COUNCIL AGENDA/INFORMATION		
☐ Closed	Date:	Item #
☑ Reg. Council	Date: Oct 3. '11	Item # 10
☐ Supplemental	Date:	Item #

Director	CAO
	GMc

10

DISTRICT OF WEST VANCOUVER
750 – 17TH STREET, WEST VANCOUVER, BC V7V 3T3

COUNCIL REPORT

Attachments for item 10 provided under separate cover

Date: September 28, 2011 File: 0500-01

From: G. McRadu, Chief Administrative Officer; B. Sokol, Director of Planning, Lands and Permits; and M. Chan, Manager of Corporate Initiatives

Subject: **Public Safety Building**

RECOMMENDED THAT:

1. the report titled "Public Safety Building" be received for information; and
2. staff bring back a public consultation process to Council in early 2012, including a public Open House regarding the Public Safety Building project with questions for the community to consider including: size; scope; design; location; cost; funding sources; and time line.

1.0 Introduction and Executive Summary

1.1 The Police Station at 1330 Marine Drive is the police headquarters in West Vancouver and it houses almost all of the Police Department's equipment and staff. Fire Hall No. 1 at 760-16th Street is the main Fire Hall for all of West Vancouver and it houses the Fire and Rescue Services' administration, records, together with some equipment and staff. The Fire Hall No.1 coverage area experiences the highest volume of all of the District's four Fire Halls (i.e. 75% of total emergency responses, 68% of all structure fires, and 50% of all medical emergencies in West Vancouver). The Police Station and Fire Hall No. 1 house the first responders who will deliver crucial services to our residents in the event of a major earthquake or natural disaster.

1.2 In recent years, it has become evident to this Council (and previous Councils), Chiefs of Fire and Police, District Staff, as well as members of the public, that the Police Station and Fire Hall No. 1 are in serious need of replacement (or substantial upgrade). This initiative has been expressly identified as a priority in the District's Community Strategic Plan and Balanced Scorecard in 2010 and 2011.

1.3 One of the District's major concerns is that both the Police Station and Fire Hall No. 1 are not constructed to a post-disaster standard (as required by the current BC Building Code). These facilities will likely fail (and possibly collapse) in a major seismic event and would not be functional thereafter. If these facilities were incapacitated, our first responders would not be able to deploy equipment, vehicles or deliver life saving services to the community.

1.4 The recent events in Japan and New Zealand are reminders of the risks of living in a seismic zone. In the event of a major disaster, residents will need to be self-reliant until first responders can arrive to provide the necessary help. During that time, we will need to rely on the facilities that have survived and remain operational. Our Fire and Police Services have the necessary training and specialized equipment to respond. They need post-disaster standard facilities to operate from in order to coordinate and deploy the resources to deal with fires, rescue of trapped victims, downed power lines, flooding, traffic and other life safety issues that may arise in the event of a major natural disaster.

1.5 In addition to the failing seismic performance of these facilities, there are numerous other design and operational deficiencies with the 43 year old Police Station and 45 year old Fire Hall No.1 including: insufficient capacity; building settlement problems; water leakage; presence of hazardous building materials; ventilation and electrical system problems; and other areas of non-compliance with the BC Building Code.

1.6 Over the last 14 months, Council and Staff have been exploring models for the construction of a new Public Safety Building, possibly housing both Fire and Police Services. The economic and operational feasibility of locating Police and Fire Services in a single Public Safety Building has been confirmed. Precedents of co-located first responder facilities are found in Metro Vancouver, Ontario, Quebec and the United States.

1.7 The District is setting out in this report the preliminary findings of the feasibility studies, current cost estimates and the previous work and analysis that has led to where we are now. There has been a significant body of work, and accordingly this report is a summary. Detailed information can be found in the attached appendices which introduce and attach the background reports. In reviewing the background reports, it will be evident that cost estimates, components of the project, considerations and other criteria have evolved throughout this 14 month process. This report therefore focuses on the most recent analysis rather than older reports which contain information that has been superseded.

1.8 The goals of Council and Staff include: to construct a new Public Safety Building to a post disaster standard; to keep costs well within industry standards; and to construct a facility that will house essential needs for today and the future, but not more than we need.

1.9 During the process of planning the Public Safety Building, different options and upgrades were considered which led to cost estimates in the region of $60 million. In keeping with the goals for the Public Safety Building, the scope and cost estimates have now been reduced to $39.5 million for all planning and construction costs. This cost estimate of $39.5 million does not include any upgrades to the existing Municipal Hall or any of the optional elements for the Public Safety Building. This "base case" cost estimate of $39.5 million has been tested and confirmed by: an external cost consultant; UBC Properties Trust (which constructs and manages all of the University's educational/institutional projects); the Ambleside Revitalization Commission (composed of resident

volunteers who are experts in real estate development and construction); an external construction management firm; and District Staff.

1.10 The District's analysis, as confirmed by the Commission, is that the entire cost of the Public Safety Building can be funded through sale of some of the District's land assets without any increase to property taxes. While this is one option, other options are available for consideration by Council and the public such as internal financing, financing from the Municipal Finance Authority or funding through property tax. This report recommends that Council affirm the funding model after public consultation.

1.11 This report sets out information to allow the public to understand the project's process and current status. This report does not recommend making any major decisions now with respect to the Public Safety Building. A significant amount of work has been done to reach this point and the groundwork has been laid for Council in 2012. The next step is the public consultation process that must take place. After the public consultation, Council in 2012, together with community input, can finalize/make the important decisions on matters such as: size, scope, design, location, cost, funding sources and the time line for the Public Safety Building. In summary, the groundwork has been laid, and Council in 2012 together with community input, will set the agenda regarding how the Public Safety Building project will move forward.

2.0 Analysis

2.1 Set out below is a summary of the significant work that has taken place since July 2010. Further detail can be found in the attached appendices:

(a) Appendix A: Background regarding Council Consideration of the Public Safety Building Project and Public Engagement Process for AmblesideNow;

(b) Appendix B: Summary of Reports/Memos from Cornerstone Planning Group regarding Public Safety Building; and

(c) Appendix C: Summary of Pros and Cons of Including Fire Hall No. 1 in Public Safety Building.

Public Safety

2.2 Public Safety is one of the District's most important services and responsibilities. The Police Department and Fire and Rescue Services, in conjunction with other District departments, work together every day to coordinate and provide this essential service to our community.

Police Station

2.3 The Police Station was constructed in 1968 with additions made in 1981. The Police Station has been identified as seriously deficient relative to current Police operational requirements. The building is undersized, has structural settlement problems, persistent water leakage, hazardous building materials, a deficient

ventilation system, in addition to other elements which do not comply with the current BC Building Code. Most importantly, based on a seismic evaluation, the Police Station would likely fail (and possibly collapse) in a major seismic event, and would not be functional thereafter.

Fire Hall No. 1

2.4 Fire Hall No. 1 is constructed of unreinforced masonry (essentially stacked blocks) and would likely fail (and possibly collapse) in a major seismic event, thereby jeopardizing first responder crews and approximately $3 million of equipment. This would significantly hinder the District's ability to assist those in need in our community. Fire Hall No. 1 is also deficient in terms of: inadequate (less than 30 centimetres) clearance between the top of the ladder truck and the lowest beam in the apparatus bays; lack of sprinkler systems; presence of hazardous building materials; insufficiently reinforced plumbing and inadequate electrical systems; in addition to other elements which do not comply with the current BC Building Code.

The Concept of a Public Safety Building

2.5 The recent events in Japan and New Zealand have underscored the importance of critical public safety infrastructure and the ability of first responders to reach those in need. The British Columbia Emergency Response Management System identifies as its top priority: "provide for the safety and health of all responders" so that first responders can then assist those in need. The BC Building Code requires that all buildings for first responders must be constructed to a "post-disaster" standard that imposes requirements for, among other things, seismic performance, wind load, and snow load.

2.6 The District now has the opportunity to construct a new Public Safety Building on existing municipal land. This will allow more efficient use of the District's Municipal Hall site, and avoid the need to acquire land for the Public Safety Building site at an additional expense. The location for the Public Safety Building is consistent with the existing public uses in the area, namely the 47 year old Municipal Hall and the 45 year old Fire Hall No.1. Due to response time requirements, Fire Hall No. 1 needs to remain within this immediate vicinity as 75% of total emergency responses, 68% of all structure fires, and 50% of all medical emergencies in West Vancouver occur in the Fire Hall No. 1 coverage area. The Police Station also should remain within this area due to the high concentration of service calls in the surrounding area and to allow the public convenient access to the Police Station. Traffic analysis has been conducted to confirm that the circulation and traffic from a Public Safety Building can be adequately accommodated within the area.

2.7 Over the last 14 months, the District has studied the feasibility of co-locating the Police Department and Fire and Rescue Services on the Municipal Hall site. The studies have confirmed the economic and operational feasibility. Precedents of co-located first responder facilities include: North Delta Public Safety Building; Port Moody Public Safety Building; The Township of Stirling-Rawdon Ontario

Police and Fire Services Station; Police and Fire Station Number 10, Montreal, Quebec; Massey Building Police and Fire Headquarters, Fairfax, Virginia; Police and Fire Building, Harwich, Massachusetts; Police, Fire and EMS Building, Holden, Massachusetts, etc. Our two emergency service providers already work closely together and respond jointly to incidents such as: car accidents; rescues; medical emergencies; hazardous materials; natural disasters; and municipal infrastructure failures affecting public safety. Co-locating Police and Fire Services in one Public Safety Building would allow further joint planning, together with capital cost savings through the use of shared space and mechanical systems.

2.8 The operating and maintenance costs of a new energy-efficient Public Safety Building would be substantially less than the operating costs of the two older buildings, the 43 year old Police Station and 45 year old Fire Hall No.1. These savings can be quantified once the design of the Public Safety Building has been finalized. A new Public Safety Building would also eliminate the need for expensive repairs to the Police Station and Fire Hall No.1 which are anticipated within the next 10 years. Those repairs would be required to avoid major building systems failures and maintain appropriate health and workplace safety conditions. Examples include restorations or upgrades to: electrical systems; plumbing systems; heating and ventilation systems; and exterior envelope.

2.9 It is important to note that the Public Safety Building will not mean complete integration between Fire and Police Services. Due to security and operational requirements, the autonomy of Police and Fire Services must be respected; however, there are certain efficiencies and cost saving measures that can be achieved through shared space in a single Public Safety Building. While there is a business and practical case for the co-location of Police and Fire within a Public Safety Building (see Appendix C), as mentioned above, whether Fire Hall No. 1 is ultimately included into the Public Safety Building remains a decision to be determined by Council in 2012.

Laying the Groundwork and Identifying the Decisions to be Made

2.10 The groundwork has been laid by conducting the studies, testing the findings, providing this information to the public for consideration, and identifying a clear path for the next steps in the Public Safety Building planning process.

2.11 Recognising that this information is being provided to the public for the first time, and that essential public consultation needs to take place, this report does not recommend that decisions be made now on the Public Safety Building. Decisions including the scope, size, design, location, cost, funding and time line for the Public Safety Building will be for Council to decide in 2012 after public consultation.

The Process for Planning the Public Safety Building

2.12 The approach that has been taken by the District to study the Public Safety Building is summarized below:

(a) consulted with relevant user groups including Fire and Police Services;

(b) engaged external experts to conduct a space needs assessment to determine the space and operational requirements for each of the relevant departments (including forecasting for future growth);

(c) reviewed, tested and revised area estimates;

(d) conducted feasibility studies and produced "test concept" illustrations to confirm graphically that Fire and Police Services can be physically located in a Public Safety Building on the Municipal Hall site;

(e) prepared cost estimates together with quantity surveyors and cost consultants taking into account the area and components of the Public Safety Building;

(f) studied possible upgrades or options (and their cost estimates) to consider for inclusion in the Public Safety Building project;

(g) reduced the scope for the Public Safety Building to the "base case" version at a cost estimate of $39.5 million (which does not include any upgrades to Municipal Hall or any optional elements for the Public Safety Building);

(h) reviewed the area and cost estimates with UBC Properties Trust which develops all of the educational/institutional buildings on the UBC Endowment Lands which tested and confirmed the $39.5 million cost estimate;

(i) reviewed the area and cost estimates with the Ambleside Revitalization Commission which tested and confirmed the $39.5 million cost estimate;

(j) obtained a second opinion from an external construction management firm confirming that the cost estimate of $39.5 million for the Public Safety Building is sufficient based on the current program; and

(k) now presenting the information for public review and consultation, after which decisions on the Public Safety Building will be made by Council in 2012, together with community input, including decisions on: size, scope, cost, design, location, funding and time line.

2.13 The feasibility studies for the Public Safety Building began in mid-2010. Since then there has been a progression of analyses that studied different options and upgrades, including potential upgrades to Municipal Hall to address deficiencies in seismic performance, BC Building Code compliance, building envelope, and system upgrades. Cornerstone Planning Group (which has experience in planning municipal halls and police and fire facilities) has studied the space needs for the Public Safety Building. Cornerstone has reviewed existing plans, conducted site visits, and conducted research and interviews to determine the

current, normative, and future needs of each of the relevant departments within the Public Safety Building.

2.14 As part of the feasibility study, "test concept" illustrations were produced to confirm that the space required for the Public Safety Building could be physically located on the Municipal Hall site. It is important to note that the test concept illustrations in the reports do not represent an architectural design for the Public Safety Building. The massing diagrams are intended to demonstrate graphically that the space can fit on the site. No architectural drawings/designs have been produced to date and this will be a topic for discussion by Council together with the community in 2012.

Cost Estimate for Public Safety Building

2.15 As mentioned above, the goals of Council and Staff include: to construct a new Public Safety Building to a post-disaster standard; to keep costs well within industry standards; and to construct a facility that will house essential needs for today and the future, but not more than we need. It is also important that the final design of the Public Safety Building allow for changes in the future that may arise due to additional responsibilities being added or changed through legislation or community requirements.

2.16 During the 14 month planning process for the Public Safety Building, different options and upgrades were considered which led to cost estimates in the region of $60 million. In keeping with the goals for the Public Safety Building, the scope and cost estimates have now been reduced to $39.5 million for all planning and construction costs. This most recent cost estimate of $39.5 million is a "base case" version and does not include any upgrades to the existing Municipal Hall or any of the optional elements for the Public Safety Building. While it is open to Council to add in options or upgrades, at this stage it was determined that the "base case" version was the most appropriate.

2.17 The estimated "gross size" of the Public Safety Building is 58,100 gross square feet. The gross size includes all space within the outlines of each floor of the Public Safety Building (including all exterior walls, mechanical and electrical systems, elevator cores and stairwells).

2.18 The area and cost estimates have been reviewed and tested by: District Staff; an external cost consultant; UBC Properties Trust; the Ambleside Revitalization Commission; and an external construction management firm. The Ambleside Revitalization Commission was established by Council in early 2011, to provide advice and recommendations to Council on the business and financial aspects of the AmblesideNow initiative (including the Public Safety Building project). The Commission is composed of volunteer West Vancouver residents who are professionals in real estate development and construction. The Commission has tested and confirmed the area and cost estimate of $39.5 million for the Public Safety Building. One of the Commission's primary objectives is to ensure that costs are well within industry standards and facilities and program are planned in

an efficient and responsible manner. The Commission will continue to be involved throughout the Public Safety Building planning process.

Funding for the Public Safety Building

2.19 The District's analysis, as confirmed by the Ambleside Revitalization Commission, is that the entire cost of the Public Safety Building can be funded through sale of some of the District's land assets without any increase to property taxes. The District-held lands on the 1300 Block of Marine Drive and around the Municipal Hall area on Fulton Avenue and 17th Street have been identified as potential sites for disposition. Land sale proceeds could be invested into the District's Endowment Fund and then used to pay for the cost of the Public Safety Building. The Endowment Fund has a history of being used to finance important community facilities such as the new Community Centre. While this is one option, other options are available such as internal financing, financing from the Municipal Finance Authority or funding through property tax. As mentioned above, while the District has laid the groundwork, Council in 2012 with community input will decide on the fundamental issues, including how to ultimately fund the Public Safety Building.

Public Consultation

2.20 This report explains the past work done, and sets out the next steps so the public can understand and comment on the progression of this project. This report proposes that Staff report back to Council in early 2012 with a public consultation process on the Public Safety Building, including a Public Open House in early 2012. The public consultation process will engage the community on the size, scope, cost, location, design, funding, and time line for the Public Safety Building. Following the public consultation process, Council in 2012 will decide on these matters to shape how the Public Safety Building project will move forward.

Next Steps

2.21 This is an important project for West Vancouver. It needs to continue to be planned in a deliberate and measured way and needs input from the public. The next main steps for the Public Safety Building project are summarized below (dependant upon successful completion of each preceding step):

(a) continue with further study and planning of the Public Safety Building;

(b) report back to Council in early 2012 with a proposed public consultation process;

(c) commence public consultation, including a Public Open House in early 2012;

(d) Council to confirm the functional program for the Public Safety Building, including a decision on whether to include Fire Hall No. 1 in the Public Safety Building;

(e) Council to authorize the engaging of an architect to commence schematic and detailed construction drawings (which will take approximately one year);

(f) continued refinement of the cost estimates taking into account the schematic and detailed construction drawings;

(g) Council to decide on matters including: size, scope, design, location, cost, funding and time line;

(h) tender construction contracts (which will take approximately two months); and

(i) after the funding model has been confirmed, award construction contracts and commence construction with a total construction period of approximately two years.

2.22 While much preparatory work has been done to reach this stage, the public consultation must now take place. Thereafter, Council in 2012, together with community input, can make the major decisions to shape how the Public Safety Building project will move forward.

2.23 As mentioned above, this report summarizes a significant body of work that has taken place since July 2010. Further detail can be found in the attached appendices.

G. McRadu: _____

B. Sokol: _____

M. Chan: _____

Appendices:

Appendix A: Background regarding Council Consideration of the Public Safety Building Project and Public Engagement Process for AmblesideNow

Appendix B: Summary of Reports/Memos from Cornerstone Planning Group regarding Public Safety Building

Appendix C: Summary of Pros and Cons of Including Fire Hall No. 1 in the Public Safety Building

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APPENDIX A

Background regarding Council Consideration of the Public Safety Building Project and Public Engagement Process for AmblesideNow

1. Set out below is background information regarding:

   - Council consideration of the Public Safety Building; and
   - the public engagement that has taken place so far regarding the AmblesideNow initiative which includes the Public Safety Building project.

2. The Public Safety Building project has been identified as a priority in the District's Community Strategic Plan through the 2010 and 2011 Corporate Balanced Scorecard in Strategic Initiatives 1.3.2 and 3.4.2. These Strategic Initiatives refer to the preparation of information regarding, among other things, the relocation of the Police Station, preparation of a business plan, space needs studies, and funding models.

3. At the July 26, 2010 Council Meeting, Council passed the following resolution:

   "*THAT as referred to in the District's Balanced Scorecard Strategic Initiatives 1.3.2* and *3.4.2, Staff report back to Council with the next steps for pursuing the possibility of a new Public Safety Building (with Police and Fire functions), including how the potential residential development of municipally owned lands surrounding Municipal Hall can provide the requisite funding and that a comprehensive public consultation strategy be included in the information to be reported back to Council*".

4. In July 2010 the District (together with external experts) began work on a feasibility study which confirmed that a Public Safety Building housing Police and Fire Services could be located on the site of the parking lot of the existing Municipal Hall site (while retaining the existing Municipal Hall).

5. Planning continued throughout the remainder of 2010 and at the January 24, 2011 Council Meeting, the District launched the AmblesideNow initiative. At that meeting Council directed that the District proceed with the next level of planning for the Public Safety Building and other elements of AmblesideNow.

6. On February 15, 2011 the District held an Open House attended by around 300 people at the Community Centre to explain the vision and goals of AmblesideNow, including the development of a Public Safety Building that could house both Police and Fire Services on the Municipal Hall site and be funded by the sale of District lands.

7. On February 21, 2011 the District established the Ambleside Revitalization Commission composed of resident volunteers who are experts in their field to advise on the business and financial aspects of AmblesideNow.

8. The proposed 2011 expenditures for the AmblesideNow initiative (which included $2.2 million for study and planning costs for the Public Safety Building) were first approved by the Finance Committee and Ambleside Revitalization Commission before being approved by Council on June 6, 2011. These expenditures were formally incorporated into the District's budget upon adoption of the 5 Year Financial Plan Budget Amendment Bylaw at the July 18, 2011 Council Meeting.

9. Updates on the AmblesideNow budget (including expenses relating to the planning and study of the Public Safety Building project) were presented at Council Meetings on July 25 and September 19, 2011.

10. From May 2011 to September 2011, the District carried out significant public engagement about the AmblesideNow initiative. The main goals of the public engagement process were: to provide residents with an understanding of the AmblesideNow vision including the planning for a new Public Safety Building; and to be visible and accessible to community members who were less likely or unable to engage in the typical consultation and decision making process.

11. To achieve these goals, the District set up an AmblesideNow booth with staff present to explain the AmblesideNow vision and Public Safety Building project at each of the following events: Community Day on June 4; Canada Day; Evenings of Cinema and Song at the Ferry Building Gallery from July to end of August; every day of the Harmony Arts Festival from July 29 to August 7; the inaugural Ambleside Day on August 21; Park Royal Block Party on September 8, and most recently, the Coho Festival on September 11, 2011. In total, during the events mentioned above, District Staff spoke with almost 1,000 people about AmblesideNow and the Public Safety Building project. In addition, the District continued to engage the public about AmblesideNow and the Public Safety Building Project in non-traditional ways by establishing an AmblesideNow website, Facebook page, Twitter account and Youtube channel.

APPENDIX B

Summary of Reports regarding Public Safety Building

1. This Appendix B summarizes and attaches the following documents prepared by Cornerstone Planning Group (an external expert engaged by the District with experience in planning police and fire facilities and municipal halls):

   B1: Updated Area and Cost Estimates Memo dated September 28, 2011;

   B2: Preliminary Feasibility Report dated September 10, 2010; and

   B3: Refinements to Preliminary Feasibility Study dated October 28, 2010.

Updated Area and Cost Estimates Memo

2. The Updated Area and Cost Estimates Memo (B1) provides the most recent "base case" area and cost estimates for the Public Safety Building. The base case does not include any upgrades to Municipal Hall or any of the optional elements for the Public Safety Building that were previously considered during the planning process.

3. The Updated Area and Cost Estimates Memo (B1) provides for an updated total gross building area estimate for the Public Safety Building of 58,100 gross square feet. Gross size includes all space within the outlines of each floor (including all exterior walls, mechanical and electrical systems, elevator cores and stairwells). The cost estimate for the Public Safety Building is $39.5 million as shown in the cost estimate prepared by Altus Group Cost Consulting and attached to the Updated Area and Cost Estimates Memo.

4. Information regarding options, upgrades, size and cost in the Preliminary Feasibility Report (B2) and Refinements to Preliminary Feasibility Study (B3) have been superseded by the Updated Area and Cost Estimates Memo and are not up to date.

Background

5. The Preliminary Feasibility Report (B2) was prepared in September 2010 and focused on answering two key questions: can the Municipal Hall, Police Department and Fire Hall No. 1 be adequately accommodated on the Municipal Hall site (i.e. the existing Municipal Hall and parking lot); and what would be the order of magnitude cost of such an initiative? The report also examined the condition of the existing Municipal Hall, Police Station and Fire Hall No. 1, and the current, normative (i.e. what is

normally required by conventional standards) and future space needs in 2036 of these facilities.

6. As part of the analysis, "test concept" illustrations were prepared to confirm graphically that Fire and Police Services could be physically located in a Public Safety Building on the Municipal Hall site. It is important to note that the test concept illustrations do not represent an architectural design for the Public Safety Building. No architectural drawings/designs have been produced to date.

7. The main findings of the Preliminary Feasibility Report included:

   - while the buildings are fairly well maintained, each of the Municipal Hall, Fire Hall No. 1 and Police Station would likely fail in a major seismic event;
   - staffing for Municipal Hall and Police is not expected to increase more than 10% from now until 2036 while staffing for Fire Services is expected to stay the same during that period;
   - the preliminary area estimate for the Public Safety Building was around 58,000 gross square feet and the cost would be in the region of $33.2 to $39.3 million;
   - certain space savings could be achieved through the sharing of space in a Public Safety Building; and
   - subject to confirmation of certain factors, the program requirements for a Public Safety Building with Police and Fire services could fit on the Municipal Hall site.

8. The Refinements to Preliminary Feasibility Report followed up on some areas identified for additional study in the Preliminary Feasibility Report including: loading bay access; potential use of Esquimalt Avenue; the concept of an integrated public service area in Municipal Hall; and parking assumptions.

9. The Preliminary Feasibility Study also examined what upgrades could reasonably be carried out to the existing Municipal Hall given that cost-savings could be achieved by performing the upgrades around the time the Public Safety Building was being constructed. It was determined that the Municipal Hall does not comply with the BC Building Code and current standards and therefore the following upgrades were studied as potential items to include in the Public Safety Building project:

   - Structural/Seismic Upgrades: structural upgrade including strengthening of walls; adding new sheer walls; adding additional foundations and strengthening the cantilevered overhang structure;

- Building Code Compliance Upgrades: all measures directly affecting life safety including replacing doors, balustrades and handrails; fire rating improvements; modifications to fire detection and alarm systems; and installation of a sprinkler fire suppression system;
- Hazardous Materials Issues: remove hazardous building materials in areas affected by the Public Safety Building project;
- Building Envelope Upgrade, Heating, Ventilation and Cooling (HVAC), Plumbing, Electrical and Lighting Systems Upgrades; and
- Space Plan Modifications to provide for more efficient use of space within the existing Municipal Hall.

10. The Refinements to Preliminary Feasibility Study provided a revised cost estimate ranging from $40.8 million to $46.7 million largely attributed to increases in: construction cost; underground parking cost; and the additional potential upgrades to Municipal Hall and optional elements to the Public Safety Building.

11. During early 2011, other potential upgrades or options (such as training facilities, additional underground parking and additional contingencies) were considered for possible inclusion in the Public Safety Building project. The cost estimate if all of these items were included was in the region of $60 million.

12. As mentioned above, the most recent "base case" version does not include any of these potential upgrades, options or additional contingencies. The cost estimate for the base case version is $39.5 million including all construction and development costs for the Public Safety Building. Accordingly, much of the discussion in the Preliminary Feasibility Report and Refinements to Preliminary Feasibility Study has been superseded and is out of date.

CORNERSTONE planning group
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MEMO

To: Bob Sokol and Mark Chan

Regarding:
West Vancouver Public Safety Building Project
Updated Area and Cost Estimates
September 28, 2011

Introduction

The new Public Safety Building development on the Municipal Hall site will have a total building area of 58,100 gross square feet. This includes all useable space in the new building as well as major internal circulation routes, mechanical and electrical rooms, and building structure (columns and outside walls). The Total Project Cost for the Public Safety Building, including parking is $39.5 million. The following estimating assumptions were used in preparing the updated costing estimates.

- The gross areas used for costing will be based on the updated estimate of 58,100 gross square feet.
- The physical configuration of the new Public Safety Building development would be similar to the test concept from the earlier 2010 Feasibility Reports.
- No renovation would be undertaken within the Municipal Hall.
- The costing for parking would be based on the same physical configuration as in the test concept from the earlier 2010 Feasibility Reports.

Study Process Update

The West Vancouver Police Facility located in the Ambleside area is operating beyond capacity. The building has been expanded a number of times and has water penetration and wall cracking issues. Based on structural reviews carried out a few years ago the facilities do not meet current seismic standards and would likely fail in an earthquake. Given the importance of having Police services accommodated in a building that could continue to function in the event of an earthquake, the District began exploring possible solutions in 2010. As the existing Fire Hall #1, located adjacent to the Municipal Hall, is also at capacity and does not meet seismic standards, the idea of locating both functions in a Public Safety Building was deemed worthy of further analysis.

Initial studies in 2010 indicated that it would be feasible and advantageous to transfer Police and Fire to the same site as the existing Municipal Hall. This would make use of land that is already publicly owned and would free up the existing Police site to be sold for development and help to fund the costs of a new building. The Fire Hall site would be retained, sold or developed as decided by Council.

The Public Safety Building Project has now moved into a detailed planning phase. Cornerstone Planning Group, who were involved in the initial study were retained to prepare detailed facility requirements that can be used by architects to generate schematic designs for the proposed building. Consultation with user groups from Police, Fire, and the Municipality was undertaken to update information gathered in the previous study phase and to obtain more detail regarding functional and spatial requirements.

In response to the District's desire to establish an update of the new Public Safety Building area and cost estimates as soon as possible, we have concentrated on generating and vetting the updated and detailed space calculations and working with Altus Group for costing analysis. This Memo summarizes the results of our analysis to date. A detailed facility program is in preparation and will be completed in time to guide the architectural design process. The Facility Program will include proximity relationship diagrams and design guidelines as well as area requirements data. To proceed with the facility program, a decision needs to be made on whether to include Fire Hall No. 1 in the Public Safety Building.

18.

West Vancouver Sites Consolidation Project **September 22nd 2011**

Program Cost Estimate Update

Prepared by Altus Group Cost Consulting per Cornerstone email Sept 15th 2011

		Essential Scope	Optional Scope	*Combined Total*
New Development:				
Public Safety Building @ 58,100 sf		$19,328,700		
U/G Parking Structure		$5,827,000		
Site Development		$2,100,000		
Contingency for Geotechnical Conditions		$200,000		
Add Ambulance Service			Excluded	
Expand Growth/Flexibility Capacity +3900gsf			Excluded	
Expand Growth/Flexibility Capacity +2500gsf			Excluded	
Subtotal		**$27,455,700**		
Existing Building Upgrades:				
Structural/Seismic Upgrade			Excluded	
Building Code Compliance Upgrade			Excluded	
Hazardous Material Remediation			Excluded	
Building Envelope Upgrade			Excluded	
HVAC System Upgrade			Excluded	
Plumbing Systems Upgrade			Excluded	
Electrical and Lighting Systems Upgrade			Excluded	
IT System Upgrade			Excluded	
Space Plan Modification			Excluded	
Subtotal				
Total Construction Cost		**$27,455,700**	**$0**	*$27,455,700*
Additional Project Costs:				
Relocation Costs Allowance		$150,000		
FF&E	10.0%	$2,745,690		
Construction Contingency	9.0%	$2,469,668		
Soft Costs	17.0%	$5,159,741		
HST	4.0%	$1,519,200		
Subtotal		**$12,044,299**		
Total Project Cost		**$39,500,000**		
Potential Maximum Optional Additions			**$0**	*$39,500,000*

District of West Vancouver

MUNICIPAL HALL SITE
CONSOLIDATED DEVELOPMENT CONCEPT

Preliminary Feasibility Report

Prepared by Cornerstone Planning Group

September 10th, 2010

District of West Vancouver
MUNICIPAL HALL SITE CONSOLIDATED DEVELOPMENT CONCEPT

Preliminary Feasibility Report

***DRAFT** July 7, 2010; **FINAL** August 17, 2010 REVISED September 10, 2010*

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PRELIMINARY FEASIBILITY REPORT – PREFACE

This report is an initial product within a more extensive set of investigations pertaining to the formulation of a recommended strategy for developing a new Public Safety Building for West Vancouver, and replacing existing Fire and Police Department buildings. Separate parallel studies are considering options for the disposition and urban development of District-owned land parcels, the conclusions from which will have a bearing on the Public Safety Building proposal.

This report has been reviewed by senior staff and the project steering committee, and a subsequent analysis phase is in progress with the purpose to refine key issues, specifically project scope and budget estimates. This report has served to answer preliminary questions concerning site development feasibility and order of magnitude cost, and received concurrence from the CAO as well as representatives of the Police and Fire Departments. The staff review identified a number of relatively minor areas of concern, or issues for further investigation, however, these do not necessitate a revision and re-issue of the report; rather the issues are recorded in this preface and are to be carried forward to the next stage of analysis.

Existing Building Conditions

It was not within the terms of reference to undertake an extensive audit of the physical conditions of the existing buildings; the purpose was to analyze the feasibility of consolidated development on the Municipal Site. However, preliminary comments can be made about the buildings:

Municipal Hall: This is a well-maintained structure listed on the Community Heritage Registry. While its functional characteristics are not what would be expected in a new building, it appears reasonable to plan on the basis that its useful life can be extended. However, in the context of an adjacent Public Safety Building development, it should be assumed that a range of upgrades will be required to address existing deficiencies. The analysis as to scope is not definitive, but the scope will include:

- Seismic structural upgrades with associated work (analysis suggests that the building has only approximately 20% compliance relative to seismic design loads required by current building codes; the building would not be functional after a major seismic event and is vulnerable to partial collapse)
- Installation of a sprinkler protection system
- Building envelope upgrades
- Building code compliance upgrades
- HVAC/energy system modifications (integration with new development anticipated)
- IT systems modifications
- Some space plan modifications to suit operations and relationship with proposed Public Safety Building

Fire Hall #1: This is a building of similar age to the Municipal Hall, located on an adjacent site to the east. The building is in good condition, but it has required modifications over time to accommodate larger and heavier fire vehicles as well as changing equipment and operational requirements. Based on the findings of four

seismic evaluations since 1989, this building would not be functional following a major seismic event. Potentially, this compromises public safety service delivery in the aftermath of a seismic event and jeopardizes approximately $3 million of equipment in the event that the roof of the fire vehicle bays were to collapse.

Police Building: This building has been converted, infilled, expanded and renovated a number of times. The functional accommodation is deficient relative to current police operational requirements. The building shows clear signs of differential structural settlement as well as indications of persistent water ingress. The HVAC system is deficient relative to maintaining comfort in all parts of the building, and for the specialized ventilation requirement in certain zones. Based on a 1990 seismic evaluation, the structure cannot be expected to perform well in a major seismic event, and would not be functional thereafter.

Functionality

The staff assessment concluded the test concept could provide a workable development based on current information. Issues that will require additional investigation and/or modification include the following:

- The loading dock location illustrated where the vehicle approach is across the fire bay apron is not acceptable. Turning the loading bay 90 degrees and shortening moving the u/g parade entry further north should be considered.
- The proposal for an integrated Municipal Hall public services node will need more consideration. A location on the upper ground level should be looked at in addition to the lower ground concept illustrated.
- The addition of more extensive archives storage functions is a possible project requirement; art collection storage is also under review and may be associated with the project.

