design Commission Approval. The site is not located in a Required Residential Development area.

Allowed Uses include mixed use, Residential and Commercial, Retail, Office, Schools, Medical Centers, Day Care, Parks and Open Space.

Allowable Floor Area Ratio (FAR) is 6 to 1, with a maximum of 9 to 1 FAR allowed with bonuses or FAR transfer.

The height limit is 100 feet with no bonus options.

All frontages are required to build to the property line for minimum 75% of the frontage, and must comply with required ground floor active use and ground floor windows for 50% of the length and 25% of the wall area.

In CX zones, all sites with at least one frontage on a transit street, and where any of the floor area on the site is nonresidential use, must locate at least one main entrance within 25 feet of a transit street. If the site has frontage on more than one transit street, the standard must be met on at least one of the transit streets.

The site is in the River District 5 Parking Sector, with a maximum of 1.5 parking spaces per residential unit; 1.5 spaces per 1000 square feet of office; and, up to 2 spaces per 1000 net square feet of supermarket area are allowed.

Residential development will require 1 Long Term Bicycle parking space per 4 units and 2 per 20 units for short term bike parking. Two off-street truck loading spaces are required, and will likely need a modification for back-in access. Parking (and Loading) access is prohibited from NW 5th Avenue.

As well, Blocks 32/33 will be subject to the Central City Parking Review (CCPR), as public parking is included in the development program.

SITE ANALYSIS

Active Use Corridors
1. Portland Mall Revitalization Project (opens 2009) will bring MAX light rail and buses back to the Portland Mall on SW Fifth and Sixth avenues, increasing the amount of regional and local access to the neighborhood and the city.
2. (Proposed) Bumside-Couch Couplel activity corridor will provide for improved traffic flow and pedestrian environment, across Bumside Street and possible Portland Streetcar service.
3. Chinatown Gate.

Vehicle Access Restricted Streets
1. Parking and Loading access currently prohibited from W Bumside street. This may or may not change as the Bumside/Couch Couplel is further developed. As well, this may limit loading or curb cuts on Bumside and Couch.
2. Portland Mall Access Restrictions prohibit parking and loading access directly off of SW Fifth or Sixth avenues. Loading or parking access on adjacent streets must be at least 75’ away from a transit street.

Zoning Summary
The **Burnside-Couch Couplet** is currently under engineering analysis as a future/proposed transportation alternative. At right are renderings highlighting the proposed improvements. (West Burnside/Couch Alternatives Analysis Executive Summary, December 2006)

Flexible public space, north of Burnside

Flexible public space, north of Burnside - temporary tents could be used during special events

Flexible public space, north of Burnside - ultimate vision: grand public space(s)

Plan drawing showing new design for Burnside Street as a one-way multi-lane boulevard.

Drawing showing typical section cut through Burnside Street looking west.

**Burnside-Couch Couplet**
The key aspects of Portland’s future transit service according to TriMet are:

- The future MAX Green Line (Clackamas Town Center-City Center) and existing MAX Yellow Line (Expo Center-City Center) will run north-south on new tracks being built on 5th and 6th avenues between Union Station and Portland State University.
- Refurbished streets, sidewalks and shelters will create a friendly and welcoming environment for transit riders, shoppers, residents and visitors.
- A continuous through-lane with separate signals will allow cars and bikes to travel the entire length of the Mall.
- Security and safety will improve thanks to the Mall Management Group, better lighting, more surveillance cameras and new see-through shelters.
- Improvements to the Burnside intersections at 5th and 6th avenues will enhance traffic flow on these two streets.

The Portland Streetcar would be expanded in conjunction with the Burnside/Couch Couplet. A memo to the City of Portland (October 2006), from DKS Associates (transportation specialists) provides a summary of proposed streetcar alignments:

**[Preferred] Alignment 4 - Burnside/Couch**
- Streetcar would travel westbound on NW Couch Street from NW 2nd Avenue to NW 19th Avenue, then turn south to W. Burnside and travel westbound on W. Burnside up past NW 23rd Avenue. Once past NW 23rd Avenue streetcar could utilize two options for turning back to run eastbound. The first utilizes W. Burnside as a switchback point, and the second utilizes a side street north of Burnside. Once back on W. Burnside the eastbound streetcar would run along W. Burnside from NW 23rd Avenue to NW 2nd Avenue then turn north and travel up to NW Couch Street completing the loop. Coordination of this alignment with the Burnside/Couch project could reduce potential cost of implementation.
1. New gateway building at 4th & West Burnside

2. Active corner and pedestrian-friendly uses at the intersection of the Max and Portland Streetcar lines replace an existing surface parking lot.

3. A mid-block entry provides an active point of interest for pedestrians, residents and shoppers.

4. Aerial view looking west of new two-block Master Plan Concept
The initial stages of the study of Blocks 32 and 33 focused on the influences on the site including traffic patterns, adjacent uses, and the City’s urban planning goals.

The main circulation challenges to the site are the proposed Burnside-Couch couplet, the Portland Mall on SW Fifth Avenue, the proposed future Streetcar line on NW Couch, several one-way streets which surround the site and 4th Avenue as a gateway street into Chinatown.

Block 33 currently operates as a surface parking lot. There are opportunities at 5th Avenue, to respond to existing retail across the street. Along 4th Avenue, opportunities exist to catalyze future use of buildings that currently sit unoccupied across the street. Uwajimaya, a Northwest-owned Asian grocer, has been involved from the early planning stages of the project, allowing for specific decisions to be made relating to site design.

Three different options for Block 33 were evaluated to consider different ways in which the building could be sited to address the neighboring buildings and respond to the various site conditions.

Block 32 has five different buildings occupying the block. These structures are in various conditions, ranging from dilapidated to recently improved, with uses ranging from Single Room Occupancy (SRO) to low-income housing to incubator office space and retail spaces recently used by art galleries. Two options were looked at to study the issues of site access and circulation. One of the options evaluated the re-use of some of the existing buildings.
BLOCK 33  OPTION A

Parking and loading, both accessed from NW Davis Street, with grocery store fronting NW Couch Street provides for the largest store area. A primary disadvantage for the grocery store is the “around the back” parking entrance that is visually separated from the store. In addition, the visual impact of side-by-side loading and parking access is undesirable. Also, in-out parking traffic conflicts onto two-way traffic street.

