BELLINGHAM TECHNICAL COLLEGE
INSTITUTIONAL MASTER PLAN

January 2014

Schreiber Starling & Lane

ARCHITECTS
# Table of Contents

**Section 1 – Executive Summary**

0.1 Process ........................................................................................................................ 0-1
0.2 Purpose Goals, Objectives........................................................................................... 0-1
0.3 Needs Assessment ...................................................................................................... 0-2
0.4 Existing Conditions ...................................................................................................... 0-2
0.5 Proposed Development .............................................................................................. 0-3
0.6 Development Standards .............................................................................................. 0-4

**Section 1 - Introduction**

1.1 Planning Goal .............................................................................................................. 1-1
1.2 Capital Planning .......................................................................................................... 1-1
1.3 Regulatory Requirements ........................................................................................... 1-1
1.4 Basic Planning Themes ............................................................................................... 1-2

**Section 2 –Mission & Goals**

2.1 Mission and Values ..................................................................................................... 2-1
2.2 Strategic Plan .............................................................................................................. 2-2
2.3 Accreditation ............................................................................................................... 2-4
2.4 Planning Goals ............................................................................................................. 2-5

**Section 3 – Need Assessment**

3.1 Demographic Analysis ............................................................................................... 3-1
3.2 Enrollment Projections .............................................................................................. 3-3
3.3 Staffing Projections ................................................................................................... 3-4
3.4 CAM Analysis ............................................................................................................. 3-4
3.5 Instructional Trends ................................................................................................... 3-5
3.6 Instructional Needs ..................................................................................................... 3-6
3.7 General Campus Needs ............................................................................................... 3-8

**Section 4 - Assessment of Existing Campus**

4.1 History ......................................................................................................................... 4-1
4.2 Context ......................................................................................................................... 4-2
4.3 Campus Character ....................................................................................................... 4-2
4.4 Land Use ...................................................................................................................... 4-3
4.5. Buildings .................................................................................................................... 4-3
4.6 Circulation .................................................................................................................... 4-12
4.7 Parking ....................................................................................................................... 4-12
4.8 Bicycle ....................................................................................................................... 4-13
4.9 Transportation .......................................................................................................... 4-13
4.10 Utilities ...................................................................................................................... 4-13

Section 5 - Proposed Development

5.1 Development Zones ............................................................................................... 5-1
5.2 Land Acquisition ..................................................................................................... 5-2
5.3 Funding Options ..................................................................................................... 5-2
5.4 General Development ......................................................................................... 5-3
5.5 Near-Term Development ..................................................................................... 5-4
5.6 Mid-Term Development ....................................................................................... 5-5
5.7 Far-Term Development ......................................................................................... 5-6
5.7 Other Projects ....................................................................................................... 5-7
5.9 Schedule and Plans .............................................................................................. 5-8

Section 6 - Development Guidelines

6.1 Campus Image and Identity .................................................................................. 6-1
6.2 Campus Entrances and Gateways ......................................................................... 6-1
6.3 Campus Building Aesthetic ............................................................................... 6-2
6.4 Vehicular Circulation and Parking ........................................................................ 6-2
6.5 Pedestrian Network .............................................................................................. 6-3
6.6 Accessibility ........................................................................................................ 6-3
6.7 Pedestrian Amenities ............................................................................................ 6-4
6.8 Landscaping ........................................................................................................ 6-5
6.9 Open Space .......................................................................................................... 6-5
6.10 Building and Site Lighting ................................................................................ 6-6
6.11 Wayfinding & Signage ....................................................................................... 6-6
6.12 Public Safety/Security ....................................................................................... 6-7
6.13 Stormwater Management ............................................................................... 6-8
6.14 Utilities/Infrastructure ....................................................................................... 6-8
6.15  Solid Waste/Recycling............................................................................................................. 6-8

Appendices

A – Material from 2007 Master Plan
B – 2013 Facilities Condition Assessment
C – Comprehensive Stormwater Management Plan
Section 0
Executive Summary

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0- EXECUTIVE SUMMARY

0.1 Process

With the 2008 economic crisis and the reduction in state capital funding, the BTC administration engaged outside consultants to facilitate the process and document an update to the 2007 Institutional Master Plan.

The team reviewed recent enrollment statistics and projected demographics for Whatcom County to establish a conservative estimate of future enrollment at BTC. The existing campus space quantity was compared to the state area standards per annualized FTE indentifying shortfalls against the established benchmark.

The planning team also explored the overall campus character and environment, evaluating the clarity and safety of site circulation, the ability of visitors and students to clearly find their way to and through campus, the current and planned parking needs, and the capability of the service infrastructure to expand with the campus.

0.2 Purpose, Goals, Objectives

All components of the BTC Institutional Master Plan (IMP) will support the accomplishment of the college’s vision and core values. The outcome of the IMP process is focused to create a development plan formed by the following goals:

Functional Grouping
Bellingham Technical College understands the inherent benefits and efficiencies in planning which incorporates shared use of facilities, space, resources and technology in both renovation and new construction projects. Clustering of core college support services is also essential. BTC’s goal is to create an obvious “front door” and make all of the student service spaces easy to find and use. Grouping these together in a central location is desirable. Services include such functions as registration, financial aid, counseling and testing.

Flexibility
Flexible design is another cornerstone of BTC’s expansion plan for two main reasons. Firstly, the college needs spaces which facilitate the integration of both lab and theory instruction. Secondly, as change in current industry and world economies is becoming ever so rapid, and so must be the response of the College to provide the necessary training and instruction for new programs.

Safety
Central to any instructional or support space on campus is the absolute necessity to provide for safe working environments. Utilizing clustering and flexibility in design and insuring visibility can help to achieve this.

The IMP should not be considered “cast-in-stone” rather it should be viewed as a framework for decision making. As the needs of the college change or if planned funding sequences change, this plan should and must be re-evaluated and modified to respond to the fluid realities of program opportunities, changing demographics, funding opportunities, and the State’s extended process of capital development.
0.3 Needs Assessment

Enrollment  
In the fall of 2012, there were a total of 2,133 FTE students enrolled at BTC. While this was a slight decrease in FTE over the previous 2 years, as uncertainty in the economy subsides, and tuition increases level, enrollment is anticipated to also be less volatile. The State Board for Community and Technical Colleges in their 2012 Enrollment Report indicates that future enrollment growth is expected to follow the general demographic growth projections.

Growth Projections  
Growth forecasts produced by the Washington Office of Financial Management (OFM) for Whatcom County show a projected 70% population increase from 2012 population of 203,500 to a population of 347,657 in 2062. The US Census Bureau also projects population increases for Whatcom County in the 4-7% range every 5 years. Using these USCB mid-range projections applied to the 2012 Fall FTE count, the enrollment at BTC is anticipated to grow nearly 40% in the next 30 years:

<table>
<thead>
<tr>
<th>FTE Enrollment</th>
<th>2012</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>2,137</td>
<td>2,222</td>
<td>2,378</td>
<td>2,545</td>
<td>2,697</td>
<td>2,859</td>
<td>2,973</td>
</tr>
<tr>
<td>Additional Baseline</td>
<td>85</td>
<td>241</td>
<td>408</td>
<td>560</td>
<td>722</td>
<td>836</td>
<td></td>
</tr>
</tbody>
</table>

Growth forecasts produced by the State Board for Community and Technical Colleges for BTC only project a total FTE of 2,225 (92 FTE Growth) for fall of 2022. This estimate is based on the low-rate projection of the USCB and should be closely monitored at each capital budgeting cycle.

Space Needs  
Using the SBCTC CAM analysis based on 2,133 FTE, the current target space allocation for BTC totals 150,900-gross square feet (GSF). The CAM building area on campus totals 121,236-gsf or approximately 30,000-gsf less than target.

0.4 Existing Conditions

Context  
Bellingham Technical College has worked very hard to establish itself as a premiere technical and professional collegiate institution. While recent new construction along the south and east boundaries and the new North Entrance has done much to improve the appearance of the physical environment, the south edge of the campus is still primarily portrays an image that feels outdated and “institutional”.

Regulatory  
Within the Birchwood Neighborhood Comprehensive Plan, BTC is identified as Areas 13, 13A, and 13B. These areas are zoned Public Use. Development in the neighborhood is subject to comment by the Birchwood Neighborhood Group (BNG).

As the BTC property is zoned for public institutional use, there is no underlying regulatory impediment to the development proposed in this master plan.

Buildings  
Generally, the buildings on the BTC campus are in fair to excellent condition with many having been constructed recently or within the last 12-years. Given their good condition and the competitive process for securing state funding, the most effective approach and most efficient use of State capital dollars would be planning for the remodel and/or expansion of older buildings (J, H, etc) rather than replacing them completely.
Circulation

Following the 2001 Traffic Study and in conjunction with recent capital projects (Morse Center), existing parking lots have been improved, new parking lots constructed and vehicular routes revised. Traffic through the Birchwood Neighborhood has been a major concern for the adjacent property owners. With the completions of the Illinois extension and the new north main entrance, the situation has improved.

Eliminating vehicles from the interior in the future is desired; efforts to relocate vehicle-related programs to the perimeter and provide additional central parking lots are recommended.

Parking

A goal of the Master Plan is to reduce the number of on-street parking spaces over time in order to provide a safer street environment, a sense of foreground and separation for the College from the neighborhood and a visually more appealing neighborhood setting.

Utilities

The existing utility services feeding campus are adequate for current and projected development. As projects are developed, they will be expected to include needed extensions and expansions of serving utilities including stormwater management and retention.

0.5 Proposed Development

Acquisition

The development considered and proposed in this IMP can be accommodated within the existing campus boundaries. Should adjacent property become available in the future, the College would consider selective acquisition on a case-by-case basis.

Development Zones

The IMP Team identified six development areas. It is proposed that all new campus facilities are located in proximity to other facilities housing similar programs/functions.

Near-Term Development

Near-term development is defined as projects which will be requested, planned, designed, and constructed within the next 5-12 years. Identified projects include:

- Engineering Technology Building (Remodel & Expansion / 30,000-sf / $14.8M / 2019)
- Health/Science Building (Replacement / 48,000-sf / $26.4M / 2021)
- Relocate Building R (Remodel / 4,000-sf / $8M / 2023)
- Campus Services (Remodel & Expansion / 43,000-sf / $18.7M / 2025)

Mid-Term Development

Mid-term development is defined as projects which will be requested, planned, designed, and constructed within the next 10-15 years. Identified projects include:

- Industrial Building (New/Replacement / 65,000-sf / $32M / 2029)
- Diesel & Automotive Repair (New/Replacement / 45,000-sf / $22.2M / 2033)
- Relocate Building U (Remodel / 4,000-sf / $2.2M / 2034)

Far-Term Development

Far-term development is defined as projects which will be requested, planned, designed, and constructed more than 15 years in the future. Identified projects include:

- General Academic (New / 60,000-sf / $30M / 2037)
- Building G (Renovation / 17,197-sf / $8M / 2039)
- Professional/Technical (New / 48,000-sf / $24M / 2041)
0.6 Development Guidelines

Future projects at Bellingham Technical College must meet a high level of quality and respond to context, built form, structure, landscape, and scenic views. Key design strategies to be implemented in all future projects include:

Buildings
- Maintain the context, scale, and material palette of existing campus buildings
- Express the building’s primary functions through form and organization
- Increase transparency as a physical and visual transition from outside to inside
- Express building entrances
- Promote low maintenance and operating costs
- Provide universal access to all campus buildings and features
- Extend and implement the existing signage standards
- Meet the campus sustainability goals

Edges and Gateways
- Reinforce campus edges and presence of the college from Cordata Parkway

Parking
- For new buildings on the campus core, use the excess above code minimum to avoid constructing new parking

Pedestrian Paths
- Provide developed paths where ad-hoc lines suggest direct routes
- Install paths that are universally accessible
- Integrate interior circulation as part of exterior circulation route
- Provide crosswalks to define the primacy of pedestrian over vehicular circulation
- Use distinctive paving materials and/or textures to emphasize these crosswalks

Pedestrian Amenities
- Provide site furnishings to include seating, bicycle racks, and waste receptacles
- Improve site lighting
- Develop a plan for the location of art in the landscape

Landscape
- Incorporate restoration and enhancement of the landscape into every project
- Establish design and installation guidelines
- Whenever possible preserve significant trees

Open Space
- Widen the diversity of scale and spatial form of open spaces
- Create outdoor areas for studying, socializing, resting, learning, eating, and viewing

Sustainable Development
- All new state-funded projects 5,000-sf or larger shall meet the minimum LEED silver certification
- Seek to maximize sustainable building practices without negative impact to the budget or program
Section 1

Introduction

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1.0 – INTRODUCTION

The following Master Plan provides Bellingham Technical College with a working document for the future. The objective of this document is to provide a physical realization of campus improvements that carries out the stated Strategic Plan, Mission, Vision and Goals of the college.

The Master Plan is derived from a series of planning forums and meetings held throughout the winter and spring of 2007 and updated through meetings with the BTC Executive Cabinet in 2013. These forums and meetings included students, staff, administration and neighborhood planning groups discussing planning concepts that would enhance what already exists and work in a rational long term master plan.

1.1 - Planning Goal

The primary goal of this Master Plan is to continually confirm that the physical environment of the College is supporting the instructional strategic plan. Summarized as the Mission, Vision and Goals of the College (see Section 2), this plan is what guides the institution in its formation, continuation and development of programs, curriculum, community and workplace. Changes to the physical environment that are necessary to improve existing conditions or provide new facilities are directly linked to the assessment of these goals and the adequacy of current facilities.

1.2 - Capital Planning

Long-range planning of educational goals and facilities is required in order to stay ahead of the curve for capital planning. Typical new construction projects require six years from proposal submission to construction completion. The Master Plan establishes a direction and strategy for future development for which funding proposals, new construction, renovation projects, limited public works projects and additional studies can be initiated. In addition to guiding what should be done, a proper plan acts to prevent misguided development that could potentially get in the way of future plans.

1.3 – Regulatory Requirement

Bellingham Technical College currently occupies roughly thirty-two acres of land including approximately nine acres of undeveloped property. While not large enough to be classified as “Institutional” under the City of Bellingham Municipal Code, the Technical College’s classification under “schools” does not quite encompass the complexity of its planning within the framework of the City and County. Institutional entities are required to submit an Institutional Master Plan (IMP), “to provide for the development of large campus type public or quasi-public uses in a planned and coordinated manner.” While not a code requirement, an IMP submittal for Bellingham Technical College will be accepted by the City as a framework for future growth that will influence the development of their Comprehensive Plan and aid in the permit review and approval process for individual projects included in the IMP.
1.4 - Basic Planning Themes

The basic themes for the BTC campus planning developed through the planning forums include:

1. Provide a physical environment that addresses the academic and technical skills learning environment by replacing the existing inadequate facilities with multi-story buildings. Growing up rather than out with technical labs on the ground level and academic classrooms above.