Site Development and Parking

- The addition of expanded street parking on 16th Street, including the possibility of some covered visitor parking near the east end of the Municipal Hall, should be considered in the next stage.
- The total parking requirements estimate will be an issue for further review in the next stage.
- The character of the development next to the sidewalk along Esquimalt Avenue will require further refinement.

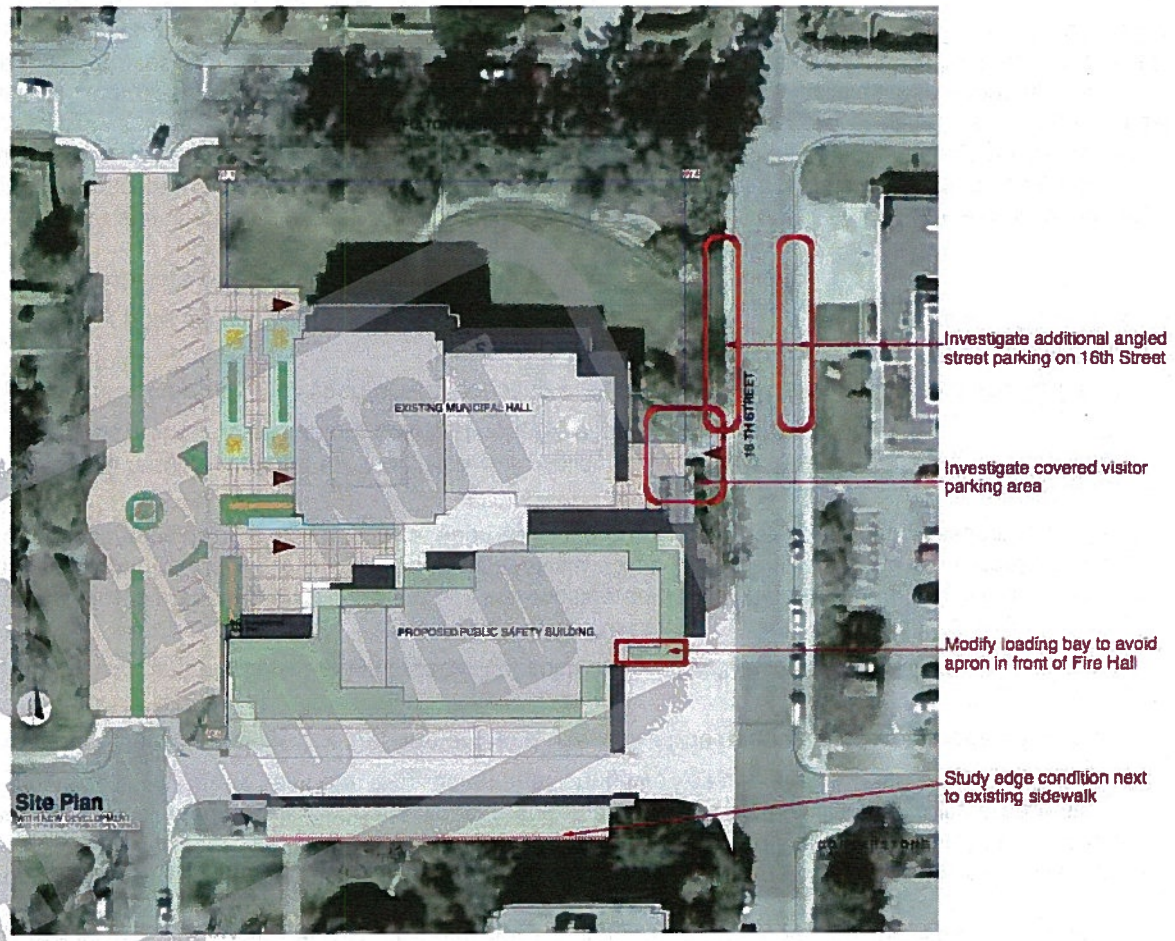
Post-Disaster Standards

Finalizing the extent to which the project should incorporate post-disaster standards requires further analysis including considering a District-wide plan.
(Note: The Building Code stipulates seismic design requirements depending on the classification of a building according to four "importance" levels: low, normal, high, and post-disaster. The authority having jurisdiction can make the determination of what level, or standard, should be applied to a project. Municipal administration buildings are usually designed to a normal standard – this implies the buildings should perform to protect the life of occupants in a major seismic event, but are not expected to remain functional in the aftermath. As part of a community post-disaster plan such a building might be treated at a high importance level. Public safety buildings are usually designated to a post-occupancy standard – from a structural perspective this implies that the structure should not fail to any degree that would prevent the continued functionality of the building after a major seismic event. However, for a building to have fully post-disaster capability, it needs to be able to operate in the absence of viable municipal utility services; therefore, incorporating emergency power and potable water supplies are examples of additional considerations. It is often the case that full post-disaster functionality is planned for only a critical portion of a building.)

Scope and Cost

The steering committee has requested additional due diligence analysis concerning Municipal Hall upgrade scope and the overall project cost estimate/budget. This is an emphasis within the follow-on work that has already been initiated at the date of finalizing this report.

Residual Preliminary Test Concept Issues



EXECUTIVE SUMMARY

Purpose and Scope

The District of West Vancouver is considering the development of a Municipal Precinct to replace and/or expand three of West Vancouver's significant public facilities that were originally constructed in the 1950's and 60's. These include the Municipal Hall, Fire Hall No. 1, and the West Vancouver Pubic Safety Building.

The proposed site for accommodating all three functional components is the existing Municipal Hall property at 750 -17th Street. In order to assess the feasibility of creating the proposed Precinct, the District requires an estimate for the projected physical and functional requirements for the built facilities and site areas. The Preliminary Feasibility Study has been focused on answering two key questions:

1. Can the Municipal Hall, Police Department, and Fire Hall #1 be adequately accommodated on the Municipal Hall site?
2. What would be the order-of-magnitude cost of such an initiative?

Estimating Approach

The area estimates prepared for this initial study are considered provisional and are at a macro level suitable for strategic planning. Additional consultation and analysis will be required to generate requirements at a level suitable for schematic design. Our analytical approach incorporates four key estimating assumptions. These include:

1. Estimate requirements for the Municipal Hall, Police facilities, and Fire Hall facilities as separate buildings first and then explore potential benefits of a consolidated development.
2. Recognize current space shortfalls by adopting a "normative" allowance as the baseline for future projections.
3. Allow for potential growth to 2036.
4. Adopt population-based growth factors.

Total Area Requirements to 2036

The potential for space sharing among Municipal, Police, and Fire operations is limited due to police security requirements for computer access, persons in custody, active case confidentiality, firearms, and evidence protection. Options are also limited by the need for firefighters to be within a few seconds access to the Fire Truck bays. However, in the preliminary work sessions a number of spaces were identified as having potential for sharing including: storage, staff support spaces, training rooms, exercise facilities, and a loading dock. Sharing these spaces represents a savings of approximately 2,500 gross square feet. While it may be feasible to find additional opportunities during detailed planning and design, the current estimate is considered suitable for this preliminary planning stage.

District of West Vancouver
Municipal Hall and Public Safety Building
2036 AREA ESTIMATES

Municipal Hall	2036 Requirements	*Shared Adj*	Consolidated Totals
Council & Conference	2,730	*1000*	1,730
Legislative Services	2,190		2,190
Mayor & Administration	2,170		2,170
Development Services	8,500		8,500
Integrated Public Services Counter	3,180		3,180
Corporate Services (Main Hall)	4,550	*1000*	3,550
Corporate Services (Fulton)	1,790		1,790
Staff Support Functions	910	*400*	510
Storage and Loading	2,730	*450*	2,280
Maintenance & Caretaking	390		390
Municipal Hall Component Gross	**29,140**	*2,850*	**26,290**

Police Department	2036 Requirements	Shared Adj	Consolidated Totals
Reception Services	450		450
Victims' & Community Services	1,060		1,060
Patrol Facilities	7,920	*1140*	6,780
Forensics & Exhibits	2,790		2,790
Command & Administration	4,330	*600*	3,730
Investigations & Support	5,660	*800*	4,860
Holding	2,750		2,750
Storage & Maintenance	1,220	*450*	770
Police Department Component Gross	**26,180**	*2,990*	**23,190**

Fire Department	2036 Requirements	Shared Adj	Consolidated Totals
Apparatus Area	3,200		3,200
Operations Support	760		760
Offices	2,160		2,160
Staff Dorms	1,350		1,350
Storage	1,270	300	970
Training Room	510	510	0
Exercise Facilities	900	900	0
Loading Dock	400	250	150
Fire Department Component Gross	**10,550**	*1,960*	**8,590**

Shared Facilities	2036 Requirements	Shared Adj	Consolidated Totals
Storage			200
Staff Support Spaces			50
Meeting Rooms			2,450
Training Rooms			1,000
Exercise Facilities			1,500
Loading Dock			350
Shared Facilities Component Gross			**5,550**

TOTAL COMPONENT AREA	**65,870**		**63,620**
	Component Area Reduction		*2,250*
Component Gross	65,870		63,620
Circulation System	18,620		18,000
Building Systems	6,160		4,500
Exterior Wall	3,740		3,600
Total Building Gross	**94,390**		**89,720**
	Building Gross Area Reduction		*4,670*

Test Concept

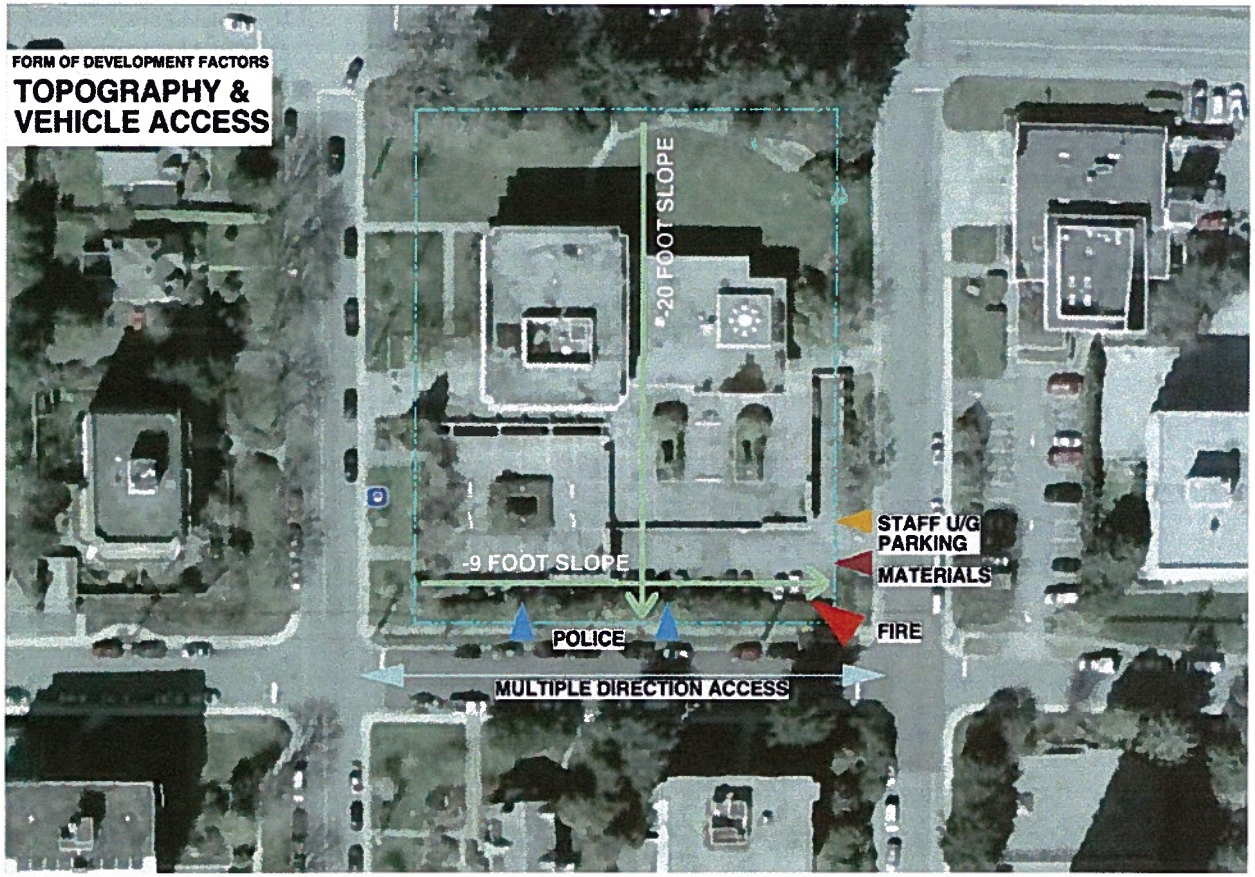
The approach has been to apply a series of principles drawn from experience and the analysis of the specific West Vancouver conditions and development program requirements to generate a single test concept with minor variations. Undoubtedly there are other options at a more detailed level, but the objective has not been to derive the best of alternate designs but rather to identify they key feasibility issues that any design will encounter and need to resolve. Based on discussions to date our understanding of the District's development objectives are as follows:

- Realize value of developable property to fund initiative
- Achieve overall accommodation efficiencies as well as long-term flexibility
- Compliment the heritage value of the existing Municipal Hall building
- Develop appropriate Civic Outdoor Space
- Achieve Sustainable Development and Asset Management targets

Key Site Development Parameters

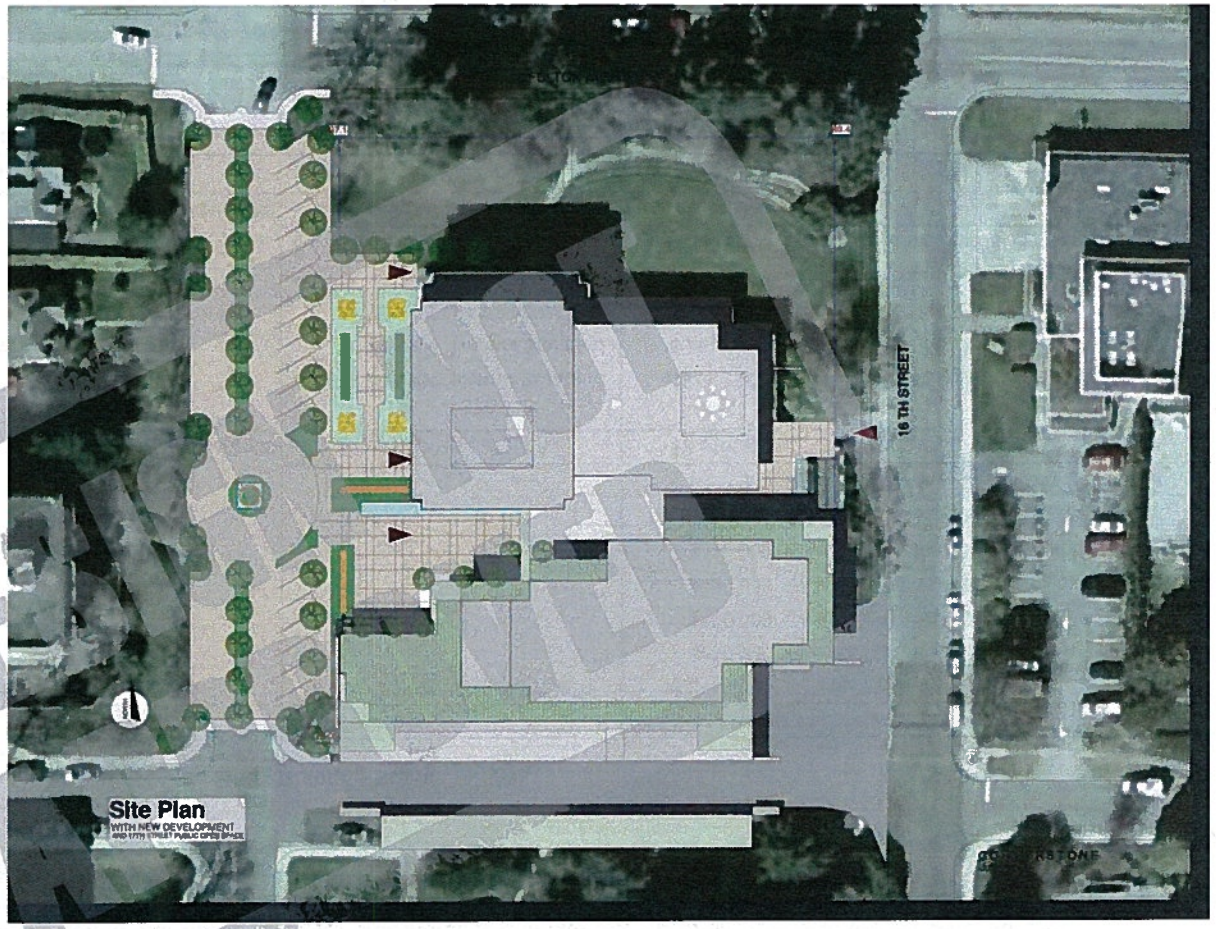
Two of the primary factors affecting the development potential of the site are topography and vehicle access requirements. The significant ground level slopes of the site provide both opportunities and constraints. It appears that the location of the three Fire Department main vehicle bays are necessarily located at the southeast corner of the site as this is the only location that provides enough access depth to accommodate the high bays while reasonably allowing floor level alignment with the existing building. This low point is also the most advantageous location for access to underground parking and a shared material-loading bay. In addition, there are a large number of fire and police fleet vehicles and other functions that reasonably need to be accommodated at grade. Multiple vehicle access points are therefore required along the south property edges. To accommodate the parking for the required complement of vehicles as well as to provide for more than one travel direction the Esquimalt Avenue R.O.W. needs to be included as part of the development site.

North



Site Layout Concept

The test concept incorporates an illustrative massing and floor plate shape to accommodate the program areas and to reflect the planning assumptions stated above for a stepped terrace form of development. To meet facility program requirements a four level new development will be required over two levels of underground parking.



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Preliminary Cost Estimate

The preliminary cost analysis estimates indicate a total project cost of $33.2 million to $39.3 million depending on the seismic standards adopted and the scope of site work and upgrades to the existing building. Approximately $7 to $8 million dollars of the total project cost (18% to 20%) is associated with the provision of parking for staff, fleet, and visitors.

WEST VANCOUVER
Municipal Hall / Public Safety Building Study
July 7, 2010

	Base Estimate		Additional Scope Estimate	
Existing Building Upgrade:	$1,453,000	Seismic Only	$1,453,000	Seismic Only
			$250,000	Sprinkler Fire Protection System
			$100,000	Code Non-Compliance
			$350,000	Envelope-Window Replacement
			$110,000	Envelope-Roof/Insulation Upgrade
			$200,000	Space Plan Modifications
			$350,000	HVAC/Energy Systems District Integration
Subtotal	$1,453,000		$2,813,000	
New Development:				
Public Services Building	$17,503,800	Normal Standard	$18,203,800	Post Disaster Standard ($700,000 addditional)
Underground Parking	$5,327,000	Normal Standard	$5,827,000	Post Disaster Standard ($500,000 addditional)
Site Development	$1,138,800	Esq.Ave./On-Site	$1,138,800	Esq.Ave./On-Site
			$759,200	17th Boulevard
			$200,000	Contingency for Unusual Geotech Conditions
Subtotal	$23,969,600		$26,128,800	
Total Construction Cost	**$25,422,600**	*% allowances*	**$28,941,800**	*% allowances*
Construction Contingency	$763,000	*3%*	$868,000	*3%*
Soft Costs	$4,322,000	*17%*	$4,920,000	*17%*
FF&E	$1,271,000	*5%*	$2,894,000	*10%*
HST	$1,271,000	*4%*	$1,505,000	*4%*
Relocation Cost Allowance	$100,000		$150,000	
Total Additional Project Costs	$7,727,000		$10,337,000	
PROJECT TOTAL (Q1-2011)	**$33,149,600**		**$39,278,800**	
Escalation Allowance (per year)	*$994,000*	*3%*	*$1,178,000*	*3%*

Conclusions

The analysis based on test concept leads to the conclusion that the program of requirements for a Public Safety Building can fit on the site subject to confirmation of the following:

- **Functionality** – That each of the organizations judge with confidence that it will be feasible to configure their operations into a building concept along the lines of the test concept, with refinement or modification as necessary.
- **Massing/Character** – That representatives of the community, Council, and City staff judge that the general massing illustrated by the test concept can result in a satisfactory character of site development with an acceptable interface to the existing City Hall building.
- **Use of R.O.W. Space** – That the incorporation of the Esquimalt Avenue R.O.W into the project site will be approvable by Council. The optional development of 17th Avenue as illustrated in the test concept is not an essential feasibility issue but may form part of the overall proposal.
- **Post-Disaster Standards** – That the requirements for a fully workable building meeting post-disaster standards can be achieved without compromising any of the issues identified above.

Suggested Pre-Decision Due Diligence

The consultants suggest that it may be prudent to undertake additional due diligence assessment relative to the following areas of residual uncertainty prior to a decision to consolidate all services and functions on one site.

- Site Fit "Subject to" issues noted above.
- Cost Estimating Assumptions
- Potential community and political support

1.0 Introduction

1.1 Purpose and Scope of Study

The District of West Vancouver is considering the development of a Municipal Precinct to replace and/or expand three of West Vancouver's significant public facilities that were originally constructed in the 1950's and 60's. These include the Municipal Hall, Fire Hall No. 1, and the West Vancouver Pubic Safety Building.

The proposed site for accommodating all three functional components is the existing Municipal Hall property at 750 -17th Street. In order to assess the feasibility of creating the proposed Precinct, the District requires an estimate for the projected physical and functional requirements for the built facilities and site areas. The Preliminary Feasibility Study has been focused on answering two key questions:

1. Can the Municipal Hall, Police Department, and Fire Hall #1 be adequately accommodated on the Municipal Hall site?
2. What would be the order-of-magnitude cost of such an initiative?

1.2 Study Process Overview

The project was organized into five steps:

- Step 1: Context Analysis involved site visits and collection, review and compilation of information and data regarding the current facilities and sites, population, comparator space standards, and staffing and fleet parking requirements.
- Step 2: Interviews were conducted with nine different user groups from across all three of the current facilities. Questionnaires were prepared and distributed to each user group prior to the meetings in order to solicit preliminary data on the adequacy of current facilities and on key functional relationships.
- Step 3: Functional / Facility Program Preparation involved the development of space requirements, space sharing opportunities, proximity relationship diagrams, design guidelines, and site area requirements.
- Step 4: Preliminary Feasibility Assessment explored the opportunities and constraints around accommodating all three functions on the one site and involved preparation of test layouts at a component level of detail. A review of seismic issues was undertaken and preliminary capital cost estimates were prepared.
- Step 5: Final Report was developed as a Draft and submitted to the Project Steering Committee for review prior to the issue of the Final Report.

1.3 Purpose of Draft Report

This Draft report has been developed to present the results of the analysis and provide the Project Steering Committee with an opportunity to review the material and obtain clarification as required. Comments arising from this review will be incorporated into the Final Report as deemed appropriate.

2.0 Facility and Functional Requirements

2.1 Estimating Approach

The area estimates prepared for this initial study are considered provisional and are at a macro level suitable for strategic planning. Additional consultation and analysis will be required to generate requirements at a level suitable for schematic design. Our analytical approach incorporates four key estimating assumptions. These include:

1. Estimate requirements for the Municipal Hall, Police facilities, and Fire Hall facilities as separate buildings first and then explore potential benefits of a consolidated development.
2. Recognize current space shortfalls by adopting a "normative" allowance as the baseline for future projections.
3. Allow for potential growth to 2036.
4. Adopt population-based growth factors.

Separate Buildings and Consolidated Development

By preparing estimates for accommodating each organization in a separate facility, we established a base line for comparing to a consolidated scenario with all three organizations on the same site. This provided an opportunity for discussing possible space sharing arrangements in work sessions involving representatives from all three organizations. Although additional sharing opportunities may be generated in the next stage of more detailed planning and design, these work sessions identified potential sharing of various types of staff and building support spaces as well as meeting rooms. Possibilities for operational and staffing adjustments to provide the public with more integrated and streamlined public counter services were noted but are only reflected in the preliminary space requirements as organizational readjustment discussions are beyond the scope of this initial feasibility study.

Normative Adjustments

Information about the adequacy of the amount of space in current facilities was derived from several sources including:

- Calculation of current area-per-person ratios from existing area and personnel data and comparison to typical standards used in facilities planning.
- Observations during site tours
- Comments submitted in Surveys distributed to staff in the Municipal Hall, Police Department, and Fire Hall #1.

This information was used to adjust existing areas at a component level to a "normative" area – i.e. the area that the component should have today to adequately support the current level of staffing and operations. The normative area was then used as the starting point for estimating future requirements.

Allow for Growth to 2036

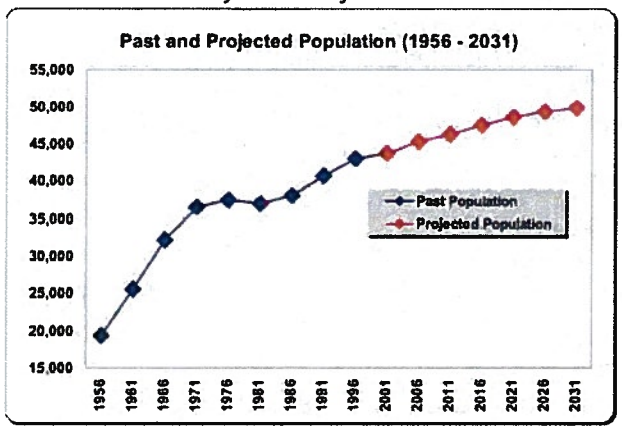
Constructing a new Public Safety Building on the Municipal Hall site represents a major capital investment. Although significant growth in the West Vancouver population is not anticipated, constructing a new building that could reach capacity within a few years and precipitate further expansion or fragmentation to other locations would not be considered a wise investment. To test the capacity of the site we have used the projected requirements to 2036. However, the development could be done in phases if deemed feasible and desirable. To allow for possible phasing discussions at a later date, we have used 2011 as our base planning year, and developed five (5), fifteen (15), and twenty-five (25) year projections for space, staffing, and parking requirements for each facility and for the consolidated facility option. At this stage of planning the projections use a unit-based calculation method to project future requirements. Normative area-per-person ratios are multiplied by future staffing numbers at a component level to generate future area requirements. Future staffing projections therefore become the primary driver for future area estimates, except for special use spaces such as a Council Chamber.

Population Based Growth Factors

Based on previous studies for other municipalities, it appears that over 10 and 25-year periods total staffing numbers tend to increase at more or less the same rate as population growth. These staffing changes tend to occur in spurts rather than in regular annual increments, largely due to municipal cost control practices that tend to defer staff increases until absolutely necessary. The District's assumptions regarding future growth are described in the Official Community Plan as follows:

> *BC Stats population projections indicate continued slow population growth for West Vancouver over the next 30 years at an average annual rate of 0.4%. This is lower than the previous 30-year period when average annual growth was approximately 0.6%. This rate of growth would increase the population by approximately 6,000 people between 2001 and 2031, for a projected population of 50,000. Accommodating a decline in average household size produces a need for additional dwellings within the community, even if total population remains the same. Between now and 2021, approximately 150 additional dwelling units per year would be required to accommodate additional housing demand associated with declining average household size and projected increases in total population.*

Official Community Plan Projections



Growth Assumptions for Study

	2010	2016	2026	2036
West Vancouver Population	43,480	44,540	46,340	48,240
	percentage growth over period	*2.4%*	*4.0%*	*4.1%*

Based on the latest information available from BC Stats the population of West Vancouver in 2006 was 42,863. Using a 0.4% annual growth rate as recommended by the Planning Department the current (2010) population would be 43,480. Based on the same annual growth rate the population would increase to 48,420 by 2036, an increase of 4,940 residents from 2010 to 2036. This projection does not explicitly incorporate the possibility of a major development on Squamish Band lands.

2.2: Municipal Hall Estimates

Staffing

Based on the population growth rates the existing Municipal Hall staffing (including those in Fulton) could grow from 118 to 130 by 2036. This increase of 12 staff over a 25-year period is considered relatively conservative. These projections do not include departments and staff currently housed at the Operations Centre and Recreation facilities. **This staffing estimate is for facility planning purposes only and does not represent any hiring commitment by the District of West Vancouver.**

	2010	2016	2026	2036
Municipal Hall Staff	118	121	125	130

Area

Based on the estimating method described previously, the projected 2036 area requirement for the Municipal Hall is 42,800 gsf. The additional space is primarily required to accommodate the projected growth in staffing over the 25-year planning period.

	Current		Normative			2016		2026		2036	
Components	Component Area	Gross Area	Comp Area	Gross Area	*Notes*	Comp Area	Gross Area	Comp Area	Gross Area	Comp Area	Gross Area
Council & Conference	2,732		2,730		*1*	2,730		2,730		2,730	
Legislative Services	1,533		1,530		*1*	1,750		1,970		2,190	
Mayor & Administration	1,951		1,950		*1*	1,950		2,170		2,170	
Development Services	9,741		7,480		*2*	7,780		7,940		8,500	
Integrated Public Services Counter	0		2,810		*2*	2,980		2,980		3,180	
Corporate Services (Main Hall)	3,733		3,920		*2*	4,110		4,330		4,550	
Corporate Services (Fulton)	2,100		1,790		*3*	1,790		1,790		1,790	
Staff Support Fuctions	626		810		*4*	840		880		910	
Storage and Loading	2,374		2,490		*5*	2,540		2,630		2,730	
Maintenance & Caretaking	303		350		*6*	360		380		390	
Total Component	**25,093**		**25,860**			**26,830**		**27,800**		**29,140**	
Component Gross	1.00	25,093	1.00	25,860		1.00	26,830	1.00	27,800	1.00	29,140
Circulation System	0.29	6,554	0.29	7,370		0.29	7,650	0.29	7,920	0.29	8,310
Building Systems	0.13	2,974	0.13	3,340		0.13	3,470	0.13	3,600	0.13	3,770
Exterior Wall	0.05	1,247	0.05	1,400		0.05	1,450	0.05	1,510	0.05	1,580
Fulton Gross Area Increment		900									
Total Building Gross	**1.47**	**36,767**	**1.47**	**37,970**		**1.47**	**39,400**	**1.47**	**40,830**	**1.47**	**42,800**

Normative Area Notes

1. Existing area adequate for current
2. Increased to mitigate current office space and storage shortfalls
3. Reduction assumes more efficient layouts for Fulton space when consolidated
4. Increased for staff change and lunch areas
5. Increased to allowed for suitable loading dock area
6. Increased to allowed for suitable work and supplies area

Parking

The projected number of parking stalls to serve Municipal Hall functions for 2036 is only marginally higher than current provisions. Staff parking estimates are based on allowing one stall per two staff, which is approximately the current ratio.

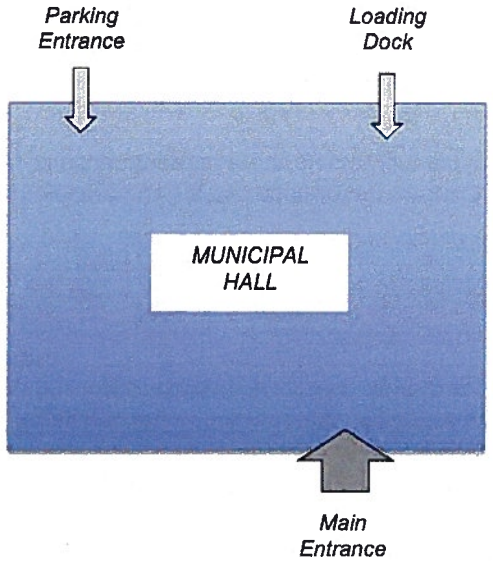
Municipal Parking Stalls

Notes		Current	Normative	2016	2026	2036
1	Visitor	12	12	12	12	12
2	Staff	62	62	62	63	65
3	Fleet	4	4	4	4	4
	Total Stalls	**78**	**78**	**78**	**79**	**81**

1. Could be shared parking with Police and/or Fire
2. Requirements based on 1 stall per 2 staff
3. Normal stalls, no compound required

Building Access Requirements

Municipal Hall functions require a clearly defined pedestrian main entrance with access onto an entry lobby. Public information and services assistance should be available upon entry. A loading dock entrance is required for delivery of materials and for pick up of waste and recycle bins. The entrance to underground parking should be located to not interfere with the loading entrance.



2.3: Police Department Estimates

Staffing

Based on the population growth rates the existing Police Department staffing could grow from 105 to 116 by 2036. This increase of 11 staff over a 25-year period is considered relatively conservative. **This staffing estimate is for facility planning purposes only and does not represent any hiring commitment by the District of West Vancouver.**

	2010	2016	2026	2036
Police Department Staff	105	107	111	116

Area

The existing Police facilities are overcrowded. An additional 2800 square feet (component area) would be required to adequately accommodate current operations at a reasonable but not excessive standard. The projected 2036 area requirement for the Police Department is 37,690 gsf. The additional space includes the normative adjustment plus projected growth in staff and operations to 2036.