BLOCK 33  OPTION B

Angled loading from NW Davis to minimize back-in loading traffic disruptions and parking access from NW Couch. Primary disadvantages are the wide loading bay on NW Davis and the conflicts with auto traffic and the future proposed Streetcar on NW Couch. Visibility to the store is limited from Light Rail and Streetcar lines. The housing component would be biased to the west, to maintain as column-free as possible grocery store layout. This configuration negatively impacts the solar orientation of the housing tower. This option was looked at for both above and below-grade parking. Above-grade parking was ruled out due to clearance issues and relative inefficiency, as well as height restrictions.
Three different options were studied for the redevelopment of Block 33. Uwajimaya, a Northwest-owned and operated Asian grocer was part of the planning process from the early stages. This allowed specific decisions to be made about how trucks, cars and pedestrians would access the site.

Early analysis of the site helped to establish specific attitudes for the various streets around the site:

- NW Couch Street will become an important street, connecting Old Town to the Pearl District
- NW 5th Avenue is an access-restricted street because of the Portland Mall; proposed uses should respond to existing retail character across the street
- NW 4th Avenue is an important street because it is the gateway into Chinatown; uses that respond to NW 4th could catalyze development across the street, in buildings that are currently vacant
- NW Davis Street provides the best opportunity for loading and vehicle access because it will likely be the only two-way street adjacent to the site

The preferred option utilizes separate in and out parking access points on NW 4th and NW Davis, as well as a reduced frontage for loading on NW Davis. Housing access is from the northwest, with a separate restaurant/commercial retail space in the northeast corner of the block. This provides the grocery store with the best potential for retail exposure and footprint, addresses the importance of the gateway traffic on NW 4th Avenue, the proposed Streetcar on NW Couch and MAX light rail on NW Fifth Avenue. The housing component would be similar in configuration to option A, providing the best solar orientation for the high-rise portion of the project.
Option A considered the re-using some of the existing buildings on Block 32. The two mid-block buildings along NW 5th Avenue were built in the 1920’s, and the original brick facades have since been covered with stucco and painted. These would need to be restored in order to contribute to the historical quality of the neighborhood. Further study is required to understand the feasibility of this option. The building on the corner of NW 4th Avenue and NW Couch Street is listed as a “historically contributing” structure and currently sits vacant on the ground floor, with creative office spaces on the second floor. It houses creative offices on the second floor.

The Grove Hotel’s highly deteriorated state provides many challenges for re-use of the existing structure. The original facade of the building was removed and replaced in 1931, when West Burnside Street was widened.

A 20' x 200' section of the original Grove Hotel was removed in 1931 when Burnside was widened.

The Grove Hotel, along West Burnside Street, is also listed as a “historically contributing” structure. Despite this designation, the highly deteriorated state of the building means that significant work would be required to bring the building to current seismic code compliance. Research also showed the original facade of the Grove was destroyed when 20 feet of the building was removed to widen West Burnside Street in 1931.
Block 32 currently contains five buildings in various states of use, from partial vacancy to full occupancy. There are a variety of existing uses in these buildings, from creative office space to low-income housing to a small-scale grocer. This study looked at two options for the redevelopment of Block 32.

Option A looked at the various issues related to reusing some of the existing buildings on Block 32.

Option B looked at the site-access and use adjacency issues associated with a series of new buildings on Block 32.

The Block 32 plan is proposed to include the following:

- +/- 145,000 sf of office
- Up to 170 parking stalls, in two levels of underground parking
- Approximately 24,000 sf of ground floor retail

Option B looks at a series of new buildings on Block 32. Design priorities would include establishing an active edge along West Burnside and creating a significant gateway into the Old Town/Chinatown neighborhood. Ground floor retail spaces, along NW Couch Street, would promote the ground level uses on Block 33 and help establish an activity corridor along the future Couch Streetcar line, potentially linking up to the Pearl District and south into Old Town. Significant restrictions exist for loading and parking access. Loading access is limited to NW 4th Avenue and would need to be accomplished in the most sensitive manner possible. Parking access would need to be limited to NW Couch Street because of access restrictions on all other streets around the site.
1. CORNER OF NW COUCH STREET & NW 5th AVENUE

2. GROCERY ENTRY at COUCH STREET

3. MICRO-RETAIL along PORTLAND MALL
The purpose of this more specific conceptual design study was to integrate the ideas that were generated during previous studies and the Master Plan stage, as previously outlined. The study of Block 33 allowed for further analysis of building access, structural systems, mechanical systems, building material studies and specific program requirements including:

- Anchor tenant and Asian grocer, Uwajimaya
- Separate ground floor commercial space
- 2-3 levels of underground parking
- +/- 140 units of rental housing
- +/- 12 creative work spaces

The Phase I and II Master Plan diagrams, from a 2003 site study*, were used as a starting point for this study. These concepts developed and changed, as new information was gathered with the help of traffic, structural, civil, and mechanical engineering consultants.

The parking entrance is located off of NW 4th Avenue. In order to maximize visibility for the store, it was separated from the parking exit; this also serves to limit its impact on the pedestrian zone. Loading occurs along NW Davis Street and was organized in a way to allow trucks to back in perpendicularly and/or diagonally. This creates a one-bay loading area, with a second loading on the street.

The concept design of the building begins to address some of the unique characteristics of the site. The entrances to the rental housing and commercial spaces are situated to respond to similar housing and commercial uses across each street. Small retail spaces along NW 5th Avenue (“micro-retail”) respond to the retail across the street activating the street in a lively and spontaneous manner. The scale, color and material choice of the conceptual renderings reference the ideas of this neighborhood as a historically active and colorful environment, as well as to highlight the neighborhood’s current attitude as a hub for creative ideas and the convergence of cultures. The housing would be angled on a diagonal to the north, keeping the majority of the grocery store unencumbered by additional columns.

MEZZANINE LEVEL

Uwajimaya is dependent on a large amount of mechanical equipment, serving the various coolers, fish tanks, display areas and food preparation areas in the store. As well, there a need for the administrative areas that support the sales floor functions.