2. Recognize the strong residential neighborhood quality to the east, south and west by developing a clearly identifiable campus entrance to the north that would remove traffic routes from the neighborhood routes.

3. Develop a new campus center core inside the campus that relates easily to the north entry and parking area.

4. Enhance the campus grounds with clear entry and parking, pedestrian pathways, lighting and gathering points to clarify the sequence of arrival, available parking, classroom locations and socialization elements of the campus environment.

5. “Transparency” in design to showcase diverse program delivery on campus.

6. Recognize the demographics of the current and future student population for which academic studies are just a part of the work and domestic day. To that end, provide a campus and building environment that will allow flexible course scheduling and easy access to parking and buildings for both day and evening use.

7. Embrace sustainable building design, recognizing its benefit to long-term maintenance and operations of facilities and the global environment.

8. Create future BTC programs and building requests through partnerships with private industry and professional business for the development of campus facilities.

9. Make Bellingham Technical College the premier technical college in the state and region.
Section 2
Mission & Planning Goals

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2.0 MISSION & GOALS

This document provides a set of guiding principles that clearly articulates the values and needs of the Bellingham Technical College (BTC) campus community with respect to campus planning.

2.1 Mission and Values

All components of the BTC Institutional Master Plan (IMP) will support the accomplishment of the college’s mission and core values.

Mission

Bellingham Technical College provides student-centered, high-quality professional technical education for today’s needs and tomorrow’s opportunities.

Vision

Bellingham Technical College will be a recognized leader in providing innovative and effective technical education, maximizing student potential and supporting the regional economy through development of a competitive workforce.

Values

*Student-Centered*
Creating a supportive and inclusive community that results in a high level of student competence, professionalism, and success

*Responsive*
Embracing positive, effective change that creates opportunities and meets current and emerging needs

*Collaborative*
Creating and leveraging partnerships and resources to achieve shared values and goals for students, the College, and the community

*Principled*
Promoting a culture of respect and accountability, reflecting integrity in decision-making, and ensuring responsible stewardship of all resources

Goals

*Student Success*
Facilitate student success through practices, structure, and policies

*Excellence and Innovation*
Promote excellence and innovation throughout the College

*Access*
Increase options and improve access for all students through educational pathways

*College Visibility & Resource Development*
Strengthen the visibility and support of the College locally, regionally, and nationally

*Campus Environment*
Create and maintain a welcoming campus that supports diversity, promotes a sense of community, provides an effective work and learning environment, and encourages respect for individuals
2.2 Strategic Plan

The College began its initial work on a new strategic plan in 2010. Key components of the planning process included identifying assumptions, environmental scanning (internal and external), developing the framework (mission, vision, values, goals, and strategic initiatives), developing the operational plan (activities, responsible areas, and timelines), and creating an evaluation plan. BTC’s planning process has been inclusive of the campus community and key stakeholders by incorporating focus group meetings, surveys, etc. The new 2013-18 Strategic Plan was approved by the Board of Directors in August 2013.

The 2013-18 Strategic Plan includes the following goals and priority initiatives:

**GOAL 1: STUDENT SUCCESS (Priority Goal)**
Facilitate Student Success through practices, structure, and policies

- **Goal 1.1** Strengthen instruction and student support services that facilitate academic, job placement, and career success
  - Strategic Initiative 1.1.a Advance cross-collaboration between Instruction and Student Services
  - Strategic Initiative 1.1.b Develop and implement a campus-wide graduation plan
  - Strategic Initiative 1.1.c Continue to strengthen faculty/staff instructional and student support skills
  - Strategic Initiative 1.1.d Continue to strengthen, expand, and integrate student support services

- **Goal 1.2** Expand student engagement opportunities that facilitate student academic, job placement, and career success

- **Goal 1.3** Strengthen campus-wide practices, structures, and policies for student success
  - Strategic Initiative 1.3.a Identify and add campus-wide practices, structures, and policies that may improve/act as supports to student success

**GOAL 2: EXCELLENCE & INNOVATION**
Promote excellence and innovation throughout the College

- **Goal 2.1** Identify and showcase the areas in which BTC excels, especially those that are unique to the College

- **Goal 2.2** Respond to the changing needs of business and industry by providing high quality, relevant, flexible, well-equipped programs

- **Goal 2.3** Create a culture of continuous improvement and innovation that is guided by both campus-level data and regional, national, and global benchmarking
  - Strategic Initiative 2.3.a Improve data quality and coding transparency campus-wide
  - Strategic Initiative 2.3.b Develop a robust and streamlined campus-wide data management/access system that is centered on measuring and increasing student success
  - Strategic Initiative 2.3.c Establish and implement a process for using data
Section 2 – Mission and Goals

January 2014

Institutional Master Plan

Goal 2.4 Expand sustainable, environmentally-friendly practices across the campus community

- Strategic Initiative 2.4.a Identify and integrate environmentally-friendly practices into daily operations
- Strategic Initiative 2.4.b Continue to identify and integrate environmentally-friendly standards into facility construction and renovations
- Strategic Initiative 2.4.c “Green” existing professional technical programs through curriculum development and specialized lab equipment

Goal 2.5 Develop an infrastructure that supports efficiency, effectiveness, and innovation in work practices

- Strategic Initiative 2.5.a Conduct an information technology needs analysis to identify technological barriers for students, faculty, and staff
- Strategic Initiative 2.5.b Implement a technology plan that is continuously updated to leverage rapidly changing instructional and operational technology
- Strategic Initiative 2.5.c Develop systems to streamline and/or improve efficiency of existing processes
- Strategic Initiative 2.5.d Expand professional development opportunities for faculty and staff

Goal 3: Access

Increase options and improve access for all students through educational pathways

Goal 3.1 Establish, communicate, and support clearly defined educational pathways and options

- Strategic Initiative 3.1.a Establish and educate students about available educational pathways and flexible learning options
- Strategic Initiative 3.1.b Align educational pathways with other educational institutions to ensure student readiness and opportunities for transfer

Goal 3.2 Strengthen student outreach, recruitment, and enrollment efforts, including underserved populations

- Strategic Initiative 3.2.a Create an effective and targeted recruitment system
- Strategic Initiative 3.2.b Expand financial resources and support services to assist students in accessing educational pathways

Goal 4: College Visibility & Resource Development

Strengthen the visibility and support of the College locally, regionally, and nationally

Goal 4.1 Position the College as a high quality institution that offers valuable, viable educational opportunities

- Strategic Initiative 4.1.a Develop and implement a dynamic, comprehensive, and segmented marketing plan for internal and external
Section 2 – Mission and Goals

2.3 Accreditation

Master Planning also plays a role in the BTC accreditation process. The college must meet the standards established by its accrediting body, the Northwest Commission on Colleges and Universities (NWCCU). Standard 2.G addresses the physical infrastructure and requires institutions to show evidence of the following:

- Develop and maintain a cohesive appearance of spaces that are functional, attractive, and inviting
- Develop and implement an effective way finding system
- Implement, maintain, and evaluate a comprehensive emergency preparedness plan
  - Provide resources to prepare students, faculty, and staff to respond to emergencies
  - Evaluate and improve protocols periodically
2.G.1 Consistent with its mission, core themes, and characteristics, the institution creates and maintains physical facilities that are accessible, safe, secure, and sufficient in quantity and quality to ensure healthful learning and working environments that support the institution’s mission, programs, and services.

2.G.2 The institution adopts, publishes, reviews regularly, and adheres to policies and procedures regarding the safe use, storage, and disposal of hazardous or toxic materials.

2.G.3 The institution develops, implements, and reviews regularly a master plan for its physical development that is consistent with its mission, core themes, and long-range educational and financial plans.

2.G.4 Equipment is sufficient in quantity and quality and managed appropriately to support institutional functions and fulfillment of the institution’s mission, accomplishment of its core theme objectives, and achievement of goals or intended outcomes of its programs and services.

Documentation providing evidence of adherence to Standard 2.G will be identified during the 2013-14 academic year.

2.4 Planning Goals

The outcome of the IMP process is focused to create a development plan formed by the following goals:

Functional Grouping
Bellingham Technical College understands the inherent benefits and efficiencies in planning which incorporates shared use of facilities, space, resources and technology in both renovation and new construction projects. In a similar fashion, there are many existing programs on campus which logistically make sense to co-locate as families, such as the Health and Science programs, Automotive Repair and Diesel Technology, Construction Trades, etc. Future planning shall take into consideration these potential groupings of existing and future programs to maximize efficiency and enhance collaboration and communication between staff, faculty and students in similar interest areas.

Clustering of core college support services is also essential. BTC’s goal is to create an obvious “front door” and make all of the student service spaces easy to find and use. Grouping these together in a central location is desirable. Services include such functions as registration, financial aid, counseling and testing.

Off-campus alternatives are also possible for capital construction for instructional space, if the partnership benefits the staff and students. Business training facilities and public schools can be used to facilitate program delivery. These facilities need to
be well suited to provide the necessary training, so that the curriculum is not compromised.

**Flexibility**
Flexible design is another cornerstone of BTC’s expansion plan for two main reasons. Firstly, the college needs spaces which facilitate the integration of both lab and theory instruction. For existing programs labs, while they can be highly specialized, also need to be flexible and adaptable to accommodate for changes in the industry or profession. Secondly, as change in current industry and world economies is becoming ever so rapid, and so must be the response of the College to provide the necessary training and instruction for new programs.

While some growing or new demand programs can be identified and planned for in advance, some develop quicker than the typical capital project funding cycle. For these, having in place flexible spaces that can be adapted quickly and easily for specific instruction is critical. Incorporating such universal design allows the College many more options in the future and can help save on costly remodeling projects.

**Safety**
Central to any instructional or support space on campus is the absolute necessity to provide for safe working environments. Utilizing clustering and flexibility in design can help to achieve this. For example, clustering the vehicle-dependant programs together on the perimeter of campus helps to provide for improved pedestrian safety. Grouping programs together which produce noise and emissions to the perimeter of campus can also reduce the health risks to the campus population. Designing open, flexible space for labs can improve the risk of injury by providing proper sight lines, safe circulation zones, and adequate working space around equipment.
Section 3
Needs Assessment
3.0 NEEDS ASSESSMENT

The section defines anticipated development/functional space needs for Bellingham Technical College.

3.1 Demographic Analysis

As the primary workforce training institution in the north Salish Sea region, Bellingham Technical College draws its student population primarily from Whatcom County. To understand the future program and facilities demand for BTC, an analysis of the demographic trends for Whatcom County can provide a solid base for determining how they might impact the programs and facilities needs at BTC.

Looking to historical trends, population growth has been steady in Whatcom County over the last 50 years, increasing from 70,317 residents in 1960 to 203,500 residents in 2012, a net increase of more than 133,000 residents. Growth forecasts produced by the Washington Office of Financial Management (OFM) for Whatcom County show a 70% population increase from 2012 population of 203,500 to a population of 347,657 in 2062.

As illustrated in the following chart, the US Census Bureau is projecting 5-year population increases in the 4-7% range:

![Projections of the Total Resident Population in Whatcom County](chart)


More impacting on the potential for program growth is the age distribution of the anticipated growth. In the next 15 years, growth in Whatcom County in the 70-80 year old bracket is expected to exceed 120%. This demographic underscores the need for increased access to education in health and related support professions. Other age-related demographics is the 2-3% growth in the 15-24 age bracket (high school and
recent graduates) and the 20-30% growth in the 30-44 age bracket which is the rough median age of BTC students in 2012 and is also the primary worker-retraining demographic. This may drive the need for more specialized learning space, particularly in high-demand professional/technical field such as engineering trades, computer technology, health IT, etc.

Whatcom County Population Projection Distributed By Age

<table>
<thead>
<tr>
<th>Age</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>11,337</td>
<td>11,662</td>
<td>12,826</td>
<td>13,416</td>
<td>18%</td>
</tr>
<tr>
<td>5-9</td>
<td>11,235</td>
<td>11,865</td>
<td>12,815</td>
<td>14,087</td>
<td>25%</td>
</tr>
<tr>
<td>10-14</td>
<td>12,059</td>
<td>11,800</td>
<td>12,948</td>
<td>13,988</td>
<td>16%</td>
</tr>
<tr>
<td>15-19</td>
<td>15,905</td>
<td>15,158</td>
<td>15,263</td>
<td>16,436</td>
<td>3%</td>
</tr>
<tr>
<td>20-24</td>
<td>20,277</td>
<td>21,511</td>
<td>20,734</td>
<td>20,727</td>
<td>2%</td>
</tr>
<tr>
<td>25-29</td>
<td>14,019</td>
<td>14,461</td>
<td>14,690</td>
<td>14,265</td>
<td>2%</td>
</tr>
<tr>
<td>30-34</td>
<td>12,150</td>
<td>13,128</td>
<td>14,490</td>
<td>14,488</td>
<td>19%</td>
</tr>
<tr>
<td>35-39</td>
<td>11,676</td>
<td>12,481</td>
<td>14,420</td>
<td>15,945</td>
<td>37%</td>
</tr>
<tr>
<td>40-44</td>
<td>12,319</td>
<td>12,306</td>
<td>13,290</td>
<td>15,377</td>
<td>25%</td>
</tr>
<tr>
<td>45-49</td>
<td>13,532</td>
<td>12,475</td>
<td>12,867</td>
<td>13,909</td>
<td>3%</td>
</tr>
<tr>
<td>50-54</td>
<td>13,797</td>
<td>13,850</td>
<td>12,890</td>
<td>13,307</td>
<td>-4%</td>
</tr>
<tr>
<td>55-59</td>
<td>13,828</td>
<td>13,583</td>
<td>13,991</td>
<td>13,070</td>
<td>-5%</td>
</tr>
<tr>
<td>60-64</td>
<td>12,336</td>
<td>13,344</td>
<td>13,696</td>
<td>14,208</td>
<td>15%</td>
</tr>
<tr>
<td>65-69</td>
<td>8,760</td>
<td>11,550</td>
<td>13,378</td>
<td>13,769</td>
<td>57%</td>
</tr>
<tr>
<td>70-74</td>
<td>5,908</td>
<td>7,899</td>
<td>11,186</td>
<td>12,978</td>
<td>120%</td>
</tr>
<tr>
<td>75-79</td>
<td>4,563</td>
<td>5,101</td>
<td>7,159</td>
<td>10,174</td>
<td>123%</td>
</tr>
<tr>
<td>80-84</td>
<td>3,666</td>
<td>3,633</td>
<td>4,134</td>
<td>5,897</td>
<td>61%</td>
</tr>
<tr>
<td>85+</td>
<td>3,743</td>
<td>4,243</td>
<td>4,530</td>
<td>5,097</td>
<td>36%</td>
</tr>
<tr>
<td>Total</td>
<td>201,140</td>
<td>210,050</td>
<td>225,307</td>
<td>241,138</td>
<td>20%</td>
</tr>
</tbody>
</table>

The following chart shown the historic and projected growth in employment forecast by the Washington State Office of Financial Management for Whatcom County. It is clear that BTC will continue to be one of the primary sources for both academic and professional-technical education needed to fill these jobs.
3.2 Enrollment Projections

In line with the general population increase and demographic trends noted above, with the exception of the recent reduction in FTE due to economic rebounding, it is expected that student enrollment at BTC will increase exacerbating problems stemming from facilities that are too small, not configured for “live-work” pedagogy, and limited resources.