	Current			Normative			2016		2026		2036	
Components	Current Component Area		Gross Area	Comp Area	Gross Area	*Notes*	Comp Area	Gross Area	Comp Area	Gross Area	Comp Area	Gross Area
Reception Services	431			450		*1*	450		450		450	
Victims' & Community Services	765			930		*2*	980		1020		1060	
Patrol Facilities	6,454			6890		*3*	7320		7610		7920	
Forensics & Exhibits	2,162			2380		*4*	2580		2680		2790	
Command & Administration	3,911			3940		*5*	4000		4160		4330	
Investigations & Support	4,185			5340		*6*	5320		5490		5660	
Holding	2,027			2530		*7*	2580		2660		2750	
Storage & Maintenance	973			1310		*8*	1130		1170		1220	
Total Component	**20,908**			**23,770**			**24,360**		**25,240**		**26,180**	
Component Gross		1.00	20,908	*1.00*	23,770			24,360		25,240		26,180
Circulation System		0.35	7,302	*0.30*	7130			7310		7570		7850
Building Systems		0.04	743	*0.08*	1900			1950		2020		2090
Exterior Wall		0.07	1,470	*0.06*	1430			1460		1510		1570
Total Building Gross		**1.46**	**30,423**	**1.44**	**34,230**	*9*	**1.44**	**35,080**	**1.44**	**36,340**	**1.44**	**37,690**

Normative Area Notes

1. Overall increase to mitigate current office space and storage shortfalls
2. Overall increase to mitigate current office space and storage shortfalls
3. Increase for admin and support partially offset by elimination of shooting range
4. Overall increase to provide suitable FIS vehicle bay and processing areas
5. Nominal increase to mitigate current office space and storage shortfalls
6. Overall increase to mitigate current office space and storage shortfalls
7. Increase due to allowance for functional sally port.
8. Overall increase to provide suitable loading area and general storage space
9. Total impact of normative adjustments is 14% increase in total building gross area

Parking

There is insufficient staff parking at the existing Police Department site. An additional 34 stalls would be required for current operations based on accommodating one Patrol shift and allowing one stall per two staff for other positions. Although there is an overlap of Patrol Teams at shift change, these changes occur before or after normal operating hours and incoming patrol members can therefore utilize empty staff parking stalls. All Police vehicles except for the Mobile Station (over height vehicle) can be accommodated in regular height parking. Fleet vehicles require a secure compound. By 2036 Police will require a total of 94 stalls (visitors, staff, and fleet) plus a parking stall for the Mobile Station. The addition of 12 vehicles over the 25-year period reflects increases in staffing and fleet vehicles.

Police Parking Stalls

Notes		Current	Normative	2016	2026	2036
1	Visitor	2	4	5	5	5
2	Staff	5	39	40	42	44
3	Fleet Vehicle	38	38	39	41	44
4	Motorcycle (3)	1	1	1	1	1
5	**Total Stalls**	**48**	**82**	**85**	**89**	**94**
6	Mobile Stn	1	1	1	1	1

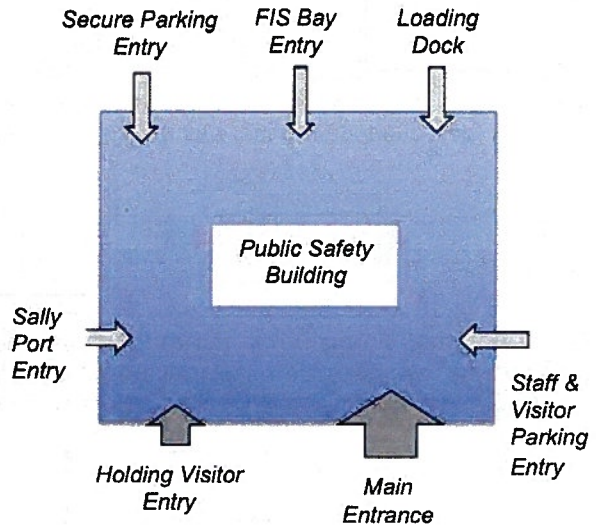
Notes

1. Could be shared parking with Municipal and/or Fire
2. Based on accommodating one Patrol Team plus 1 stall for every two other
3. Secure compound required
4. Three motorcycles per normal stall
5. Current total stalls count taken from RFP info
6. Mobile Police Station (over height - e.g. UPS delivery truck – Grumman)

Building Access Requirements

Police Operations require a clearly defined pedestrian main entrance with access onto an entry lobby and secure service counter. A separate entrance to the Holding Area is required for visitors and to enable those who are released to exit without passing through other parts of the Station.

Required vehicular entrances include security-controlled access to a Sally Port serving the Holding Area, fleet parking, and a Forensic Investigation Services (FIS) bay. Access to staff and visitor parking and to the loading dock area do not have to be secure.



2.4: Fire Hall #1 Estimates

Staffing

Requirements for Fire Hall #1 are based on accommodating the activities and personnel that occupy the building during normal working hours. The Normal Occupancy staff complement is projected to remain constant as the geographic area served by the Hall is not expected to change significantly in terms of density.

	2010	2016	2026	2036
Fire Hall #1 Staff Normal Occupancy	19	19	19	19

Area

The Normative Area is less than the existing for two main reasons. One is that the maintenance and repair functions currently at Fire Hall #1 will be shifted to another location. The second reason is that the area under the truck bays is "found" space (i.e. non-planned space that is available due to the configuration the building). Although it is currently used for storage and exercise space the amount of available is greater than what would be warranted on a functional basis.

	Current		Normative			2016		2026		2036	
	Component Area	Gross Area	Comp Area	Gross Area	*Notes*	Comp Area	Gross Area	Comp Area	Gross Area	Comp Area	Gross Area
Apparatus Area	3,252		*3,200*		*1*	3,200		3,200		3,200	
Operations Support	754		*760*		*2*	760		760		760	
Offices	2,416		*2160*		*3*	2,160		2,160		2,160	
Staff Dorms	2,053		*1350*		*4*	1,350		1,350		1,350	
Storage	1,505		*1273*		*5*	1,270		1,270		1,270	
Training Room	512		*510*		*6*	510		510		510	
Exercise Facilities	1,734		*900*		*7*	900		900		900	
Loading Dock	0		*400*		*8*	400		400		400	
Total Component	**12,226**		***10,553***			**10,550**		**10,550**		**10,550**	
Component Gross	1.00	12,226	*1.00*	10,553			10,550		10,550		10,550
Circulation System	0.23	2,853	*0.23*	2460			2460		2460		2460
Building Systems	0.03	346	*0.03*	300			300		300		300
Exterior Wall	0.06	684	*0.06*	590			590		590		590
Total Building Gross	**1.32**	**16,109**	**1.32**	**13,903**		**1.32**	**13,900**	**1.32**	**13,900**	**1.32**	**13,900**

Normative Area Notes

1. Sized for Pumper, Rescue, and Aerial - No mechanical bay
2. Existing area adequate
3. Mechanic's spaces deleted
4. Existing area could be more efficiently utilized
5. Existing area under truck bays is found space - normative is function based
6. Existing area adequate
7. Existing area under truck bays is found space - normative is function based
8. Loading Bay required

Parking

The parking stalls remain at the Normative level for the planning period. Staff stall estimates are based on an allowance of one stall per staff pending clarification of daily trip patterns and contract provisions.

Fire Parking Stalls

Notes		Current	Normative	2016	2026	2036
1	Visitor	4	5	5	5	5
2	Staff	14	16	16	16	16
3	Firefighters	6	6	6	6	6
4	Fleet	10	10	10	10	10
	Total Stalls	**34**	**37**	**37**	**37**	**37**

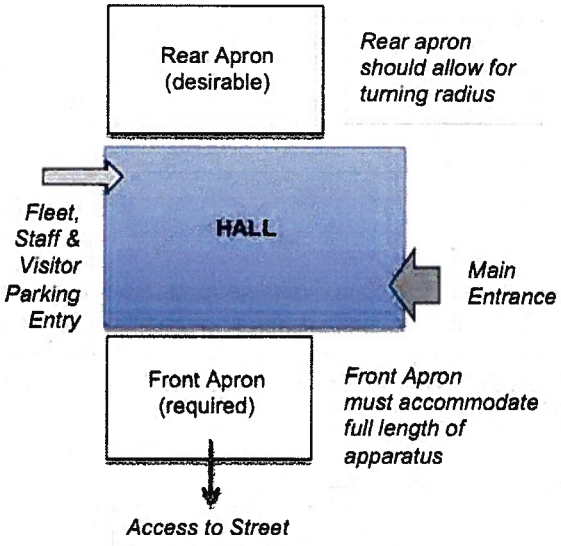
Notes

1. Could be shared parking with Municipal and/or Police
2. Allowance of 1 per staff
3. Assumes incoming shift uses staff parking (unoccupied at shift change)
4. Normal parking stalls. Excludes 3 fire trucks (pumper, rescue, aerial)

Building Access Requirements

The most critical vehicular access condition is to provide unimpeded access from the Fire Truck Bays to the street. Given that fleet vehicles, other than the Fire Trucks, do not require a secure compound, access for fleet, staff, and visitor vehicles can be shared.

Fire Hall #1 requires a clearly defined pedestrian main entrance with access onto an entry lobby and service counter.



2.5: Component Space Savings Opportunities Created by Consolidated Development

There are four basic categories of component (useable) space for Municipal Hall, Fire Hall, and Police Station functions:

- building support spaces (e.g. general storage, loading docks)
- operations support spaces (e.g. meeting rooms, training rooms)
- general administrative office space
- dedicated use spaces (e.g. holding cells, fire truck bays)

Building Support Space Savings Potential
Although building support spaces such as general storage, loading docks, and maintenance facilities do not represent a significant portion of the total facilities, they are amenable to being used on a shared basis and therefore offer opportunities for sharing to achieve space savings.

Operations Support Space Savings Potential
Operations support spaces such meeting rooms, training rooms, lunchrooms, and exercise rooms are amenable to being used on a shared basis as long as requirements for security and critical proximities are met. Although the area associated with these spaces does not represent a significant portion of the total facilities, space savings are feasible.

General Administrative Office Space Savings Potential
The majority of space in a consolidated development would be in the general administrative office space category. Space savings can be achieved in this type of space if consolidation makes it feasible to reduce the number of staff. During the interviews and work sessions there was some discussion of the possibility of operational efficiencies that might be feasible because of the closer proximity of the three operations. Although security, confidentiality, staff training, and reporting relationships would need to be carefully considered, there was general agreement that some administrative functions might be potential candidates for more consolidated operations serving all three organizations. While such operational changes might not reduce the number of staff and the amount of space required in the short term, they could make it feasible to more effectively accommodate future growth in service demand and thereby reduce the staffing estimates for the 10 and 25-year futures. A detailed Operational Review would be required to determine the potential long-term impacts. One of the changes that might be explored as part of an Operational Review would be establishing an integrated public services counter area for some customer services, although Fire and Police operations would likely still have their own reception areas. There may be some space savings associated with a public service counter concept but the primary benefit is in enhancing the quality of customer services by making it more convenient for residents to obtain routine services. No space savings have been assumed at this stage of analysis as it not feasible to make even provisional estimates without a more in-depth operational review.

Dedicated Use Space Savings Potential
Specialized spaces such as holding cells, gun lockers, evidence storage, fire truck bays, and fire hose towers are not amenable to being used on a shared basis and therefore offer little or no opportunity for sharing to achieve space savings.

Estimated Component Space Savings
A 15% space saving in Building Support and Operations Support Spaces is a plausible target. Although there may be significant space savings in General Admin Space, it is not feasible to make an estimate without a detailed Operational Review. There are no readily apparent space-saving opportunities from sharing of dedicated use spaces. Based on these conservative planning assumptions, a total of 2,250 square feet of useable area can be saved by adopting a consolidated development approach.

	Separate Developments Requirements	Consolidated Development Requirements	Space Savings	% Savings
Building Support Spaces	6,010	5,110	900	15%
Operations Support Spaces	9,010	7,660	1,350	15%
General Admin Spaces	36,040	36,040	Unknown Pending Operational Review	
Dedicated Use Spaces	14,810	14,810	0	
Total Component Area	**65,870**	**63,620**	**2,250**	**3%**

2.6: Total Space Savings with Consolidated Development

Building Gross Area Savings
Component space represents the useable portion of buildings. The total gross area of a building includes building systems space, major circulation space, and the plan area occupied by exterior walls. The building systems spaces (mechanical, electrical, communications) required to support the Public Safety Building will be based on up-to-date sustainability principles and technology. Although well maintained, the building systems in the current Municipal Hall are an older technology and are now well into their expected life cycle. It is highly likely that the new building systems in the new facilities will be designed to serve both the Public Safety Building and the Municipal Hall. If each of the three buildings were considered as a separate development, a total of 6,160 square feet would be required for Building Systems spaces. With a consolidated development the requirements are estimated at 4,500 square feet, yielding a space saving of 1,660 square feet (27% saving). Circulation space and the allowance for exterior walls are both estimated as percentages of total component area and therefore show reductions comparable to the total component area reduction of 3%.

Potential Parking Space Savings
Both Fire and Police operate on a shift basis. During the shift change period, personal vehicle parking is required for two shifts (one outgoing and one incoming). The shift changes occur before and after normal working hours. Consolidation makes it more feasible to accommodate one of the shifts by using vacant staff parking. This saves approximately 20 stalls (7,000 square feet). Promoting and supporting alternative travel options, such as van or car-pooling, transit passes, and bicycles could achieve further reductions in staff parking space requirements. However, no reductions have been included in the estimates pending further discussion.

Total Space Savings
The Total Space Savings (including parking) are estimated at 11,670 gross square feet – a 7% reduction due to consolidation.

	Separate Developments Requirements	Consolidated Development Requirements	Space Savings	% Savings
Total Component Area	**65,870**	**63,620**	**2,250**	**3%**
Building Systems	6,160	4,500	1,660	27%
Circulation System	18,620	18,000	620	3%
Exterior Wall	3,740	3,600	140	4%
Gross Up Subtotals	28,520	26,100	2,420	8%
Total Building Gross Area	**94,390**	**89,720**	**4,670**	**5%**
Parking Stalls	239	219	20	8%
Parking Structure Area	**83,650**	**76,650**	**7,000**	**8%**
TOTAL SPACE SAVINGS	**178,040**	**166,370**	**11,670**	**7%**

2.7: Consolidated Estimates

The following 2036 area estimates incorporate the space savings noted above.

District of West Vancouver
Municipal Hall and Public Safety Building
2036 AREA ESTIMATES

Municipal Hall	2036 Requirements	*Shared Adj*	Consolidated Totals
Council & Conference	2,730	*1000*	1,730
Legislative Services	2,190		2,190
Mayor & Administration	2,170		2,170
Development Services	8,500		8,500
Integrated Public Services Counter	3,180		3,180
Corporate Services (Main Hall)	4,550	*1000*	3,550
Corporate Services (Fulton)	1,790		1,790
Staff Support Functions	910	*400*	510
Storage and Loading	2,730	*450*	2,280
Maintenance & Caretaking	390		390
Municipal Hall Component Gross	**29,140**	*2,850*	**26,290**

Police Department	2036 Requirements	Shared Adj	Consolidated Totals
Reception Services	450		450
Victims' & Community Services	1,060		1,060
Patrol Facilities	7,920	*1140*	6,780
Forensics & Exhibits	2,790		2,790
Command & Administration	4,330	*600*	3,730
Investigations & Support	5,660	*800*	4,860
Holding	2,750		2,750
Storage & Maintenance	1,220	*450*	770
Police Department Component Gross	**26,180**	*2,990*	**23,190**

Fire Department	2036 Requirements	Shared Adj	Consolidated Totals
Apparatus Area	3,200		3,200
Operations Support	760		760
Offices	2,160		2,160
Staff Dorms	1,350		1,350
Storage	1,270	300	970
Training Room	510	510	0
Exercise Facilities	900	900	0
Loading Dock	400	250	150
Fire Department Component Gross	**10,550**	*1,960*	**8,590**

Shared Facilities	2036 Requirements	Shared Adj	Consolidated Totals
Storage			200
Staff Support Spaces			50
Meeting Rooms			2,450
Training Rooms			1,000
Exercise Facilities			1,500
Loading Dock			350
Shared Facilities Component Gross			**5,550**

TOTAL COMPONENT AREA	**65,870**		**63,620**
	Component Area Reduction		*2,250*
Component Gross	65,870		63,620
Circulation System	18,620		18,000
Building Systems	6,160		4,500
Exterior Wall	3,740		3,600
Total Building Gross	**94,390**		**89,720**
	Building Gross Area Reduction		*4,670*

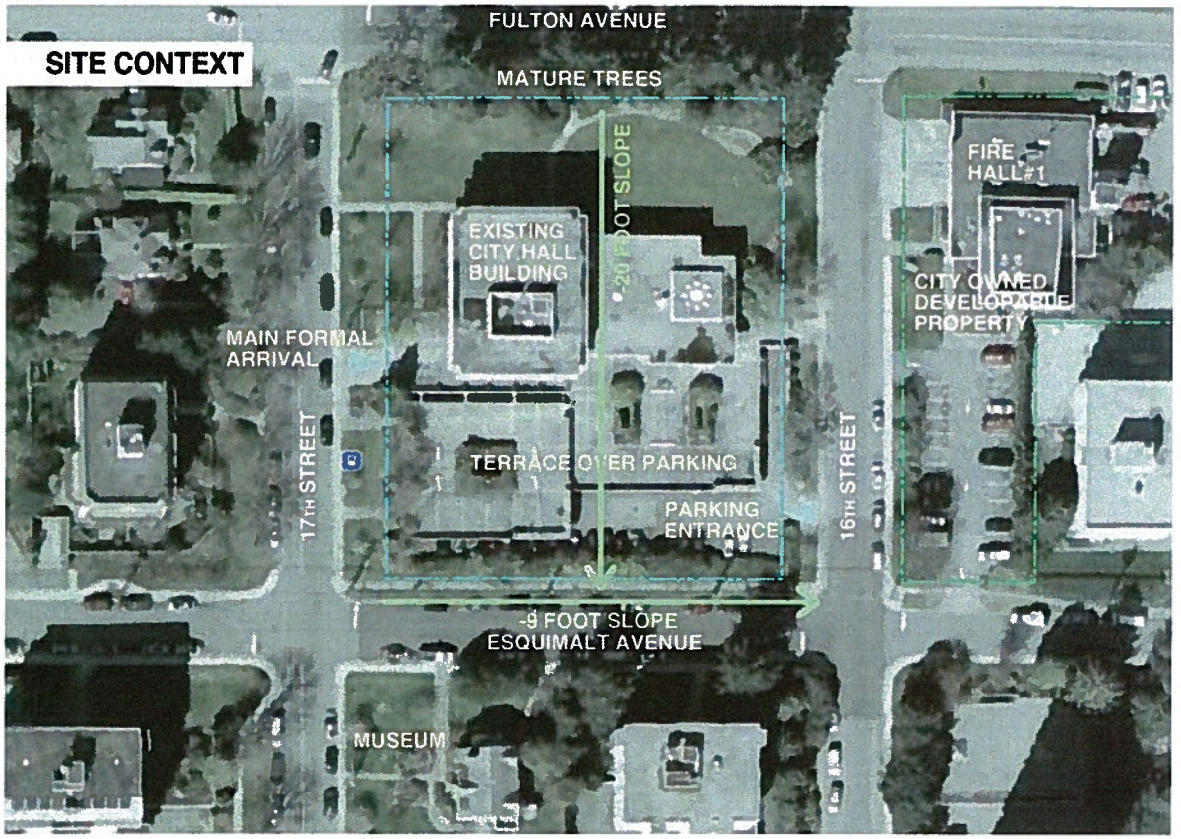
3.0 Existing Conditions – City Hall Site

3.1
Site Context

The City Hall occupies a full block, bounded by Fulton and Esquimalt Avenues on the north and south, between 16th and 17th Streets. The site area is 64,500 sf. (59,920 sm.). A key feature of the site is the slope of the topography, with a fall of over 28 feet across the diagonal from the northwest corner high point to the low southeast corner. Other site features include:

- A dense row of mature trees along the north property line;
- Generous areas of well developed lawn and planted landscape beds; and
- A low site coverage for the City Hall building itself at 17% (excluding covered parking terrace).

The surrounding properties on the three sides south of Fulton Avenue are developed mostly with higher density multi-unit residential buildings. Lower density residential development exists north of Fulton. The site to the immediate east on 16th Street is the location for the existing West Vancouver Fire Hall #1. This property plus additional parcels further east fronting Fulton are owned by the District and are subject to a study concerning possible disposition for private development. The West Vancouver Museum is located in a heritage structure on a property south of Esquimalt Avenue.



3.2
Municipal Hall Building

The existing Municipal Hall building was designed by Toby Russell and Buckwell Architects in 1963, and was constructed in 1964. It is a building of notable architectural character and has been designated as a listed heritage building.

The building is a five-level non-combustible (reinforced concrete) structure. The massing includes a lower wing oriented east-west comprising a basement level and upper and lower ground floor levels, each accessible from grade as facilitated by the sloping site. A two-storey "tower like" element of the massing is located on the west side and straddles the lower wing. This is designed in part with double height freestanding columns on the south side. The building is further characterized by generous floor overhangs with a particular back-sloped soffit detail. Ribbon windows enclose most of the perimeter; vertical sunscreens shade the upper storey windows. The Council Chamber is expressed as a separate massing element on the upper level of the low wing with solid walls, a raised centre portion of the roof, and a cantilevered section on the south side. Mechanical and Electrical system equipment is accommodated almost entirely within the building (primarily in the Basement) resulting in a clean roof appearance.

As noted above, the building is situated in the centre of the site and is set in context by mature landscape, in part naturalistic, and part in formal planters and landscape planting beds. The parking is located at the Basement level and is covered by an open-sided concrete structure, providing a public terrace above connected to the Lower Ground level. The "terracing" effect is enhanced through the use of planters on the outside edges of the covering structure, matched to perimeter planters and retaining walls on the lower level.
Plans for the existing building are included in Appendix B: Existing Floorplans. The total gross building area is approximately 33,800 gsf. As is typical, the Municipal Hall functions are primarily accommodated in office space. The Mayor and CAO's offices, with the Council Chamber, are located on the Upper Ground level. Other office departments are distributed over the four upper levels. The main public services reception/counter locations are on the upper three levels (HR and IT are on the level below. The basement accommodates Mechanical and Electrical space as well as a number of support functions.

It appears that few modifications to the building have been made, and that it is generally in excellent condition. It has not been within the scope of this study to undertake a building audit, however from other investigations, the age of the building, and cursory observation, it is clear that the building has a range of deficiencies relative to current standards. These include:

- **Seismic Resistance** – There are significant deficiencies, these have been commented upon in previous studies; an updated analysis by Bush Bohlman and Partners is included as Appendix A: Seismic Report.
- **Building Code Compliance** – As building codes are regularly amended it is usual for older building to have issues of non-compliance. One obvious deficiency is the inadequate fire separation of the exit stairs; the design of the stairs and their railings are also non-compliant.

- **Building Envelope** – The building has single glazing, relatively low insulation levels, and likely inadequate air barrier detailing. Some of the solar screens are in need of repair.
- **Mechanical/Electrical/Data Systems** – These appear to have been well maintained, and upgraded in 2000, however, in the context of other adjacent development and other upgrades in the building it is likely further renewal of these systems will make sense.
- **Sustainability** – As there is a growing expectation that public buildings exhibit high standards of sustainable practice, the items above, as well as others, are likely to contribute to pressure to improve building performance, particularly as part of a potential site redevelopment proposal.

4.0 Test Development Concept

This section documents the investigation of a test concept to ascertain the general feasibility of developing a new Public Safety Building on the Municipal Hall site, and to identify key associated issues relevant to the strategic decision to advance this proposal.

The material in this section is diagrammatic and should not be interpreted as an actual architectural design. The diagrammatic concept is intended to test the implication of critical feasibility factors that an architectural design process would need to resolve, and thereby draw relevant feasibility conclusions. The test concept has also been used as the basis for a preliminary cost estimate (report by Altus Group is included as Appendix C: Cost Report).

The approach has been to apply a series of principles drawn from experience and the analysis of the specific West Vancouver conditions and development program requirements to generate a single test concept with minor variations. Undoubtedly there are other options at a more detailed level, but the objective has not been to derive the best of alternate designs but rather to identify they key feasibility issues that any design will encounter and need to resolve. Based on discussions to date our understanding of the District's **development objectives** are as follows:

- Realize value of developable property to fund initiative
- Achieve overall accommodation efficiencies as well as long-term flexibility
- Compliment the heritage value of the existing Municipal Hall building
- Develop appropriate Civic Outdoor Space
- Achieve Sustainable Development and Asset Management targets

4.1 Development Factors

This initial analysis considers a number of factors that will have a major bearing on the form of development.

Development Program

As documented in the previous sections, the contemplated development would involve adding new building development on the Municipal Hall site in the magnitude of 58,100 gross square feet (gsf) and additional parking to accommodate in excess of 200 vehicles. These vehicles range from three large fire truck bays, a large number of fleet vehicles operated primarily by Police and Fire plus parking for staff and visitors. Due to site capacity and layouts needed to meet functional relationship requirements, the majority of vehicle parking and storage space will need to be located within the mass of the new structure, at or below grade.
To help achieve efficiency, flexibility, and facility sharing objectives it is proposed that the contemplated Public Safety Building be planned as an integrated/single structure. For a number of reasons, massing and access among them, it appears advantageous to locate the new development on the south side of the site. Further, and as discussed in points below, it would appear that a workable concept will require using the Esquimalt Avenue Right-of-Way (R.O.W.) as part of the property available to accommodate the development program.

Post-Disaster Building Standards

A significant aspect of the program is the requirement for the Public Safety Building to be designed to post-disaster importance (BCBC 4.1.2.1). Based on the Building Code of BC, Post-Disaster buildings are:

"buildings that are essential to the provision of services in the event of a disaster, and include:

- *hospitals, emergency, treatment facilities and blood banks*
- *telephone exchanges*
- *power generating stations and electrical substations*
- *control centres for air, land and marine transportation*
- *public water treatment and storage facilities, and pumping stations*
- *sewage treatment facilities and buildings having critical national defence functions*
- *buildings of the following types, unless exempted from this designation by the authority having jurisdiction:*
  - *emergency response facilities*
  - *fire, rescue and police stations, and housing for vehicles, aircraft or boats used for such purposes*
  - *communications facilities, including radio and television stations."*

This requirement will affect many aspects of the final design and may impose constraints on the massing, toward a more regular plan and section shape. At minimum there will need to be continuity of the vertical elements providing lateral strength and a structural separation between the new and existing structures.

Existing Building Retention and Upgrading

As the Existing Municipal Hall building is listed on the Community Heritage Register and would appear to have considerable useful life, it has been assumed that it will be retained and that an appropriate program of upgrades will be incorporated in the overall project.

Retaining the existing Municipal Hall imposes constraints on a reasonable massing form for the new development as discussed further below. There are also project cost implications. The degree to which the building is upgraded will have a degree of discretion by the District, however, given the issues of example and precedent, the prospect of contiguous new development, and the commitment to preserving the existing heritage structure, the study assumes a range of upgrades would be approved, specifically the following:

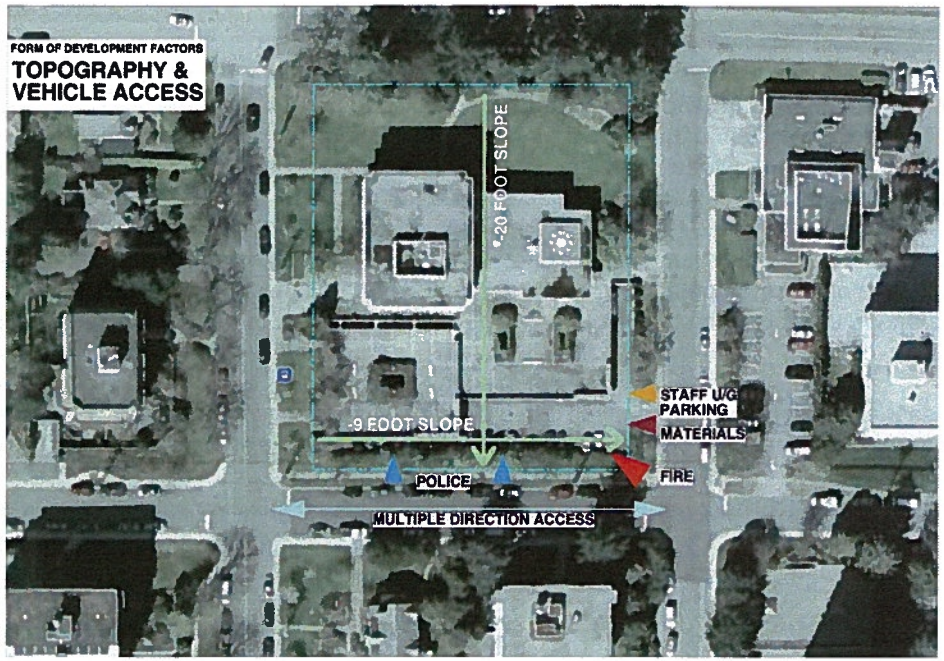
- Seismic upgrade
- Installation of sprinkler fire protection system
- Other building code life safety compliance upgrades
- Building envelope upgrades including window replacement
- Building systems upgrades including modification to operate as part of a district system

It would appear advantageous that the Municipal Hall and Public Safety Building be linked (notwithstanding the requirement for a seismic separation between the two). While this could be as simple as entrances related to a common outdoor space, two options for an enclosed link have been examined.

Topography and Vehicle Access

The significant ground level slopes of the site provide both opportunities and constraints. It appears that the location of the three Fire Department main vehicle bays are necessarily located at the southeast corner of the site as this is the only location that provides enough access depth to accommodate the high bays while reasonably allowing floor level alignment with the existing building. This low point is also the most advantageous location for access to underground parking and a shared material-loading bay. In addition, there are a large number of fire and police fleet vehicles and other functions that reasonably need to be accommodated at grade. Multiple vehicle access points are therefore required along the south property edges. To accommodate the parking for the required complement of vehicles as well as to provide for more than one travel direction the Esquimalt Avenue R.O.W. needs to be included as part of the development site.

North

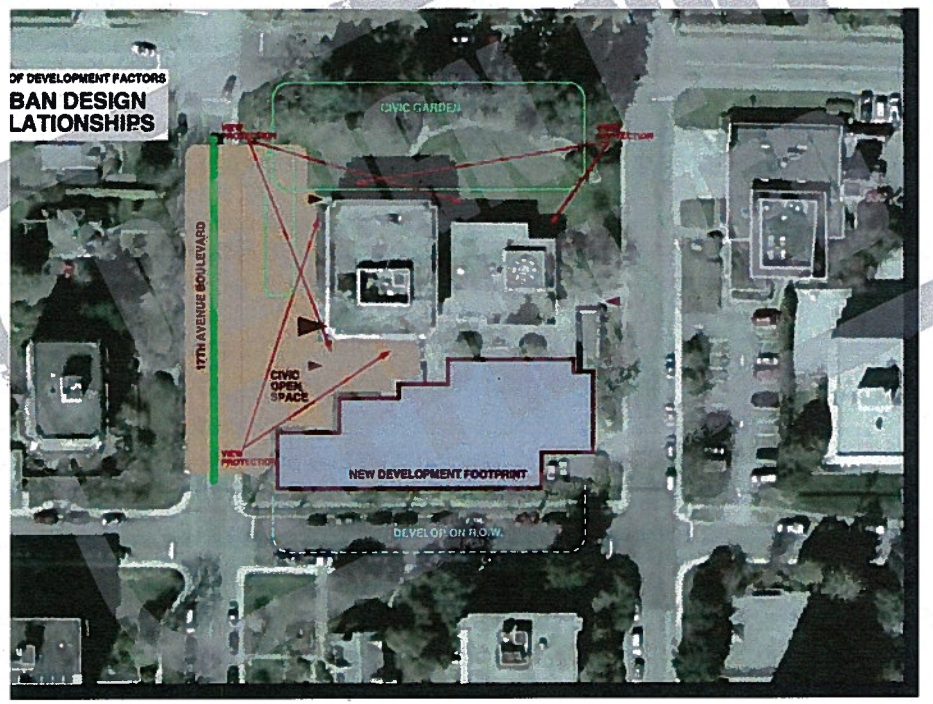


Urban Design Features

While this topic has many potentially relevant issues, three key planning assumptions are reflected in the test concept:

- As noted above, the 17th Avenue R.O.W. will be integrated into the proposed development.
- The massing for the new development will need to step back in plan and be terraced in section, particularly from the southwest approach, to be suitably responsive to maintaining views to the existing Municipal Hall as an independent structure. To the extent possible, the new development should not exceed the height of the low wing of the existing building.
- Should the District decide to develop a major civic public open space as part of the development, this would be located on the west side of the site to coincide with the traditional main entrance to the Municipal Hall. A related issue is the provision for visitor parking that, as discussed further below, appears best provided on surface; this could be as part of an open space development using a convertible surface (e.g. stone or concrete pavers) or alternatively on the north part of site.

North



Sustainable Development Practices

It is assumed as a given that any new development will incorporate sustainable practices. Some of the likely features relevant to this high level study include:

- Deep sun shade devices on the south face
- Green roof applications on the upper roof areas and the perimeter of terrace shelves
- A central district plant facility
- Allowances for alternate transportation including bicycle facilities

4.2 Test Concept

The test concept is illustrated in the diagrams included at the end of this section (4.2). Key issues/features include the following:

Massing

The test concept incorporates an illustrative massing and floor plate shape to accommodate the program areas and to reflect the planning assumptions stated above for a stepped terrace form of development. To meet facility program requirements a four level new development will be required over two levels of underground parking. The upper level is in conflict with initial assumptions to avoid crowding the existing Municipal Hall, however, the size of this floor area could be minimized and located to the east to reduce its impact.

Ground Floor (Basement) Plan:

The constraining plan area for the concept is the new building level at grade, corresponding to the basement of the existing Municipal Hall. In association with the required maneuvering space, the requirements include:

- three fire truck bays and outdoor apron plus the directly connected equipment and staff space
- the base of the fire tower
- three enclosed vehicle bays for different police functions
- parking for up to 53 Fire and Police fleet vehicles
- shared loading bay with garbage and recycling holding
- access ramp to underground parking
- secure vehicle entry (sally port) to the Police Holding facilities (ideally)
- storage directly associated with Police patrol kits and supplies

The test concept represents a plausible layout approach. As illustrated, a covered fleet vehicle parking lane is located on the south edge for security and view shielding. The existing sidewalk with buffering landscape would remain on the south side of this covered parking.

Functional Arrangement

The test concept locates the Fire Department operation on two levels in the southeast corner plus an optional partial mezzanine; the vehicle bays are at the low level; offices and dorms are at the upper level, which has public access.