These auxiliary functions have been consolidated into a mezzanine which will overlook the store.

Floor 2 (Grocery Mezzanine)
The podium level becomes a special place for the residents of the building. A seven-story tower is sited to the north, and a series of two-story live-work spaces are sited to the south of the block above the grocery. This arrangement creates a courtyard which becomes an amenity for the residents, as well as providing important opportunities for sustainable strategies, such as rainwater capturing and natural light penetration into the store; the latter will be accomplished when light enters the skylights located on the podium level. A small pavilion is placed in the center of the courtyard to serve as a creative gallery and community gathering space.
A mix of units are incorporated into the typical housing level. Apartment units that face south are more narrow and deeper, because of good solar exposure from the south. Units that face north are more shallow and wide, because access to light is from the north and therefore indirect and ambient. There are two-bedroom units on each corner, allowing for a good mix of unit types on each floor.
At the top floor, some units are combined and consolidated, in order to create larger units.
Parking Floors

PARKING LEVEL 2

PARKING LEVEL 3
(Optional)

PARKING LEVEL 1
The basic program of the building is organized with Uwajimaya on the ground floor, a podium level that contains an accessible courtyard and two separate housing pieces that contain different unit types.

The building is massed with a higher portion toward the north, allowing sunlight to access the courtyard as well as into the units. To the south, the live/work units establish a strong urban edge along NW Couch Street.

The service mezzanine allows for the placement of the various complex mechanical systems serving the grocery store, along with office and other back-of-the-house functions. Placing mechanical systems in the mezzanine reduces the amount of equipment that needs to be placed on the rooftop or in the underground parking garage, both of which create system inefficiencies and added expense.

PARKING

Because of the 100’ height limit on this site, underground parking was the most logical solution. This allows for various schemes to be considered which provide for two or three levels of parking to serve the needs of the grocery store, the housing and a potential public parking component. This also allows for the consideration of underground parking connections between Blocks 32 and 33. Significant challenges to these schemes exist because of an 18” sewer main which currently runs through the middle of NW Couch Street. Further discussion of these challenges occurs on the PARKING SCHEMES page of this chapter as well as in the CONSULTANT REPORTS section of the final chapter.
OLD TOWN/CHINATOWN - BLOCKS 33 & 32

EAST - NW 4th AVENUE

NORTH - NW DAVIS STREET
ELEVATION STUDIES

A series of elevation studies were done to explore ideas of materiality, composition, color and form.

SOUTH - NW COUCH STREET
UNIT TYPES “L” ONLY OCCUR ON THE PODIUM LEVEL. This two-level live/work unit has an open creative work space on the ground floor and an internal staircase connecting to the one-bedroom apartment above. The two floors can be rented separately or together.
Establishing a series of housing unit prototypes was an important step in the conceptual design process, as it helped to define the size and layout of the residential floorplates.

Designing units which would respond to their solar orientation in an appropriate manner was a driving principle. It was decided that narrow, deep units should take advantage of good southern light, while wider, shallower units would be better served by the indirect light gained from a northern exposure.

Within each of these unit classifications, variations were established by increasing the size of living areas for a greater unit mix. This unit mix creates the opportunity for an affordable component, to be incorporated into the project in an integrated way.

Two-Bedroom Unit Prototypes
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### OPTION 2.2: 2-LEVEL W/ MECHANICAL PARKING

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### Two-Level Parking Options

- **P1**
  - Extra depth for mechanical parking equipment.

- **P2**
  - Extra depth for mechanical parking equipment.

**NOTE:**
- GSF: Gross Square Feet
- Cost and Cost/stall are calculated based on the number of parking stalls.

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**OLD TOWN/CHINATOWN - BLOCKS 33 & 32**
### PARKING OPTIONS

Several parking options exist for Block 33. The general issues which are addressed by the various options are:

- The ability to serve the parking needs for the grocery store.
- The ability to serve the parking needs for the housing component.
- The potential for a public parking component, to serve the existing buildings, restaurants and nightclubs in the neighborhood which lack parking.
- Potential future underground connections to Block 32 parking levels; challenges exist for this idea because of an 18” sewer main running below NW Couch Street. The specific heights ideal for an underground parking connection.
- Increasing the parking density on the site through possible integration of mechanically-assisted parking machines into the bottom level of parking; this would allow for the lower level to remain relatively unchanged, with the exception of increasing the floor-to-ceiling height to accommodate the parking equipment.

#### OPTION 1.3: 3-LEVEL BASELINE

<table>
<thead>
<tr>
<th>Traditional Parking</th>
<th>Level</th>
<th>Height</th>
<th>GSF</th>
<th># Stalls</th>
<th>$/SF</th>
<th>Cost</th>
<th>Cost/stall</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>12’</td>
<td>44,575</td>
<td>105</td>
<td>$105.00</td>
<td>$4,680,375</td>
<td>44,575</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>14’</td>
<td>44,575</td>
<td>106</td>
<td>$105.00</td>
<td>$4,680,375</td>
<td>44,154</td>
<td></td>
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<tr>
<td>P3</td>
<td>14’</td>
<td>38,025</td>
<td>86</td>
<td>$105.00</td>
<td>$3,992,625</td>
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<td><strong>Subtotal</strong></td>
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<td>127,175</td>
<td>297</td>
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<td>$13,533,375</td>
<td>44,961</td>
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#### OPTION 2.3: 3-LEVEL W/ MECHANICAL PARKING

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<thead>
<tr>
<th>Semi-Automated Parking (No Pits)</th>
<th>Level</th>
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<th>GSF</th>
<th># Stalls</th>
<th>$/SF</th>
<th>Cost</th>
<th>Cost/stall</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>12’</td>
<td>44,575</td>
<td>105</td>
<td>$105.00</td>
<td>$4,680,375</td>
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<td>$105.00</td>
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<td>P3</td>
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<tr>
<td><strong>Addt Stalls</strong></td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

Mechanically-assisted parking systems on the lower parking levels would increase the overall parking count, with minimal impacts to the traditional layouts.