In 2012, BTC created an Enrollment Management Advisory Committee (EMAC). This committee and its nine subcommittees undertook an extensive review of BTC enrollment data, polices, and trends which resulted in creation of a Strategic Enrollment Plan (SEP) for 2013-2018. Among other specific goals, targets, and themes, this focused effort identified a goal of increasing BTC Enrollment from 2,226 annualized FTE’s in 2011-12 to 2,935 by 2018.

Enrollment Assumptions

The SEP goal of 2,935-FTE’s in 2018 is based on an optimal outlook assuming the following:

- The State unemployment rates continues to decline
- Additional Institutional, state and federal financial aid is available and increases at the rate of 1% per year
- Tuition increases are kept at 2% or less averaged over 5-years
- FAFSA federal financial aid application process is simplified
- Resources for growth are acquired by the college.

The State Board for Community and Technical Colleges in their 2012 Enrollment Report indicates that future enrollment growth is expected to follow the general demographic growth projections. Using the USCB medium growth projections for the County, the FTE student enrollment at BTC can be estimated as follows:

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Funded</td>
<td>1,967</td>
<td>2,046</td>
<td>2,189</td>
<td>2,342</td>
<td>2,483</td>
<td>2,632</td>
<td>2,737</td>
</tr>
<tr>
<td>Contract Funded</td>
<td>93</td>
<td>97</td>
<td>103</td>
<td>111</td>
<td>117</td>
<td>124</td>
<td>129</td>
</tr>
<tr>
<td>Student Funded</td>
<td>77</td>
<td>80</td>
<td>86</td>
<td>92</td>
<td>97</td>
<td>103</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>2,137</td>
<td>2,222</td>
<td>2,378</td>
<td>2,545</td>
<td>2,697</td>
<td>2,859</td>
<td>2,973</td>
</tr>
</tbody>
</table>

The above projected are slightly below the EMAC Optimum Goal of 2,935 FTE’s by 2018 however it is close to the 2,300-FTE goal established as the middle Scenario by the EMAC.

Growth forecasts produced by the State Board for Community and Technical Colleges for BTC only project a total FTE of 2,225 (92 FTE Growth) for fall of 2022. This estimate
is based on the low-rate projection of the USCB and should be closely monitored at each capital budgeting cycle.

**Unduplicated Headcount**

While the majority of space and enrollment planning is based on FTE, it is important to understand that BTC is used by many more individuals than attend full-time. It is illustrative to compare FTE count with the actual individual count of enrollees in each program of study. The following table approximates the unduplicated (adjusted for students that enroll in cross-theme course work) headcount based on the core learning themes provided by BTC.

<table>
<thead>
<tr>
<th>Headcount</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Funded</td>
<td>2,545</td>
<td>2,647</td>
<td>2,832</td>
<td>3,030</td>
<td>3,212</td>
<td>3,405</td>
<td>3,541</td>
</tr>
<tr>
<td>Contract Funded</td>
<td>71</td>
<td>74</td>
<td>79</td>
<td>85</td>
<td>90</td>
<td>95</td>
<td>99</td>
</tr>
<tr>
<td>Student Funded</td>
<td>420</td>
<td>437</td>
<td>467</td>
<td>500</td>
<td>530</td>
<td>562</td>
<td>584</td>
</tr>
</tbody>
</table>

3,036 3,157 3,378 3,615 3,832 4,062 4,224

**3.3 Staffing Projections**

Using the current student/faculty-staff ratio and the projected student population, the planning team projects staffing needs for the master plan duration as follows:

<table>
<thead>
<tr>
<th>Staff FTE (all sources)</th>
<th>2012</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classified</td>
<td>74</td>
<td>77</td>
<td>82</td>
<td>88</td>
<td>93</td>
<td>99</td>
<td>103</td>
</tr>
<tr>
<td>Administrative</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>25</td>
<td>27</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Professional/Technical</td>
<td>30</td>
<td>31</td>
<td>33</td>
<td>36</td>
<td>38</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Teaching Faculty</td>
<td>85</td>
<td>88</td>
<td>95</td>
<td>101</td>
<td>107</td>
<td>114</td>
<td>118</td>
</tr>
<tr>
<td>Non-teaching Faculty</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

212 220 236 252 268 284 295

**3.4 CAM Analysis**

The Capital Analysis Model (CAM) is a method to evaluate quantitatively on-campus facilities of Washington community and technical colleges. The CAM was originally developed by the community college system to provide a reference point for determining facility needs and to assist in justifying requests for capital improvements.

The CAM uses future enrollment and space-per-FTE factors to set a probable level of future space requirements on each campus. These requirements, when compared to
available space (existing or funded) help support decisions about the amounts of space that should be available on a campus to meet future enrollment demands. CAM does not address the adequacy of space.

Using the Draft 2013 Capital Analysis Model (CAM) planning tool (below) and 2012 annualized FTE counts, Bellingham Technical College has shortages in instructional space. There are existing CAM shortages totaling over 50,389-sf in general classrooms, basic skills labs, and especially in computer labs and faculty offices.

### 3.5 Instructional Trends

As a comprehensive technical college, BTC will continue to educate the community through work-force training and professional-technical, basic-skills, developmental education, international, community/contract education, degrees, and in the future, applied baccalaureate programs. BTC anticipates that that they will continue to see growth of student FTE’s. It is anticipated that their future program mix (i.e., percentages of transfer versus professional-technical, etc) will remain similar to the current program mix, however it is likely that many of the courses currently offered will change over time, based on their responsiveness to external needs/trends.
3.6 Instructional Needs

Through a number of Planning Charettes/Workshops the various campus stakeholders were invited to provide input on the programs and elements that support the BTC Mission and define the BTC campus. The first charette was entitled “Curriculum Development” and focused on reviewing the current Strategic Plan for BTC’s future program delivery. Committee members were encouraged to spend some time prior to the charette considering the institutional programs’ current and future trends as related to campus and off campus delivery. Participants were encouraged to consider programs that are perhaps not being offered that may serve a real need in the future of the community, program needs and opportunities. A list of programs/services that were stable, growing, transitioning and emerging was developed.

The participants identified the following as growing or stable programs that are being limited by existing facilities or not being fully supported by the BTC physical plant:

- Civil Engineering Tech
- Project Management
- Mechanical Engineering Tech
- Survey and Mapping
- Refrigeration/HVAC
- Control Technology
- Electrician
- Commercial/Industrial Refrigeration and HVAC Tech
- Registered Nursing
- Practical Nursing
- Nursing Assistant
- Dental Assistant
- Radiologic Tech
- Surgery Tech
- Precision Machining
- Adult Basic Education

They also identified the following possible and emerging programs that would create the need for increased instructional space:

- Dental Hygiene
- Veterinary Tech
- Alternative Energy
- A/V Media Technician
- Telecommunication Tech
- Electronics (Bio-Med/Infomatics/Avionics/Robotic)
- Composites Manufacturing

General discussion on the specific types and characteristic of instructional space noted the following:

Classrooms
Given that many of the programs for jobs for the next 10-15 years have not been developed yet, as new buildings are planned, they should provide new classrooms that
are flexible. In addition to new classrooms per the CAM and projected enrollment growth, instructional space needs noted in the Stakeholder workshops included:

- There is a shortage of general classroom space
- There are limited options for larger classrooms
- Expand the technical capabilities of instructional space/computer labs (the need to connect to the internet is basic need in all classrooms and labs)
- Insure classrooms/labs/shops can expand/change to accommodate various delivery models
- Technical educations requires storage space in the classroom/lab

**Science Labs**
While recent new buildings on campus have provided new science labs, there remains a shortage of program specific including:

- Physics
- Life Science

**Computer Labs**

- There is a shortage of scheduled and drop-in computer labs
- Expand the technical capabilities of computer labs

**Program Specific Labs/Shops**
Many of the specialized technical programs lack sufficient space to provide the unique lab or shop spaces needed for students to excel in learning, particularly in Engineering and Health-related fields. Specific labs needed that are either grossly under-sized or not accommodated in existing campus buildings include:

- Surveying/GIS/Mapping
- Materials Testing/Modeling
- Mechanical Engineering
- Civil Engineering
- Veterinary
- Commercial Refrigeration/HVAC
- Electrician
- Nursing labs
- Specialized Allied Health Labs
- Dental Clinic Labs
- Electromechanical

**Informal Learning Spaces**
Informal learning spaces are non-scheduled areas in a building that facilitate meeting others “accidentally” and allow for the exchange of information. These are also referred to as “sticky” spaces...spaces that are pleasant and invite interaction, where students, faculty, and staff want to “stick around”
They may be a space where student projects are displayed and ideas are incubated, tested, and exhibited or a space where faculty/staff can interact with students as an extension of their faculty offices.

The availability of formal and informal social gathering and learning places throughout campus is a high priority for students and staff. Gathering spaces, whether interior or exterior, need to range in size and shape in order to suit various activities. Window seats at the end of a long corridor can become the perfect place for an individual to find some quiet study time. Small alcoves off main corridors can serve as excellent pull-out spaces for a few people to have an informal conversation. Slightly larger alcoves can serve several people for meeting or studying. As projects are developed, they should explore the following concepts to increase access to informal learning/social space:

- More flexible (non-scheduled), media equipped conference rooms
- One-on-one student-teacher interaction space
- Collaboration rooms for students
- Quiet study space
- Exterior spaces with protection from the elements including covered areas with tables to meet with a few friends or colleagues
- Landscape that provides a variation of spaces for studying

**Instructional Support Spaces**

- Faculty and adjunct faculty office space
- General storage space (especially in classrooms)
- Meeting/Conference/Seminar Rooms

**Student Services**

- Enrollment Services: Admissions, Registration, Assessment,
- Financial Resources: Financial Aid, Work First
- Support Services: Counseling/Advising, Disability Support, Career Services, Veterans, Diversity Services, Outreach
- Tutoring/Math/Writing Centers

**3.7 General Campus Needs**

The consensus of administration and faculty is that the image of the campus needs continued updating from the College’s 1950’s vocational technology institute beginnings. The existing modular light colored masonry buildings along Lindbergh Avenue, among other things have attributed to that perception. The following measures have been identified and are recommended to be incorporated into any future development to improve the image of the College and campus:

- Replace original, outdated campus buildings with new adequate facilities
- Reinforce the newly defined “front door” entrance sequence to campus from West Illinois
- Continue to implement the new signage and graphics throughout campus
- Continue building renaming program
- Establish an Artwork Programs for sculpture and landscape improvements
• Minimize and or contain/visually cover the storage of excess materials around trades and technical program buildings
• Eliminate parking within the interior of campus allowing for more landscaping and courtyards
• Promote a new campus image that reflects the regional uniqueness of the Northwest and its heritage
• Make programs more visible to the community
• Create a culture of continuous improvement and change acceptance
• Increase access for diverse populations with flexible pathways
• Promote a highly diversified level of student experience
• Emphasize health, lifestyle
• Display and reflect campus commitment to sustainability
• Create strong partnerships with community, business, industry and education
• Develop a “sense of place” that will become a unique signature of the BTC Campus
Section 4
Assessment of Existing Campus
4.0 EXISTING CONDITIONS ASSESSMENT

4.1 HISTORY

Bellingham Technical College (BTC) began its long and rich history as the first "Industrial School" built by the Bellingham School District. The first buildings were opened in 1911. This school then became a manual-training facility for Whatcom High School and in 1917, with the passage of the Smith-Hughes Act, courses in automotive mechanics and machine shop for Fairhaven High School were offered.

The need for evening classes emerged with the onset of World War II. BTC expanded its role and provided training for industry for nearly 4,000 persons during wartime. In 1952, local school districts realized that the vocational programs being offered were not meeting the needs of the community. An advisory committee was formed from local labor and management organizations and in 1957, Bellingham Vocational Technical Institute was established as a separate entity from the School District. The campus grew and expanded along with programs needs, and the Institute served the community in this way for thirty-four years.

In 1991, the name officially changed to Bellingham Technical College and its governance was transferred to the State Board for Community and Technical Colleges (SBCTC) and a newly formed local Board of Trustees, elevating the College’s status among other State two-year community colleges and professional/technical institutions. Formal Accreditation followed in 1999, after years of bolstering programs, updating facilities and continued excellence in instruction.

Development of new facilities on its original twenty-one acre site began in 1955 with Buildings A and B. Sixteen buildings were added in the period between 1965 and 1985. Between 1965 and 1993, development on the twenty-one acre parcel was primarily done as needs arose, with one building block growing up next to the last. A core of classroom buildings started to evolve along Lindbergh Avenue, the south edge of the campus. Vocational Lab buildings were sited in the next two rows of buildings to the north, creating an organized, but tight grouping of uniform, single story masonry buildings. As the campus grew to the east, new buildings and infrastructure were added as required, but an overall sense of campus organization was lacking. This left the tertiary spaces between buildings undefined, pedestrian routes meandering, vehicle and pedestrian traffic mixed, and parking sporadic.

Formal Master Plan and Existing Conditions Surveys for the campus did not begin until 1993. This was the first study of the campus to determine existing conditions, future needs and to recommend a potential organization for future development and growth. In 2002, the first comprehensive Master Plan setting forth a vision for the potential build-out of the entire existing BTC property was completed. It realized the main objectives of the College which were to provide a definitive campus entrance, improve and enhance the existing campus core, provide new state-of-the-art facilities for programs in need, move vehicular dependant programs to the perimeter of the site and provide adequate parking, pathways, and lighting throughout campus.
4.2 CONTEXT

4.2.1 Neighborhood

Located in the Birchwood Neighborhood in northwest Bellingham, the BTC campus lies between the City and County boundaries. It is bordered on three sides by public streets: W. Illinois Street to the north, Nome Street to the east, Lindberg Avenue to the South. The west boundary is also the Bellingham City Limits and is bordered by Little Squalicum Park. Across Lindbergh and Nome, the adjacent land use is Single-family housing where north of Illinois, industrial land use predominates. The eastern thirty acres is within the City Limits while two acres to the west of Little Squalicum Park lies within Whatcom County.