The Police space is distributed over four levels:

- The lower floor accommodates fleet vehicles, enclosed vehicle bays, critical patrol storage, holding, and some exhibit storage.
- The level above (lower ground) accommodates the majority of patrol/operations functions, reception, and community/victims services.
- The upper two levels accommodated investigations, forensics, administration and command functions

There is a zone on the lower ground level identified as shared use that can be accessed from both Fire and Police sides. This would primarily contain exercise and training space, plus possibly additional shared meeting and food/service/lounge space.

A zone is identified on the upper ground level for municipal operations that will not fit in the Municipal Hall. This would accommodate operations consolidated from the Fulton Avenue site and allowance for expanded requirements over the twenty-five year planning period. Until required, some of this space could be leased to other public organizations.

Access Circulation and Parking

The test concept reflects the existing condition where public access to the site can be made from three sides, but not directly from Esquimalt Avenue. The "front" of the site is considered to be on the west side facing 17th Street. Pedestrian entrances to Municipal Hall, Police, and Fire components are provided along an east-west public space on the lower ground level. Optionally there could be a link in the centre of this space. The Municipal Hall can also be accessed on the upper ground level as it is now.

The total parking requirement necessitates an underground structure. The analysis of the test concept suggests that the underground parking be assigned only to staff use, and that a minimum of twenty visitor spaces be provided at grade (either north of Municipal Hall or as part of a redevelopment of 17th Street). The rationale is that mixing use of the parkade would add to cost, unduly compromise security requirements and would not provide an appropriate quality of arrival experience for visitors.

The proper organization of internal circulation in the Public Safety Building is complex. The requirements for the circulation system include:

- Separate outdoor front doors for Municipal Hall, Police, and Fire plus additional entrances for specific Police Department functions
- Access and emergency exiting to serve all space
- Secure separation between: connection to parking / police circulation / fire circulation / connected municipal/lease space
- Flexibility to allow the tenancy pattern to be modified over time

The test concept illustrates the entrance and vertical access cores in a general way. In order for all conditions to be satisfied exits would need to be planned so as not to interconnect at the discharge level. More analysis will be required to fully resolve this critical aspect of the concept at the actual design stage.

Integrated Public Service Centre

Consultation with staff suggests considerable interest in pursuing the concept of an integrated public service centre where most Municipal Hall service interactions would be located. There may be some opportunities for this Service Centre to handle some routine enquiries that are now served at the Police and Fire Department reception points but more analysis of this idea beyond the scope of this study will be needed. For current purposes the test concept approach involves constructing a two-level link between the Municipal Hall and the Public Safety Building. This link would have main entrances on the lower ground level. The space required would include this link plus adjacent existing space. The second level of the link would include additional meeting spaces.

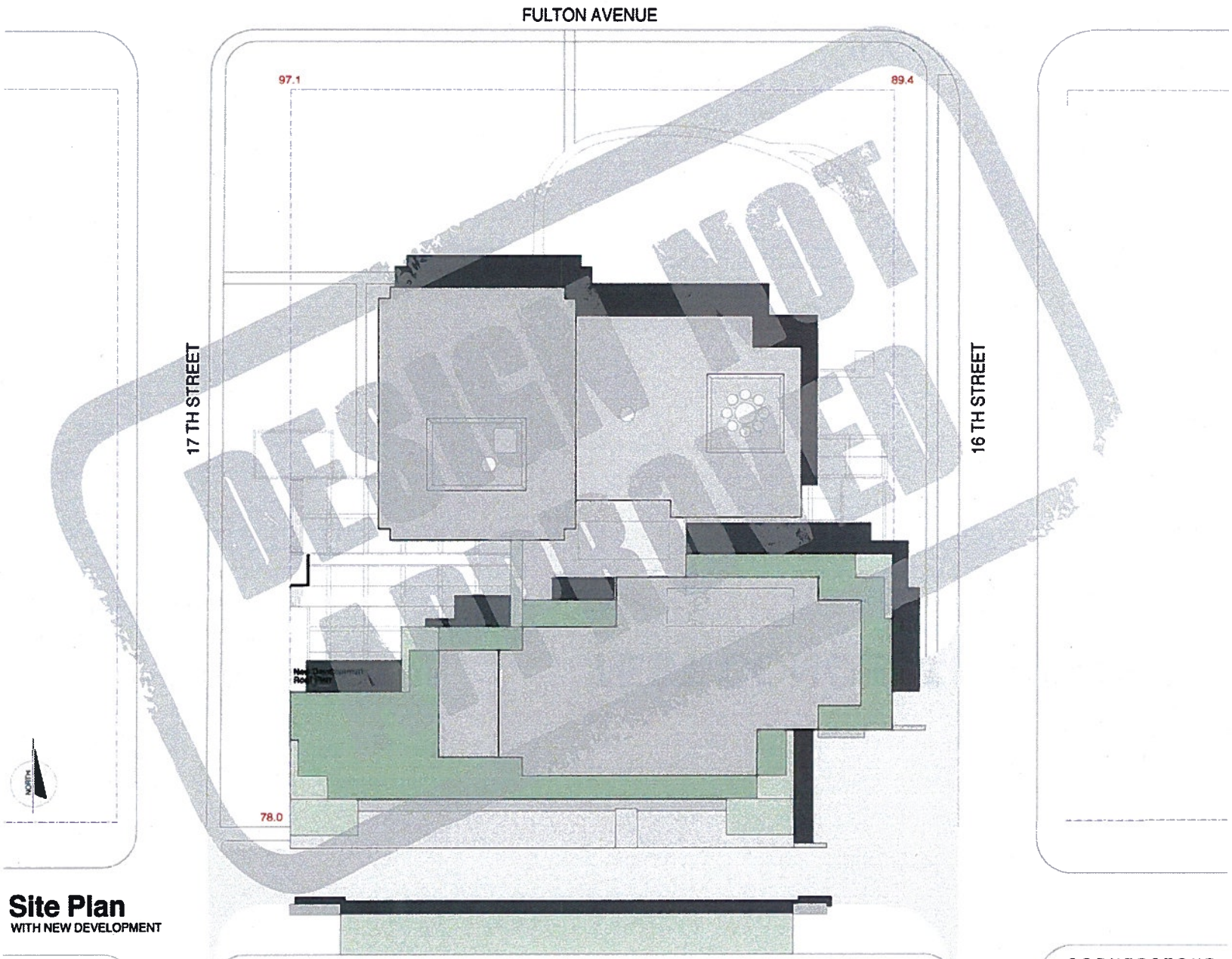
An examination of future realignment of the space within Municipal Hall is not part of this initial study. However the test concept suggests a general direction that this rearrangement might take. The new space provides for the consolidation of Fulton Ave operations and for the relocation of Human Resources (to free up space for the service centre). As a consequence of the integrated services centre, some staff will be relocated out of their current department space, thereby allowing for distributed incremental growth as required. The addition of common meeting space will allow for the current meeting room to be converted to provide improved Council work space and to allow for a proper separation for reception and access to the office of the Mayor. These arrangements would be examined in more detail if the District decides to proceed with this development initiative.

Sustainable Development

Sustainability concepts have been taken into consideration, but the scope of the study does not include fully defining the sustainable strategies that would be applied to the project. Some relevant points for further consideration include the following:

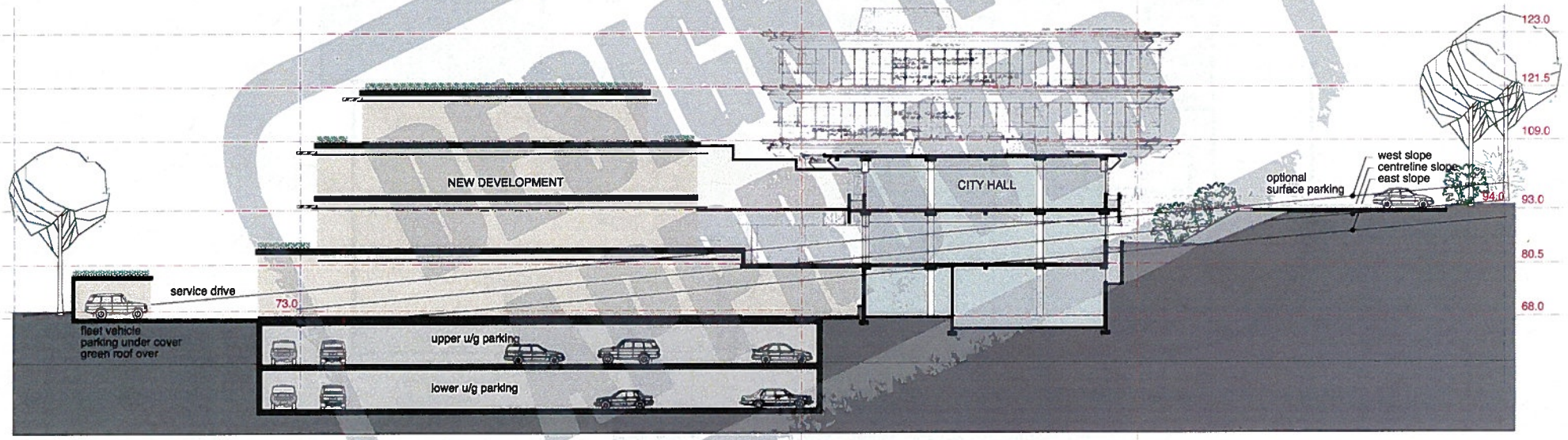
- **Alternate transportation strategies and policies.** For reasons of sustainability, as well as capital cost economies, the cost of constructing parking spaces might be traded off against inducements toward carpooling, public transportation, bicycles, etc.
- **Use of Roof-top Surfaces.**
- **Site Landscaping and Stormwater Management.**

TEST CONCEPT DIAGRAMS



DESIGN NOT APPROVED

Site Plan
WITH NEW DEVELOPMENT



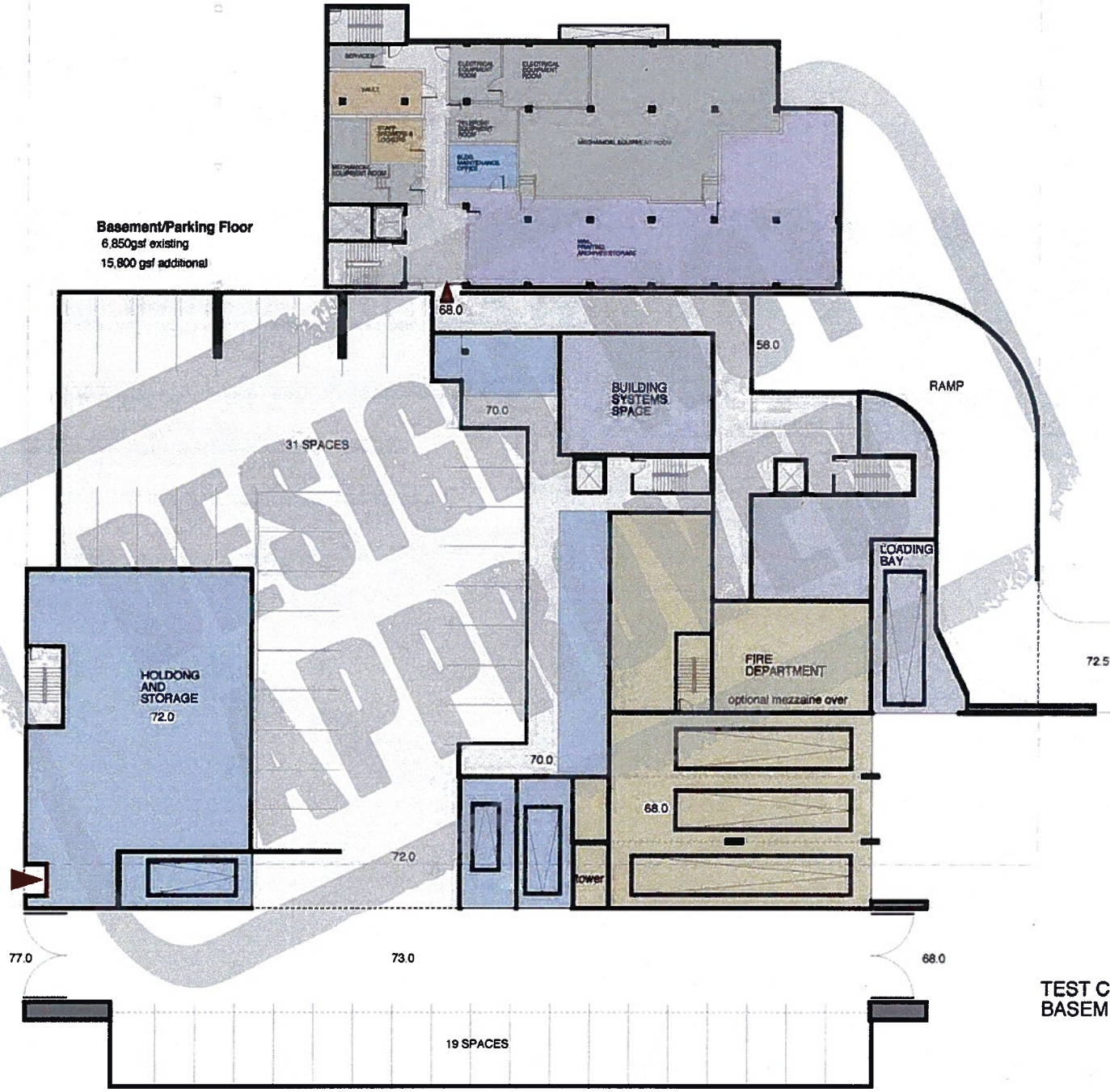
North-South Section
WITH NEW DEVELOPMENT