**Three-Level Parking Options**

---

OLD TOWN/CHINATOWN - BLOCKS 33 & 32

43
Potential Green Strategies

**WATER**

**GREEN ROOFS**
- Can reduce energy loads and reduce the heat island effect, by providing insulation
- Create a natural habitat for local species, as well as mitigate 50-90% of runoff

**LOW-FLOW PLUMBING FIXTURES**
- Can reduce water demand by 25-40%
- Can reduce energy use for hot water heating

**RAINWATER HARVESTING & GREYWATER RE-USE**
- Rainwater can be stored on site to be re-used for fire suppression, toilet flushing or irrigation
- Greywater from sinks, showers and drinking fountains can be treated and re-used on site

**NATIVE LANDSCAPING**
- Use native species and drought resistant plants along with drip-irrigation systems
- Water consumption for irrigation can be reduced by 50%

**BIOSWALE**
- Reduce stormwater runoff and improve the quality of captured water for re-use on site
- Mitigate the amount of water returning to the city’s sewage system to reduce fees

**ENERGY**

**WIND ENERGY**
- Micro-turbines allow for on-site energy production in an urban roof-top setting
- Advances in micro-turbine technology are making this a cost-effective option

**SOLAR SHADING & NATURAL DAYLIGHT & SOLAR ORIENTATION**
- Designing to take advantage of natural light reduces dependence on electric lighting
- Solar shading southern facing windows can greatly reduce cooling loads on the building

**INDIVIDUAL APARTMENT METERING**
- Sub-metering unit utility usage promotes conservation through education and awareness
- Centrally locating information can accomplish this goal in a cost-effective manner

**SOLAR ENERGY & ROOFTOP SOLAR HOT WATER HEATING**
- Opportunities exist for integrating solar panels into southern shading devices or on roofs
- Solar hot water heating tubes can be used on rooftops to provide hot water supply

**HEAT RECOVERY**
- Water-based closed-loop systems can allow heat energy to be transferred and shared between different parts of the building, reducing waste and increasing efficiency

**RECYCLING & COMPOSTING**
- Innovative programs can be combined between the housing and the grocery
- Green roofs and roof gardens create the opportunity for on-site composting
Old Town/Chinatown - Blocks 33 & 32

**Green Goals**

Block 33 is a mixed-use development, with unique opportunities for energy recovery and water reuse. Energy is naturally abundant on the site, in the form of sun, wind, and heat recovery. The building can exploit the sun’s ability to provide natural light — providing heat that can be used for the water heating demands of the building and giving off energy that can be converted into electricity. As well, wind can be harnessed to be used as electricity.

Block 33 provides an opportunity for heat recovery, by having a grocery store as the retail component. Heat can potentially be recovered from the refrigeration systems to be re-used in the apartment units. The average 42 inches of rain that falls in Portland per year can be harvested to provide a portion of the building’s water demand. Greywater used within the building can be re-used on site. The rooftops also provide an ideal space for community gardens, on-site water treatment and habitats for local species.

Using the resources on site will not only decrease long-term costs but will also increase the desirability of the units for renters. Implementing systems that are available on site is inherent to attracting new tenants in Portland. The tenants will know their money is well spent on a building that has a positive impact on its local environment.

The final goal is a LEED (Leadership in Energy and Environmental Design) Silver or better rating from the US Green Building Council.

**Water**

Block 33 will use water for hand washing, cleaning, showers, toilet flushing, cooking, heavy kitchen cleaning, ice making, possible heating and cooling, irrigation and aquariums. With increasing water prices, it is only natural that the building should consider the collection, treatment, and re-use of water on site.

The roof levels provide an opportunity to collect abundant rainwater for re-use. An average of 445,276 gallons of rainwater can be collected annually, for re-use in toilet flushing and irrigation. Introducing green roofs can help mitigate stormwater runoff as well as provide excellent spaces for community gardens and habitat for wildlife.

An estimated 4,450 gallons of greywater will be generated by the apartment units alone and could be re-used on site. This could reduce the amount of potable water going into the building. The podium level provides an excellent location for a greenhouse that can contain an on-site water treatment system. Podium level treatment can provide gravity-fed treated water to the grocery space. Installing low-flow fixtures can reduce water demands by 25-40%. This will also decrease energy needed for hot water use. An estimated 2,608 gallons of blackwater from toilet flushing could be treated and reused on site as well.

At the ground level, bioswales can be introduced to beautify the site as well as to mitigate stormwater. Water consumption, due to irrigation, can be reduced by 50% by installing a drip irrigation system and planting native species.

**Energy**

By including multiple types of uses, Block 33 allows for energy re-use to be an integral part of the design. With increasing energy and fuel prices, tenants will naturally be attracted to a building that harnesses energy for re-use on site.

There are many natural sources of energy available on Block 33. These include using the sun’s daylight as well as its energy for heating water in the building, via solar water heaters, and converting its energy to electricity via photovoltaic panels, by placing wind turbines on the roof. Wind energy can be captured and reused as electricity. Heat recovery may be available from the grocery refrigeration systems.

Energy loads can be reduced in a number of ways. Green roofs add insulation to the building — trapping cool air in the building in the summer and warm air in the winter. They also add to the longevity of the roof system, by protecting its membrane. Sunshades can be used on the apartment units, to let in the desired winter sun and to block unwanted glare by the summer sun. The podium level is an opportune space to locate skylights for the grocery store. This will reduce energy loads by decreasing the amount of electric light needed. Daylight sensors can also be incorporated, allowing the lighting systems to adjust with the amount of daylight received.

Individual metering for the apartment units can be made available, allowing tenants to know when they are using more energy than is needed and how much of that energy is imported to the site.

Recycling and composting a large portion of the waste on site can help reduce hauling fees and the amount of waste hauled to landfills. The grocery store provides a unique opportunity to allow for composting in the roof garden spaces.