The Birchwood Neighborhood has historically been dominated by single-family residences.

4.2.1 Property

The total area owned by the College is 32.02 acres. The only existing easements on the property are a City maintenance easement for the fire protection water line and a street extension easement for diagonal parking along Lindbergh Avenue.

Bellingham Technical College currently has enough land to support its anticipated 20 year growth. Land acquisition is not a significant issue for the foreseeable future or of this Master Plan. This assessment will be reviewed through time and as adjacent properties become available.

4.2.2 Topography

The majority of the campus is situated on a flat, city-block like plat. There is a steep bank behind Buildings U, K, J, which slopes down into the student parking lot. The entire parking lot is roughly twelve feet lower than the main campus. The topography rises again near the Desmond McArdle Center and Morse Center to the east. The undeveloped portion to the north is primarily flat at the same elevation of the main campus. Drainage from the Little Squalicum Creek system is evident on portions of the site.

4.3 CAMPUS CHARACTER

Bellingham Technical College has worked very hard to establish itself as a premiere technical and professional collegiate institution. While recent new construction along the south and east boundaries and the new North Entrance has done much to improve the appearance of the physical environment, the south edge of the campus is still very outdated.

The architectural design of the majority of campus buildings imparts a low-quality image to the campus which is not in keeping with the very quality of instruction of the College. The modular, monotone, and overly simplified exteriors are dated and do not have the interest, complexity, or intrigue to connote the technical image of excellence desired.

The perception of campus began to change with the construction of the Culinary Arts/Cafeteria and Health Buildings, completed in 1981. These buildings utilized a new set of building materials, color palette, and floor plan orientation which has not been replicated with any other new construction.
In 2003, with the completion of the Haskell Center, a new set of materials and colors were introduced to campus. Adding warmth and interest, this new palette creates a campus uniqueness which characterizes the College’s identity. All new buildings since have followed with the consistent theme of architectural style and materials creating a cohesive campus environment.

4.4 LAND USE

Within the Birchwood Neighborhood Comprehensive Plan, BTC is identified as Areas 13, 13A, and 13B. These areas are zoned Public Use. Development in the neighborhood is subject to comment by the Birchwood Neighborhood Group (BNG). This is an active community organization which meets on a regular basis to review and discuss issues affecting the Neighborhood. The City of Bellingham land use permitting process underscores the importance of coordination with the BNG in future development. For this reason, the BNG has been included in the BTC Master Planning process.

4.5 BUILDINGS

**Building A**

**Size:** 11,465 SF  
**2013 FCS Score:** 430  
**Built:** 1955  
**Renovations:** 1992 (General Renovation), 1999 (Boiler), 2004 (CISS, Library) 2013 (Basic Skills)

**Original Program:**  
Cooking, Restaurant, Nursing, Counseling, Bookstore, Survey Tech, Engineering Tech

**Current Program:**  
Computer Services, Classrooms, Central Receiving, Basic Skills

**Deficiencies:**  
Lack of meeting space  
Central Receiving is small  
Lack of storage for Central Receiving area  
Inadequate heating and ventilation  
Poor space utilization  
Restrooms are inadequate in number and do not comply with ADA  
Closer student parking required  
Lack of student and staff space

**Amenities:**  
Overall size of building is large  
Three adequately sized classrooms  
Loading Dock

**Future Use:**  
Interim: Continue with current programs  
Long Range: Replace with new building
Building B
Size:  31,708 SF
2013 FCS Score: 296
Built: 1955
Renovations: 2001 (Addition and Renovation), 2006 (Classroom)
Original Program:
Current Program:
   Building Construction Technology, Precision Machining Electrician, Electro-Mechanical Technology, Major Appliance, Central Computer Lab
Deficiencies:
   Chopped up, inefficient spaces
   Worn and unattractive aesthetic
   Restroom heating poor, cold
   Not energy efficient
   Construction program requires better ventilation
Amenities:
   Renovated lab and classroom spaces
   Remodeled restrooms which meet ADA standards
   Some large, open lab spaces
Future Use:
   Interim: Continue with current programs
   Long Range: Replace with new building

Building C
Size:  5,511 SF
2013 FCS Score: 286
Built: 1965
Renovations: 1999 (Reroof), 2006 (Dental Lab/Classroom)
Original Program:
   Dental Assisting, Dental Hygiene, Student Lounge
Current Program:
   Dental Assisting, Dental Clinic
Deficiencies:
   Classrooms are too small and have a long and narrow configuration; not proper layout for instructional space
   Reception Area inadequate size for clients
   No space for conferencing of students
   Dental Clinic is inadequate in size for hygiene
   Limited infrastructure which affects technology use
   Darkroom and sterilization lab are inadequate
   Poor traffic flow
   Access from parking difficult
   Better located near Health/Medical
   Faculty and Dental Clinic office space inadequately sized.
   Needs staff office space
Amenities:
   Efficient building with recent expansion
Clinic facilities are up to date
Has adjacent classroom for program instruction

Future Use:
Current/Interim: Continue with current programs
Long Term: Replace with new building

Building G
Size: 17,197 SF
2013 FCS Score: 218
Built: 1981
Renovations: 1998 (Reroof), 2001 (Addition)
Original Program:
Pastry, Culinary Arts, Conference
Current Program:
Baking, Pastry & Confections, Culinary Arts
Deficiencies:
More classroom and lab space is required
Office space is inadequate
HVAC poor, needs replacement
Restrooms are inadequate for function
Poor work flow in kitchen
Line up/service area does not flow properly
Poor sound system
More conference area near food service is required

Amenities:
Large capacity cafeteria

Future Use:
Current/Interim: Continue with current programs
Long Term: Improve with Renovation

Building H
Size: 9,158 SF
2013 FCS Score: 314
Built: 1979
Renovations: 1999 (ADA Restroom), 2002 (Nursing Renovation), 2013 (Reroof)
Original Program:
Health Occupations, Practical Nursing
Current Program:
Health Occupations, Practical Nursing, Assessment Center, Tutoring Center
Deficiencies:
Classrooms are too small
Not enough lab space
Existing labs too small
Not enough restrooms to serve students
Offices too small, inflexible and lack ventilation
No student gathering spots
Poor lighting
Poor acoustics
Not enough space for number of students
Poor work flow
Building not ADA compliant

Amenities:
Location adjacent to Haskell Center

Future Use:
Current/Interim: Continue with current programs
Long Range: Replace or renovate and expand to make collection to Haskell Center

**Building J**

Size: 11,558 SF
2013 FCS Score: 348
Built: 1977
Renovations: None

Original Program:
Engineering Technology, Electronics, Electrical, Instrumentation

Current Program:
Civil Engineering, Mechanical Engineering, Geomatic Technology; General Classrooms, Personal Fitness

Deficiencies:
Inadequate Heating, Ventilation and Air Conditioning controls
Restrooms need to be expanded
Small spaces throughout Lack of suitable offices
Inadequate space layout
Interior circulation problems
Code Compliance
Data infrastructure problems

Amenities:
Clustering of similar programs to share resources and build community Adequate size classrooms

Future Use:
Current/Interim: Renovate and Expand

**Building K**

Size: 4,302 SF
2013 FCS Score: 296
Built: 1978
Renovations: None

Original Program:
Ironworkers Apprenticeship

Current Program:
Facilities Management Shop

Deficiencies:
Metal Building - not meant to be used for instruction
Lacks technological infrastructure
Mezzanine is structurally unstable
Mezzanine is not ADA compliant

Amenities:
Large open warehouse space

Future Use:
- Current/Interim: Improve thru Minor Works
- Far Term: Replacement

**Building M**

Size: 15,454 SF

2013 FCS Score: 246

Built: 1977

Renovations: 1999 (ADA restrooms)

Original Program:
- Automotive Technology

Current Program:
- Automotive Technology

Deficiencies:
- Inadequate classroom space (Only one small classroom within 14,000-sf
- Building too small for program
- Lab layout is not effectively designed for optimum use
- Stairwell has potential safety problems and access
- Limited infrastructure which affects technology use
- Safety issues for student supervision
- Inadequate electrical service
- Creates a safety hazard for pedestrians
- Building not energy efficient

Amenities:
- Clear span assists in remodeling for change in use
- Central location on campus

Future Use:
- Current/Interim: Improve thru Minor Works
- Far Term: Replacement

**Construction Pavillion**

Size: 7,054 SF

2013 FCS Score: (not rated)

Built: 1960

Renovations: 1977 (Auto Body), 2008 (Construction)

Original Program:
- Auto Body Repair Technology

Current Program:
- Construction Trades

Deficiencies:
- No classroom space
- Insufficient space for program
- Limited infrastructure which affects technology use

Amenities:
- Clear span assists in remodeling for change in use
- Central location on campus

Future Use:
Current/Interim: Improve thru Minor Works
Far Term: Replacement

**Building R**

Size: 2,023 SF  
2013 FCS Score: 706  
Built: 1991  
Renovations: 1997 (Interior Remodel and Electrical Service Upgrade, 2002 (Reroof))  
Original Program: 
  Bookstore  
Current Program: 
  Veterinary Tech  
Deficiencies: 
  Inadequate space for program  
  Manufactured building  
Amenities:  
  None  
Future Use:  
  Current/Interim: Keep for surge space  
  Far Term: Replacement

**Building T**

Size: 16,789 SF  
2013 FCS Score: 278  
Built: 1977  
Renovations: 1999 (Various Remodel and Addition)  
Original Program:  
  Not Known  
Current Program:  
  Diesel Technology  
Deficiencies:  
  Pedestrian Conflict  
Amenities:  
  New dividable classroom, computer lab and restrooms  
  Renovated lab space  
  Upgrades for power, data, mechanical, and energy systems  
  Large service bays and open lab space  
  Central location on campus  
Future Use:  
  Current/Interim: Improve thru Minor Works  
  Far Term: Replacement

**Building U**

Size: 9,495 SF  
2013 FCS Score: 266  
Built: 1979  
Renovations: 1999 (Various Remodel and Addition)  
Original Program:
Carpentry
Current Program:
    Commercial Refrigeration, HVAC Technology
Deficiencies:
    Lacking space for large equipment
    Storage mezzanine not adequate
    Hot water supply barely works
    Needs secure area for tools
    Temperature control in computer lab is required
    Lacks gathering areas for study and conversation
Amenities:
    Large open lab space
Future Use:
    Current/Interim: Improve thru Minor Works
    Far Term: Replacement

Building Y
Size: 2,023 SF
2013 FCS Score: 730
Built: 1991
Renovations: 1997 (Interior Remodel and Electrical Service Upgrade, 2002 (Reroof))
Original Program:
    Offices
Current Program:
    Parenting & Child Services
Deficiencies:
    Creates safety hazard with pedestrians and children
    Small spaces
    Manufactured building
    Adjacent wetland cause conflict with play area - bugs
    Needs closer parking for parents and children
Amenities:
    None
Future Use:
    Current/Interim: Improve thru Minor Works
    Far Term: Replacement

Building CS
Size: 12,703 SF
2013 FCS Score: 158
Built: 1993
Renovations: 2001 (Interior Remodel)
Original Program:
    Administrative & Student Services
Current Program:
    Administrative & Student Services
Deficiencies:
    Not located at new campus “Front Door”
Insufficient space for Student Services
Insufficient space for Business Services
Financial Resources needs more privacy
Admissions is not welcoming
Registration has bad layout
Wayfinding is difficult
Lack of meeting space/ conference areas
No privacy for students
Office acoustics are poor
Waiting area inadequate
Need private testing area
No gathering or informal spaces
Need better proximity to Learning Center, Human Resources and Purchasing
Upper restrooms not ADA compliant
Inadequate HVAC creating potential health issues
Inadequate lighting
Amenities:
Adjacent to Parking
Future Use:
Current/Interim: Improve thru Minor Works
Far Term: Replacement

**Haskell Center**

Size: 33,461 SF
2013 FCS Score: 146
Built: 2003
Renovations: None
Original Program:
Allied Health, Nursing, Science Labs, General Classrooms.
Current Program:
Allied Health, Nursing, Science Labs, General Classrooms.
Deficiencies:
Insufficient space for program needs
Amenities:
ADA Compliant
Access to Technology
Energy Efficient
Future Use:
Current/Interim: Maintain thru RMI/Minor Works
Far Term: Expand thru addition

**Desmond McArdle Center**

Size: 15,397 SF
2013 FCS Score: 146
Built: 2005
Renovations: 2011-12 Added classrooms and Labs
Original Program:
Electronics Technology, Instrumentation and Control Technology, Process Technology,
Classrooms
Current Program:
  Electronics Technology, Instrumentation and Control Technology, Process Technology,
  Classrooms
Deficiencies:
  Insufficient space for program expansion
Amenities:
  ADA Compliant
  Energy Efficient
Future Use:
  Current/Interim: Maintain thru RMI/Minor Works
  Far Term: Maintain thru RMI/Minor Works

Morse Center
Size: 50,065 SF
2013 FCS Score: 146
Built: 2007
Renovations: None
Original Program:
  Welding, Auto Collision Repair
Current Program:
  Welding, Auto Collision Repair, BTC Foundation Offices, Computer Lab
Deficiencies:
  None
Amenities:
  ADA Compliant
  Energy Efficient
Future Use:
  Current/Interim: Maintain thru RMI/Minor Works
  Far Term: Maintain thru RMI/Minor Works

Campus Center
Size:
2013 FCS Score: 146
Built: 2009
Renovations: None
Original Program:
  Library, Classrooms, Student Center, Bookstore, Computer Networking, Business Systems,
  Café, Assembly Space (Settlemyer Hall)
Current Program:
  Library, Classrooms, Student Center, Bookstore, Computer Networking, Business Systems,
  Café, Assembly Space (Settlemyer Hall)
Deficiencies:
  None
Amenities:
  Central Campus Location
  ADA Compliant
  Energy Efficient
Future Use:
4.6 Circulation

An in-depth traffic and parking study was performed for the campus in 2001, identifying vehicle trip numbers and patterns, parking availability and use, and potential revisions to existing conditions to alleviate traffic and parking congestion. Following the study’s recommendations, existing parking lots have been improved, new parking lots constructed and vehicular routes revised as Capital Projects have been developed. It is recommended that with the next Major Capital Project a new traffic and parking study be performed.

Most vehicles arrive at the campus via Nome Street from the south along Marine Drive or Nome Street from the north through the Birchwood Neighborhood. Several come from the west, along Lindbergh Avenue from Bennett Road following the College directional signs from Interstate 5. Getting to the campus from various parts of the City can be confusing. Once at the perimeter of the campus, newcomers are often confused as to where to go. In 2004 the College relocated the primary entry to campus from Nome Street, adjacent to the Birchwood Neighborhood, to West Illinois Street on the north side of campus.