SCALE

0 10 20 30 40 50 100 150feet

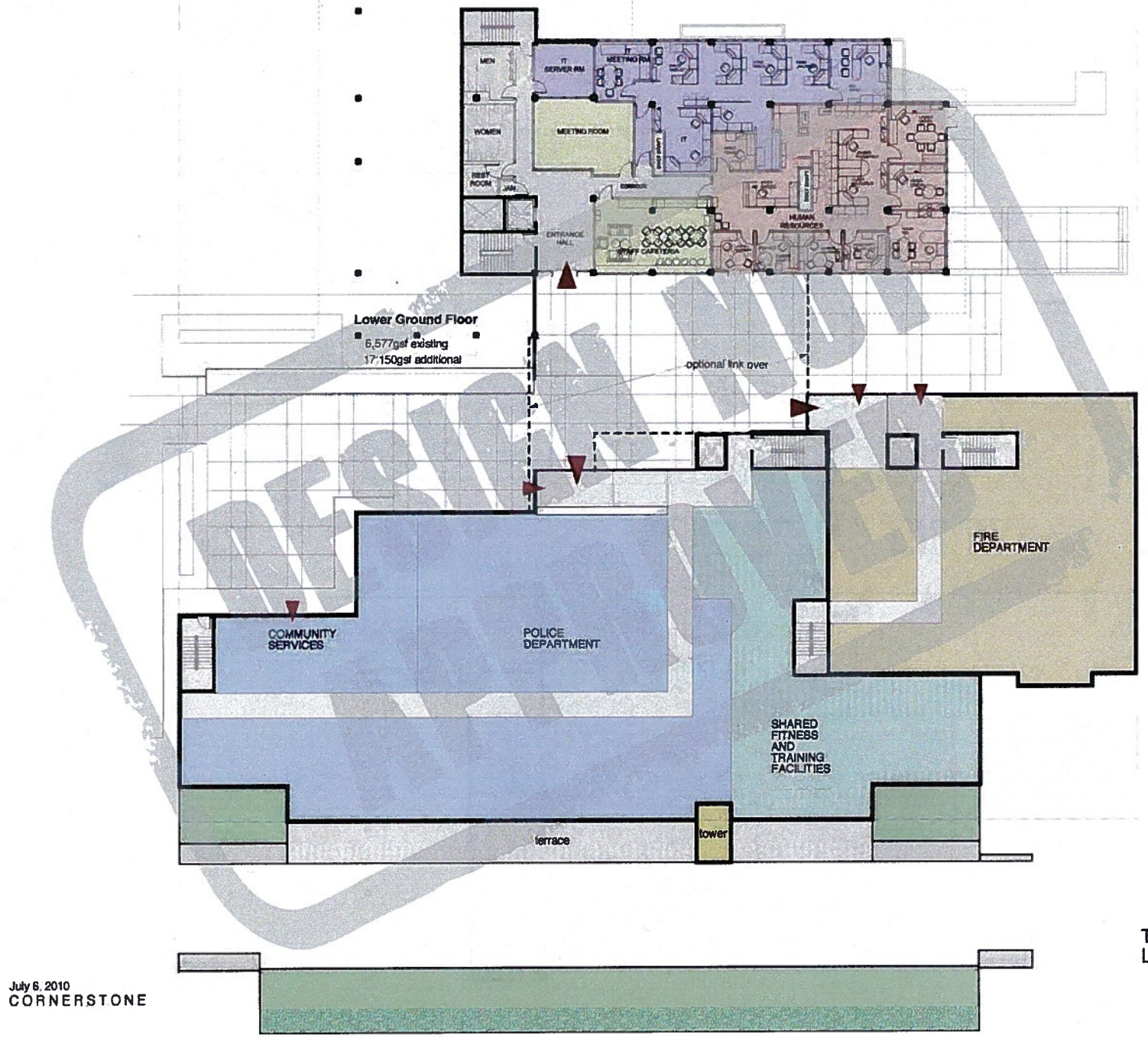
July 6, 2010
CORNERSTONE

DESIGN NOT FINAL



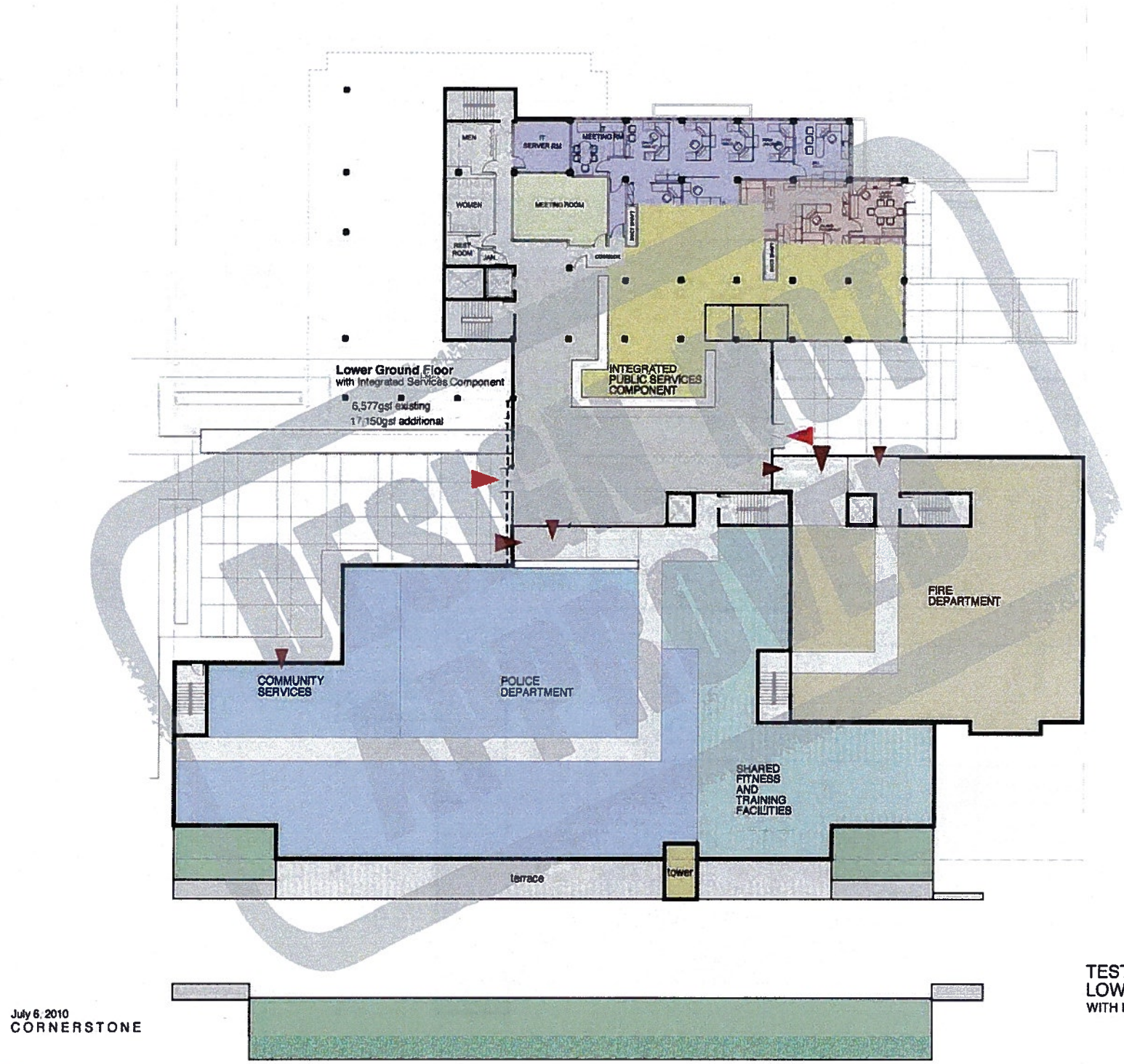
TEST CONCEPT
BASEMENT LEVEL

July 6, 2010
CORNERSTONE



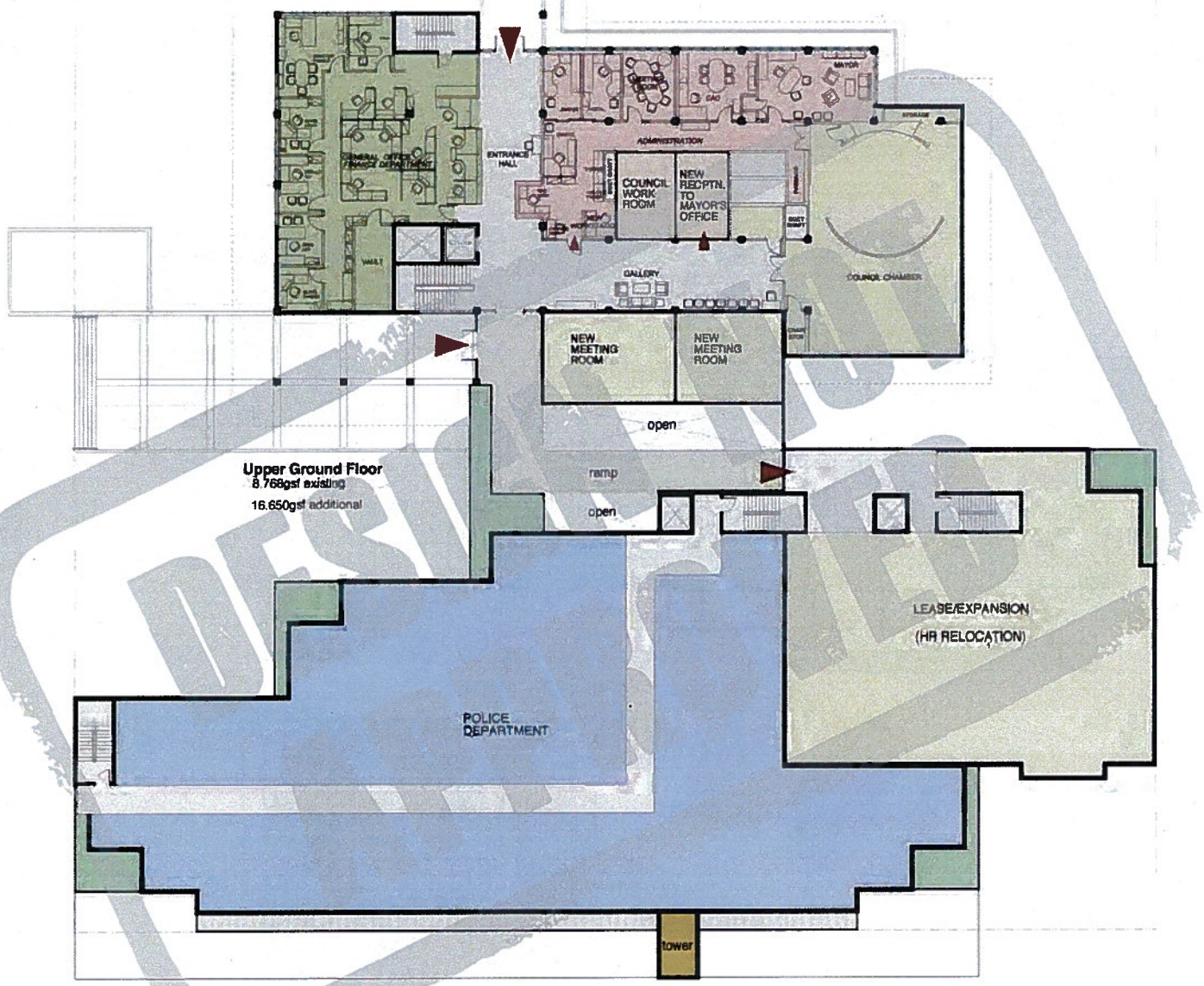
TEST CONCEPT
LOWER GROUND LEVEL

July 6, 2010
CORNERSTONE



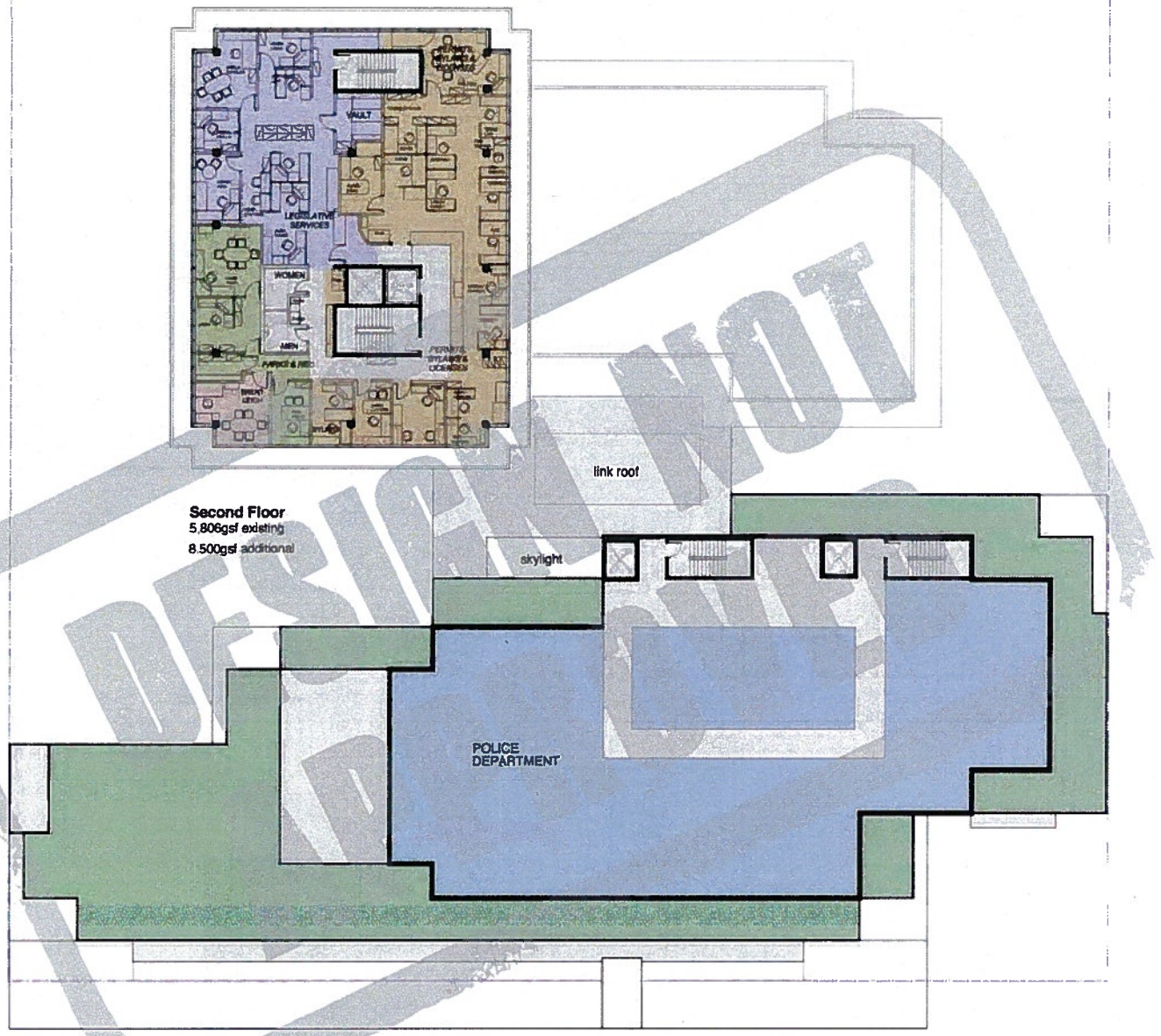
July 6, 2010
CORNERSTONE

TEST CONCEPT
LOWER GROUND LEVEL
WITH INTEGRATED SERVICE NODE



TEST CONCEPT
UPPER GROUND LEVEL

July 6, 2010
CORNERSTONE

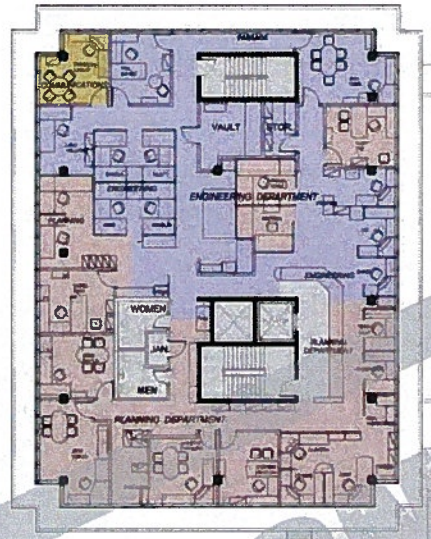


Second Floor
5,806gsf existing
8,500gsf additional

DESIGN NOT FINAL

TEST CONCEPT
SECOND LEVEL

July 6, 2010
CORNERSTONE



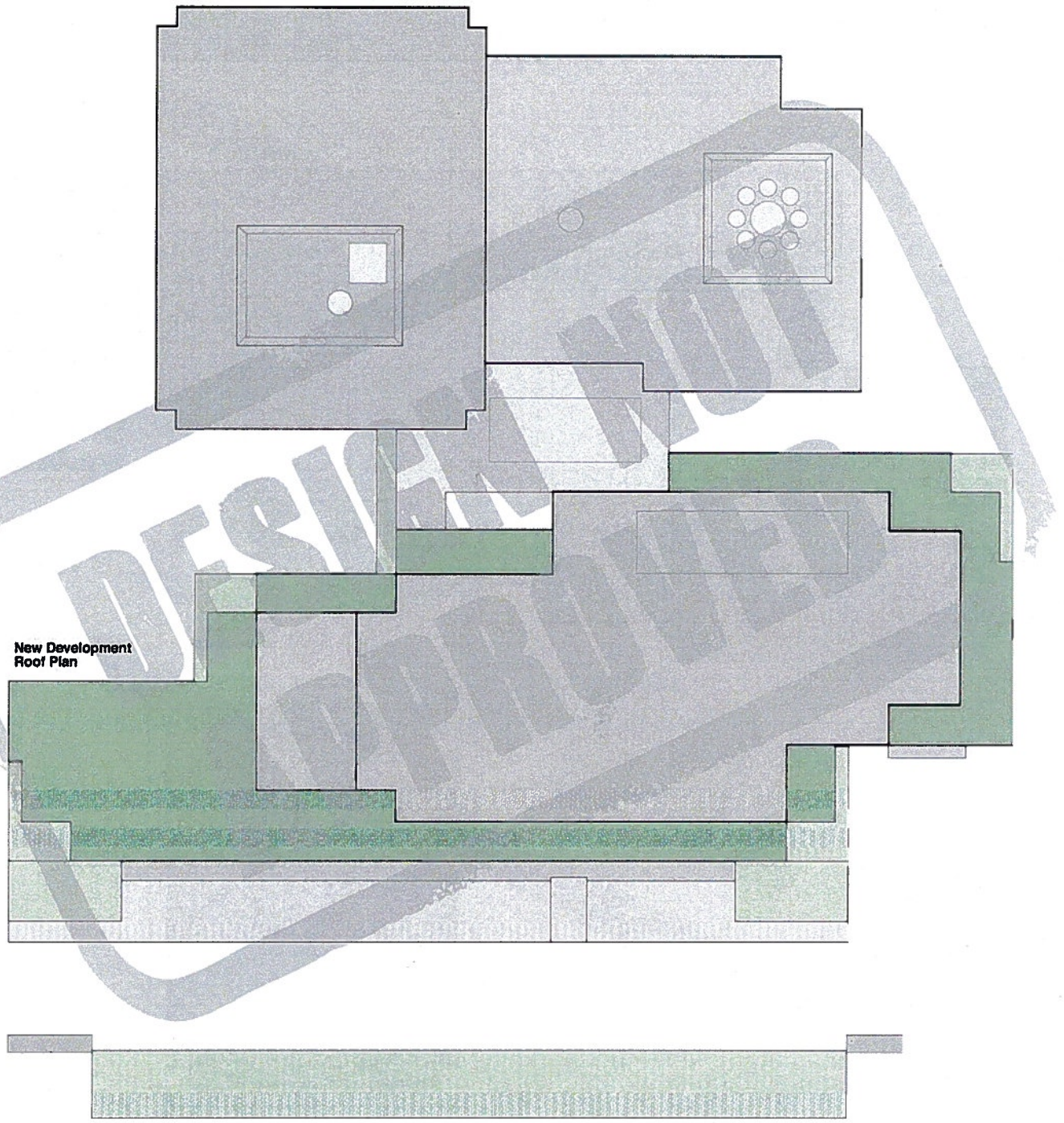
Third Floor
5,806gsf existing

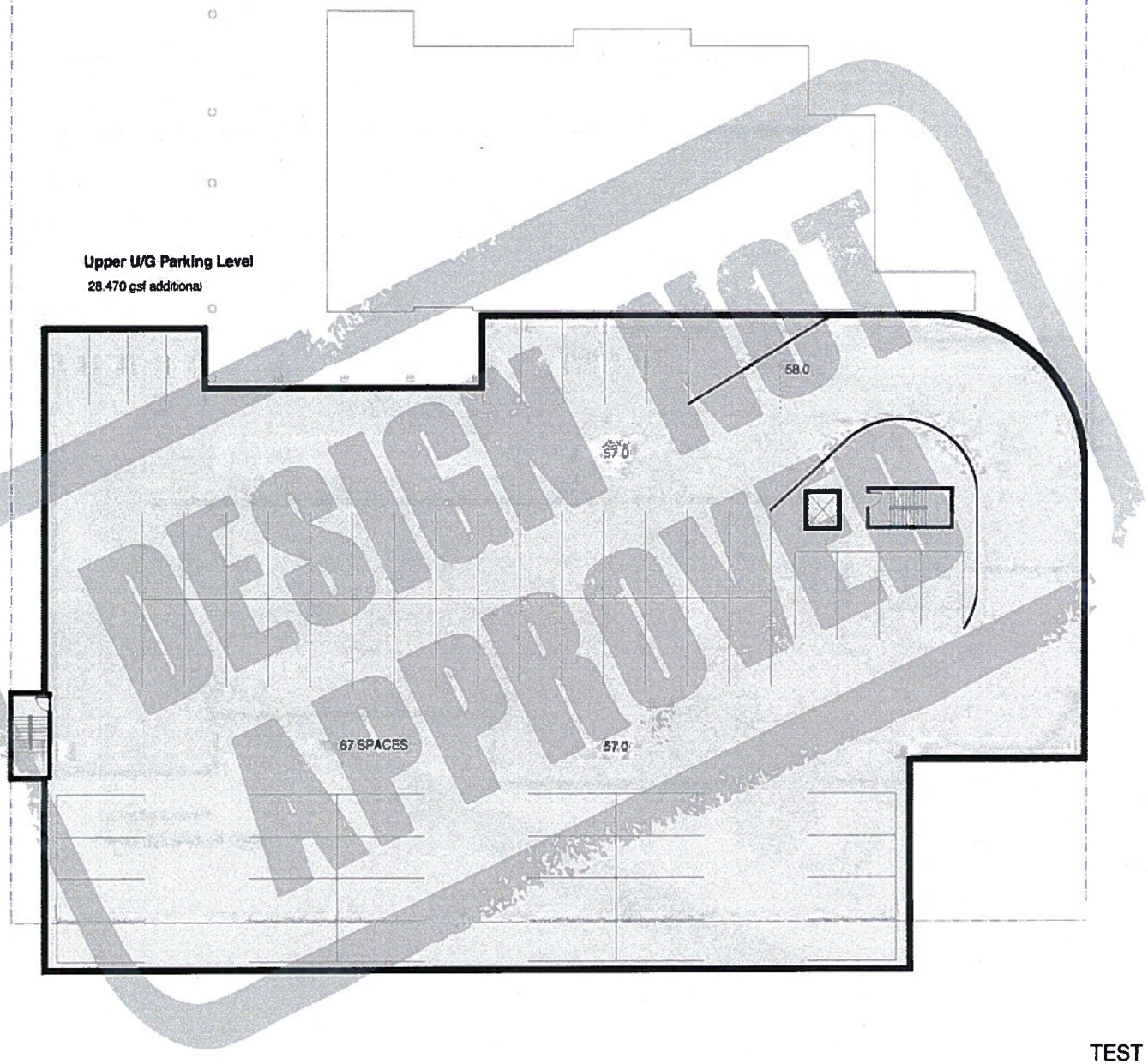
New Development
Roof Plan

DESIGN NOT APPROVED

TEST CONCEPT
THIRD LEVEL

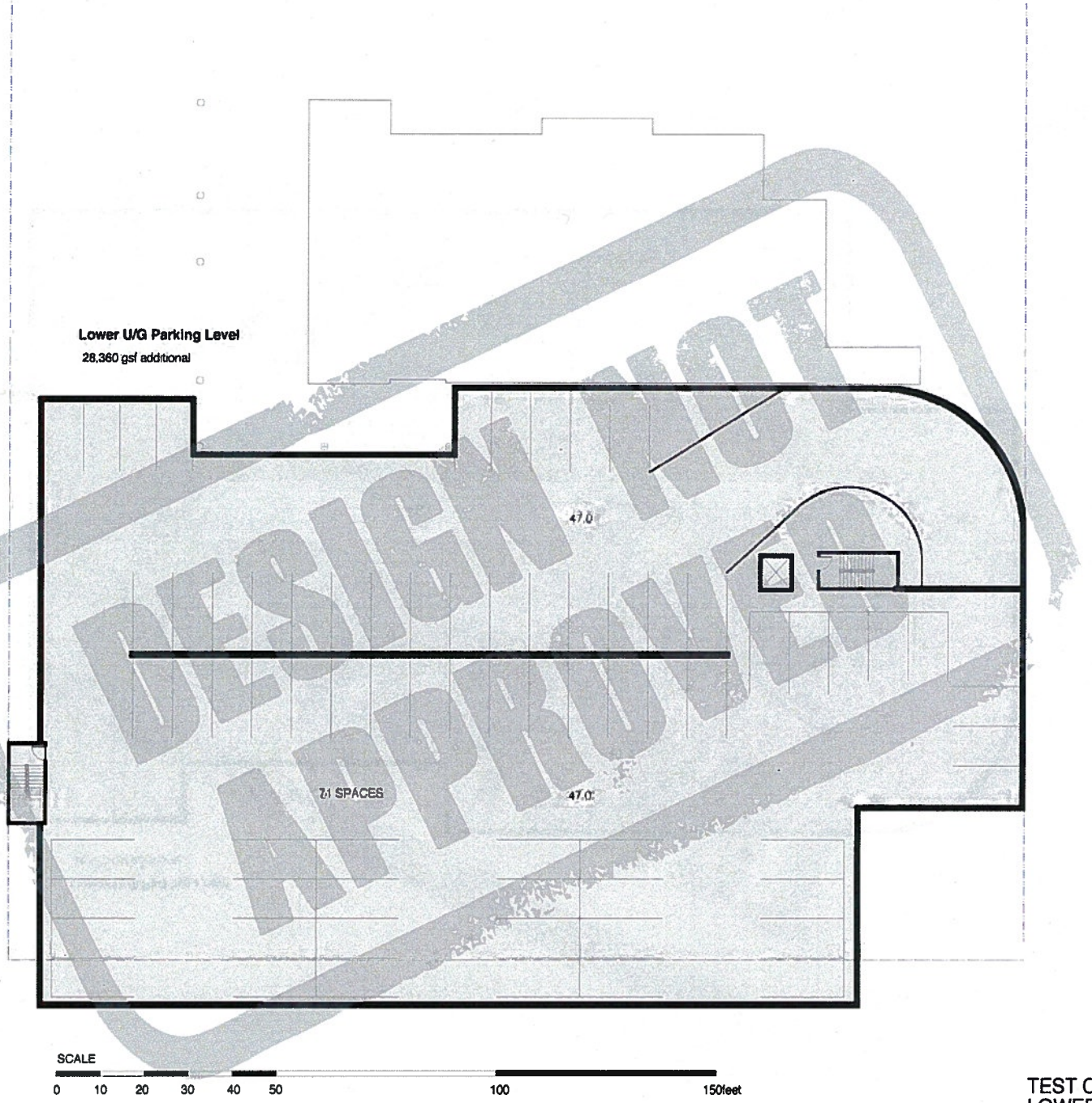
July 6, 2010
CORNERSTONE


New Development
Roof Plan



TEST CONCEPT
UPPER PARKING LEVEL

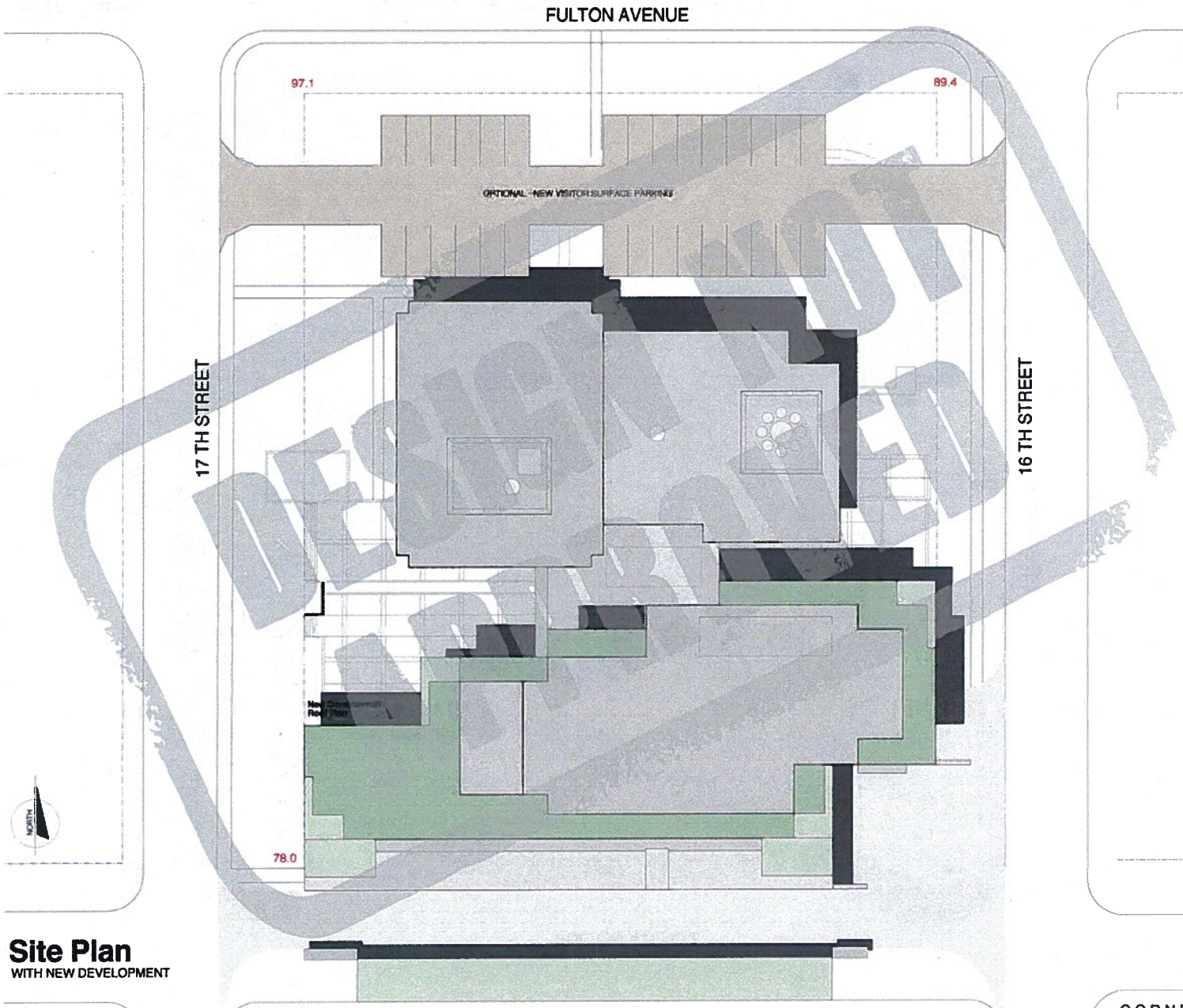
July 6, 2010
CORNERSTONE



DESIGN NOT APPROVED

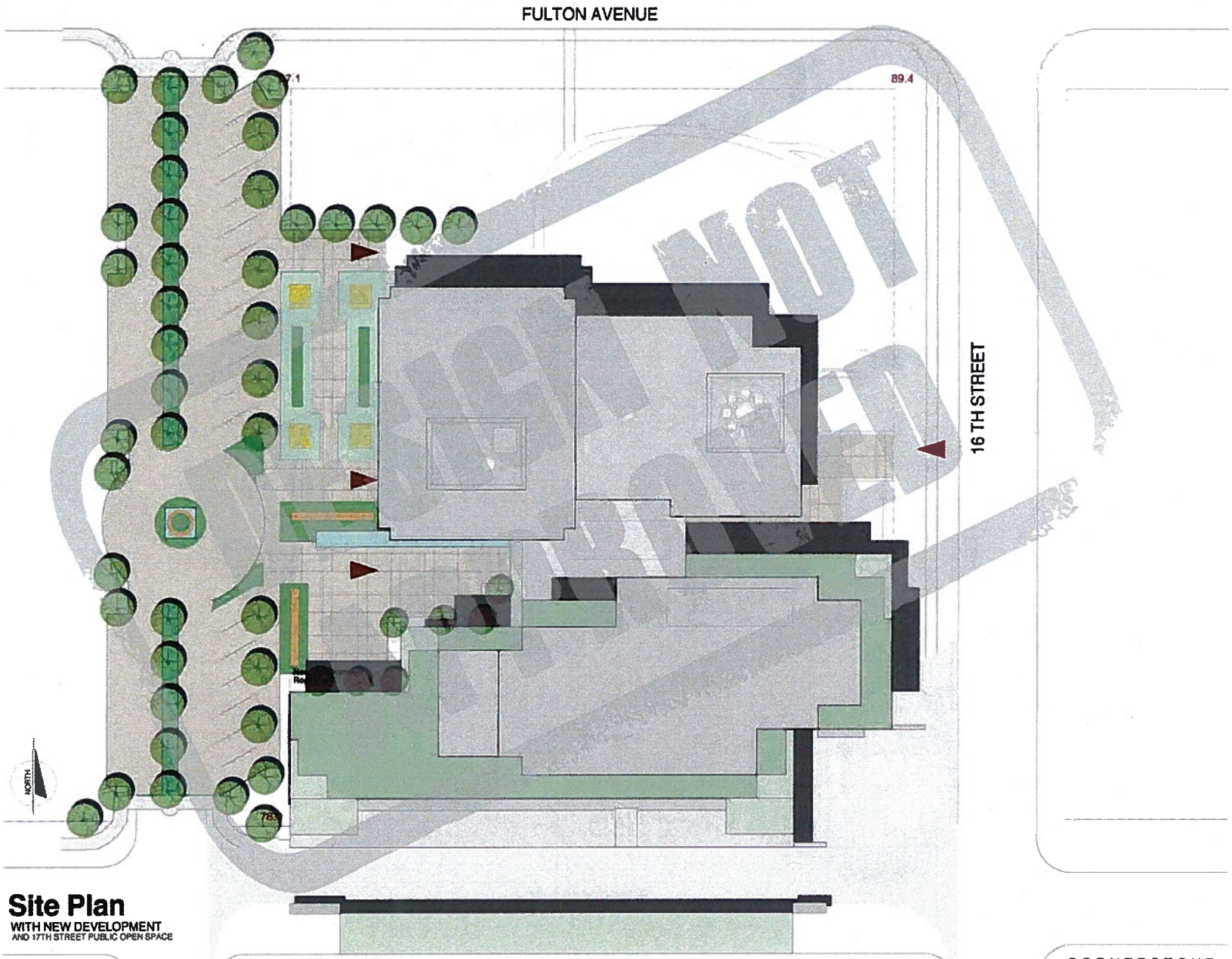
TEST CONCEPT
LOWER PARKING LEVEL

July 6, 2010
CORNERSTONE



Site Plan
WITH NEW DEVELOPMENT

CORNERSTONE
June 18.10

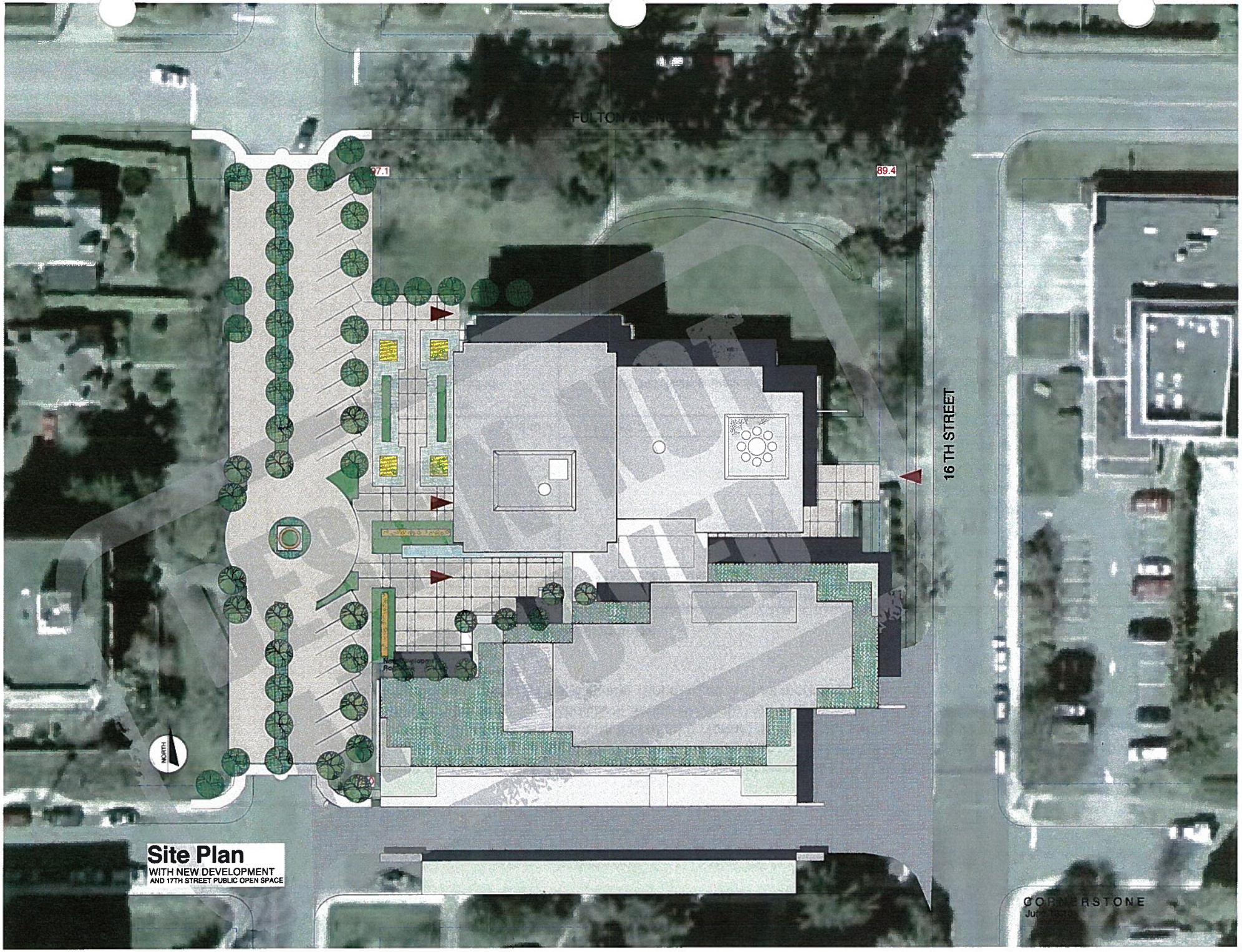


Site Plan

WITH NEW DEVELOPMENT
AND 17TH STREET PUBLIC OPEN SPACE

DRAFT NOT APPROVED

CORNERSTONE
June 18.10



Site Plan
WITH NEW DEVELOPMENT
AND 17TH STREET PUBLIC OPEN SPACE

4.3
Preliminary Cost Estimate

A preliminary concept (or functional program) level cost estimate has been prepared by the Altus Group. The full report is included as Appendix C: Cost Report. The summary is shown in the table below. The Base Estimate represents the cost of a development based on a Normal Standard for structural integrity and minimal upgrades to the existing building. The "Additional Scope Estimate" represents the cost of a development with the new building portion meeting a Post-Disaster Standard as well as more extensive upgrades of the existing building to meet code requirements.

WEST VANCOUVER
Municipal Hall / Public Safety Building Study
July 7, 2010

	Base Estimate		**Additional Scope Estimate**	
Existing Building Upgrade:	$1,453,000	Seismic Only	$1,453,000	Seismic Only
			$250,000	Sprinkler Fire Protection System
			$100,000	Code Non-Compliance
			$350,000	Envelope-Window Replacement
			$110,000	Envelope-Roof/Insulation Upgrade
			$200,000	Space Plan Modifications
			$350,000	HVAC/Energy Systems District Integration
Subtotal	$1,453,000		$2,813,000	
New Development:				
Public Services Building	$17,503,800	Normal Standard	$18,203,800	Post Disaster Standard ($700,000 addditional)
Underground Parking	$5,327,000	Normal Standard	$5,827,000	Post Disaster Standard ($500,000 addditional)
Site Development	$1,138,800	Esq.Ave./On-Site	$1,138,800	Esq.Ave./On-Site
			$759,200	17th Boulevard
			$200,000	Contingency for Unusual Geotech Conditions
Subtotal	$23,969,600		$26,128,800	
Total Construction Cost	**$25,422,600**	*% allowances*	**$28,941,800**	*% allowances*
Construction Contingency	$763,000	*3%*	$868,000	*3%*
Soft Costs	$4,322,000	*17%*	$4,920,000	*17%*
FF&E	$1,271,000	*5%*	$2,894,000	*10%*
HST	$1,271,000	*4%*	$1,505,000	*4%*
Relocation Cost Allowance	$100,000		$150,000	
Total Additional Project Costs	$7,727,000		$10,337,000	
PROJECT TOTAL (Q1-2011)	**$33,149,600**		**$39,278,800**	
Escalation Allowance (per year)	*$994,000*	*3%*	*$1,178,000*	*3%*

Explanatory Notes:

- Estimate is based on general comparable unit costs, taking into account the general configuration of the test concept - not at the level an actual or detailed architectural design. All values are subject to future scope and design decisions.
- Estimate assumes Q1-2011 tender; escalation allowance required for later construction at approx. 3% per year based on current forecasts.
- Cost range reflects assumptions as to variation in upgrade costs and site development scope.
- Construction costs include 10% design contingency. Other allowances are shown in the table.
- A provisional cost allowance for interim accommodation/relocations has been included based on using new facilities for swing space and nominal moving costs for furniture and equipment. This should be considered a minimum estimate pending further planning and analysis.

5.0 Conclusions

5.1 Conclusions

In response to the terms of reference for this study, conclusions have been reached on a number of key issues as follows:

Estimated Future Requirements

The estimated future requirements can be accommodated in a new Public Safety Building development that provides:

- **Staff.** A total of 265 staff FTE by 2036 based on provisional staffing estimates as described in the body of the report
- **Parking.** Accommodation for 219 vehicles for parking on site, 7 of which are designated non-standard stalls (subject to further consideration of staff parking stall allowances as noted below).
- **Area.** Based on assumptions noted in the body of report an estimated 58,100 gsf of additional facilities to the existing Municipal Hall site is required to accommodate a Public Safety Building and Fire Hall #1. This represents a complete space requirement of 91,910 gsf for all three organizations on the one site.

An integrated development will reduce the requirement versus separate developments by a minimum 2,500 gross square feet and will provide additional benefits of space assignment flexibility and the potential for improved delivery of public services. Consolidating some administrative support functions among the three organizations may also yield operating cost savings, however, these opportunities have not been examined at this stage of analysis.

Site Fit (Subject to...)

The analysis based on test concept leads to the conclusion that the program of requirements for a Public Safety Building can fit on the site subject to confirmation of the following:

- **Functionality** – That each of the organizations judge with confidence that it will be feasible to configure their operations into a building concept along the lines of the test concept, with refinement or modification as necessary.
- **Massing/Character** – That representatives of the community, Council, and City staff judge that the general massing illustrated by the test concept can result in a satisfactory character of site development with an acceptable interface to the existing City Hall building.
- **Use of R.O.W. Space** – That the incorporation of the Esquimalt Avenue R.O.W into the project site will be approvable by Council. The optional development of 17th Avenue as illustrated in the test concept is not an essential feasibility issue but may form part of the overall proposal.
- **Post-Disaster Standards** – That the requirements for a fully workable building meeting post-disaster standards can be achieved without compromising any of the issues identified above.

Estimated Project Cost

The preliminary cost analysis estimates indicate a total project cost of $33.2 million to $39.3 million depending on the seismic standards adopted and the scope of site work and upgrades to the existing building. Approximately $7 to $8 million dollars of the total project cost (18% to 20%) is associated with the provision of parking for staff, fleet, and visitors. Before the amount of structured parking is finalized in a development plan, consideration of alternate transportation strategies and policies with a view to reducing the number of parking stalls may be advisable. For reasons of sustainability, as well as a capital cost reduction, constructing parking spaces might be traded off against inducements toward carpooling, public transportation, bicycles, etc

5.2 Suggested Pre-Decision Due Diligence Follow Up

The consultants suggest that it may be prudent to undertake additional due diligence assessment relative to the following areas of residual uncertainty prior to a decision to consolidate all services and functions on one site.

Site Fit "Subject to" issues

The following actions are suggested for addressing the Site Fit "Subject to" issues noted above.

- **Functionality** – Assessment of the proposed development concept can be addressed through workshops with staff representatives of each of the three organizations. For this exercise it may be necessary to undertake additional consultation and prepare additional detail on critical areas/issues.
- **Massing/Character** – Discuss with the Committee their perceptions of acceptability of the visual massing and character for the consolidated facility on the site. Subject to the Committee conclusions, further analysis may be required.
- **Use of R.O.W. Space** - Discuss with the Committee the likelihood of obtaining support and approval for using the R.O.W. along Esquimalt Avenue to enhance vehicular circulation to the site and potentially reconfiguring 17th Avenue to create public plaza and boulevard space.
- **Post-Disaster Standards and Concept Workability** - Discuss with the Committee the level of concern. if any, regarding the feasibility of achieving functional and efficient layouts even with the measures required to achieve a Post Disaster structural standard in the new facilities. If deemed necessary by the Committee, explore potential strategies to achieve both functional and structural objectives using a structural analysis computer-modeling tool.

Cost Estimates

The cost estimates prepared during this study provide a provisional indication of the magnitude of capital costs associated with the proposed development. If a greater level of assurance is deemed desirable at this preliminary stage it may be worth considering undertaking the following tasks.

- Review parking stall policies
- Geo-tech study to clarify site conditions
- More detailed audit of existing building and refinement of scope definition for upgrade work
- Further engineering definition of new building systems
- Refinement of site development scope
- Review of contingencies and exclusions

Community/ Political Acceptance/ Endorsement	The scale and scope of the proposed project will ultimately need to be supported at the community and political level. If Council wishes to obtain an indication of community views before proceeding further, the test concept could be discussed with an Advisory Group representing key community stakeholders. However, given that potential impact on property taxes is likely to be high on the list of community sensitivities, it would probably be more productive to wait until the Local Area redevelopment study is completed.

B3

District of West Vancouver
Municipal Hall Site Consolidated Development Concept

Refinements to Preliminary Feasibility Study

Prepared by Cornerstone Planning Group
October 28, 2010

The following is a discussion of refinements to the Municipal Hall Site Consolidated Development Concept based on a review of the Preliminary Feasibility Report (September 10, 2010) and further planning discussions.

Response to Minor Issues from Review of Initial Report

There were a number of relatively minor residual issues from the review of the Preliminary Report. These are addressed below:

- Loading Bay Access: The diagrams illustrated access to the shared loading bay across the apron for the Fire Truck Bay - this is deemed to be unworkable. The loading bay has been rotated in the revised diagrams to avoid this problem. The parking access is affected but it is judged that the ramp slopes can be resolved.
- Parking on 16th: It was suggested that the angle-parking be illustrated on the west side of 16th. This has been added to the diagrams.
- Canopies: It was suggested that it would be desirable for rain protection over the path from at least a portion of the visitor parking to the main building entry (entries). This has been added to the diagrams.
- Esquimalt Edge: A larger scale concept section through the south edge of the proposed Esquimalt Avenue "vehicle service yard" has been added to illustrate a possible treatment of this aspect of the concept.
- Integrated Service Node Options: It is not within the current study scope to consider details of administrative operations, however, interest was noted during the study process in ensuring that the concept of an integrated public service node (or service "front door") be examined at the appropriate time. This concept could be considered at different scales, but in essence comprises the bringing together of some service functions from Planning, Engineering and Permits to a convenient location next to the main entry so as to improve public service delivery. Without resolving the direction that may be selected in the future, three options appear viable:
    - To relocate a portion of the existing functions on the upper ground level to the proposed Public Safety Building so as to release space for the service node
    - To pursue the same approach but on the lower ground level

- To relocate a portion of the existing functions on the lower ground level to the proposed Public Safety Building and also to develop a new two-storey "atrium" link between the existing and new building. This approach would require an increase to the total size of the new development (see discussion below under *additional expansion contingency*)

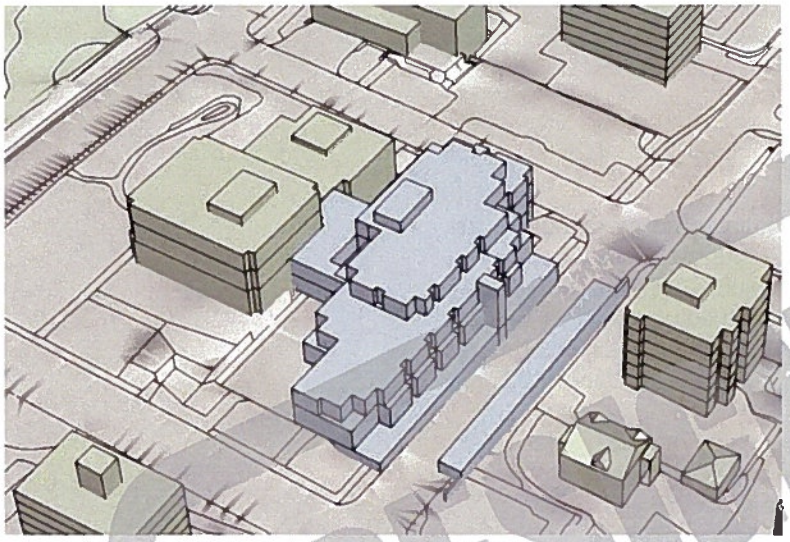
- In the Test Concept plan diagrams an option for locating the space for this function is illustrated on the lower main level; this utilizes proposed new atrium space in combination with space currently occupied by the staff lounge and Human Resource Department – these would be relocated. An alternative option could be to locate the service node on the upper main level; in this case displacing Finance or most of the current uses on the east side of the existing building. See additional discussion in the *Space Modifications* section under *Upgrades to the Existing Building* below.

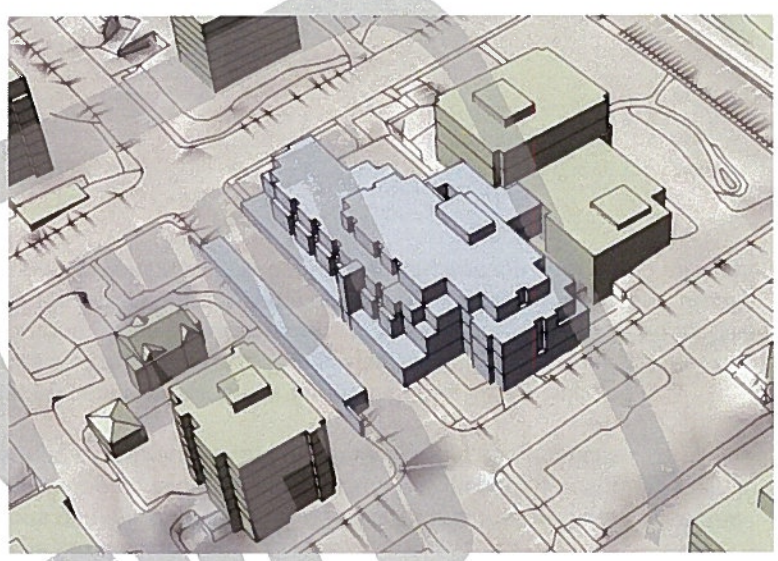
- Parking Assumptions: The Test Concept, and the related cost estimate, is based on the arrangement of structured underground parking for staff (and some service vehicles) and surface parking for visitor parking. The number of staff spaces is estimated on the basis of .5 spaces per staff, with no additional allowance for shift changes (assuming sufficient unused supply at these times). There are several reasons to suggest that additional analysis will be required at the detailed planning stages to finalize the parking numbers:
  - underground parking is very expensive, so measures of cost containment will undoubtedly focus on this issue;
  - one implication of the post-disaster standard structure can be expected to be a less efficient parkade design, compared to a normal standard building, as a consequence of the larger size of the structural elements and the higher requirement for regularity of the structural grid without the flexibility to transfer loads;
  - one of the consequences of a full sustainable practices review, that would be expected during detailed planning, is the consideration for alternate transportation strategies, in turn likely to result in a lowering of the regular parking development assumptions.

- Staging During Construction: The general concept assumes the new Public Safety Building is constructed first, followed by upgrades and renovations to the existing building. When completed, part of the new building can be used on an interim basis to decant areas of the existing that are to be modified. This will minimize the requirement for temporary accommodation such as portable buildings or off-site lease space. However, the existing on-site parking will be lost for the construction period and alternate arrangements will be required.