**Usable green roofs**

Native plants  Rain harvesting  Greywater re-use  Bioswales

Solar hot water heating

Heat recovery  Daylight  Composting  On-site energy

Green Goals
## Area Calculations

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<thead>
<tr>
<th>Floor</th>
<th>FIr to Flr</th>
<th>Fin Flr Elev</th>
<th>Tot. Flr Area</th>
<th>Grocery</th>
<th>Core/Serv.</th>
<th>Retail</th>
<th>Housing</th>
<th>Parking</th>
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<td>Total area above grade</td>
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</table>

| Site Area | 40,000 | Total Units | 139 |
| Max. Area  | 240,000 | Unit Size SF (Avg) | 745 sf |
| FAR Difference | 65,275 |

| Appenidix | 49 |
### OLD TOWN/CHINATOWN BLOCK 33
### CONCEPTUAL DEVELOPMENT COST ESTIMATE

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<th>Unit</th>
<th>Unit Cost</th>
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#### Construction (Hard) Costs

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<th>Unit</th>
<th>Unit</th>
<th>Total</th>
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<tr>
<td>Retail Podium &amp; Mezzanine</td>
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<td>$177</td>
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<td>Terrace Level</td>
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<td>$98</td>
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<tr>
<td>Residential Low Rise</td>
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<td>$273</td>
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<tr>
<td>Residential High Rise</td>
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<td>$230</td>
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**SUBTOTAL CONSTRUCTION (HARD) COSTS**

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<tr>
<td>Escalation/Design &amp; Construction Contingencies</td>
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**SUBTOTAL**

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<tr>
<td>Soft Costs (Architecture, Permits, Financing Costs, Fees)</td>
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<td>$16,239,000</td>
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</table>

**TOTAL ESTIMATED PROJECT COST**

<table>
<thead>
<tr>
<th></th>
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<th>$88,000,000</th>
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</thead>
</table>
illustrates a more aggressive attitude towards the feasible for Block 33.

USGBC LEED CERTIFICATION

Several different strategies exist for pursuing USGBC LEED certification on this project, ranging lowest to highest, from Cerufied to Platinum ratings. Included are scorecards highlighting two approaches which are very feasible for Block 33.

The SILVER scorecard illustrates a conservative approach to the building design, while the GOLD scorecard illustrates a more aggressive attitude towards the certification process.
FINANCIAL INCENTIVES FOR SUSTAINABLE STRATEGIES

Several City, State and Federal incentives and tax credits exist, to encourage LEED Certification and/or the implementation of specific sustainable strategies. The following is a summary of some of those incentives, which can help offset the initial cost of attaining LEED Certification.

Green Investment Fund from Energy Trust of Oregon and the City of Portland
- Funding of up to $425,000
- Given to industrial, multi-family, commercial and mixed-use projects
- For investment in innovative approaches to waste reduction, water conservation, on-site stormwater management and re-use, energy conservation and on-site renewable energy generation

City of Portland
- Reduction of Systems Development Charges (SDC)

Energy Trust of Oregon
- Cash Incentives and design assistance are available for energy efficient new buildings
- Incentive amounts based on level of energy efficiency or LEED certification level achieved
- Several different tracks provide different maximum benefits, some of which can be combined
- Custom Track, LEED-NC tracks cap at $300,000 per project

State of Oregon Business Energy Tax Credit (BETC)
- Sustainable Building Program
- Tax credit increased to 50% of eligible project costs (50% for solar; 35% for all other efficiencies)
- Eligible costs are the incremental costs beyond standard practice
- Systems that contribute to improved energy efficiency, renewable energy production or reduced commuting impacts
- Tax credit distributed over five years
- Credit amounts are based either on level of LEED certification or level of energy efficiency achieved
- 160,000 sf LEED Gold: $339,350 credit
- 160,000 sf LEED Platinum: $589,150 credit

Bonneville Environmental Foundation Renewable Energy Grant
- Provides grants, loans, convertible loans, guarantees, and direct investments
- For renewable energy projects located in OR, WA, ID, and MT
- Preference goes to those projects that generate electricity
- Renewable energy includes photovoltaic, solar thermal, electric, wind, and hydro power, as well as biomass and animal waste converted to energy use.

Federal Tax Deduction for Energy Efficient Commercial Buildings (CITD)
- A tax deduction up to $1.80 per sf is available for buildings with more than 50% energy savings
- The sunset date was recently extended to December 31, 2008; additional legislation to extend and expand the deduction is being discussed
- Partial deductions are available for buildings achieving at least 16.7% energy savings through efficiencies in lighting, HVAC or building envelope design

Incentives for Solar Power
- Section 48(a)(3) (Investment Credit: Energy Credit) of the IRS tax code commercial solar tax
- Given a credit of 30% of the tax credit basis that a company has invested in eligible property, such as photovoltaic or solar thermal systems

Renewable Energy Tax Exemption
- Added value to any property from the installation of a qualifying renewable energy system will be exempt from the assessment of the property's value for property tax purposes
- Includes solar, geothermal, wind, water, fuel cell or methane gas systems in order to heat, cool or generate electricity
- Applies to commercial, industrial or residential projects

Financial Incentives
REFERENCE DOCUMENTS

Several different documents and previous studies were consulted in the conceptual planning phases of both the Master Plan and Block 33 Concept Design portions of the study. The following is list of some of the primary documents that were referenced.

OLD TOWN / CHINATOWN

- Old Town / Chinatown 3rd & 4th Avenue Streetscape Plan, September 2002
- River District Design Guidelines, May 2008

TRANSIT MALL

- www.PortlandMall.org

STREETCAR EXPANSION + ALIGNMENT

- DKS Associates Draft Memorandum to Bill Hoffman, City of Portland, October 2006

DOWNTOWN

- City of Portland, Title 33 Planning and Zoning Code
- Central City Fundamental Design Guidelines, November 2003
- Central City Plan, March 1988

Goldsmith Blocks: A Redevelopment Opportunity to Revitalize Burnside & Chinatown, September 2003
CONSULTANT SUMMARIES

Several consultants assisted in the initial information gathering and conceptual planning phases of both the Master Plan and Block 33 Concept Design portions of the study. The following is a summary of their key findings. Full reports are available in the following sections.