Traffic through the Birchwood Neighborhood is a major concern for the adjacent property owners. Heavy trip patterns in the morning and at the end of the school day create dangerous conditions for children and elderly citizens, as many of the vehicles exceed the arterial speed limits.

Internal vehicle traffic within the campus also creates problems, as many vehicles travel at high speeds and pedestrian routes cross vehicle paths in numerous locations. However, many of the technical programs are dependent on vehicle access and faculty parking is scattered about the center of campus. Eliminating vehicles from the interior in the future is desired; efforts to relocate vehicle-related programs to the perimeter and provide additional central parking lots are recommended.

4.7 Parking

New parking lots associated with the Morse Center Building provide more parking spaces than are required by the Zoning Code for the current building area. The college has been working to provide as many spaces as possible, even above the required amounts to deal with actual demand rates. Each new building proposal will need to address additional parking as required.

Off-site parking is heavily used on both Nome and Lindbergh Avenue. These spaces are closest to the classroom buildings, so the spaces are highly sought after throughout the day. Plans for reorganizing the spaces along Lindbergh into angles parking can increase the spaces available, but may cause more delay to passing traffic.

A goal of the Master Plan is to reduce the number of on-street parking spaces over time in order to provide a safer street environment, a sense of foreground and separation for the College from the neighborhood and a visually more appealing neighborhood setting.
4.8 Bicycle

The demographic of the BTC student population and the workforce focus of its program result in very little use of bicycles as a means of transport. BTC encourages bicycle use both on and around campus. There are a number of bicycle parking areas around the newer campus buildings however there are insufficient covered storage/parking and access to bicycle support such as shower facilities.

4.9 Transportation

The BTC campus is well served by public transit. Whatcom Transit Authority (WTA) has regularly scheduled bus routes serving the campus with two routes on Lindberg Avenue (3 & 4). Bus service is presently available weekdays from 7:00 am to 10:30 pm. with more limited service on weekends.

In the future it may be desirable to work with WTA to have the bus routing relocated to West Illinois Street campus entrance and provide covered bus shelter.

4.10 Utilities

4.10.1 HVAC Systems

Due to the wide range in facility ages, there are a multitude of building HVAC systems, equipment and controls on campus. Most of the buildings on campus are served by stand alone heating plants fueled from natural gas. In some cases these plants include backup capacity in the event of a boiler failure. In many cases the equipment is sized to meet winter design conditions and is oversized for the majority of the heating season. Recent facilities have implemented operable windows and radiant floor heating systems.

The master plan assumes that new HVAC systems will be included in individual projects as they are executed. Additionally, all new projects will be connected to a campus-wide energy management system in order to centrally monitor and control individual building heating, air conditioning and ventilation systems. Global management of these systems allows for greater energy conservation and savings and makes it easier for Facilities personnel to monitor.

4.10.2 Natural Gas

Cascade Natural Gas Corporation (CNG) has an 8-inch high pressure (250psig) gas line in Lindbergh Avenue which services the southern portion of campus and an existing gas main which runs north/south in the alley just east of the campus which supplies both the Desmond McArdle and the Morse Center. In addition, CNG has installed new 2-inch gas line along West Illinois Ave. which services Morse Steel. CNG has an ongoing program with the College to change out the master meters and replace them with individual building meters. There are several master meters on campus at the following locations:

- Building B which serves several buildings,
- Building G which also serves Building I and Building U
- Campus Center
12,470Y/7200V, 3 phase service is delivered by the utility to a primary metering cabinet located west of Building A. This is the service point. Primary feeders run from the primary metering cabinet to a 15KV, 200 amp, 3 phase, pad mounted switch located nearby. From the pad mounted switch, there are 3 primary feeders serving the entire campus. The primary feeders serve a total of 11 pad mounted transformers and there are underground secondary feeders from the transformers to the buildings.

The North Loop Feeder is 3#2 copper 15KV Type XLPE and 1#2 600V THHN Ground routed in a 4” conduit within a concrete encased duct bank. The extension of the loop to Transformers 10 and 11 is 4”-3#1/0 copper 15KV Type XLPE and 1 #1/0 600V THHN Ground routed underground. It serves Buildings G, J, K, M, R, T, U, Campus Services, McArdle, & Morse Center via Transformers 2, 4, 5, 6, 10 and 11 as follows:

- Transformer #2 – 12.5KV:480Y/277V, 1000 KVA, 3 phase, 4 wire. Serves Buildings T & U with secondary feeders to each.
- Transformer #4 – 12.5KV:480Y/277V, 300 KVA, 3 phase, 4 wire. Serves Buildings J & R with a secondary feeder to Building J. Building R is fed by a secondary feeder from Transformer #4 which goes through another transformer dedicated to Building R.
- Transformer #5 – 12.5KV:480Y/277V, 750 KVA, 3 phase, 4 wire. Serves Buildings I & M with secondary feeders to each.
- Transformer #6 – 12.5KV:480Y/277V, 500 KVA, 3 phase, 4 wire. Serves Buildings G & Campus Services with secondary feeders to each.
- Transformer #10 – 12.5KV:480Y/277V, 1000 KVA, 3 phase, 4 wire. Serves Desmond McArdle Center.
- Transformer #11 – 12.5KV:480Y/277V, 2000 KVA, 3 phase, 4 wire. Serves Morse Center.

The South Loop Feeder is 4”-3#2 copper 15 KV Type XLPE and 1#2 600V THHN Ground routed underground. It serves Buildings C, H and Haskell Center via Transformers 7 & 9 as follows:

- Transformer #7 – 12.5KV:208Y/120V, 500 KVA, 3 phase, 4 wire. Serves Building C
- Transformer #9 – 12.5KV:480Y/277V, 1000 KVA, 3 phase, 4 wire. Serves Building H & Haskell Center with secondary feeders to each.

The Building A & B Feeder serves Buildings A, B & Y via Transformers 1 & 8. Transformer #8 serves Building B. It is 12.5KV:480Y/277V, 750 KVA, 3 phase, 4 wire. The primary feeder to Transformer #8 is 4”-3#2 copper 15 KV Type XLPE and 1#2 600V THHN Ground routed underground. Transformer #1 serves Buildings A & Y. It is 12.5KV:208Y/120V, 500KVA, 3 phase, 4 wire. The primary feeder to Transformer #1 is 4”-3#2 copper 15 KV Type XLPE and 1#2 600V THHN Ground routed underground.

The primary power distribution system will need to be extended to each new building constructed on campus. Intent is to extend the primary feeder from the nearest available manhole to a dedicated pad mount transformer for the particular building. When existing buildings are demolished, the transformer serving the building will be demolished provided it does not serve other remaining buildings. Transformers will be sized based on load requirements for the buildings served.
Deficiencies and potential deficiencies of the power distribution system are as follows:

- Ampacity rating for the #2 wires used for most of the primary feeders is 155 amps. At this time, this is sufficient to handle the capacity on all of the feeders but this must be reevaluated whenever significant loads are added to the system. Analysis is that the capacity will remain adequate through the time span of the master plan as buildings will be demolished as well as added. But, this issue will require evaluation each time a building is added. If capacity will ever be exceeded due to added buildings, the likely solution is to bring in a second service from the utility.

- Most of the pad mount transformers are nearing the end of their anticipated life span. The College maintains them well and consequently they are in good condition given their age. The transformers likely have several more years of useful life but replacement of Transformers 1 through 8 should occur at some point during the time span of this master plan.

4.10.4 Emergency Power

The campus does not currently have any emergency power facilities as there are no generators or generator hookup locations on campus. Emergency egress lighting and exit lighting is accomplished using battery backup. The possibility of adding emergency generators to serve a central gathering space and the data network will be explored. Building G is the likely location of a central gathering space during an emergency.

4.10.5 Data

The Local Area Network (LAN) for the campus runs over multimode and single mode fiber optic cabling distributed to all buildings. Routing is primarily via the underground duct bank though there is some fiber routed above ceilings in Building C. Head-end LAN equipment and servers reside in Building A with all fiber homerunning to that location. Most buildings have 12 strands of fiber dedicated to them. Exception to this is Building K with 4 strands.

To the Desmond McArdle Center from Building A there are 48 strands of multimode fiber and 48 strands of singlemode fiber.

To the Morse Center from the Desmond McArdle Center there are 48 strands of multimode fiber and 48 strands of singlemode fiber.

Deficiencies and potential deficiencies of the data network are as follows:

- Facilities in Building A housing the central data equipment are inadequate. Recent renovations of the area have improved the space but a completely new space is eventually required.
- Fiber required for new buildings must be routed all the way back to Building A unless the fiber count for other buildings is reduced. Ability of existing raceways to accommodate this is questionable and will not be known for certain until pulling cables is attempted.
- The recently installed access control system utilizes available strands of fiber. This reduces the total number of available strands which is not an immediate concern for
buildings with 12 strands but is of concern for those with less than 12 strands.

4.10.6 Telephone

The voice network for the campus routes over multipair copper cabling distributed to all buildings. Routing is primarily via the underground duct bank. The PBX for the telephone system is located in Building Z and all voice cabling is tied back to this location.

Deficiencies and potential deficiencies of the data network are as follows:

- Much of the backbone cabling is old and unreliable particularly the branch running along the North side of campus in the duct bank.
- Many of the splices feeding individual buildings are in questionable condition. Feeds to Buildings J, K, and U are all questionable.
- Most IDF’s on campus need to be rewired.
- The existing phone system requires replacement. It only has 5 ports, it is difficult to find qualified technicians to service it, and has failed numerous times in recent years. Also, there have been repeated handset failures in recent years.

4.10.7 Intercom

Intercom cabling is routed to most buildings on campus primarily via the underground duct bank. Intercom speakers are located in many of the buildings. These speakers were installed when the buildings were originally constructed and it appears that they are not generally used currently. It is recommended that the campus install a mass-notification system.

4.10.8 Television

Television system coaxial tie cabling is routed to most buildings on campus primarily via the underground duct bank. Individual TV outlets are located in many of the buildings on campus. It appears that the TV distribution system is not generally used. Given that most television and video is accessed via data systems, it is recommended that un-used TV systems be removed under future projects.

4.10.9 Fire Detection/Alarm

Tie cabling for the campus fire alarm system routes to all buildings primarily via the underground duct bank. The main fire alarm control panel for the campus is located in Building A. Most buildings have their own control panels that monitor all devices in the building and connect back to the main panel at Building A. Devices in Building B are monitored by Building A. Devices in Building C are monitored by Building D. The Morse Center Fire Alarm Panel is wired to the McArdle Center Fire Alarm Panel which in turn connects to the main panel in Building A. Individual control panels in each building are able to function as a standalone system if connection to the main fire alarm panel in Building A is lost. Most of the control panels are by Silent Knight.

4.10.10 Security/Access Control

Security was handled individually at each building until a recent project adding Access Control at Buildings A, B, C, G, H and the Campus Services Building. For these buildings, access control via card readers is provided at multiple exterior doors. The access control devices tie back to the system head-end located in Building A via fiber optic cabling that was originally installed for the data network. The Access Control System runs over its own network on dedicated fiber.
strands rather than over the campus LAN.

Door sensors and, at some buildings, motion detectors or break glass detectors, are located in most buildings to detect intrusion. In the buildings where access control was recently installed the devices are monitored by the Access Control System. Individual security panels monitor the devices in the other buildings. The individual security panels are not networked.

Video cameras are located in Buildings D, G and Z and are monitored by the Access Control System.

Existing lighting around campus was documented during this process. Pole lights in the central student parking lot have recently been replaced with taller poles and newer reflectors to improve safety. Two additional pole lights were installed in areas determined to have inadequate coverage from other lights.

Deficiencies or potential deficiencies of the security and access control systems

- Fiber may not be available to install the new access control system at buildings with less than 12 strands.
- Individual security panels in buildings that were not upgraded to the new access control system are old and difficult to maintain

4.10.11 Fire Protection

BTC has installed a 10-inch water line for purposes of providing adequate fire protection for present and future campus facilities. New fire hydrants have already been installed in the northern portion of the campus to protect the future buildings along West Illinois Street. The City owns and maintains this 10-inch water main. A campus-wide utility easement has been granted to the City for access to water system.

4.10.12 Domestic Water

The City has 6-inch and 8-inch water mains located in the streets surrounding the BTC campus. Water pressure is 70 psi (static low in high demand periods) and 87 psi (static high in low demand periods). These City water mains provide enough capacity for both existing and future anticipated water demands on campus. The City owns and maintains the water main loop which provides fire protection to the campus and BTC owns and maintains the domestic water service lines to each campus facility. While the existing City water mains will provide sufficient capacity for future domestic water needs on campus, the adequacy of these lines must be checked with regard to future fire sprinkler requirements.

4.10.13 Sanitary Sewer

The College has an existing, gravity sanitary sewer running east/west along the southern portion of the campus which services the buildings in that area. This sewer main discharges to the City’s sewer system at a gravity manhole located in Lindbergh Ave., (southwest corner of the campus). Portions of this southernmost sewer system are deteriorating and will require
The McArdle and the Morse Centers each have individual, gravity connections to the City’s sewer systems via individual manholes located in Nome Street.

4.10.14 Stormwater Management

The existing campus drainage system is currently divided into three zones; the southwest zone (which contains the oldest remaining buildings on campus), the southeast zone (which is composed of the Building Z parking lot and lawn area adjacent to the intersection of Lindbergh Ave. and Nome Street), and the northern zone (which is composed of the campus area north of Buildings U, K, J, R, I, G, and the campus Services Building). The southwest drainage zone drains directly, without treatment, to the City’s storm drain system located along Lindbergh Ave. Stormwater from the southeast drainage zone drains to the City’s storm drain system along Nome St. after passing through a biofiltration swale and an underground, stormwater detention basin. The northern drainage zone drains to the City’s drainage system located at the west edge of the campus and ultimately to Little Squalicum Creek. The stormwater flow from the northern drainage zone is treated in an underground, canister treatment vault system, (two treatment vaults in series). The City currently is not requiring detention capacity for stormwater discharging from the northern drainage zone.
Section 5
Proposed Development
5.0 PROPOSED DEVELOPMENT

5.1 Development Zones

For the purposes of Master Planning, six planning zones have been established for the campus. Planning zones are useful for identifying sections of the campus with similar planning criteria and to address broad site improvements within planning zones which should be considered as part of capital project proposals:

Zone 1
The area of campus at the corner of Nome and Lindbergh Avenue where College Services building, Building G and the Haskell Center is located. This includes the large front lawn areas that are often used by the neighborhood. This area used to be the formal entrance to campus. There is potential for development in this area for new campus community spaces and the health and science programs.