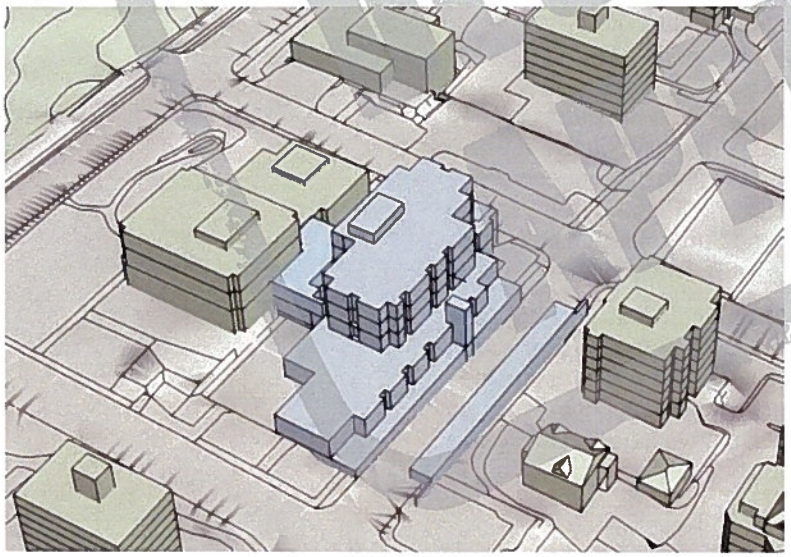
Proposed Public Safety Building Form of Development

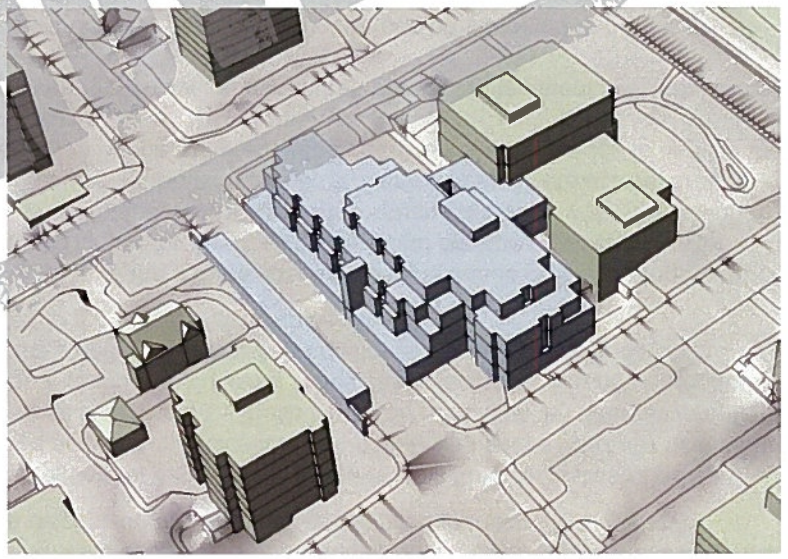
The computer model images below illustrate the general massing of the Test Concept for the proposed Public Safety Building in context, also illustrating one of the development options under consideration for adjacent District-owned properties.





Alternate massing with west side lowered and east side increased in height.





DRAFT

Scope Outline for Upgrades to Existing Building

The existing Municipal Hall building is over forty-five years old. At this age, conventional practice suggests it is prudent to undertake a major audit of the building systems with a view to determining their condition (and useful operating life) and to identify where repairs or upgrades are pressing, and/or where cost-benefit considerations would justify additional upgrades. Further, in the context of a major adjacent development, both additional imperatives and opportunities come into play. Within this study, an actual audit of the existing building has not been undertaken apart from the seismic structural analysis, therefore, the scope outline below should be considered as a set of assumptions that will require further analysis to confirm and refine. At an overall level, it is observed that:

- The existing building is in good condition, and there are no visible indications of building system failures.
- Cyclical maintenance appears to have been undertaken in a regular manner and many of the major systems have been upgrades over the past four to twelve years.
- Minor renovations have occurred as office and technology requirements have changed, but the changes appear relatively minor in scope compared to many buildings of this age.

The useful life of almost any building of reasonable initial quality can be extended indefinitely as long as timely cyclical maintenance is undertaken, as has been the case with the existing building. In general, extending the life of buildings is a sound component of sustainable practice. The upgrade scope assumptions (excluding minor items) are discussed below by element, with consultant recommendations for what should be considered essential versus optional (although desirable) in estimating the project budget. If the full scope of grades were implemented, it is reasonable to assume the material* building will be serviceable for another forty years although requiring some mid-life investment as do all buildings.
(* notwithstanding possible functional deficiencies that might argue for replacement),

Structural/Seismic Upgrade: The existing building has been assessed to be approximately only 20% compliant with the current BC Building Code requirements for a normal importance building. Voluntary upgrade is at the discretion of the jurisdiction having authority, ie. West Vancouver itself. However, in the context of adjacent development of a post-disaster classified building, as well as consideration of other public policy imperatives, it is recommended that upgrading seismic deficiencies is considered to be essential.

Essential:

- As described in the Preliminary Feasibility Report and the appendices to this report, it is considered that structural upgrade to the existing building will be an essential part of the work. This will include strengthening the walls of the existing stair cores and adding new sheer walls, in both cases tying these to the existing floor/roof plates and adding additional foundations. The cantilevered overhang structure also requires strengthening. In order to execute this work, damage will be caused to

Optional:

- Additional seismic restraint of non-structural elements (ceilings, major suspended equipment, furniture items more than 4 feet high etc.) is recommended for life safety, but may be considered optional (some of this restraint will be installed as part of the installation of a sprinkler fire suppression system).

some of the current finishes, which will then need to be made good.

Building Code Compliance Upgrade:

All buildings older than ten years or so tend to have some measure of non-compliance with current building codes as the latter are updated. In the case of the existing Municipal Hall there are obvious areas of non-compliance, for example the fire enclosure and other characteristics of the exit stairs. Also, the public washrooms do not fully conform to current accessibility code requirements, although they have been reasonably modified to meet the code's intent. It is likely a number of additional fire safety non-compliance issues would be identified in a full audit and a contingency budget has been included in the cost estimate. It is further assumed that a sprinkler fire protection system will be part of the scope of upgrade work.

Essential:

- All measures directly affecting life safety. Executing this work will involve:
  - replacing the doors to the stair cores, replacing (or modifying) the balustrades and handrails, adding contrasting nosings and tactile warning strips;
  - Adding some additional fire-rated GWB assemblies to achieve fire ratings, but the scope will be minor;
  - Modifying detection and alarm systems in conjunction with the sprinkler system installation
  - Modifying the annunciator panel so as to integrate with the new building.
- The installation of a sprinkler fire suppression system (note: this system will necessarily address the detection/alarm issues and in many cases is likely to serve as an alternate measure to address fire-rating deficiencies).

Optional:

- Additional measures to fully comply with accessibility design best practices

Hazardous Materials:

The only known hazardous material is low to medium hazard asbestos-containing materials, eg. VA floor tiles, original GWB and joint compound, original pipe lagging (most of which has been removed in HVAC upgrade).

Essential:

- Remove asbestos materials only in areas modified by project.

Optional:

- Test and remove all asbestos from balance of building.

Building Envelope Upgrade: (also see HVAC Upgrade)

Typical of buildings of its age, the existing building envelope does not conform to current standards with regard to insulation or air barrier measures. Envelope upgrades tend to show good investment payback, and as such, can be justified as being financed through operating cost reductions. As discussed further below, it has been assessed in previous work that envelope upgrade is a necessary precondition to adding central cooling to the HVAC system.

Essential:
- Repair existing external sunshade system

Optional:
- Replace exterior window and spandrel panels with new high performance system.
- Budget to replace main roof membranes and increase roof insulation within 5 years as part of cyclical maintenance regimen.

HVAC System Upgrade:

A major upgrade to the HVAC system was completed in about 2000. This included replacement to high-efficiency boilers, installation of a basic DDC system providing zone control using a VAV distribution approach. While some provisions were made for its later addition, the building does not have central cooling. At the time of the previous upgrade work it was concluded that adding cooling would not be effective without a simultaneous envelope upgrade; with even higher concern for energy efficiency today, that conclusion continues to apply.

Essential:
- DDC system (direct digital control) tie-in to new building – ie. at minimum it is recommended that the existing controls be upgraded to the degree required for site-wide coordination of system functions.

Optional:
- Integration with new building on heating side (eg. current boiler converted to back-up use with primary heat from new low-energy source in new building).
- Add integration including addition of central cooling (in conjunction with envelope upgrade).
- As the means of achieving an integrated maximally efficient full heating/cooling system, substitute a system such as chilled beams for the VAV system.
- Add heat recovery technology to any sub-option.

Plumbing Systems Upgrade:

The plumbing piping and fixtures are original. Piping over forty years old is getting to an age where some failure can be expected, and a (sample destructive) testing exercise would be prudent. However, piping of that vintage has often tested well (and seems to be of higher quality than some installations half that age). The expectation is that tests would reveal another twenty-five years of useful life. Current fixtures are showing signs of age and do not fully comply with current accessibility requirements.

Essential:
- Replace main water entry service.

Optional:
- Replace all (or most) fixtures with water-efficient types that comply with current accessibility code requirements.

Electrical and Lighting Systems

The electrical supply and lighting systems have been incrementally upgraded over past five years. Lighting is

Upgrade: at least to T-8 standard with electronic ballasts. The transformers have been refreshed and power distribution augmented with additional sub-panels.

Essential:
- No significant items identified.

Optional:
- Add local zone switching to levels 2 and 3.

IT Systems Relocation: IT systems by their nature require regular cyclical upgrade and there is nor reason to assume that the existing is significantly deficient. However, in the context of the proposed adjacent development of the Public Safety Building, it is recommended that the central IT system facility be relocated to the new post-disaster structure to ensure its functioning in the aftermath of a major event.

Essential:
- Develop new central IT facility in new building and connect back to existing building network.

Optional:
- Covered by cyclical maintenance regimen.

Other Building Systems Items: Some other deficiencies have been noted, for example, minor ground water penetration at the basement level of the SW stair core.

Essential:
- It is recommended that a more complete building condition audit be included as an early task at the early design stage.

Optional:
- This analysis assumes the contingencies in the cost estimate will cover necessary unidentified work.

Space Plan Modifications: Since the existing building is fully occupied, and most departments are estimated to experience some incremental growth over the planning period, the strategy for physically accommodating growth typically involved developing some new space plus undertaking a range of minor changes to "shuffle" the use in the existing space. A common strategy is to move a few total operations out of the existing space to release space for others to grow; the space modifications for the latter may be spread out over a number of years. In the test concept it appears to make sense to move the functions on the lower main level to new locations (Human Resources, Staff Lounge (to be shared) and all or part of IT). It is recommended that the consequential scope of space modifications (often referred to as "churn") be carried within the project budget. The recommended essential scope is as shown below; and, given uncertainty at this stage of the planning, an additional optional scope is suggested also.

Essential:
- Allow for approximately 5,000 sf of space modification renovations.

Optional:
- Add contingency allowance for an additional 2,500 sf of space modification renovations.

Post-Disaster Standards and Strategies

In the event of a major disaster event, the proposed West Vancouver Public Safety Building would provide an operations role in concert with the North Shore Emergency Operations Centre. Based on input from Dorit Mason, Municipal Emergency Coordinator, it is recommended that the proposed Public Safety Building be planned to accommodate only emergency services operations, and a temporary centre for municipal government (with the inclusion of certain key staff such as engineering (utility systems related) personnel) in the aftermath of a disaster event, and not be conceived to accommodate a wider range of social/community services. There is not enough space in the concept to accommodate public assembly nor should the general public be brought into the midst of emergency operations. The building should be planned to function with a reduced core of operations (likely requiring approximately one-third of the total space) for a period between one to two weeks relying only on its own resources. Within this core area, selected spaces should be planned for conversion to emergency uses, for example, training rooms converted to Council and key staff working space. Specific special requirements include:

- Design and construction of the entire structure to post-disaster standards
- Scalable building services settings (reduced lighting, HVAC, etc.)
- Emergency power (generator and fuel supply) installed with the appropriate capacity
- Central IT system facility with required power and local network
- Secure communications tower
- Sufficient capacity for storing emergency operating supplies
- Potable water and food supply storage for emergency personnel
- Conversion kits for toilets (to be used without sanitary drainage system).

Ambulance Service Option

BC Ambulance Service currently operates a satellite facility from a rented property owned by the District of West Vancouver on Fulton Avenue, a site that the District plans to sell for development. Based on a discussion with the BC Ambulance Services Region Superintendent and District Fire Chief, BC Ambulance Service has indicated that it would serve their medium to long term plans to maintain a facility in the central area of West Vancouver. The minimum requirement is for two ambulance vehicle bays and a staff facility of approximately 500 sf.

The Test Concept exercise has led to the conclusion that the Public Safety Building proposal is feasible but is a very tight fit on the site area south of the existing building – the site area available with the decision to maintain the existing building. In principle it appears that it would be technically possible, although somewhat problematic, to displace some area at grade (termed Basement level in relation to the building) that is currently identified for Police and Fire Department uses so as to accommodate the Ambulance staff area. The displaced space would need to be replaced in a different location.

In addition, two covered bays for the ambulance vehicles and one for the displaced Police Mobile Station vehicle would need to be added to the structure on the south side of Esquimalt. For urban design (massing) reasons this added covered storage may prove undesirable, in which case two or three fleet vehicles would need to be accommodated in the underground parking structure to compensate. In either case, the storage movement of emergency vehicles will be rendered more complex, in addition to which there are likely to be other operational complexities.

In summary, it is assessed that the feasibility of this proposal is qualified – it is likely to be technically possible, but also likely to impose additional development and operational complexity to a concept that is already challenging. If this option were incorporated in the proposal, the estimated project cost for this additional component is at least $315,000 (unescalated).

Archives and Art Storage Option

Depending on the larger District property management strategy, the existing facilities accommodating the District Archives and Art Collection Storage may be displaced and require a new location – the proposed Public Safety Building is a potential option. The preliminary estimate of space requirements is approximately 1,000 sf. for the Archives and 3500 sf. for the Art Collection for a component area total of 4,500 sf. Allowing 18% as a grossing factor, approximately 5,300 gsf of developed space would be required, with a significant portion of this space being provided with a high standard of climate control.

The Test Concept illustrates that the site area south of the existing building is tight for accommodating the identified public safety service operations, and there is not sufficient space to be converted in the existing building. In order to accommodate these additional uses on the site it likely will be necessary to develop below grade space, either north of the existing building, or at a deep level, at or below the parking structure, beneath the proposed Public Safety Building. Both options would be relatively expensive and the former would compromise future development flexibility.

It is recommended that, if possible, an alternate location be considered for these uses.

Fifth Storey Option (additional expansion contingency)

The estimated facility program requirements in the Preliminary Feasibility Report (September 10, 2010), and reflected in the Test Concept, consider a planning time frame to 2036. The space provision for future operational growth compared to the normalized current requirement is approximately 16% for Municipal Hall and 21% for Police, equivalent to 0.6% and 0.8% annually respectively; Fire remains constant. The issue has been raised as to whether it would be prudent and cost-effective to develop an allowance for expanded future requirements, nominally by adding an additional (fifth) storey to the concept.

As noted above, the Test Concept illustrated in the Preliminary Feasibility Report shows that accommodating the estimated requirements for the proposed Public Safety Building on the site area south of the existing Municipal Hall is tight, and in order to be feasible requires use of the Esquimalt Avenue R.O.W. for a vehicle service area. The contemplated massing will require modulation (stepping in plan and section) to achieve a scale compatible with the neighbourhood's context and relationship to the existing building. Further, the test shows that the Police Department accommodation will be spread over four building levels and that designing for suitably secure/separated circulation, while possible, will be a challenge. Significantly increasing the amount of flexible expansion space will exacerbate the difficulty of the development – adding the space at the main level will further fragment Police space: adding the space on an upper storey will make the circulation (and hence building efficiency) problematic as well as adding difficulty to the massing scale issue.

If expanded flex/growth space is desired, it is recommended that it be sized on the basis of the additional floor space that could be reasonably obtained by maximizing the floor plate size of the main levels. A preliminary assessment based on the Test Concept suggests that:

- A reasonable massing could be maintained while increasing the gross developed area from the estimated requirement of 56,000 gsf. to approximately 59,900 gsf. - an increase of 3,900 gsf. or 7%.
- The base scenario assumes a link at the upper main level only (with an open breezeway below on the lower main level). If the lower ground floor were enclosed so as to achieve a double height (atrium-like) space with service functions located at the lower level, then the gross development could be increased by an additional approximately 2,500 gsf. - combined with the option above, providing an overall increase of 6,400gsf or almost 12%. (Note; the 2,500 gsf. option could be pursued independently of the 3,900 gsf. enlargement described above).

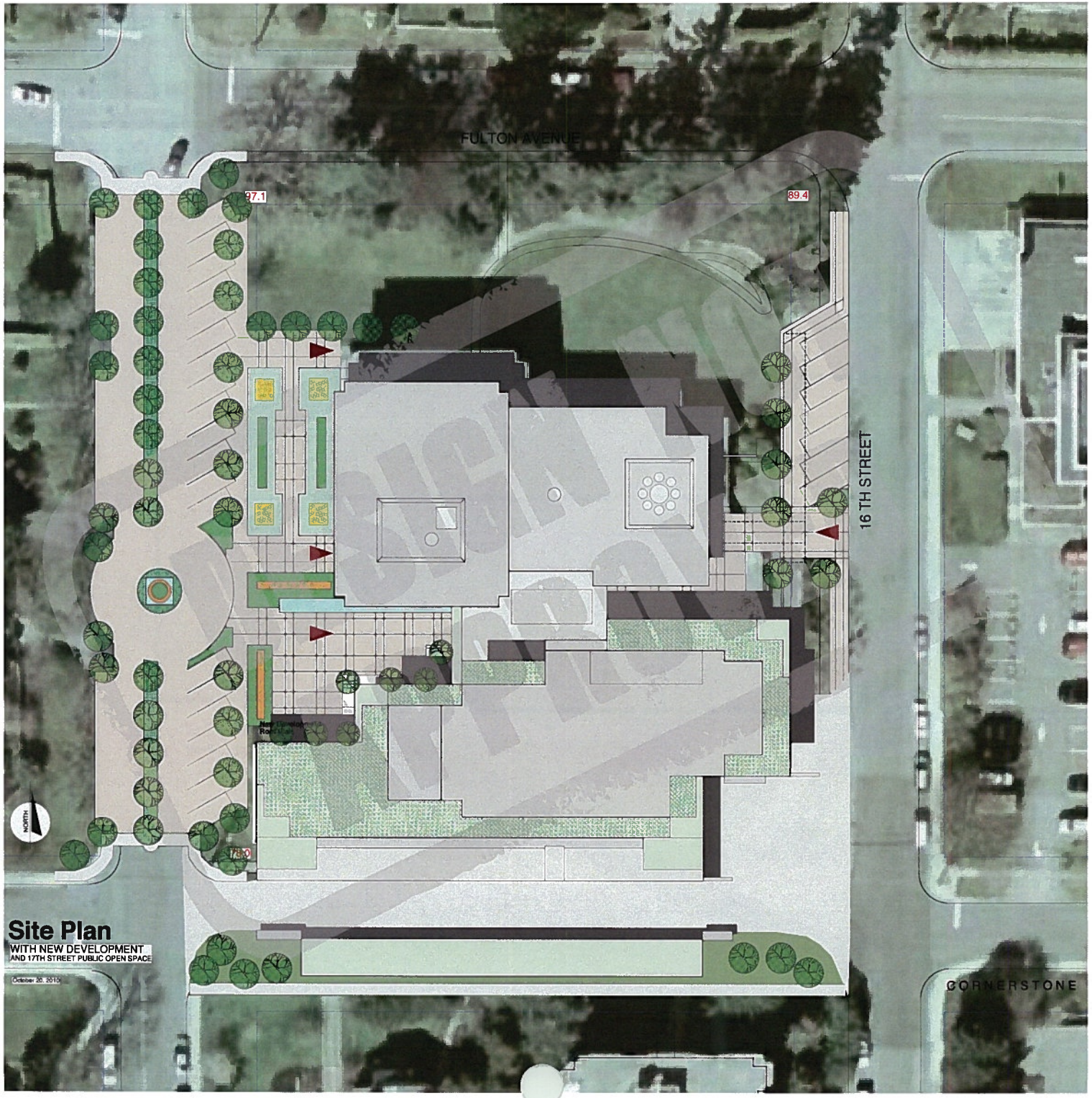
Updated Cost Estimate
Prepared by Altus Group

Q1 - 2011 Costs October 28, 2010		**Essential Scope**	**Optional Scope**		*Combined Total*
Public Safety Building @ 56,000gsf		$18,606,400			*$18,606,400*
U/G Parking Structure		$5,827,000			*$5,827,000*
Site Development		$2,100,000			*$2,100,000*
Contingency for Geotechnical Conditions		$200,000			*$200,000*
Add Ambulance Service			$250,000		*$250,000*
Expand Growth/Flexibility Capacity +3900gsf			$877,500		*$877,500*
Expand Growth/Flexibility Capacity +2500gsf			$637,500		*$637,500*
Subtotal		**$26,733,400**	**$1,765,000**		*$28,498,400*
Existing Building Upgrades:					
Structural/Seismic Upgrade		$1,443,000	$160,000		*$1,603,000*
Building Code Compliance (incl.Sprinkler) Upgrade		$250,000	$140,000		*$390,000*
Hazardous Material Remediation		$100,000			*$100,000*
Building Envelope Upgrade		$80,000	$1,050,000	*	*$1,130,000*
HVAC System Upgrade			$350,000	*	*$350,000*
Plumbing Systems Upgrade		$250,000	$120,000		*$370,000*
Electrical and Lighting Systems Upgrade			$230,000		*$230,000*
IT System Relocation		$95,000			*$95,000*
Space Plan Modification		$250,000	$125,000		*$375,000*
Subtotal		**$2,468,000**	**$2,175,000**		*$4,642,999*
Total Construction Cost		**$29,201,400**	**$3,940,000**		*$33,141,399*
Additional Project Costs:					
Relocation Costs Allowance		$150,000	$350,000		*$500,000*
FF&E	10.0%	$2,920,100	$394,000		*$3,314,100*
Construction Contingency	5.0%	$1,459,800	$197,000		*$1,656,800*
Soft Costs	17.0%	$5,486,200	$796,200		*$6,282,400*
HST	4.0%	$1,568,700	$227,100		*$1,795,800*
Subtotal		**$11,584,800**	**$1,964,300**		***$13,549,100***
Total Project Cost		**$40,786,200**			
Potential Total Optional Additions			**$5,904,300**		*$46,690,500*

* Note: Operating cost savings would offset these capital cost items

Appendices

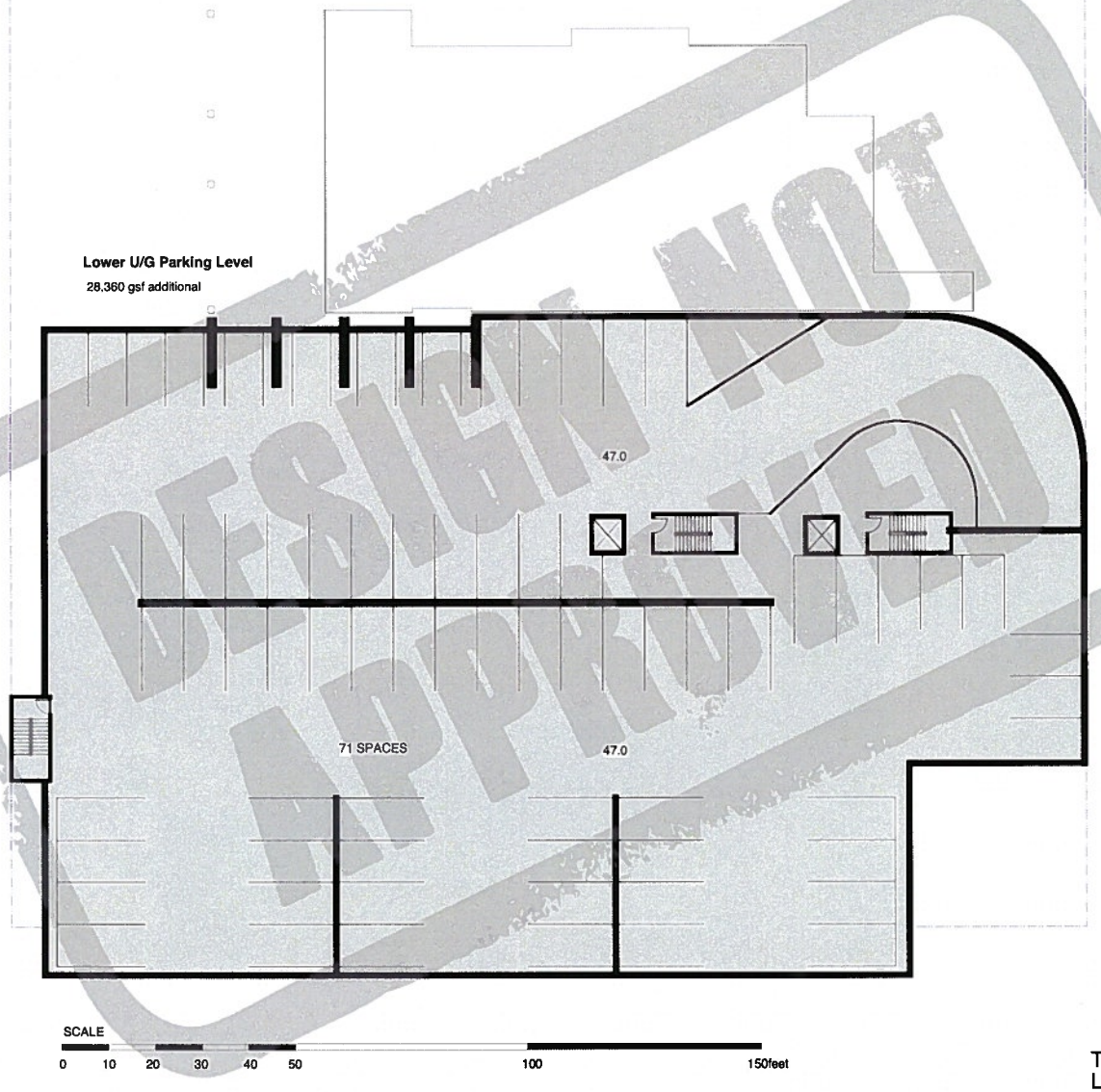
Test Concept Drawings
Structural Report – Bush Bohlman and Associates
Cost Report – Altus Group



Site Plan

WITH NEW DEVELOPMENT
AND 17TH STREET PUBLIC OPEN SPACE

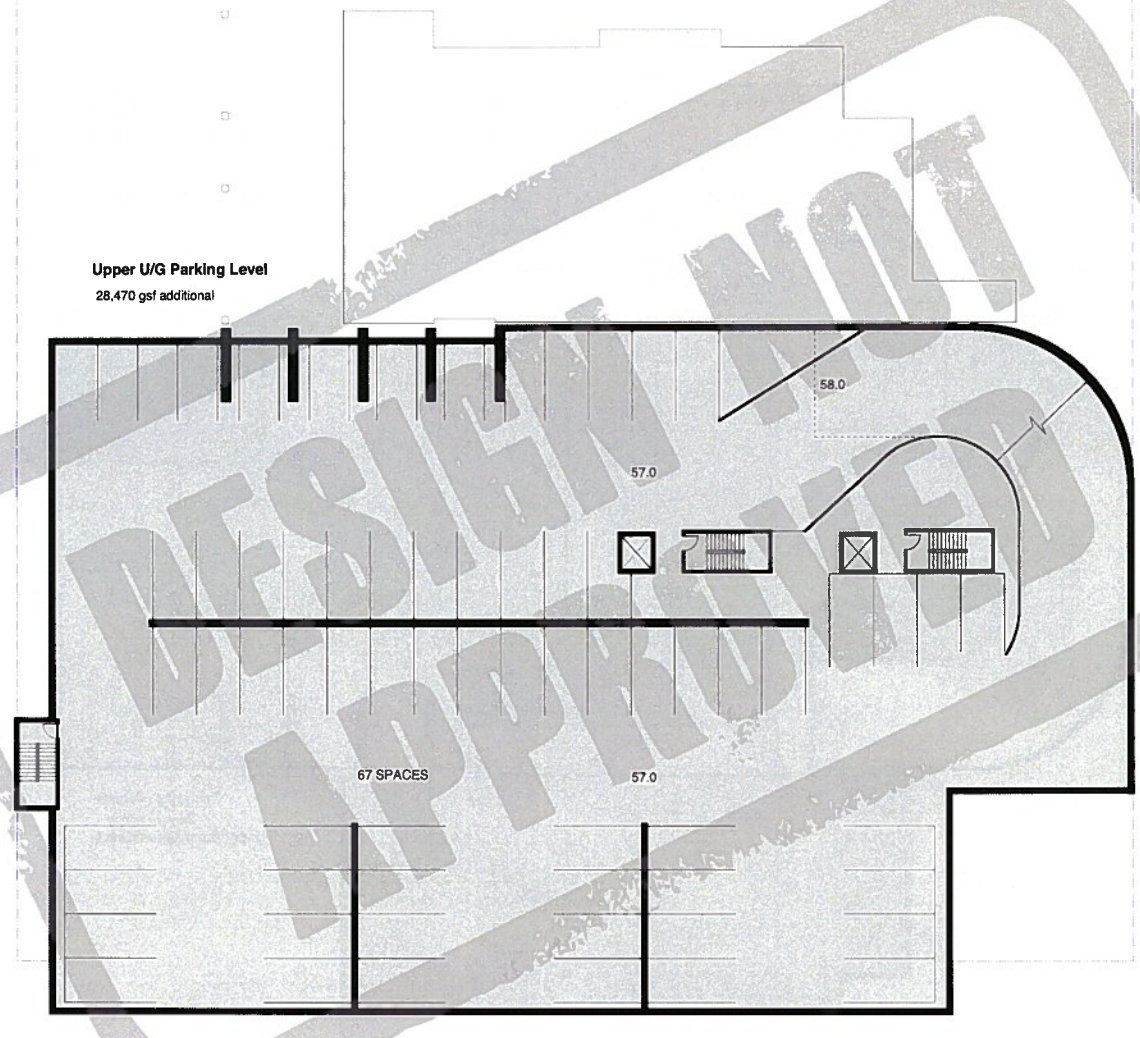
October 20, 2010



DESIGN NOT APPROVED

TEST CONCEPT
LOWER PARKING LEVEL

October 20, 2010
CORNERSTONE



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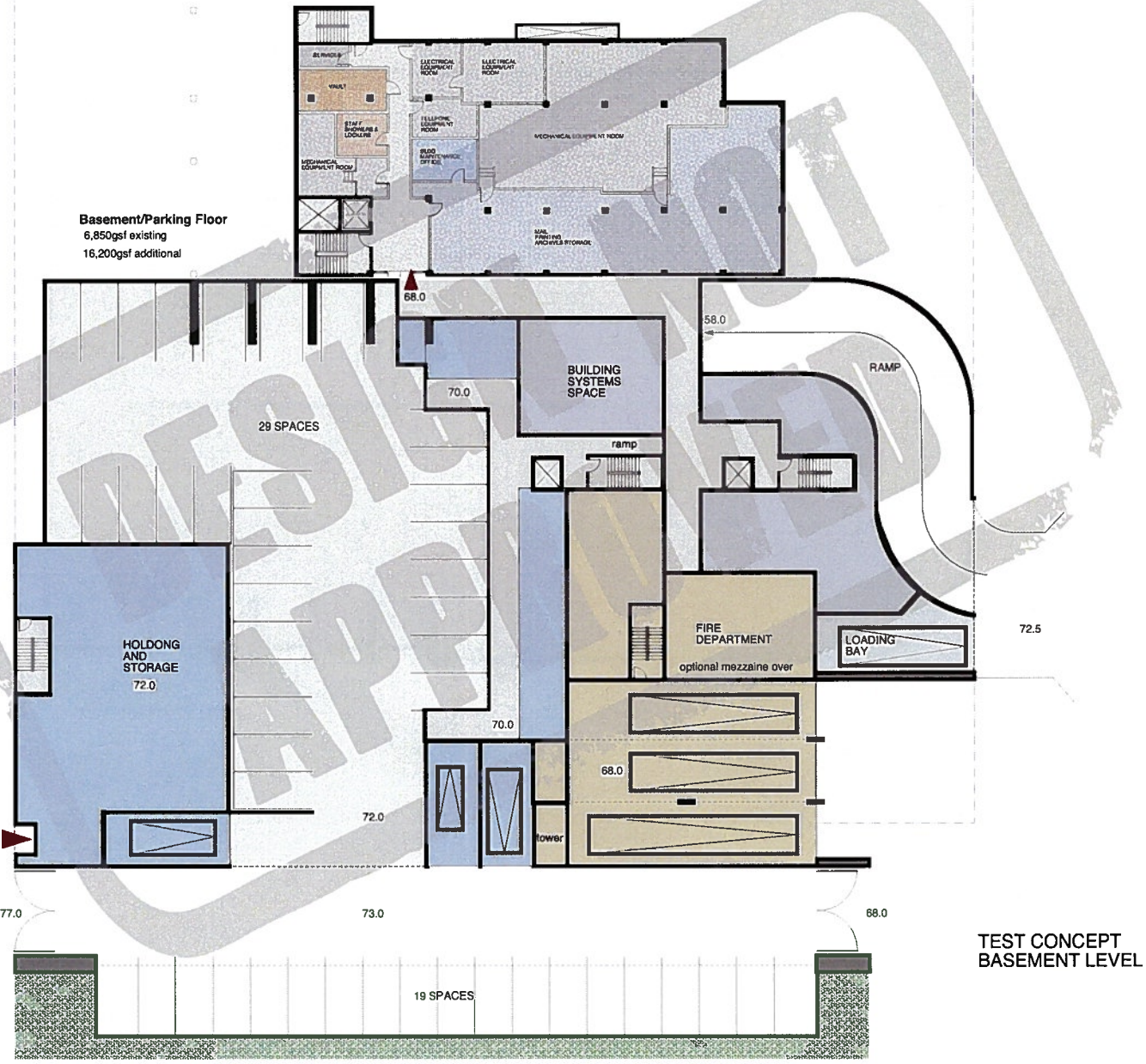
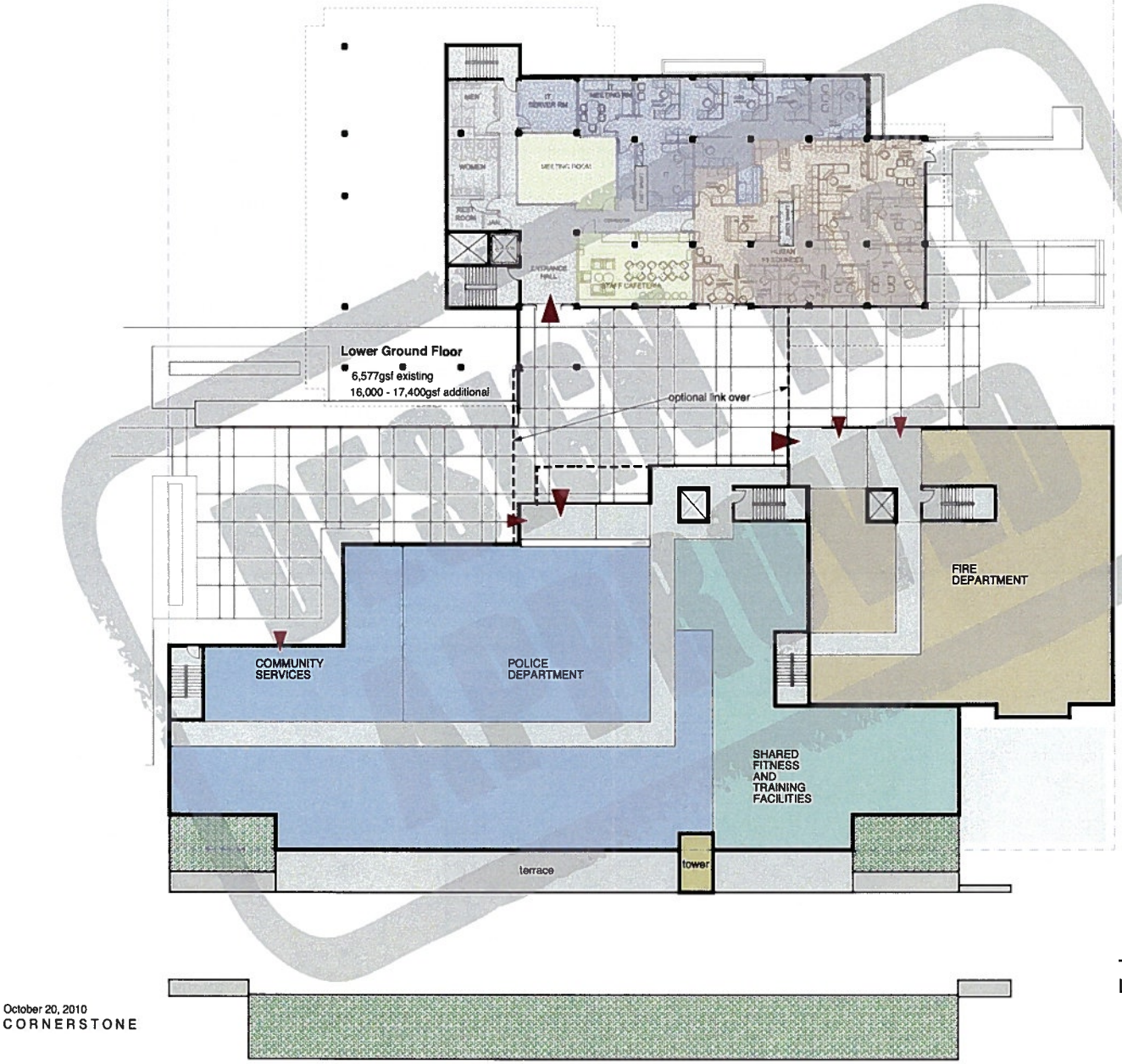
TEST CONCEPT
UPPER PARKING LEVEL