TRAFFIC ENGINEER: Kittelson & Associates
CIVIL ENGINEER: KPFF Consulting Engineers
STRUCTURAL ENGINEER: KPFF Consulting Engineers
MECHANICAL ENGINEER: Mazzetti & Associates

Consultant Report Summaries
MEMORANDUM

Date: April 30, 2008
To: Lucas Pendas
From: Mike Coleman

Project: Goldsmith Block 33
Subject: Site Access Due Diligence Results

Key Portland Office of Transportation (PDOT) staff reviewed GBD’s ground floor site plan for the Goldsmith Block 33, dated February 1, 2008. Kurt Engle, manager of PDOT’s Traffic Design Section, and Lewis Wadhrip, manager of PDOT’s Traffic Review Section, have no objections to the proposal. In our conversations they noted several of the proposal’s strengths and offered a few notes of caution.

Street conditions in the vicinity of Block 33 are evolving, but the proposed ground floor site plan has the versatility to fit nearly all conditions. Recent and future street changes include the following:

- NW 3rd and 4th Avenues, between NW Burnside and Clyatt Streets were recently reconstructed.
- The transit mall on NW 5th and 6th Avenues is currently being reconstructed to accommodate light rail transit, buses, and vehicular traffic.
- NW Burnside and NW Couch Streets are planned to convert to one-way streets with protected bus lanes.
- NW Davis Street, between NW 3rd and 4th Avenues, was recently reconstructed as a "mixed-street," and
- NW Davis Street is planned to be designated a bike boulevard.

The proposed driveways to and from the site’s parking offer significant benefits:

- Separate parking entrance and exit driveways are preferred over two-way driveways.
- They operate more simply and safety.

POD staff did not oppose driveway access on NW Couch Street, but the absence of driveways on NW Couch will facilitate traffic progression in the event that NW Couch becomes a one-way street. It will also facilitate street parking.

- Locating the parking entrance on NW 4th Avenue provides easy access from all directions.
- Locating the parking exit on NW Davis Street, a two-way street, makes it especially convenient to disperse traffic leaving the site.

The truck loading area proposed for NW Davis Street should work well, provided the necessary approval can be acquired from the City. The City has specific code requirements addressing the number of bays and their dimensions. The likelihood of the City agreeing to establish a truck loading zone on NW Davis Street is very high. Onstreet truck loading zones are common, but like all onstreet parking, they are created and managed for the general public’s benefit and may be vacated or altered if conditions warrant. Onstreet truck loading zones should not be assumed to be a substitute for code-required onstreet loading bays.

POD staff cautioned that the proposed site plan would need to be reconsidered if the festival street theme extended onto Block 33’s portion of NW Davis Street. It is preferred that festival streets not have driveways. Staff did not know of any plans to extend the festival street theme to NW 3rd Avenue. They advised that the theme would only continue to Block 33 if the adjacent property owners requested it, or if the Neighborhood Association felt strongly about it.
Existing Conditions:
The property covers two existing blocks bounded by NW 5th Avenue and NW 4th Avenue to the west and east, respectively; and West Burnside Street and NW Davis Street to the south and north, respectively. The south Block 32 is separated from the north Block 33 by NW Couch Street. Block 32 is occupied by commercial and residential buildings. Block 33 is currently occupied by an asphalt parking lot. The existing topography is generally flat with a slight slope down to the east.

Construction of a new north-south segment of the MAX line was recently completed along NW 5th Avenue with a proposed station on the west side of NW 5th Avenue across from Block 33. The City of Portland also has plans to construct new Streetcar corridors along West Burnside Street and NW Couch Street with the Burnside/Couch Couplet project. Locations of future Streetcar stations have not yet been determined.

Site Improvements:
The site improvements for Block 33 include a large grocery store covering the south half of the block with some retail and the loading dock access along the north at street level. A seven-story residential building is planned above the retail and loading dock at the north end of the block. The street access is from the northeast corner of the block. Although the primary block considered for development is Block 33, the project is also evaluating the potential for a below-grade parking lot on both blocks with a connection below NW Couch Street. See discussion below in Below Grade Parking Connection Under NW Couch Street section. The viability of this below-grade connection will influence the type of development proposed on Block 32, but it is currently planned for retail at street grade.

Demolition:
Site demolition will include the removal of any paving, concrete, lighting and structures throughout Block 33 currently serving as the surface parking lot. Efforts will be made to minimize the extent of sidewalk removal along the broad sidewalk portion of NW 5th Avenue and the new sidewalk along NW 4th Avenue, but the limits of the below-grade parking will extend below the existing sidewalk and curb to the north and south requiring full removal. Full street replacement and new tree plantings are likely along Davis and Couch. The existing apartment buildings on Block 32 would also be partially demolished for renovation. Again efforts will be made to minimize impacts to existing sidewalks along NW 5th Avenue and NW 4th Avenue, but sidewalk replacement is anticipated along Burnside and Couch.

Site Utilities:
Block 33:
Utility connections for the proposed grocery building can be obtained from any of the fronting streets with the exception of NW 5th Avenue where there might be conflicts with the recently constructed MAX line improvements. Utility work and utility connections within NW Couch Street will also need to be coordinated with future planned improvements for the Burnside/Couch Couplet project to minimize potential impacts.

Water:
According to Portland Water Bureau documents, there is an existing 12-inch water main running north-south along the east side of NW 5th Avenue, a 20-inch line running east-west in NW Davis Street and both a 12-inch and 24-inch water main running north-south along NW 4th Avenue with the 24-inch line west of centerline. The existing surface lot has only one service connection from the 12-inch main in NW 4th Avenue, but the size is most certainly insufficient to serve the new building. It appears that new water services can be provided from any of these mains, depending on the location of the proposed riser room. A water connection in NW 5th Avenue would require more expensive street and sidewalk repair.

Sewer:
According to utility data on Portland Maps the site is served by combined sewer systems only. There is a 27-inch reinforced concrete pipe flowing east in NW Davis Street about 15 below grade and an 18-inch high density polyethylene pipe flowing east in NW Couch Street ranging from 15' to 17' below grade. There are no combined sewer lines in NW 5th Avenue or NW 4th Avenue. A sewer service can be provided from either of these two combined sewer mains. Floor drains from below-grade parking may need to be pumped to lie into the public system.