Zone 2
This Zone encompasses the southern portion of campus and includes older, densely sited existing masonry buildings. The majority of the planned development in this area consists of replacing outdated buildings by consolidating programs in new buildings in other zones on campus. This zone is projected to become green space which could then be used for new buildings for growing and emerging programs.
Zone 3
This zone encompasses the main center of campus and consists of older, densely sited masonry buildings and the lower student parking lot. The majority of the existing buildings will be replaced by consolidating the programs in new buildings in other zones on campus with the exception of Facilities. This will be the primary zone for parking expansion.

Zone 4
The area of the Desmond McArdle Center and Morse Center on the west edge of Nome Street and the remaining undeveloped northern section of BTC’s property. Vehicle dependent programs and Construction Trades will be located in this zone. This area has a wonderful relationship to the neighborhood and could be developed with new buildings and a trail system to the creek. The primary campus entrance was moved here with the completions of Illinois Ave which has helped alleviate vehicle traffic from the neighborhood.

Zone 5
Located on Marine Drive to the west of the main campus. Additional Facilities storage is located here on a short term basis to reduce the use of land on the main campus. Activities and programs that require frequent, short term arrivals and departures will benefit from the zone’s location on a primary arterial away from campus congestion.

Zone 6
This zone is the only remote campus property. It is located in the Maritime Heritage Park in downtown Bellingham adjacent to Whatcom Creek. The new Perry Center for Fisheries and Aquaculture Science is located at this zone. There is no further expansion of development planned in this zone.

5.2 Land Acquisition
Bellingham Technical College currently has enough land to support its anticipated 20 year growth. Land acquisition is not a significant issue for the foreseeable future or of this Master Plan. This standpoint will be reviewed through time and as adjacent properties become available.

5.3 Funding Options
The majority of Bellingham Technical College’s current and past capital projects have been funded by allocations from Washington State which flow through the State Board for Community and Technical Colleges (SBCTC) as specific dedicated funds for particular areas of capital enhancement.

Applications for State funds require a series of formal submittals, including a Project Request Report, a Pre-Design study for projects over five million dollars, and subsequent Status Reports. Proposals are reviewed competitively against projects proposals from other STBTC institutions on an established timeline during each two-year funding biennium. If a project is successful through the state board PRR competition, it will be included in SBCTC Capital Budget, included in the budget proposals/negotiations by OFM, adopted by the State Legislature.
5.4 General Development

Growth and improvement for the campus is anticipated as a result of (a) existing programs with a long successful history of demand outgrowing their current facilities, (b) existing programs changing to reflect new standards in industry and manufacturing, (c) existing programs becoming obsolete, and (d) new, known and unknown future programs developed to respond to economic trends.

Over the next 25 years, Bellingham Technical College is expected to experience significant growth in FTEs. It is crucial to the achievement of the college’s mission that a comprehensive and logical plan for accommodating this growth be developed and adopted. The recommended plan in this document has been generated to respond to the space and functional needs of the existing programs as well as projected program expansion.

The recommended Plan herein should not be considered “cast-in-stone” rather it should be viewed as a framework for decision making. As the needs of the college change or if planned funding sequences change, this plan should and must be re-evaluated and modified to respond to the fluid realities of program opportunities, changing demographics, funding opportunities, and the State’s extended process of capital development.

The Master Plan proposes to address the identified space shortfall through a number of projects. The sequence proposed for development is generated to work within the capital project funding process established by the SBCTC and assures a logical process enabling continuous operation of programs in existing buildings while their new buildings/spaces are developed.

The proposed major capital development includes two basic project types; renovation/expansion projects which will seek to expand and upgrade existing buildings that by virtue of their condition still hold much of their value as academic structures; and new buildings to be constructed on available sites which will either replace existing non-functional and worn building or accommodate new growth.

Note, all budget estimate figures are based on area costs in 2013 funds escalated at 3% to the anticipated mid-point of construction. Project cost estimates are based on historical cost average per unit or area, i.e. $/GSF, $/bed, $/LFT, etc.

It is anticipated that each project will incorporated utility/infrastructure improvements/extensions needs to support the specific project. Additionally as new projects “consume” the existing parking over the code minimum, new parking will be provided per code. Similarly, unless a proposed project is in a drainage basin that has been designed accounting for its added impervious area; on-site stormwater detention is assumed to be included in the project scope.
5.5 Near Term Development

Near-term development is defined as projects which will be requested, planned, designed, and constructed within the next 2-12 years. The proposed projects include (Note all estimates in 2013 funds):

**Engineering Technology Building Remodel/Addition (Building J)**
The proposed project will completely reconfigure and renovate the 12,000-sf of the existing building J and add an additional 16,600-sf of new program space supporting the Engineering programs. Remodel includes reorganization of interior non-load bearing partitions, new interior finishes, new lighting and instructional media, and new systems (power/HVAC)

- Renovated Area: 12,000-gsf
- Addition: 18,000-gsf
- Anticipated Project Cost: $14,800,000
- Anticipated Schedule:
  - Funding Request: 02/14
  - Predesign: 08/15-12/15
  - Design: 1/16-07/17
  - Construction: 08/17-05/19
  - FF&E & Move-In: 06/19-08/19
  - Anticipated Completion: September 2019

**Nursing/Science Building (Replace Building H)**
The proposed project will replace Building H with a two-phased multi-story building providing additional lab space for nursing, general science labs, and general classrooms. The initial phase will be new construction to the west of Haskell Center. Following construction of this phase, building H can be vacated and demolished to create site area for the second phase. After completion of the second phase, the dental clinic in Building C and the Vet Tech program in Building R can be relocated and building C can be removed and temporary green pace provided.

- Demolished Area: 9,558-gsf
- New Construction: 48,000-gsf
- Anticipated Project Cost: $26,450,000
- Anticipated Schedule:
  - Funding Request: 02/16
  - Predesign: 08/17-12/17
  - Design: 1/18-07/19
  - Construction: 08/19-12/21
  - FF&E & Move-In: 12/21-2/22
  - Anticipated Completion: February 2022

**Expand Child and Family Services**
The proposed project will relocate the existing modular R adjacent to Building Y.

- Renovated Area: 4,000-gsf
- Addition: 4,000-gsf
- Anticipated Project Cost: $800,000
- Anticipated Schedule:
  - Design: 1/22-06/22
Renovate/Expand Campus Services
The proposed project will expand Campus Services Building to correct deficiencies and provide added space needed in all areas of student services (admissions, registration, financial aid, counseling, etc.). This project will also provide space for ABE, ESL, and related functions currently in Building A. The project is anticipated to be phased to accommodate continued operations. At its completion, Building A will be removed.

Renovated Area: 12,790-gsf
Addition: 30,000-gsf
Anticipated Project Cost: $18,700,000
Anticipated Schedule:
- Funding Request: 02/20
- Predesign: 08/21-12/21
- Design: 01/22-07/23
- Construction: 08/23-12/24
- FF&E & Move-In: 01/25-03/25
Anticipated Completion: May 2025

5.6 Mid Term Plan
Mid-term development is defined as projects which will be requested, planned, designed, and constructed within the next 12-20 years. The anticipated projects include:

Trades Building
The proposed project will provide new building to house all trades-related programs including: Construction, Electrical, Appliance Repair, HVAC, and similar trades programs. The project will include the removal of Buildings B, T, & CP.

Demolished Area: 55,500-gsf
New Construction: 65,000-gsf
Anticipated Project Cost: $32,000,000
Anticipated Schedule:
- Funding Request: 02/24
- Predesign: 08/25-12/25
- Design: 01/26-07/27
- Construction: 08/27-07/29
- FF&E & Move-In: 08/29-10/29
Anticipated Completion: September 2029

Diesel & Automotive Repair
The proposed project will relocate the automotive and Diesel repair from the south core campus to the industrial zone. It will provide added shop and classroom space and accommodate projected expansion on this growth program. The project will include the removal of Building M.

Demolished Area: 15,454-gsf
New Construction: 45,000-gsf
Anticipated Project Cost: $22,200,000
Anticipated Schedule:
  Funding Request: 02/28
  Predesign: 08/29-12/29
  Design: 1/30-07/31
  Construction: 08/31-05/33
  FF&E & Move-In 05/33-08/33
Anticipated Completion: September 2033

Renovate Building U
The proposed project will renovate Building U for the campus Facilities and Shops followed by demolition of Building K.
  Demolished Area: 4,302-gsf
  Renovated Area: 9,495-gsf
  Anticipated Project Cost: $2,200,000
  Anticipated Schedule:
    Design: 1/33-07/33
    Construction: 08/33-12/33
    FF&E & Move-In 1/34-2/34
Anticipated Completion: February 2034

5.7 Far-Term Plan
Far-term development is defined as projects which will be requested, planned, designed, and constructed within the next 20+ years. Owing to the extended timeframe, only MACC estimates in 2013 funds are noted. The anticipated projects include:

General Academic
The proposed project will provide for expansion of general academic and lab space to accommodate projected growth in FTE. This project is anticipated to include a major assembly space.
  New Construction: 60,000-gsf
  Anticipated Project Cost: $30,000,000
  Anticipated Schedule:
    Funding Request: 02/32
    Predesign: 08/33-12/33
    Design: 1/24-07/35
    Construction: 08/35-07/37
    FF&E & Move-In 08/37-10/37
Anticipated Completion: September 2037

Renovate Building G
By the middle of the far-term window, Building G will be 50 years old and it’s systems and finishes will be at the end of their useful life. Managing deficiencies by minor projects will not be cost-effective. It is proposed to do a full renovation of this building.
  Renovated Area: 17,197-gsf
  Anticipated Project Cost: $8,000,000
  Anticipated Schedule:
Professional/Technical Building
A new building addressing projected space needs for expansion in professional/technical fields is proposed.

New Construction: 48,000-gsf
Anticipated Project Cost: $24,000,000
Anticipated Schedule:
Funding Request: 02/36
Predesign: 08/37-12/37
Design: 1/38-07/39
Construction: 08/39-05/41
FF&E & Move-In 05/41-08/41
Anticipated Completion: September 2041

5.8 Other Projects
Not specifically addressed in this plan is the opportunity for projects which are not state-funded. These projects may occur off the traditional biennium capital budgeting cycle and could include:

Structured Parking
Earlier Master Plans anticipated construction of structured parking combined with state-funded academic projects or as a stand-alone project. OFM policies will not allow state funds to be used to design or construct parking garages. As the capital projects are developed, it may become desirable for the College to consider constructing structured parking in lieu of surface. In order to do this, alternative funding (COP, etc.) would need to be used. This plan has not indicated structured parking which, if it were to be provided, would be placed where surface parking is indicated.

Marine Drive Property
Earlier Master Plans anticipated relocation of the campus facilities storage/shipping/receiving on this site. It also envisioned this site as a location for potential programs that may be developed in partnership with industry or future programs that do not require physical adjacency to the main campus. Other interim uses may include remote parking.

Development on this property has not been included in this master plan as its sequence is projected to be beyond the 20-year window.
### Sequence Plan for Major Capital Construction 2013-2040

**1/14/2014**

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<td>Engineering Tech Center (Renovate/Expand J)</td>
<td>REN/N</td>
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<td>Renovate/Remodel Building G</td>
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**NEW SF** | 369,692

**Total $** | $179,150,000

**Notes:**
- Costs are relative order of magnitude. Detailed estimates have not been completed.
Development Sequence:

- Near Term:
  1. Temporary relocation of J program; renovation & addition to Bldg. J
  2. New construction; move Bldg. H into new
  3. Demolition of Bldg. H; new construction; move Bldg. R & C into new
  5. Renovation & addition to Bldg. CS
  6. Expand surface parking
  7. Relocate Bldg. A to new CS; demo Bldg. A

- Mid Term:
  8. New construction
  9. Expanded Surface Parking
  11. Renovation to Building U
  12. Demolition of Building K
  13. New construction
  14. New dedicated Parking for Transportation Program
  15. Move Bldg. M & T into new
  16. Demo Buildings M & T
  17. Expanded Surface Parking
  18. Landscape development

- Far Term:
  19. New Construction
  20. New Construction
  21. Renovation of Building G
  22. New Construction

Color Key:
- Existing Buildings
- Future Interior Renovations
- Future New Buildings (Short Term)
- Future New Buildings (Mid Term)
- Future New Buildings (Long Term)
- Future Lawn/Green Space
- Future Parking

Campus Master Plan - 2013
Existing Condition
Campus Master Plan - 2013
Near Term Development

Development Sequence:

1. Temporary relocation of J program; renovation & addition to Bldg. J
2. New construction; move Bldg. H into new
3. Demolition of Bldg. H; new construction; move Bldg. R & C into new
5. Renovation & addition to Bldg. CS
6. Expand surface parking
7. Relocate Bldg. A to new CS; demo Bldg. A
8. New construction
9. Expanded surface parking
11. Renovation to Building U
12. Demolition of Building K
13. New construction
14. New dedicated Parking for Transportation Program
15. Move Bldg. M & T into new
16. Demo Buildings M & T
17. Expanded Surface Parking
18. Landscape development
19. New Construction
20. Renovation of Building G
21. New Construction

Color Key:
- Existing Buildings
- Future Interior Renovations
- Future New Buildings (Short Term)
- Future New Buildings (Mid Term)
- Future New Buildings (Long Term)
- Future Lawn/Green Space
- Future Parking

Schreiber Starling & Lane
ARCHITECTS
Campus Master Plan - 2013
Mid Term Development

Development Sequence:
1. Temporary relocation of J program; renovation & addition to Bldg. J
2. New construction; move Bldg. H into new
3. Demolition of Bldg. H; new construction; move Bldg. R & C into new
5. Renovation & addition to Bldg. CS
6. Expand surface parking
7. Relocate Bldg. A to new CS; demo Bldg. A
8. New construction
9. Expanded Surface Parking
11. Renovation to Building U
12. Demolition of Building K
13. New construction
14. New dedicated Parking for Transportation Program
15. Move Bldg. M & T into new
16. Demo Buildings M & T
17. Expanded Surface Parking
18. Landscape development
19. New Construction
20. New Construction
21. Renovation of Building G
22. New Construction

Color Key:
- Existing Buildings
- Future Interior Renovations
- Future New Buildings (Short Term)
- Future New Buildings (Mid Term)
- Future Lawn/Green Space
- Future Parking

Campus Master Plan - 2013
Mid Term Development

Schreiber Starling & Lane
ARCHITECTS
Campus Master Plan - 2013
Far Term Development