October 20, 2010
CORNERSTONE



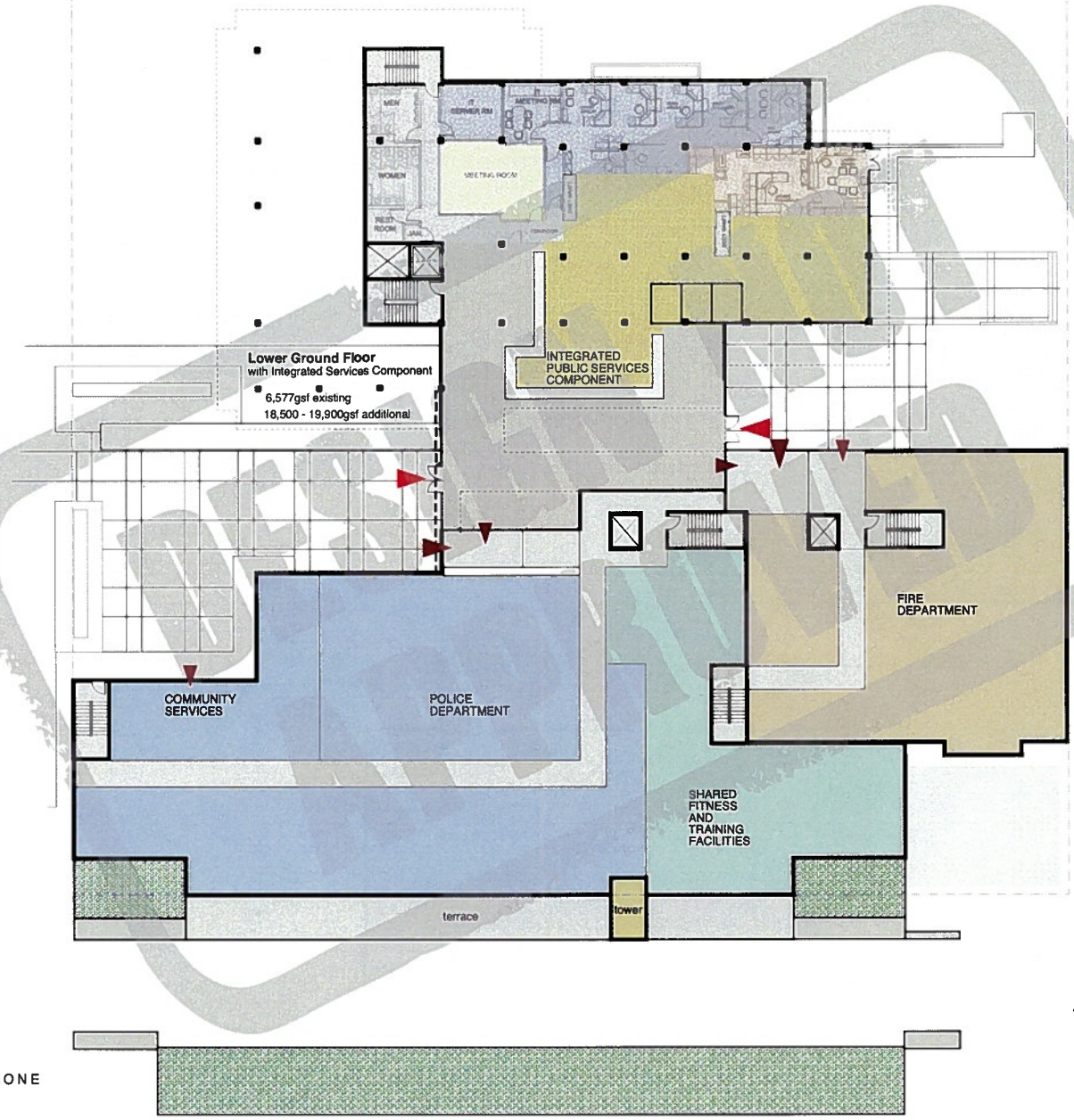
TEST CONCEPT
BASEMENT LEVEL

October 20, 2010
CORNERSTONE



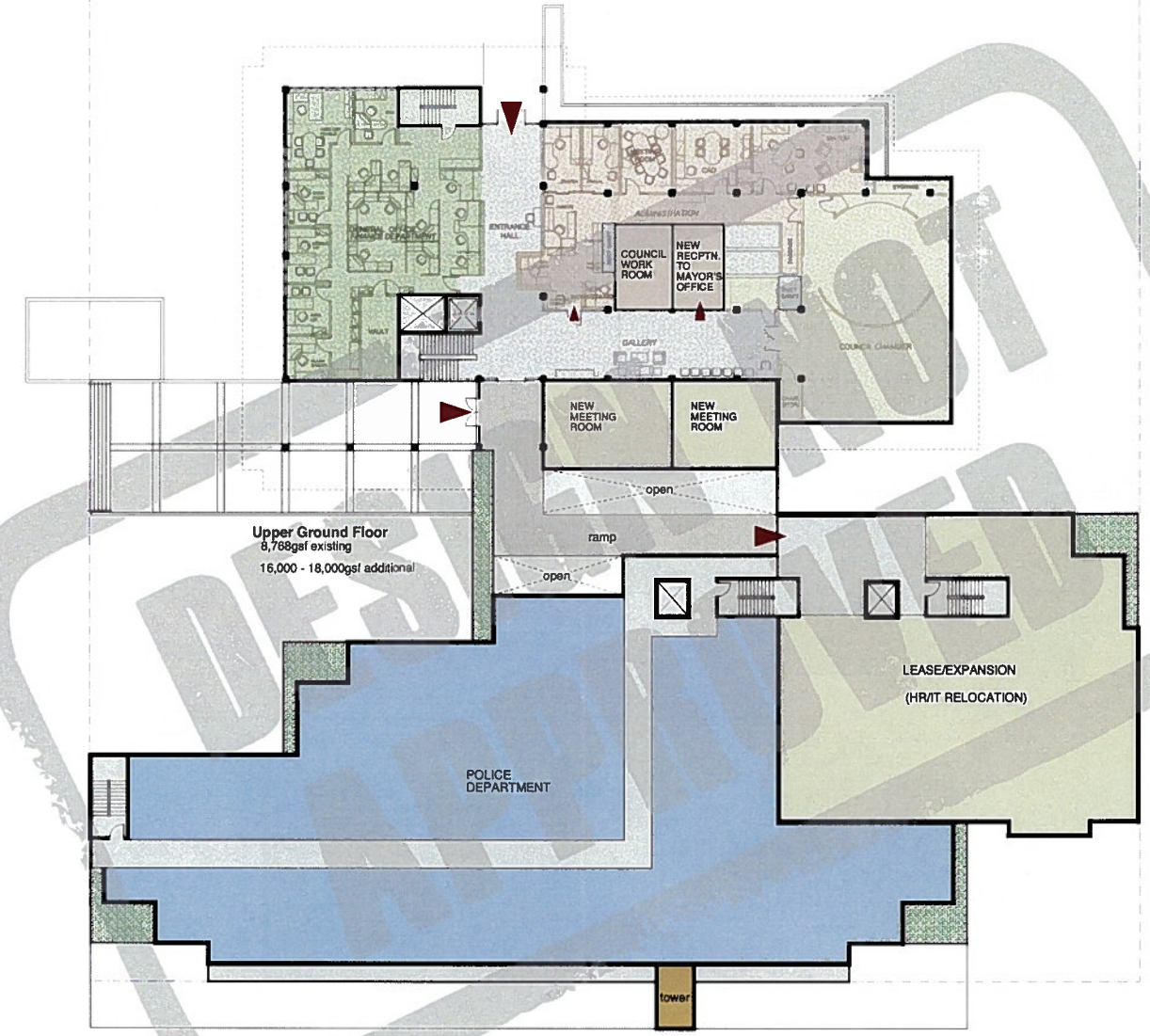
TEST CONCEPT
LOWER GROUND LEVEL

October 20, 2010
CORNERSTONE



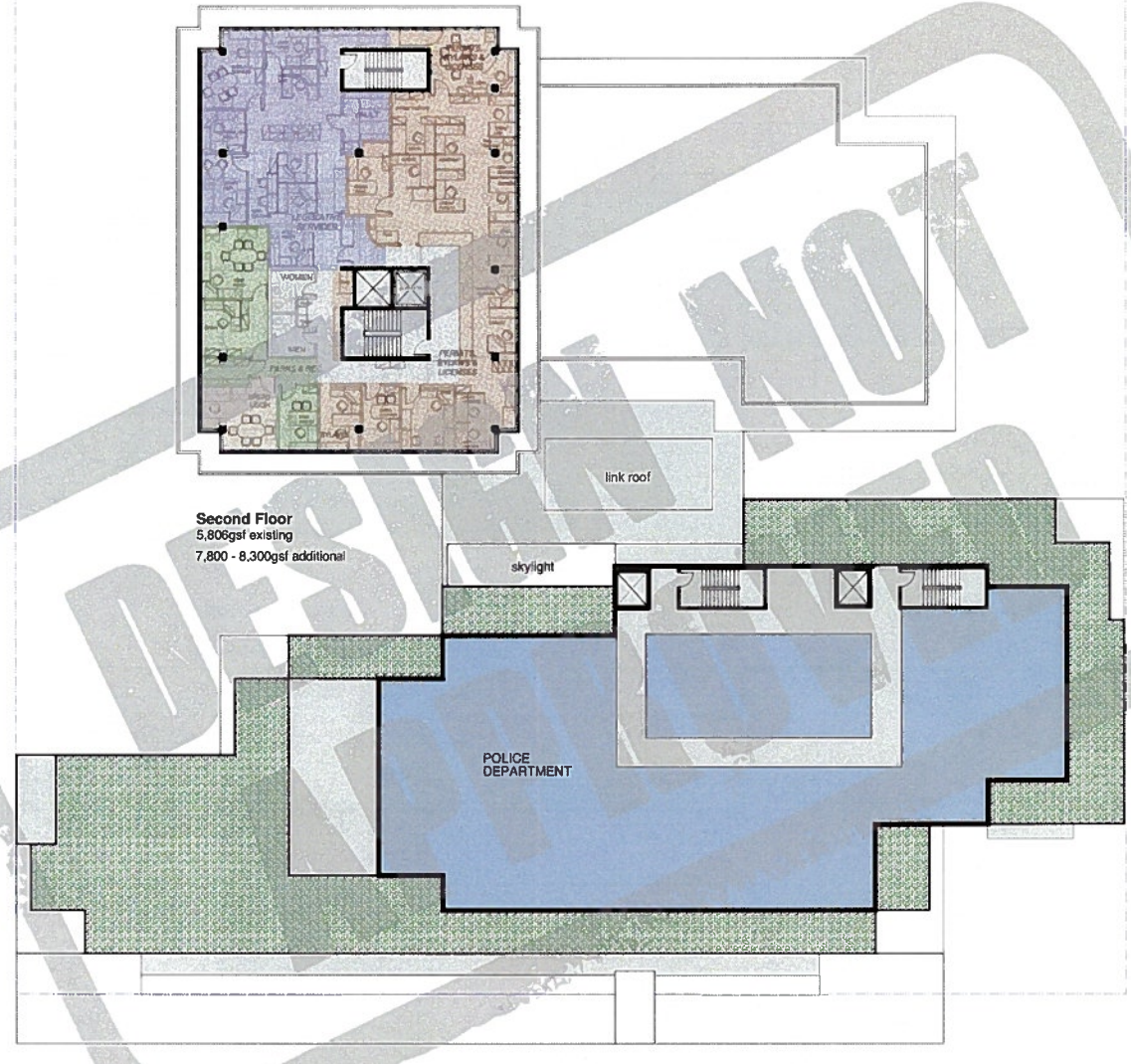
TEST CONCEPT
LOWER GROUND LEVEL
WITH INTEGRATED SERVICE NODE

October 20, 2010
CORNERSTONE



TEST CONCEPT
UPPER GROUND LEVEL

October 20, 2010
CORNERSTONE

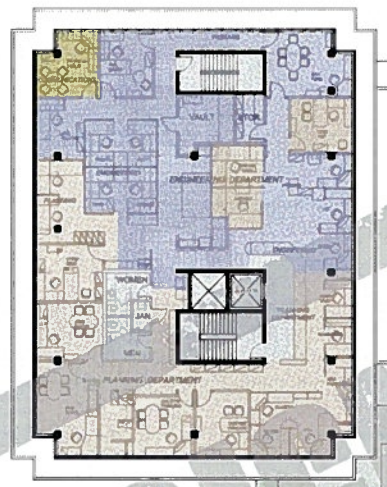


Second Floor
5,806gsf existing
7,800 - 8,300gsf additional

DESIGN NOT FINAL

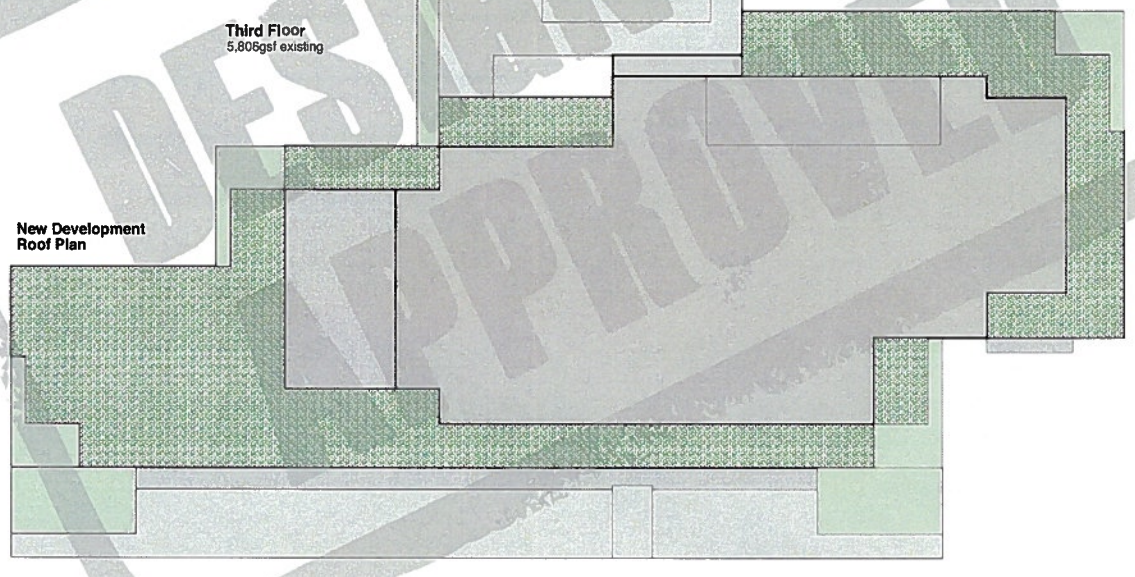
TEST CONCEPT
SECOND LEVEL

October 20, 2010
CORNERSTONE



Third Floor
5,806gsf existing

New Development
Roof Plan



TEST CONCEPT
THIRD LEVEL

October 20, 2010
CORNERSTONE

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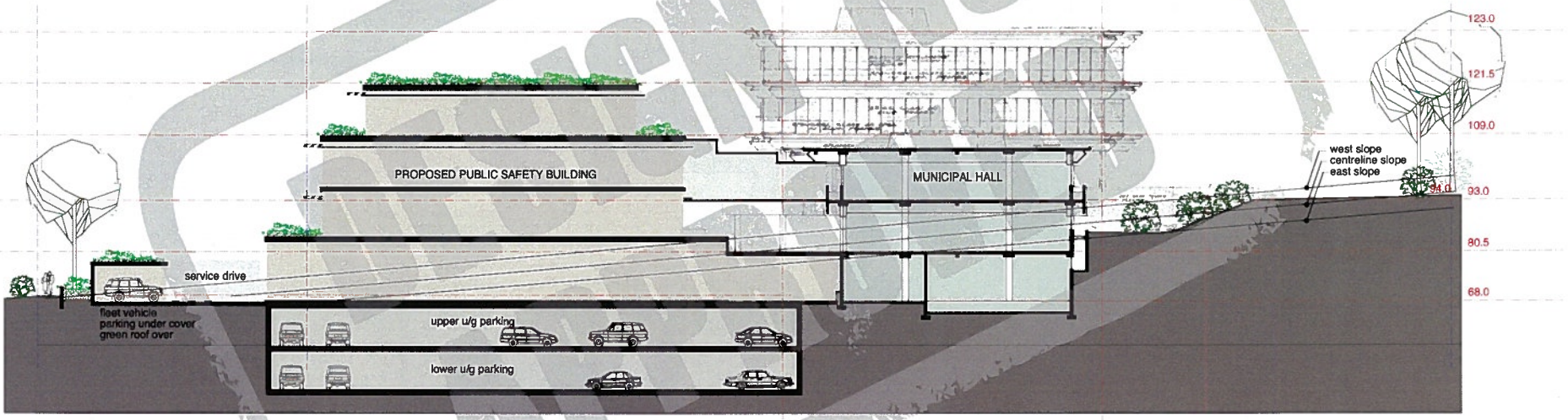


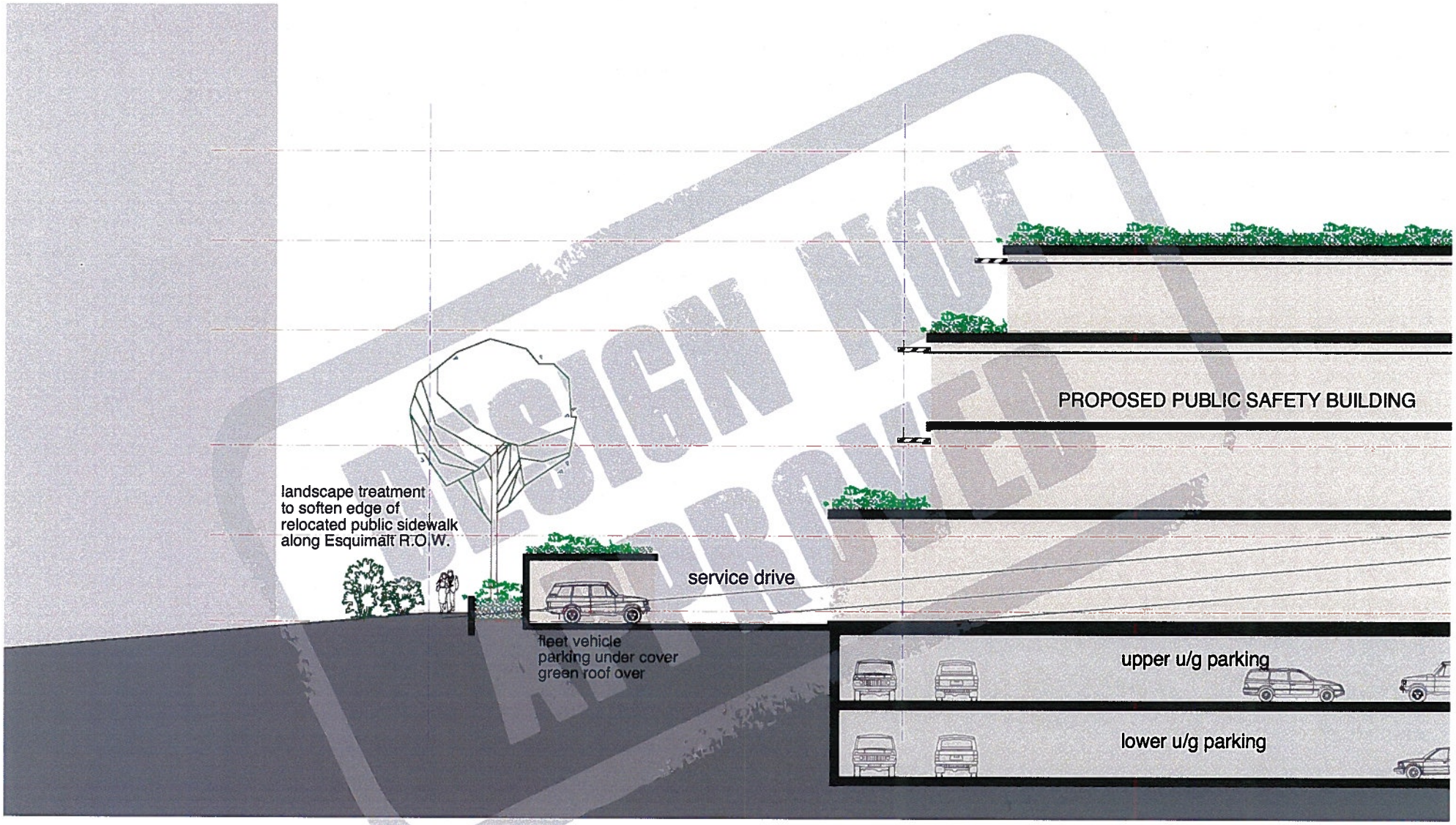
North-South Section
WITH NEW DEVELOPMENT

SCALE

0 10 20 30 40 50 100 150feet

October 20, 2010
CORNERSTONE

CHECK NOT APPROVED



DESIGN NOT APPROVED

North-South Section
WITH NEW DEVELOPMENT

SCALE

0 10 20 30 40 50

APPENDIX C

Summary of Pros and Cons of Including Fire Hall No. 1 in the Public Safety Building

1. Attached to this Appendix C is the memo from Cornerstone Planning Group entitled "Alternate Fire Hall Development Options Review" which sets out an analysis of the following options together with the estimated development costs for each option:

   - Proposed Concept: Relocate Fire Hall to Public Safety Building with Fire Hall No. 1 site available for alternative use as determined by the Municipality;
   - Option A: Leave Fire Hall on existing site and perform seismic upgrades; or
   - Option B: Relocate Fire Hall to Public Safety Building and use Fire Hall Site for parking for the Public Safety Building.

2. The merits of the above have been summarized in the Cornerstone memo. This Appendix C supplements the Cornerstone memo and sets out a more detailed analysis of the advantages and disadvantages of the Proposed Concept (i.e. relocate Fire Hall to the Public Safety Building with Fire Hall site available for alternative use).

3. The Proposed Concept has several practical benefits as summarized below:

   - The additional cost of approximately $5 million of including the Fire Hall is outweighed by the benefits, particularly if it were decided that the existing Fire Hall site be sold for redevelopment. If the Fire Hall site were sold for redevelopment, it is anticipated that there would be a net gain as the value of the Fire Hall site is likely to exceed the $5 million cost of the Fire Services component of the Public Safety Building.
   - As mentioned in the attached Cornerstone memo, after carrying out seismic upgrades to the Fire Hall ($1.4 million), and factoring in the costs of temporary accommodation during the seismic upgrades, it is anticipated that there would not be a significant saving by retaining the Fire Hall on its existing site. The cost and feasibility of performing seismic upgrades while keeping the Fire Hall operational needs to be studied further.
   - The Fire Hall is not constructed to a post-disaster standard and is likely to fail in a major seismic event. Incorporating the Fire Hall into the Public Safety Building would allow a new post-disaster

building which would outperform even a seismically upgraded Fire Hall.

- A new Public Safety Building would have a useful life of around 50 years, whereas the existing Fire Hall is already 45 years old. Seismic upgrades in themselves would not extend the useful life of the 45 year old Fire Hall. Furthermore, operating and maintenance costs of the Fire Hall would substantially exceed those of the Fire Hall component of a new energy efficient Public Safety Building.
- Even if seismic upgrades were performed, the Fire Hall would remain deficient in numerous aspects that would be rectified by a new Public Safety Building including: inadequate (less than 30 centimetres) clearance between the top of the ladder truck and the lowest beam in the apparatus bays; lack of sprinkler systems; presence of hazardous building materials; insufficiently reinforced plumbing and inadequate electrical systems; and other elements which do not comply with the current BC Building Code.

4. The potential disadvantages of incorporating Fire Hall No. 1 into the Public Safety Building include:

- If the Fire Hall is incorporated into the Public Safety Building and the Fire Hall site is not sold for redevelopment, there will be an increase in the total funds required for the Public Safety Building project of approximately $5 million.
- The design constraints for the Public Safety Building increase due to the increased complexity of incorporating the Fire Hall into the Public Safety Building.
- The physical size of the Public Safety Building will be larger if the Fire Hall is included which will result in a bigger "bulk/massing" for the Public Safety Building.
- There is a concern about having both Fire and Police in a single building as opposed to separate facilities in the event of a major disaster. This argument is valid if both facilities are post-disaster standard, which is not the case in the current situation. This argument is also stronger where the two facilities are some distance apart, so that a localized disaster does not affect the other facility located further away. In the present situation, if the Fire Hall were to remain on its current site, it would be directly across the street from the Public Safety Building.

CORNERSTONE planning group
204 – 1551 Johnston Street Granville Island Vancouver BC V6H 3R9 fax 604 684-6201 phone 604 687-5896
www cornerplan.com

MEMO

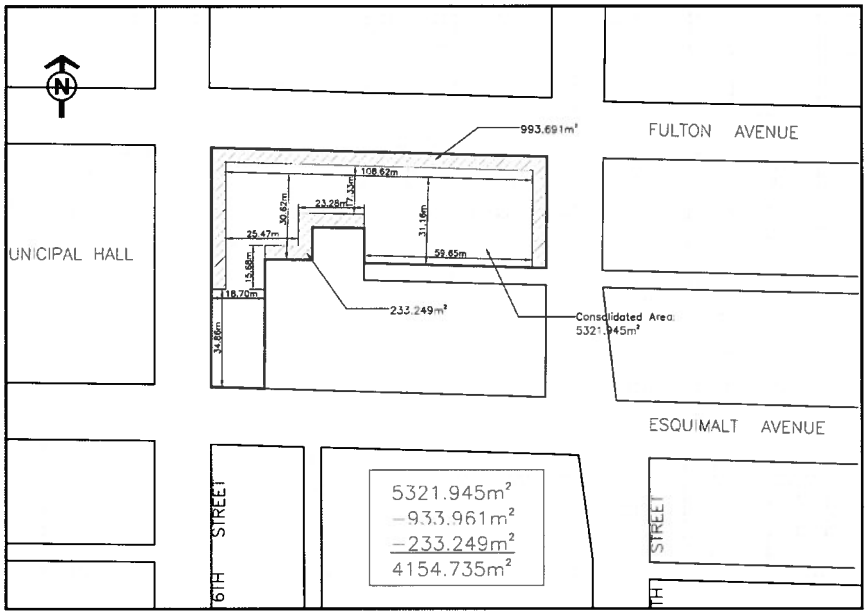
To: Bob Sokol and Mark Chan

Regarding:
West Vancouver Public Safety Building Project

Alternate Fire Hall Development Options Review

September 28, 2011

Existing Fire Hall Site Plan



The proposed concept for the Public Safety Building (PSB) project envisions the Police Department and Fire Hall #1 being located with the Municipal Hall on the existing Municipal Hall site. The Fire Hall property could then be available for development, holding or other use as determined by the Municipality. To explore possibilities for reducing the cost of the PSB, the City requested that two alternate development options be examined.

Option A: Leave Fire Hall #1 on Existing Site

In this option the Fire Hall would be left on its current site and would thereby reduce the size and costs of the PSB. To make this option comparable to the consolidated PSB concept, the existing Fire Hall #1 would need to be structurally upgraded to a post-disaster structural standard. This would require addition of steel bracing to walls, reinforcement of the roof, and other remedial measures. While the seismic capacity would be upgraded to a post-disaster level it would not be as effective as it would be in a totally new facility like the PSB. Undertaking the construction with the Fire Hall remaining operational would significantly increase the costs due to factors such as: smaller sub-projects; limitations on work times; daily reconfigurations of protection for equipment; more frequent clean-ups; and extended periods for heating and drying of plaster and paint. If any hazardous materials were discovered, the building would need to be vacated until the material is properly disposed of. The noise, fumes, and intrusions on operable space would also compromise the effectiveness of Fire service operations. In the circumstances, keeping the Fire Hall operational during the upgrades is not recommended.

If it is determined that the Fire Hall will not remain operational during the upgrades, relocation will be necessary. It may be feasible to phase the upgrades while relocating parts of the Fire Hall crew, staff and equipment to the south parking lot of the Fire Hall (with the administration staff relocated at a later time). This strategy would need to be studied further to examine costs and potential operational issues and to determine if it is feasible. A phased approach would increase the duration and expense of the upgrades and would also incur costs for temporary relocation. If a complete relocation to another site were required, the costs would be substantial. Due to the required response times, any off-site location would need to be within the same general geographic area, which could make the availability of an alternative site questionable. For these reasons, the Development Cost Comparison table below under Option A provides "To be determined" for the cost of the Fire Hall Temporary Relocation.

Option B: Relocate Fire Hall to PSB and Use Fire Hall Site for PSB Parking
In this option the Fire Hall would remain in the PSB. The existing Fire Hall building would be demolished and the property would be used for PSB and Municipal Hall parking. The objective is to reduce the cost of the PSB by using the Fire Hall site for parking and thereby eliminate the need for two levels of underground parking that were included in the preliminary PSB development concept. Although the site could be configured to accommodate the required 138 surface parking stalls, it is unlikely that such a low-density land use would be considered appropriate for this site. A large surface parking lot would also not likely be considered a compatible land use given the nature of the surrounding area. However, a multi-storey parking garage could provide sufficient parking and still leave a substantial portion of the land available for other uses.

Development Cost Comparison

	Public Safety Building	**Option A**: Retain Fire Hall on Existing Site	**Option B1:** Surface Parking on Fire Hall Site	**Option B2:** Multi-Level Parking on Fire Hall Site
PSB Development Cost	$39.5	$34.2	$31.1	$31.1
Fire Hall Structural and Interior Upgrade	$0.0	$1.4	$0.0	$0.0
Fire Hall Demolition and Parking	$0.0	$0.0	$1.7	$6.1
Fire Hall Temporary Relocation	$0.0	To be determined	$0.0	$0.0
TOTALS	**$39.5**	**$35.6**	**$32.8**	**$37.2**
	Possible Savings	*$3.9*	*$6.7*	*$2.3*
	Feasibility	*Not Recommended*	*Unlikely*	*Moderate*

In **Option A,** the size of the PSB is reduced due to the exclusion of the Fire Hall. After factoring in the cost of the seismic upgrades, the Total Development Cost of the PSB would be reduced by $3.9 million. If the Fire Hall remains operational during the upgrades, the cost and time for the upgrades would increase from the current $1.4 million. In addition, the cost of the Fire Hall Temporary Relocation would need to be added back. In summary, Option A would provide that the Total Development Cost of the PSB would be reduced by $3.9 million, but the cost of Fire Hall Temporary Relocation (to be determined) would need to be subtracted from those savings. In the circumstances, this Option A requires further study and based on the current information is not recommended.

In **Option B** the Fire Hall site (developable area of 4154.7 square metres or 44,705 square feet) would be developed to provide 138 parking stalls. If the total site were used for surface parking the Total Development Cost could be reduced by $6.7 million. As noted above it is unlikely that this use would be considered appropriate in the local neighbourhood context. A multi-level parking structure, with less site coverage would likely be considered more practical, but the savings for this option would be less - about $2.3 million.