Storm:
Stormwater runoff from the proposed development will need to be separated from sanitary flows up to the property line. Flows can be combined at that point for a shared service connection to the combined sewer. However, water quality treatment and detention will be required for stormwater prior to discharge from the site. Low Impact Development strategies can be implemented with the design to mitigate the extent of detention required, but the current stormwater management manual requires that the peak flow from the developed 25-year modeled storm event not exceed the existing peak site runoff during the 10-year modeled storm event.

Gas:
Gas utility data is inconclusive based on the City of Portland intersection maps. The maps show that historically the block had gas mains on all 4 sides, but the lines have been noted as abandoned and no new lines are shown. According to a representative from NW Natural, the gas system no longer loops Blocks 32 & 33. There is a line in NW 5th Avenue that extends south of NW Davis Street, but ends approximately mid-block. Another line is in NW 4th Avenue extending north and south beyond Block 33. There is no gas line in NW Davis Street. The line in Couch is a 4 ½-inch steel line and supplies a dead-end system that feeds ~15 customers to the west of 5th Ave. This line will need to be protected during construction. See Below Grade Parking Connection Under NW Couch Street section below for additional discussion.

Electrical:
According to the City of Portland intersection maps it appears that there are no significant electrical vaults in conflict with the proposed improvements. However, there appear to be electrical conduit banks running east-west on both the south side of NW Davis Street and the north side of NW Couch Street. These duct banks will be close to the proposed limits of excavation for the garage. Protective measures will be required to protect these lines and maintain continued service during construction.
The exact strategies we will implement will be determined in future design phases based on conversations with the City of Portland and conditions of existing utilities.

**Erosion Control:**
Contractor shall provide erosion control for all construction activities. Erosion control shall be in accordance with the requirements of the City of Portland.

**Below Grade Parking Connection Under NW Couch Street**
As noted above in the Site Improvements section, the developer is exploring the possibility of connecting below grade parking under NW Couch Street. There are a number of design issues that will need to be evaluated further to assess the viability of this proposal. Utility base map data suggests that this block of NW Couch Street has sewer, telephone, TV, electrical and gas utilities. See below for a discussion of each utility.

**Sewer:**
The design team approached BES to discuss the potential of installing a lift station for the combined sewer system in NW Couch Street. Record data available from Portland Maps suggests that the existing depth of the 18-inch combined sewer line in NW Couch Street is in conflict with any reasonable parking lot connection design. A lift station would facilitate the construction of a below-grade parking lot connection between Blocks 33 and Block 32. Initial discussions with BES suggest that although feasible, there would be a strong reluctance to install such a system on a line that already flows by gravity due to system reliability issues as well as expensive on-going maintenance. Locating the infrastructure and controls for the lift station in an urban corridor right-of-way will also be a challenge. The depth to groundwater and expensive waterproofing requirements are also being considered in the alternatives assessment.

**Electrical & Communication Conduit:**
There appears to be numerous telephone and television conduit duct banks with vaults running below the south parking aisle of NW Couch Street.

- **PGE:** We spoke with a representative and verified that there are two separate electrical conduit duct banks run below both the north and south parking aisles. The north duct bank contains two primary feeds to China Town and holds 12-4 inch conduits, while the south duct bank contains secondary lines. The conduit and vaults are typically installed within the top 6 feet below grade. Temporary bypass power will need to be coordinated with PGE if the construction requires conduit removal. A quick review of system maps by the PGE representative suggested that rerouting could occur through existing ducts in NW 6th Avenue and NW Everett Street.

- **Comcast:** A representative indicated that they have one 2-inch conduit running along the south side of the street, but the line is currently empty.

- **Qwest:** We were unable to contact a representative at the time of the memo to verify the contents of their conduit and the viability of relocation or temporary bypass. According to the reference base mapping prepared for the TriMet MAX project on NW 5th Avenue, the line appears to run along the south side of the street.

**Gas:**
According to a representative from NW Natural, there is a 4.5-inch steel gas line in NW Couch Street that supplies a dead-end system feeding ~15 customers to the west of 5th Ave. NW Natural will not allow this line to be cut or capped for the excavation of the garage without first making arrangements for an alternate feed line to these customers. As noted above, there appears to be a line running south in NW 5th Avenue that ends about mid-block between NW Davis Street and NW Couch Street. If there is no moratorium for street work in 5th, given the recent construction of the TriMet Light Rail, then it may be possible to provide an alternate feed if the line has capacity to serve the anticipated loads. We requested a copy of the gas distribution system map, but it can not be made available to us for security reasons. Additional research and discussions are required to identify alternatives.

**Grading:**
The site will be graded to ensure that water does not pond adjacent to the proposed buildings. Building access will also be graded to provide ADA accessibility.

Due to the depth of the basement excavation, it is likely that groundwater will be encountered. A geotechnical report will be prepared for the project and exploratory field boring data will identify static groundwater elevations. The design of the parking garage below the groundwater table will need to consider waterproofing or a permanent dewatering system to mitigate for water infiltrating the garage. We have found that a permanent dewatering system in the City of Portland has been cost prohibitive on other projects due to requirements for initial groundwater testing, possible water treatment, permit fees, and discharge fees of ~$6 per cubic foot. The design should consider structural and waterproofing alternatives to create a bathtub foundation.

**Sustainability:**
The project will explore options to reduce potable water demands and reduce the extent of stormwater runoff. A couple of options to consider include a rainwater harvesting system that utilizes stored stormwater to flush toilets within a portion of the building to reduce the potable water usage. In addition, a portion of the building roof area could be constructed with an eco-roof to reduce impervious surface area. Stormwater that falls on this eco-roof will naturally be treated through the planting media and runoff rates and volumes will be attenuated and reduced by infiltration and evapo-transpiration, respectively.