Development Sequence:
1. Temporary relocation of J program; renovation & addition to Bldg J
2. New construction; move Bldg. H into new
3. Demolition of Bldg. H; new construction; move Bldg. R & C into new
5. Renovation & addition to Bldg. CS
6. Expand surface parking
7. Relocate Bldg. A to new CS; demo Bldg. A
8. New construction
9. Expanded Surface Parking
11. Renovation to Building U
12. Demolition of Bldg. C; interim green space
13. Move Bldg. M & T into new
14. New construction
15. New dedicated Parking for Transportation Program
16. Move Bldg. M & T into new
17. Demo Buildings M & T
18. Expanded Surface Parking
19. Landscape development
20. New Construction
21. Renovation of Building G
22. New Construction
23. New Construction
24. New Construction
25. New Construction
26. New Construction
27. New Construction

Color Key:
- Existing Buildings
- Future Interior Renovations
- Future New Buildings (Short Term)
- Future New Buildings (Mid Term)
- Future New Buildings (Long Term)
- Future Lawn/Green Space
- Future Parking

Far Term Development
Mid Term Development
Near Term Development
Development Sequence:

1. Temporary relocation of J program; renovation & addition to Bldg. J
2. New construction; move Bldg. H into new
3. Demolition of Bldg. H; new construction; move Bldg. R & C into new
5. Renovation & addition to Bldg. CS
6. Expand surface parking
7. Relocate Bldg. A to new CS; demo Bldg. A
8. New construction
9. Expanded Surface Parking
11. Renovation to Building U
12. Demolition of Building K
13. New construction
14. New dedicated Parking for Transportation Program
15. Move Bldg. M & T into new
16. Demo Buildings M & T
17. Expanded Surface Parking
18. Landscape development
19. New Construction
20. New Construction
21. Renovation of Building G
22. New Construction

Color Key:
- Red: Existing Buildings
- Pink: Future Interior Renovations
- Brown: Future New Buildings (Short Term)
- Medium Orange: Future New Buildings (Mid Term)
- Yellow: Future New Buildings (Long Term)
- Green: Future Lawn/Green Space
- Gray: Future Parking

Campus Master Plan - 2013
Building Sequence - FINAL
Section 6
Development Guidelines
6.0 – DEVELOPMENT GUIDELINES

6.1 Campus Image and Identity

The current feeling of administration and faculty is that the image of the campus needs continued updating from the College’s 1950’s vocational technology institute beginnings. The existing modular light colored masonry buildings along Lindbergh Avenue, among other things have attributed to that perception.

Recommendations

1. Replace original, outdated campus buildings with new adequate facilities
2. New defined “front door” entrance sequence to campus
3. New and consistent signage and graphics throughout campus
4. Continue building renaming program
5. Artwork Programs for sculpture and landscape improvements
6. Minimize the storage of excess materials around trades and technical program buildings
7. Eliminate parking within the interior of campus allowing for more landscaping and courtyards
8. Reinforce clarity and consistency in campus architecture
9. Promote a new campus image that reflects the regional uniqueness of the Northwest and its heritage
10. Make programs more visible to the community
11. Create a culture of continuous improvement and change acceptance
12. Increase access for diverse populations with flexible pathways
13. Promote a highly diversified level of student experience
14. Create strong partnerships with community, business, industry and education
15. Develop a “sense of place” that will become a unique signature of the BTC Campus

6.2 Campus Entrance/Gateways

The campus edges and entrances are the physical first impressions of the College to the Bellingham community. There are currently five ways for vehicles to enter the campus. Newcomers to the campus may enter the address and are directed to the College Services building and its grassy forecourt which still appear to be a main entrance to the campus. Once there, they find it difficult to determine where to park and where to go once outside of their vehicles. West Illinois Street has been extended to Bennet Road and serves as the main entrance and access to the majority of student and staff parking however this entrance is not always apparent to newcomers to the campus, especially since the College’s address remains Lindbergh Avenue.

Recommendations

1. Clearly define a formal entrance to campus for both staff and students
2. Continue to develop the Illinois Street formal entrance and reinforce the sense of arrival with appropriate signage
3. Direct visitors to the campus from I-5 with attractive signage
4. Improve transit service to campus; promote bus drop off and turn around at center of campus
5. Promote walking and bicycle paths on these same access routes
6. Promote carpooling and other alternative means of transportation arriving on site at the main access point
7. Promote access to and use of the County Parks trails system connected to Little Squalicum Creek
8. Promote the reduction of on-street parking at the perimeter of the campus
9. Provide clear and attractive wayfinding signage to direct newcomers throughout campus
10. Have formal address change to West Illinois to have GPS wayfinding direct visitors to the front door

6.3 Campus Building Aesthetic

The new campus buildings have gone a long way towards achieving the goal of changing the 1950’s Vo-Tech image of the campus. To assure that this goal continues to better the visual identity of the campus; all new building facades shall have continuity, interest, and complexity and create an image of a sophisticated, higher education institution. Quality materials, complimentary color palettes, and consistent themes shall be used to tie the entire campus together. The following characteristics for new construction and renovation projects are recommended:

1. Consistent themes in architectural style and materials in all new and renovated buildings
2. New buildings will seek and display human scale qualities
3. Generous overhangs for protection from the elements
4. Maintain existing mountain views
5. Create interior and exterior social gathering spaces
6. Provide flexible, adaptable spaces
7. Provide built-in expandable infrastructure
8. New projects to include adjacent site improvement
9. Incorporate an architectural style that reflects a regional influence of form, site orientation and material selection
10. Rejuvenate and reorganize the existing buildings and their features into an orderly and cohesive campus complex
11. Create a campus uniqueness which characterizes the College’s identity

6.4 Vehicular Circulation and Parking

Vehicle circulation and parking on campus has been a problem for BTC for several reasons. The entrance to campus is not well-defined, particularly for new students and visitors. This creates confusion as people circle around campus trying to find their way. Many programs rely on vehicles for their instruction (i.e. Diesel Technology, Auto Repair Technology and Auto Collision Repair Technology). This means that separation of pedestrian routes and vehicular routes is more difficult and creating a safe pedestrian environment is a challenge. While the number of parking spaces is adequate for the loads, many feel that the distances from parking to buildings is a problem.
Recommendations
1. Change the campus address from Lindberg to Illinois
2. Provide clear, directional signage from I-5 to campus front door on West Illinois
3. Eliminate or reduce the amount of vehicle dependant programs at the interior of the campus - move programs to perimeter or serve from obvious vehicle routes.
2. Relocate staff parking to central area to eliminate pedestrian conflicts, but keep close enough to buildings.
3. Create additional parking in campus center
4. Promote the reduction of on-street parking at the perimeter of the campus.
5. Promote remote parking lots with shuttle service to campus if necessary.
6. Promote use of local transit to campus.
7. Promote pedestrian and bicycle routes to campus
8. Clearly identifying fire lanes/loops through campus for emergency services
9. Clearly identify and enhance ADA parking and paths of travel to buildings
10. Explore revenue generating paid parking as a funding source for possible structured parking

6.5 Pedestrian Network
As a collegiate campus, pedestrian circulation influences one’s daily experience in significant ways. Whether or not buildings and classrooms are easy to find, places are easy to get to, there is a sense of safety and security and the grounds are pleasant to walk through shape people’s attitudes about the campus and can actually affect their ability to learn - either positively or negatively. The existing pedestrian routes on campus are easily definable, but could be improved through the following recommendations:

Recommendations
1. Reinforce pedestrian routes with paving, vegetation, and lighting so that circulation around campus is clear and understandable.
2. Provide clear, easily understandable signage for wayfinding. Note: Signage should only be used to support a well-defined pedestrian route. Routes should be clear and obvious and not depend on signage.
3. Provide short pedestrian routes from parking to buildings.
4. Circulation routes should be direct and clear.
5. Maintain visual sight lines when walking throughout campus (in order to see, recognize and stop to visit with colleagues when walking from building to building)
6. Provide ramps at areas of significant grade, both for ADA access and for students with rolling book bags.
7. Provide areas for persons who smoke off the main circulation route.
8. Maintain a human scale
9. Promote “wellness walks” around the perimeter and core of campus for students and staff to exercise during the day.

6.6 Accessibility
Over the years, BTC has worked to improve the accessibility for persons with disabilities. This is challenging for a campus where most of the buildings are over 30 - 50 years old and accessibility issues were not considered in their design. The masonry construction of these buildings and underground plumbing makes for difficult and expensive remodels. Aging sidewalks that are heaving with freeze and thaw conditions create trip
hazards. Typically with the older buildings, doorways are not wide enough, door thresholds too tall, and restrooms have not been in compliance.

The campus does benefit from being on fairly level ground. This is true except for the lower student parking lot, where there is no handicap ramp up to the campus core. The campus is also primarily single story buildings, but several have mezzanines where classrooms are located and no access for handicapped students. All new buildings on campus are fully ADA compliant.

Recommendations
1. Provide ADA ramp up from the lower student parking lot.
2. Provide adjacent ADA parking and route of travel for future buildings.
3. Improve remaining non-compliant restrooms on campus.
4. Where possible, widen doorways and aisles and correct all thresholds.
5. Replace problem sidewalks where possible.
6. All new pedestrian routes should be wide enough for maintenance vehicles and pedestrians
7. Replace ramps with curb cuts where necessary.
8. Identify ADA routes of travel with paving patterns.
9. Apply Universal Design concepts to all future site and building projects

6.7 Pedestrian Amenities

Site furnishings and fixtures can provide a level of consistency throughout the campus landscape that can help knit different areas together and through their design, can create a new image for the College. The lighting on campus seems adequately dispersed in the core but requires additional fixtures in parking areas. Benches are scarcely located throughout the entire campus and should be increased in quantity to enhance the park-like setting. Additional bicycle racks and storage areas are needed to encourage the use of bikes as an alternative means of transportation. Trash receptacles and recycling containers are located throughout campus, but are of a design that is heavy and dated.

Recommendations
1. Establish a palette of coordinated site furnishings to include lighting, seating, bicycle racks, and receptacles that are stock items and are durable, attractive and easy to maintain.
2. Assess existing site lighting and furnishings for inconsistency and develop a policy for removal and replacement. Lighting levels should follow IES (Illuminating Engineering Society of North America) recommended levels:
   a. Sidewalks along roads – 0.2 footcandles minimum; uniformity ratio 3:1 preferred, 10:1 maximum allowable
   b. Interior walkways – 0.5 footcandles minimum; uniformity ratio 4:1 preferred, 10:1 maximum allowable
   c. Maximum 1.5 footcandles in any location
3. Develop a plan for the location of art in the landscape and establish an endowment fund to install and maintain artwork and water features.
6.8 Landscaping

The maturation of the campus plan relies heavily on the application of consistent landscaping design concepts. The organization of buildings, walkways, courtyards and vegetation are aimed at not only making the campus more visibly attractive, but to help users find their way. The integration of lighting and signage are critical related planning elements.

Recommendations
1. Maintain the existing mountain views
2. Provide social gathering spaces within the landscape
3. Plan for year-round colors when selecting plant species.
4. Reinforce the campus “edge” with plantings.
5. Screen parking and utility equipment where possible.
6. Maintain existing or create new green space for community use where possible.
7. Avoid design that create areas that could present a personal safety concern.
8. Provide for low-maintenance, drought-tolerant plantings, including short-growing grass species for lawns
9. Consider allergy sufferers in plant selections.
10. Budget for maintenance of landscaping as well as the buildings.
11. Provide consistent and common design themes throughout campus (i.e., plant type, colors, texture, density, height, etc...)
12. Address scale of residential neighborhood
13. Provide areas for recreational play (i.e. basketball courts, lawns, etc...)
14. Incorporate the Greenways Trails Association path into campus planning.
15. Incorporate the State-supported Art Program into landscaping design when possible
16. Utilize native planting to reflect the Northwest, create a “sense of place” and recreate the natural backdrop of the campus

6.9 Open Space

Equally as important as the built environment of the campus is the character of the open space on the BTC campus. It helps establish the image of the College, forming opinions, impressions and attitudes about the institution.

A high priority for staff and students is the availability of formal and informal social gathering places throughout campus. Exterior spaces need to be designed with the same diversity of size and enclosure. Protection from the elements is another influence - sunny grass slopes for studying are just as important as covered areas with tables to meet with a few friends or colleagues.

Recommendations
1. As individual projects are developed, seek opportunities to widen the diversity of scale and spatial form of open spaces. Seek opportunities to create outdoor areas for studying, socializing, resting, learning, eating, and viewing
6.10 Building and Site Lighting

Application of consistent campus lighting standards including foot candle ranges for assorted tasks, light fixture and lamp type and quality, and energy efficiency shall be done with all new site and building projects. Recommendations for improvement for the lighting on campus include:

Recommendations
1. The primary concern has been for the safety of students on campus, particularly for the evening courses. Providing adequate lighting along pedestrian routes and in the student parking areas is critical.
2. Lighting along the sidewalks and on or near buildings is critical for leading staff and students throughout the campus. The same is true inside each building, where one should be able to get from room to room in well-lit spaces.
3. Whether inside or out, lighting levels should be designed to accommodate the tasks that will be performed in that area. This could range from welding, computer programming, reading, video projection, or eating. Care must be taken to consider all possible tasks and design light level flexibility.
4. Older existing fixtures need to be replaced, or at least relamped with more efficient models. Solar energy collection for the use of running lights or other electrical fixtures is a consideration for future buildings and site design.
5. The existing light fixtures on campus tend to be types that allow for a lot of light to escape into the sky and/or neighborhood. New or replacement fixtures should be considered that are hooded, so that the light is directed at the intended surfaces and the least amount of light leaks out from the campus.
6. Incorporating lower light poles, bollards and step lighting within courtyards and walkways can add unifying elements that help to organize space and provide a human scale. Lamp posts with banner or planter arms can be used to further promote the campus identity, announce events or celebrations, and add an aesthetic touch to the landscape.

6.11 Wayfinding and Signage

Application of a strong signage program has begun to tie the BTC campus together. As mentioned, wayfinding should not be dependent on directional signage. The routes through campus, if defined architecturally and with landscaping, should be clear without the need for signage. Directional maps and signs should only serve as support to a well-defined plan. Signage graphics can influence the “feel” of a campus tremendously. They need to be consistent, professional, scaled appropriately, and blend with the architecture and collegiate presence intended for BTC.

Recommendations
1. Work with the City and County to provide clear directional signage from the main highways and arterials serving the campus.
2. Continue with the building naming policy to replace the current alphabet in order to add interest and a collegiate feel to campus.
3. Implement the new BTC Campus Wayfinding Standards with every new site/building project to insure consistent, clear directional signage for both vehicles and pedestrians and consistent, clear room identification signage.
4. Promote the consistent use of the BTC logo in the signage
5. Plan informational kiosks throughout campus to consolidate and organize flyers and notices.
6. Utilize professional signmakers for temporary signs.
7. Enlist local artists, crafters and BTC student and faculty participation in the manufacturing of signage where appropriate.