West Vancouver Sites Consolidation Project
Program Cost Estimate Update : No Firehall R2
Adapted from September 1, 2011 Estimate by Altus Group Cost Consulting

New Development:		
Public Safety Building @ 45,540 sf		$15,692,000
U/G Parking Structure		$5,827,000
Site Development		$2,100,000
Contingency for Geotechnical Conditions		$200,000
Add Ambulance Service		$0
Expand Growth/Flexibility Capacity +3900gsf		$0
Expand Growth/Flexibility Capacity +2500gsf		$0
Subtotal		**$23,819,000**
Existing Building Upgrades		$0
Total Construction Cost		**$23,819,000**
Additional Project Costs:		
Relocation Costs Allowance		$150,000
FF&E	10.00%	$2,382,004
Construction Contingency	9.00%	$2,143,710
Soft Costs	17.00%	$4,413,665
HST	4.00%	$1,316,261
Subtotal		**$10,405,640**
Total Project Cost		**$34,224,640**

BUSH, BOHLMAN & PARTNERS consulting structural engineers

SUITE 1550 – 1500 WEST GEORGIA STREET, VANCOUVER B.C. V6G 2Z6
TEL: (604) 688-9861 Fax: (604) 688-7039 Email: ametten@bushbohlman.com

MEMO MESSAGE FORM

DATE: July 22, 2011 **Total Pages:** 5 of Report/9 pages of attachment

TO: **Cornerstone Planning Group**

ATTEN: David Whetter Partner

FROM: **Andrew Metten**, P.Eng, Struct.Eng.. (ametten@bushbohlman.com)

PROJECT: **West Vancouver Fire Hall 16th & Fulton Avenue** **Project No**: 5549

SUBJECT: **Scope of structural work to bring Fire Hall to Post Disaster Standards.**

Introduction

As part of the redevelopment of the West Vancouver Municipal Hall, Bush, Bohlman & Partners have been asked to review some specific questions related to structural issues of the existing fire hall. In particular the desire is to develop a scope of work to bring the existing Fire Hall to Post Disaster Standards of the current building code.

This review is based on the structural drawings of the original structure provided by District of West Vancouver, a site visit dated July 20th, 2011 and resulting calculations.

Structural Description of the Fire Hall

The existing Fire hall at 16th street and Fulton Avenue was constructed in 1966 and probably to the requirements of the 1965 National Building Code. The building is on a sloping site and varies from one to three stories in height. It is constructed of reinforced concrete below the level of the appliance bay and relies mostly on unreinforced masonry walls and steel columns to transfer the gravity loads from the roof and suspended floors to the foundation. The roof and suspended floors consist of Tongue and Grove (T&G) wood decking which is supported by open web steel joists and beams. There is a tower located as part of the building that has undergone some upgrading in the past. The majority of the appliance bay remains an unreinforced masonry building.

Site Observations

During the site visit, no sign of structural distress was observed at the interior or exterior of the building with exception of cracking of the appliance bay which is discussed later. The building appears to be performing well under the vertical loads that it is currently experiencing. There are no signs of settlement, sagging or other visible signs that would give reasons to be concerned about the building's performance. There are visible cracks on the slab of the appliance bays which were fixed by epoxy injection in the past.

There have been some upgrading in the past which includes replacement and augmentation of some of open web steel joists that support the roof of the appliance bay and the addition of new load steel beams and columns in the basement to support the slab and slab bands of the appliance bay.

There are some mechanical equipment in the basement area that are not seismically restrained which are the boiler, the furnace, the generator, the gas tank and a mechanical equipment, see figures 1 and 2.

Figure 1 - The water boiler (on the left) and the furnace (on the right) are not properly restrained

Figure 2 - The generator (on the left), the gas tank (in the middle) and the mechanical (on the right) are not properly restrained

Review of the Vertical Load Capacity

The roof of the building was designed for a snow load of 40 psf with no consideration for snow drifting. Present requirements for this post disaster building are for a basic snow load of 55 psf and snow drifting. It is noted that the roof has several steps and considerable areas of the roof will be affected by the snow drifting. It is found that the roof deck of the lower roof is exposed to significant snow drift and is unable to carry the loads. Also, the open web steel joists of both the upper and lower roof are unable to carry the snow loads of the current building code.

The appliance bay floor was designed for 200 psf. Current Code requirements would be for a live load capacity of 250 psf. Use of the trucks heavier than used in 1966 was causing damage to the floor – still evidenced by now sealed cracks in the slab. To address this deficiency the capacity of the floor was upgraded using a grillage of Wideflange steel beams below supported on HSS posts. The cracks in the floor were addressed using pressure injected epoxy.

Review of the Lateral Load Capacity

The existing building is very week from a seismic stand point. Its seismic load resisting system is predominantly unreinforced masonry walls which are not permitted in our seismic zone for neither normal nor post-disaster buildings. The poor seismic performance of unreinforced masonry walls has been demonstrated in many of the past seismic events. Very poor seismic performance is expected from this building. The seismic forces computed using unreinforced masonry and a post-disaster designation require forces equivalent to 145% of gravity. The walls of the building are not capable of carrying these loads.

Also, the unreinforced masonry walls are unable to carry the out-of-plane loads caused by wind and seismic loads.

The floor and roof diaphragms consist of Tongue and Groove decking which are unable to transfer the seismic loads.

The Proposed Upgrading

The following are the upgrading required to bring the Fire Hall up to the current building code as a post-disaster structure:

- New seismic load resisting system is to be implemented. Steel brace bays appear to be the cheapest and easiest option. The plan view of the structure with the locations of the proposed braces and the elevation view of each brace bay is attached to this report. All the new braces come with a new concrete foundation and in four locations the soil anchors are also required. The new braces are proposed to added to both outside and inside the structure. In both cases, removal and replacement of the existing finishes is unavoidable.
- Steel bracing is also added to the exterior of the Hose Tower as an option. Another option, which seems more economical is the demolition and reconstruction of a new tower.
- The roof and suspended floor diaphragm is to upgraded by removal of the roof finishes and adding ½" thick plywood sheathing on top of the existing T&G over

the entire roof area. Also, steel strapping is to be added on top of the plywood sheathings. The layout and sizes of the steel strapping is attached to this report, see sketch 2.

- Upgrade the unreinforced masonry so that it can withstand out-of-plane seismic loads by filling the the hollow blocks with grout and reinforcing steel bars.
- Increase the vertical load carrying capacity of the roof to accommodate the new snow loads.
    - The roof deck over the appliance bay is to be upgraded by addition of new steel beams and columns to support the deck, see the mark ups in the plan view attached
    - The open web steel joists of the both lower and upper roof are to be upgraded by addition of new steel members to the existing joists, see sketch 3 and the plan. Upgrading of the upper roof would require the removal and replacement of the existing finishes.

Conclusions

We have reviewed the structure of the West Vancouver fire hall located at 16th and Fulton and found there to be significant gaps between the present building and current post-disaster structural standards. We have outlined the items that need to be upgraded and itemized upgrading for each of these.

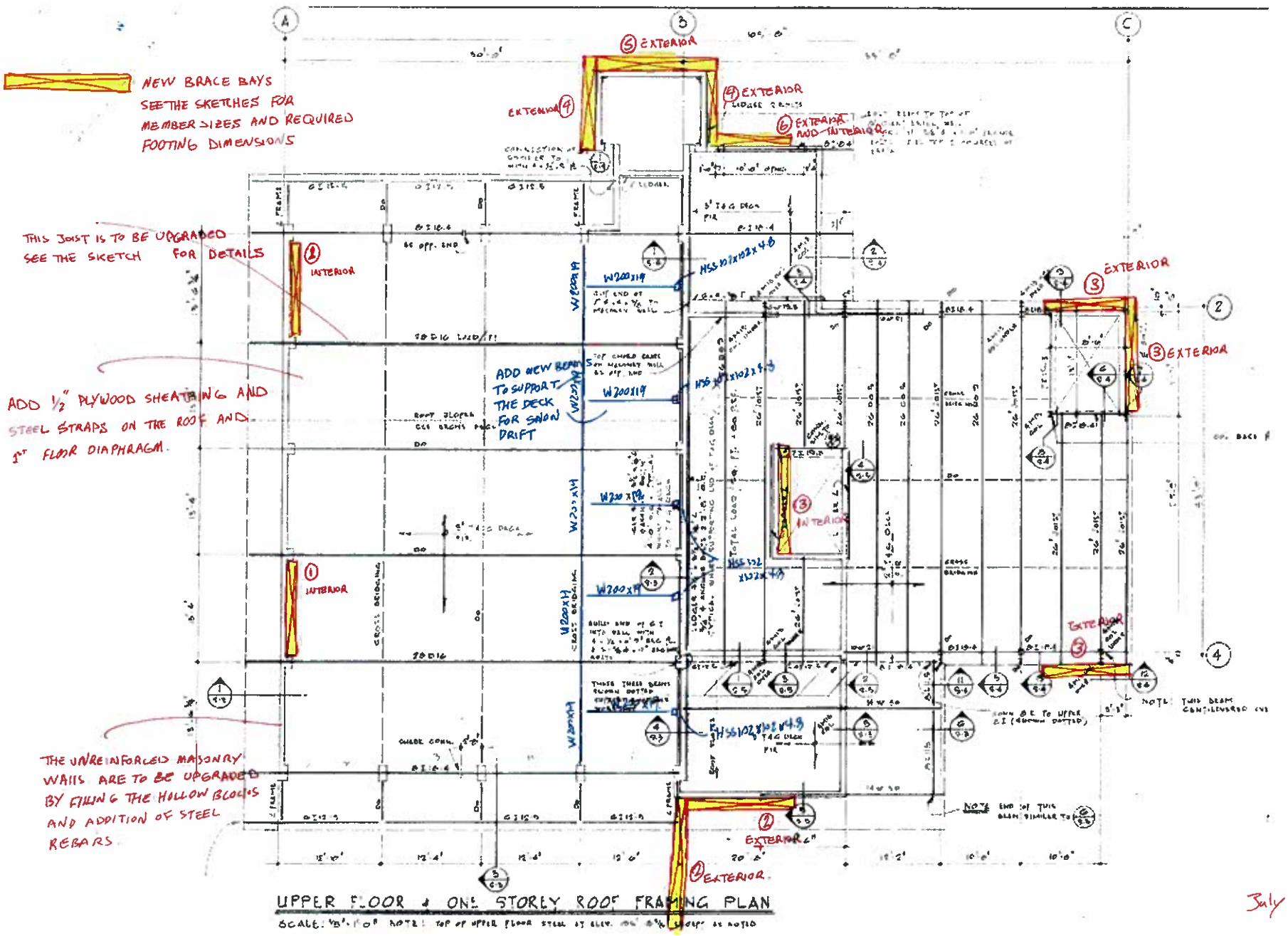
If you have any questions please contact the undersigned.

Andrew Metten, P.Eng., Struct.Eng.

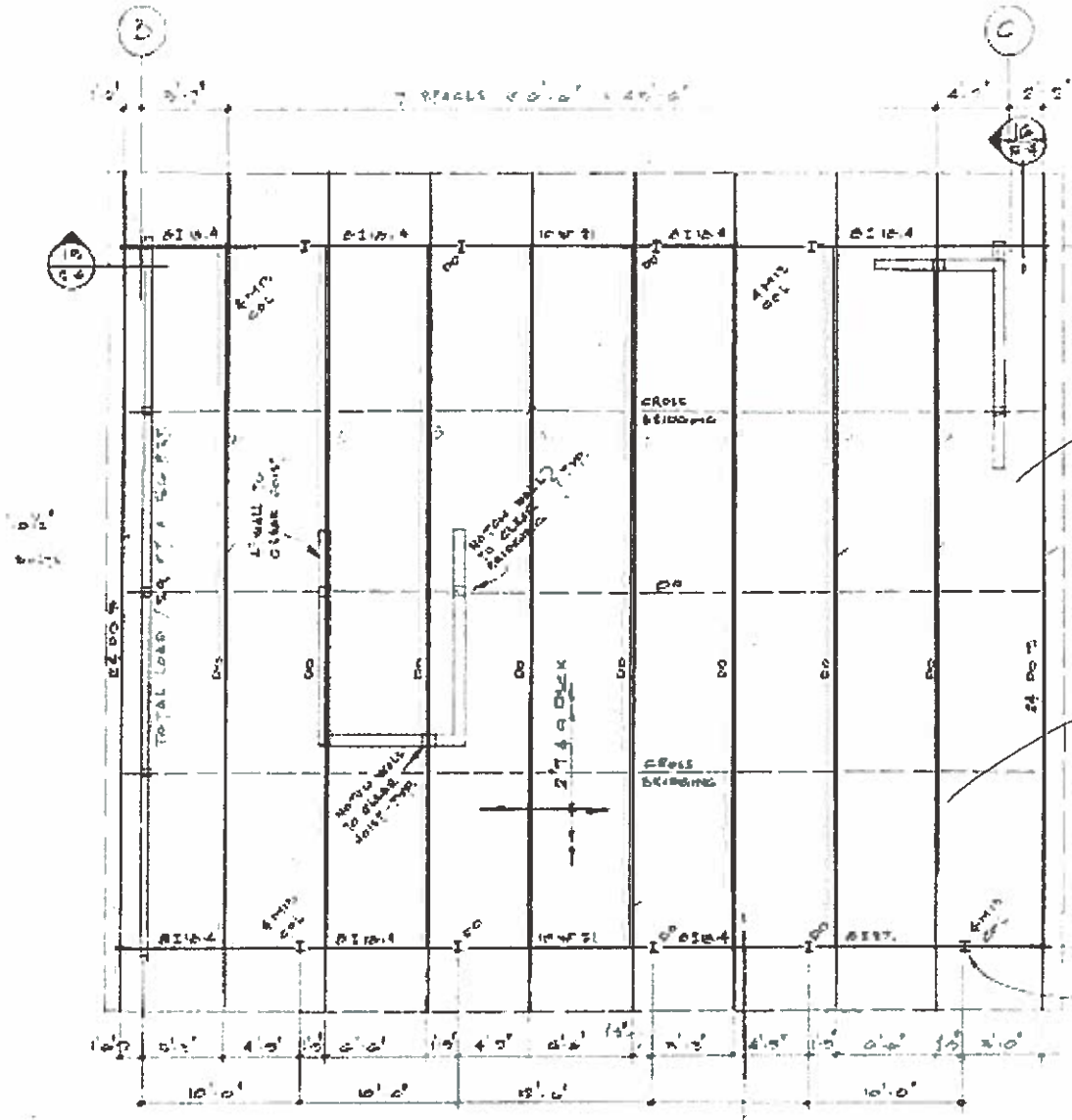
Partner: Bush, Bohlman and Partners

Payman Hosseini, EIT

Bush, Bohlman and Partners



July 21th/2011



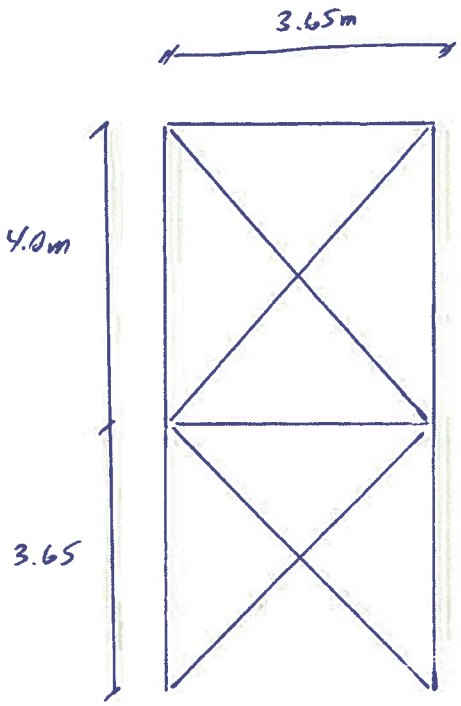
UPPER ROOF FRAMING PLAN

SCALE 1/8"=1'-0" NOTE TOP OF STEEL AT ELEV. 107'-6" EXCEPT AS NOTED

July 21st/ 2011

SKETCH 1:

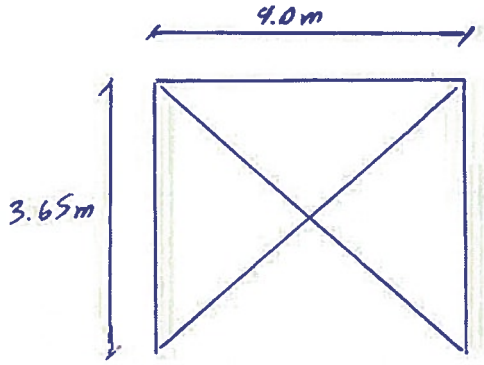
BRACE BAY ① on GL A - 2 locations.



ALL BRACES : HSS 89x89x4.8
COLUMNS: W250 x 58
and BEAMS

comes with
7.0m long x 3.5m wide x 0.3m Deep
concrete footing.

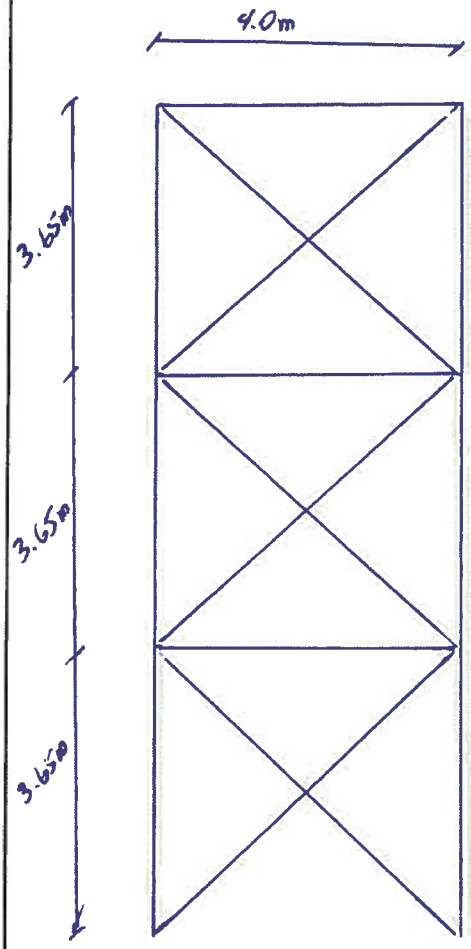
BRACE BAY ② on GL B and 3 - 2 locations



ALL BRACES : HSS 102x102x6.4
+ COLUMNS : W250x67
BEAM : W250x67

Comes with
8.0m long x 3.5m wide x 0.3m Deep
Concrete strip footing.

BRACE BAY (3) on GL (2), (4), (C) and between (C) and (B) – 4 locations.



BRACES

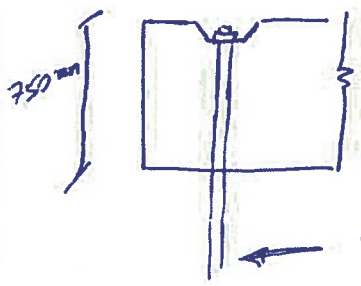
HSS 114x114x6.4

HSS 127x127x8

HSS 127x127x9.5

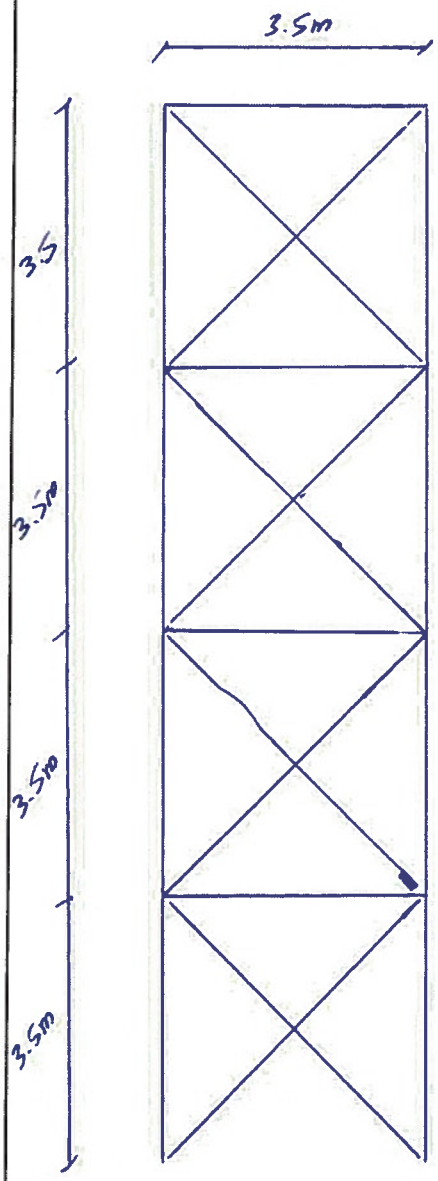
All COLUMNS: W360x91
All BEAMS: W250x67

Comes with 8m long x 4m wide x 0.75m Deep strip footing with 4-43ϕ Grade 517/690 (75ksi) Double corrosion protected Dywidag Thread Bar soil Anchor by Depth of Embedment to be determined by Geotech Consultant.



← 4 soil Anchors on each side.

BRACE BAY (4) - ON NORTH AND SOUTH OF HOSE TOWER - 2 locations



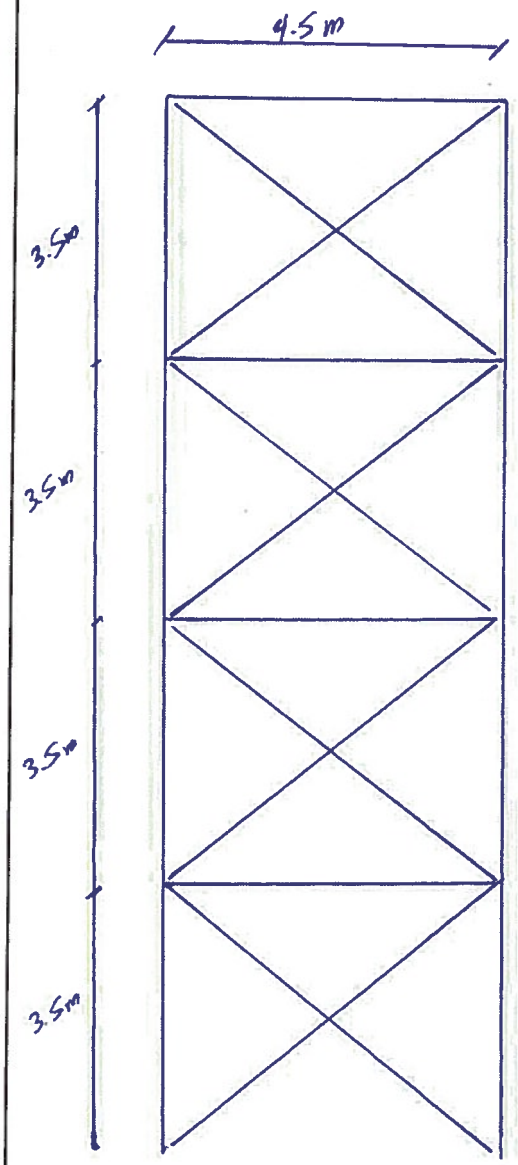
ALL BRACES : HSS89x89x9.8
All COLUMNS : HSS254x254x8.0
All BEAMS : W250x67

Comes with

7.0m long x 4.3 m wide x 1.0m Deep

Concrete Strip Footing.

BRACE BAY (5) WEST SIDE OF THE HOSE TOWER - 2 location



All BRACES : HSS 89x 89x 4.8
All COLUMNS : HSS 254 x 254 x 8.0
All BEAMS : W 250 x 67

Comes with

9.0m long x 4.3 m wide x 1.0 m Deep

Concrete Strip Footing.

DESIGNER _____

CHECKED BY _____

BUSH, BOHLMAN & PARTNERS
CONSULTING ENGINEERS

PAGE NO. _____

DATE July 21st/2011

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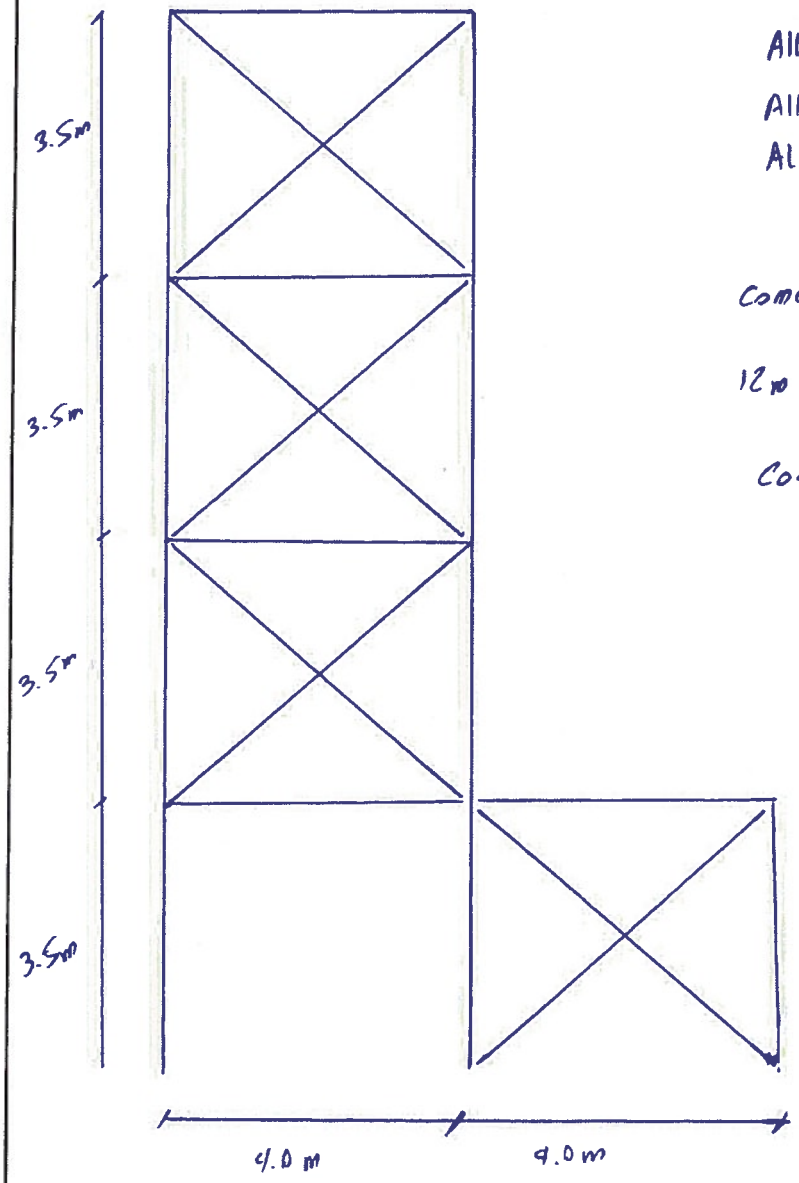
BRACE BAY (6) EAST SIDE OF THE HOSE TOWER - 1 location.



All BRACES: HSS 89x89x 4.8

All COLUMNS: HSS 254x 254x8.0

All BEAMS : W 250 x63

Comes with

12m long x 4.3m wide x 1.0 Deep

Concrete strip footing.

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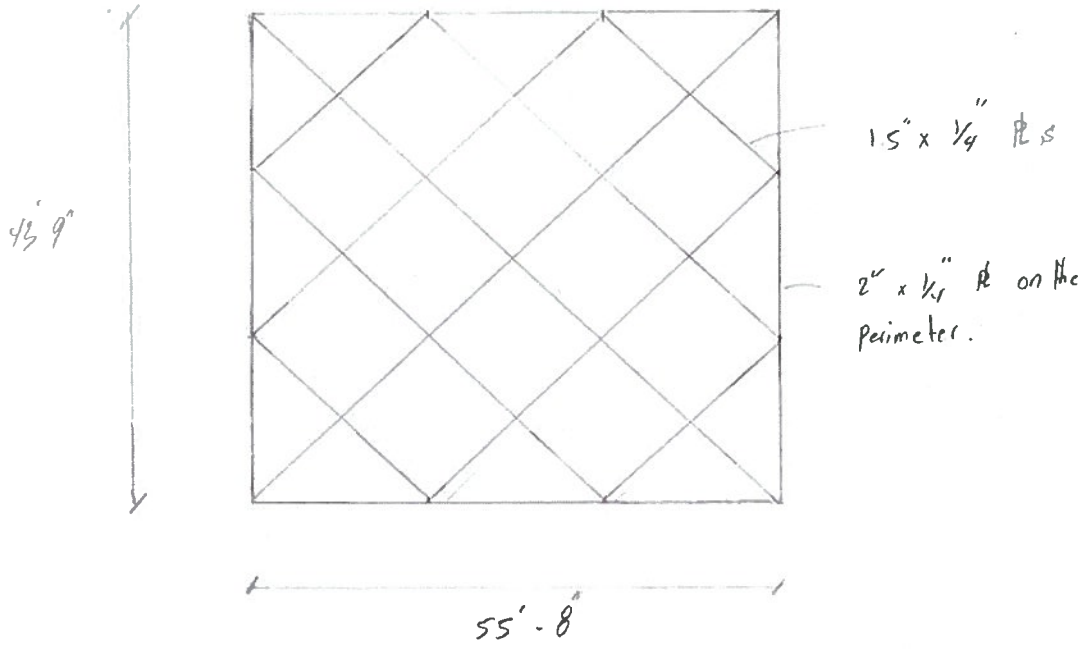
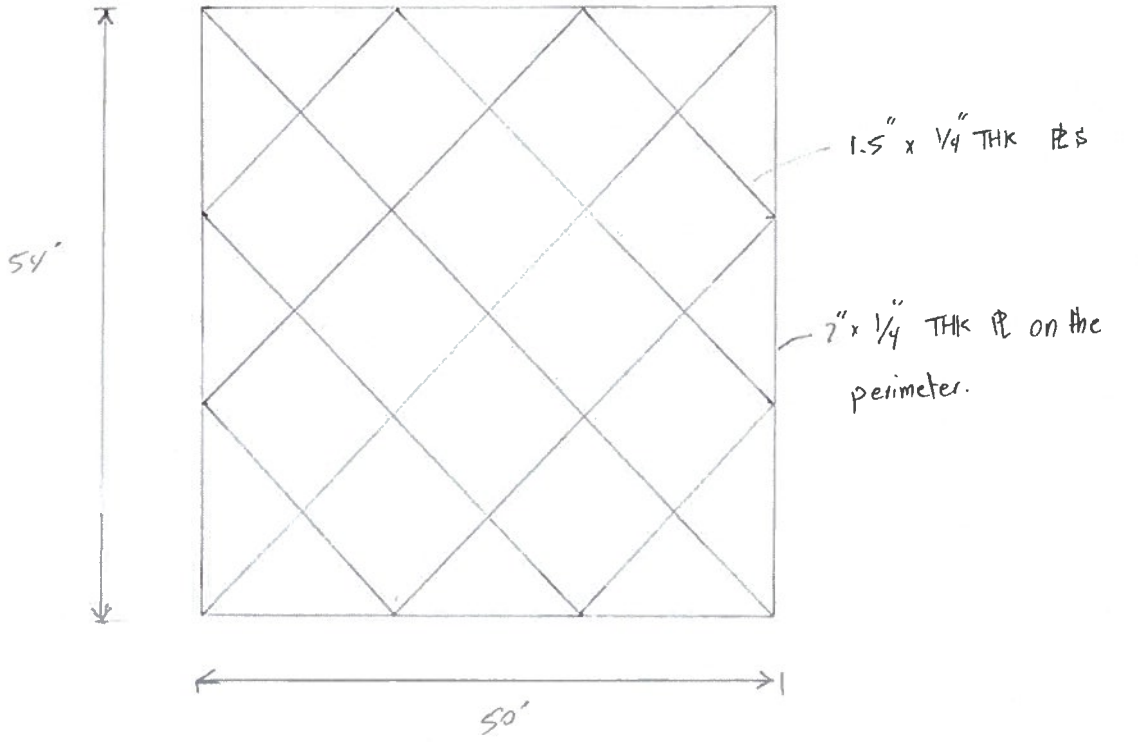
SKETCH 2:

DIAPHRAGM UPGRADE: ADD ½" PLYWOOD SHEATHING ON TOP OF THE EXISTING T&G. ADD ¼" thick PLATES ON TOP OF THE PLYWOOD AS OUTLINED BELOW.

UPPER ROOF AND FIRST FLOOR:



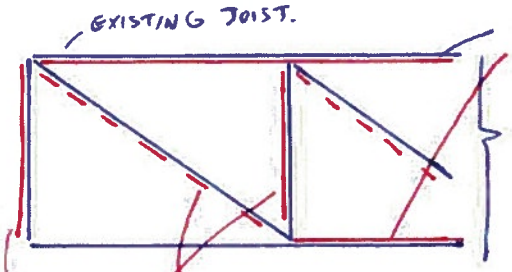
LOWER ROOF:



SKETCH 3:

Roof Joist Upgrade:

Lower Roof: One joist only

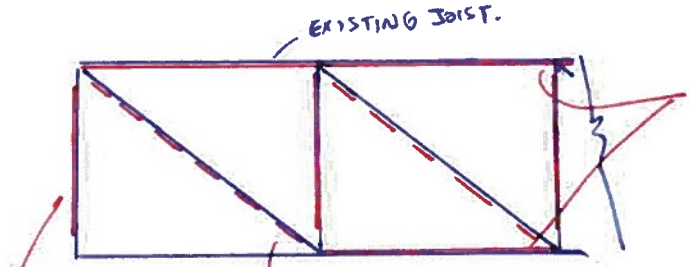


ADD 2 - 1¼" ϕ SOLID STEEL ROD TO TOP AND BOTTOM CHORD

ADD L76x76x13 TO FIRST THREE DIAGONALS ON EACH SIDE

ADD L64x64x6.4 TO FIRST FOUR VERTICAL MEMBERS ON EACH SIDE

Upper Roof: 8 Joists.



ADD 1 - 1" ϕ SOLID STEEL ROD TOP AND BOTTOM CHOAD

ADD L51x51x4.8 TO FIRST FOUR DIAGONAL ON EACH SIDE.

ADD L44x44x4.8 TO FIRST FIVE VERTICAL MEMBER ON EACH SIDE.