**Right-of-Way Improvements:**
Full frontage improvements should be anticipated on all four sides of each block for sidewalk replacement and curb bulb construction in accordance with City of Portland Bureau of Transportation requirements. Some recent construction on NW 5th Avenue and NW 4th Avenue might be preserved to limit the extent of improvements. On Block 33 a new below-grade parking entry is proposed along NW 4th Avenue and a new exit is proposed along NW Davis Street. On-street parking will need to be coordinated with these driveways as well as the loading dock entry that will also be located along NW Davis Street. A new loading dock entry is also proposed along NW 4th Avenue at Block 32. Green Street strategies are already anticipated with the future Burnside/Couch couplet project. Therefore, the extent of frontage improvements along Burnside and Couch may not be fully realized until the couplet design is further along. The design team will have to discuss potential interim improvements with PDOT to be included with the project.
GOLDSMITH BLOCK 33

Structural Narrative
April 2, 2006

A new mixed-use project is being planned for Block 33 located between NW 34th and 35th Avenues and Couch and Davis Streets in downtown Portland. The project will have two levels of below grade parking with up to five stories of above grade structure used primarily for housing, with retail at grade and an underground level. The layout and structural systems used for the project are anticipated to be similar to those of Museum Place South.

The primary purpose of this narrative is to provide information about the likely structural systems for the building as the consultant can develop a preliminary budget for the owner. As this stage of the project and site components are determined, the consultant will be able to offer information to other similar projects to provide advances in forms such as concrete panels, steel walls, columns, beams, and elevator steel beams, window decks, miscellaneous framing, excavation footing, and other similar elements that will occur in order to provide an accurate budget to the owner.

Excavation Shoring

Excavation shoring will be required on all sides of the project. The shoring could consist of conventional soldier piles, tie-backs, and bentonite. For the conventional shoring system, soldier piles would likely be placed at approximately 10 feet on center with one tie-back required. Because of the potential for groundwater rise to approximately 10 feet below ground surface during 100 year floods, weeping tile will be required on the face of the excavation.

As an option to the conventional shoring system, steel sheet piles may be used for the temporary soldier piles and the permanent wall. Steel plate piles are believed to be required for a weld load. Typically, the steel piles would be fabricated and shipped to site with a total length of approximately 100 feet.

Foundations

Based on discussions with DuckDesign there are several options for the foundation system. Competent gravel will be approximately 10 feet below the bottom of the excavation. One option is to excavate for loadings and backfill with competent gravel to CPC (6") to the bottom of the backfill elevation. An adequate bearing pressure of up to 14,000 psi is possible. Footings would be approximately 37.5"x37.5"x37.5" below the floor and in "P"x"P"x"P" outside the tower with 183 pounds per cubic foot (2400) density. Due to the potential for hydraulic uplift, one 120 ton anchor will be required to resist uplift forces for loadings outside the tower.

Another option is 16-inch diameter driven ground piles with a capacity of approximately 1.6M. Six piles would be required below each tower column and two piles would be required between column to sustain the tower.

Footings or piles may have concrete that would have compressive strength of 4000 psi at 28 days.

Basement Walls

Bailey excavation shoring, if constructed against a conventional excavation shoring system, would be a 10-inch thick concrete wall with approximately 0.5 psi of water with a 25-year compressive strength of 4,000 psi. Another option is to excavate the soldier piles to allow them to provide support for the vertical loads from the wall. Shear stress would be required to be added to the side of the soldier piles. In this case the basement walls could be constructed with an open-joint 3.3 psi wall.

If metal sheet piles are used for the excavation shoring system, the sheet piles could be utilized for the permanent wall section.

Below Grade Parking Floor Framing

The lowest parking level slab will need to resist approximately 10 feet of hydrostatic water pressure. The slab would be 14 inches thick with approximately 1.5 psi of water transfer. Waterproofing will be required below the slab.

The upper parking level slab would be formed using a flat plate post-tensioned concrete slab. The slab thickness would be 14.5 inches thick, assuming the slab did not exceed 30 feet. A concrete compressive strength of 3,000 psi at 28 days would be required. The typical post-tensioning reinforcement would be approximately 1.1 psi at the middle reinforcement would be approximately 2.8 psi. The floors would be supported by columns at the interior and perimeter basement walls (concrete or steel) at each level. A post-tensioning strip would be required around the perimeter of the garage and the walls could be paper added to the sides similar to Museum Place South. Depending on the size and shape of the exterior walls, interior ceramic tile may be required.

Columns would be approximately 24 inches by 24 inches below the tower with approximately 850 pounds of reinforcing per square foot. A concrete compressive strength of 4,000 psi at 28 days would be required.

Ground Floor Framing

The ground floor would be a 6 inch thick flat plate post-tensioned slab with approximately 1.2 psi of post-tensioning and 4.1 psi of post-tensioning. A compressive strength of 3,000 psi at 3 days for showings and 4,000 psi at 28 days would be required.

Consultant Reports - Structural

OLD TOWN/CHINATOWN - BLOCKS 33 & 32

Groundnut Block 33
Brownstone Avenue

KPF Consulting Engineers
June 1, 2006

Groundnut Block 33
Brownstone Avenue

KPF Consulting Engineers
June 1, 2006
FIRE SPRINKLERS

The entire building will be sprinkled, with parking dry pipe for frozen protection.

PLUMBING SYSTEMS

Cold Water: Municipal. Probably pressure boosted, tankless.

Domestic Hot Water:

A. Steam: Generated by heat recovery from display refrigeration with back up from condensing water heaters.
B. Heating: Multiple options including heat recovery from store refrigeration, central condensing water heaters, and heat from water heaters. Central systems would be tenant installed.
C. Restaurant: Heat recovery from store refrigeration or central condensing water heaters.

Water Conservation: Low flow fixtures, dual flush toilets, possible rainwater harvesting for toilet flushing.

Sanitary Waste: To municipal sewer. Parking drainage will be into oil separator. Grease trap for restaurant.

Storm Sewer: Discharge to municipal sewer, with possible harvesting of rainwater. Rain water will be used to irrigate roof.

Natural Gas: To serve backup heating, domestic water heating, and restaurant cooking.

HVAC SYSTEMS:

Piping/Canopy will be exhausted as controlled by a smoke/gas detection system. Discharge will be deflected to sidewalk leaves below the canopy, set back above grade. Make-up will be via drive entry.

Store: The store will be served by a single zone air handler with fixed outside air. Heating will be provided by heat recovery from water cooled store refrigeration. Back up by condensing boiler. Cooling, supplemental to store refrigeration, will be provided by a water cooled refrigeration system. Heat from store refrigeration and supplemental cooling will be via a closed circuit cooling tower or the upper housing roof.

Consultant Reports - Mechanical