6.12 Public Safety/Security

The safety and security of staff and students on campus is a priority for all. Campus and building design can influence personal safety in many ways. Safety and security considerations include personal harm from the physical environment, personal harm from others, theft or vandalism of personal property, and theft or vandalism of the college’s property.

Across the county, governmental agencies have turned to a design guide, known as CPTED or Crime Prevention through Environmental Design to help city planners and designers make the environment a safer place. CPTED principles include:

Territoriality Reinforcement: Physical design can create or extend a sphere of influence. Users then develop a sense of territorial control while potential offenders, perceiving this control, are discouraged. Security is promoted by features that define property lines and distinguish private spaces from public spaces using landscape planting, pavement designs and gateway treatments and fencing.

Natural Surveillance: A design concept directed primarily at keeping intruders easily observable. Promoted by features that maximize visibility of people, parking areas and building entrances: doors and windows that look out onto streets and parking areas; pedestrian friendly sidewalk and streets; adequate nighttime lighting.

Natural Access control: A design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating in offenders a perception of risk. Improved control can be gained by designing streets, sidewalks, building entrances and neighborhood gateways to clearly indicate public routes and discouraging access to private areas with structural elements.

Target Hardening: Accomplished by features that prohibits entry or access: window locks, dead bolts for doors, interior door hinges.

Recommendations
1. Provide adequate lighting throughout campus
2. Locate windows along walkways to allow for monitoring of indoor activities after hours
3. Avoid planting bushes or other vegetation in a manner that allows for hiding places along routes of travel.
4. Avoid building alcoves that allow for hiding places along routes of travel.
5. Provide safe, clear paths from parking areas to building entrances.
6. Provide gate at campus entrances for after-hours access control.
7. Avoid landscaping that blocks line-of-sight and creates physical hiding places.
6.13 Stormwater Management

The collection, treatment and discharge of storm water runoff from building roofs and impervious surfaces has become one of the major “hidden” costs of capital development on campus. The City Planning department requires review of storm water treatment plans and they assess yearly surface and storm water utility charges to Owners for each new development. Other reviews, depending on the project, can include those by the U.S. Army Corps of Engineers, State Department of Ecology, Department of Fisheries or Wildlife, Department of Natural Resources or other appropriate agencies.

The design and construction of future buildings and parking will be required to manage all runoff within the BTC property. There are several means for dealing with storm water treatment, including but not limited to the following:

Recommendations
1. Expansion of existing treatment vaults
2. Above ground detention ponds
3. Above ground retention ponds
4. Above ground bio-swale treatment
5. Below ground sand filters
6. Below ground retention structures
7. Below ground detention structures

6.14 Utilities/Infrastructure

As the campus ages, problems with existing utilities and infrastructure are continually encountered. Some deal with the basic deterioration of materials and some have to do with the changing technology of new systems. Refer to section 6d for the description and condition of existing systems

Underground systems pose a unique challenge, as they are sometimes difficult to locate, existing record drawings are inaccurate, and problems with them are more difficult to detect and locate. Repair or replacement generally calls for excavation and patching of paved areas Above-ground systems are easier to monitor and repair, but tend to add visual clutter to covered walkways or building elevations. Similarly, because of the single-wall masonry of the majority of buildings, most new utilities have had to be run exposed down walls and across ceilings.

Recommendations
1. Create organized, easy to maintain underground utility corridors on campus
2. Adopt standards for utility structures for use on new construction and remodeling projects
3. Create organized, easy to access and maintain utility routes within buildings to respond to changing technology
4. Provide accessible cable trays, conduit chases, large mechanical rooms and mechanical chases to avoid future renovation interruptions
6.15 Solid Waste/Recycling

Collection of wastes from buildings is currently done by facilities personnel. Waste is stored on site in large dumpsters and removed every other week. Removal of solid waste is currently contracted to independent waste management firms. Access through campus for pick-up of these dumpsters needs to be considered.

Efforts to reduce the amount of solid waste generated from the campus will be considered as fundamental policy and procedure. Programs that generate a large amount of waste can be studied for more efficient use or recycling possibilities. Policies for procurement of materials can affect how materials are delivered, packaged, and used efficiently.

Recommendations
1. Improved screening of waste collection areas
2. Locate a central waste shredder on campus to reduce the volume of waste and cost by allowing the college to bale their own waste
3. Maximize recycling and waste management in all future site and building projects
APPENDIX A
Material from 2007 Master Plan

Schreiber Starling & Lane
ARCHITECTS
Vicinity Map
LEGAL DESCRIPTIONS

W.O., A.F. NO. 768254 - MAIN PARCEL

A TRACT OF LAND LOCATED IN THE WEST HALF OF THE ELLWOOD ESTATES ESTATES CLARK IN SECTION 23, TOWNSHIP 36 NORTH, RANGE 2 EAST OF THE WILAMETTE MERIDIAN, BOUND AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 30 FEET NORTH AND 15 FEET WEST OF THE CENTER LINE OF MANHATTAN STREET WITH THE WEST LINE OF HOME AVE AS SHOWN UPON THE PLAT OF "ELLWOOD" BACK ADDITION TO THE CITY OF BELLEHAVEN" FILED FOR RECORD IN THE OFFICE OF THE AUDITOR OF WHATCOM COUNTY WASHINGTON, APRIL 3RD, A.D. 1970; THENCE EAST AT RIGHT ANGLES TO HOME AVE 482.5 FEET TO A CONCRETE MONUMENT; THENCE NORTH 45 DEGREES 30 MINUTES WEST 296.22 FEET TO A CONCRETE MONUMENT; THENCE NORTH 45 DEGREES 30 MINUTES WEST 234.5 FEET TO MONUMENT; THENCE SOUTH 30 DEGREES 30 MINUTES WEST 466.7 FEET TO A CONCRETE MONUMENT; THENCE SOUTH 30 DEGREES 30 MINUTES WEST 245.7 FEET, MORE OR LESS, TO THE NORTH LINE OF THE OLD MARINETA ROAD; THENCE SOUTH 45 DEGREES 45 MINUTES EAST 141.4 FEET, MORE OR LESS, ALONG A LINE PARALLELED TO AND 30 FEET NORTH-WESTLY FROM THE CENTER LINE OF THE OLD MARINETA ROAD, AS THE SAME IS NOW LOCATED AND MARKED BY CONCRETE MONUMENTS, TO A POINT ON THE SOUTH LINE OF THE OLD MARINETA ROAD; THENCE NORTH 15 DEGREES 15 MINUTES WEST OF THE NORTH LINE OF HOME AVE 1072.56 FEET, MORE OR LESS, TO THE POINT OF BEGINNING; Situated in WHATCOM COUNTY, WASHINGTON.

O.C.D., A.F. NO. 93201178 - TRANGLE PARCEL

A TRACT OF LAND LOCATED IN THE WEST HALF OF THE ELLWOOD ESTATES CLARK, IN SECTION 23, TOWNSHIP 36 NORTH, RANGE 2 EAST OF W.N., BOUND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 30 FEET NORTH AND 15 FEET WEST OF THE CENTER LINE OF MANHATTAN STREET WITH THE WESTLY MARGIN OF HOME AVE AS SHOWN UPON THE PLAT OF "ELLWOOD" BACK ADDITION TO THE CITY OF BELLEHAVEN" FILED FOR RECORD IN THE OFFICE OF THE AUDITOR OF WHATCOM COUNTY WASHINGTON, APRIL 3RD, A.D. 1970; THENCE EAST AT RIGHT ANGLES TO HOME AVE 482.5 FEET TO A CONCRETE MONUMENT; THENCE NORTH 45 DEGREES 30 MINUTES WEST 296.22 FEET TO A CONCRETE MONUMENT; THENCE NORTH 45 DEGREES 30 MINUTES WEST 234.5 FEET TO MONUMENT; THENCE SOUTH 30 DEGREES 30 MINUTES WEST 466.7 FEET TO A CONCRETE MONUMENT; THENCE SOUTH 30 DEGREES 30 MINUTES WEST 245.7 FEET, MORE OR LESS, TO THE NORTH LINE OF THE OLD MARINETA ROAD; THENCE SOUTH 45 DEGREES 45 MINUTES EAST 141.4 FEET, MORE OR LESS, ALONG A LINE PARALLELED TO AND 30 FEET NORTH-WESTLY FROM THE CENTER LINE OF THE OLD MARINETA ROAD, AS THE SAME IS NOW LOCATED AND MARKED BY CONCRETE MONUMENTS, TO A POINT ON THE SOUTH LINE OF THE OLD MARINETA ROAD; THENCE NORTH 15 DEGREES 15 MINUTES WEST OF THE NORTH LINE OF HOME AVE 1072.56 FEET, MORE OR LESS, TO THE POINT OF BEGINNING; Situated in WHATCOM COUNTY, WASHINGTON.

O.C.D., A.F. NO. 900001187 - GLACIER PARK PARCEL

THAT PORTION OF THE E 1/4 E 1/2 OF SECTION 23, TOWNSHIP 36 N., RANGE 2 E., WHATCOM COUNTY, WASHINGTON DESCRIBED AS FOLLOWS:


RECORD OF SURVEY FOR BELLEHAVEN TECHNICAL COLLEGE

WITHIN THE SE 1/4 OF SEC 23, T . 36 N., RGE. 2 E., W.M., WHATCOM COUNTY, WASHINGTON

DRAWN BY: SUB FILE: PLAT: CHECKED: SHEET:

DATE: FILE NO.: SHEET NO.:
LEGEND:
- = Stake edge
- = Stake edge [P.L.S. 9642]
- = Stake distance
- = Stake distance [P.L.S. 9642]
- = Footnote
- = Footnote [P.L.S. 9642]

SURVEYOR'S NOTES:
1. STANDARD FIELD TRaverse PROCEDURES AND A ONE SECOND METICULOUS SURVEY WERE USED TO ACCOMPLISH THIS SURVEY. ACCURATE SURVEY IN MARCH, 2000. CERTIFICATE OF COMPLETION HUMID. 11,000,000.
2. THE BASE OF SECTIONS IS 69'12"O" AND 99'24"O" FOR THE CENTERLINE OF LINDEN AVENUE, AS SHOWN ON SURVEYOR'S NOTE OF ADDITION SUPPLEMENTAL, RECORDED IN BOOK 7 OF PLATS, PAGE 17.

RECORD OF SURVEY FOR BELLINGHAM TECHNICAL COLLEGE
WITHIN THE SE 1/4 OF SEC. 23, TAP. 33 N., RGE. 2 E., W.M., WHATCOM COUNTY, WASHINGTON

LEGAL DESCRIPTIONS:
SEE SHEET 2 FOR FULL TEXT OF LEGAL DESCRIPTIONS.
DEED OF EASEMENT

The grantor, WASHINGTON STATE BOARD FOR COMMUNITY AND TECHNICAL COLLEGES, for and in consideration of Ten and 00/100 U.S. Dollars ($10.00), in hand paid, the receipt and sufficiency of which is hereby acknowledged, conveys to the CITY OF BELLINGHAM, a municipal corporation, an exclusive easement for water lines and attendant water utility purposes on, across, and under the real estate more particularly described in Exhibit A attached hereto and incorporated herein by this reference, and shown on the drawing attached hereto as Exhibit B and incorporated herein by this reference:

This grant is made subject to the following special conditions:
A. This easement is granted for both construction, and subsequent maintenance and operation of the water utility facilities.

B. Permanent structures will not be built upon the easement without express, written consent of the City, and any landscaping or other similar uses of the easement will be of such a character as to permit ready removal and replacement when maintenance or excavation is required.

DATED this 25th day of March, 2002.

WASHINGTON STATE BOARD FOR COMMUNITY AND TECHNICAL COLLEGES

By ________________________________
Earl Hale, Its Executive Director
STATE OF WASHINGTON  )
COUNTY OF WHATCOM  ) ss

I CERTIFY that I know or have satisfactory evidence that EARL HALE signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the EXECUTIVE DIRECTOR of the WASHINGTON STATE BOARD FOR COMMUNITY AND TECHNICAL COLLEGES to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

March 25, 2002
DATED

Linda L. Becker
SIGNATURE OF NOTARY PUBLIC

Name Printed

03-01-03
MY APPOINTMENT EXPIRES
EXHIBIT A

LEGAL DESCRIPTION

A tract of land located in the West half of the Eldridge Donation Claim, in Section 23, Township 38 North, Range 2 East of the Willamette Meridian, bounded and described as follows:

Beginning at a point 30 feet North and 15 feet West of the Concrete Monument marking the point of intersection of the center line of Maryland Street with the West line of Nome Avenue as shown upon the Plat of "Eldridge's Second Addition to the City of Bellingham" filed for record in the office of the Auditor of Whatcom County, Washington, April 9th, A.D. 1907; thence West at right angles to Nome Avenue 462.5 feet to a concrete monument; thence North 65 degrees 55 minutes West 268.13 feet to a concrete monument; thence North 54 degrees 59 minutes West 342.6 feet to monument; thence South 20 degrees 50 minutes West 614.7 feet to a concrete monument; thence South 20 degrees 50 minutes West 265.7 feet, more or less, to the North line of the Old Marietta Road; thence South 66 degrees 42 minutes East 1414.86 feet, more or less, along a line parallel to and 30 feet Northeasterly from the center line of the Old Marietta Road, as the same is now located and marked by concrete monuments; to a point on said North line of the said Road 15 feet West of the West line of Nome Avenue, 1414.86 feet; thence North along a line 15 feet West of the West line of Nome Avenue 1072.34 feet, more or less, to the point of beginning.

LESS: A tract of land in the West half of the Eldridge Donation Claim in Section 23, Township 38 North, Range 2 East W.M., described as follows: Beginning at a point 30 feet North and 15 feet West of the concrete monument marking the point of intersection of the center line of Maryland Street with the West line of Nome Avenue, as shown on the "Plat of Eldridge's Second Addition to the City of Bellingham, Washington," as per the map thereof, recorded in Book 5 of Plats, page 42, in the Auditor's office of Whatcom County, Washington, the said point of beginning being the Northeast corner of the tract of land recorded under Auditor's File No. 798254 in Volume 407 of Deeds, page 28, in the Auditor's office of said county and state; thence West along the North line of the said tract recorded in Volume 407 of Deeds, page 28 a distance of 462.5 feet to a concrete monument; thence North 65° 55' West along the Northerly line of the said tract recorded in Volume 407 of Deeds, page 28, a distance of 268.13 feet to a concrete monument and to the true point of beginning; Thence North 54° 59' West along the Northerly line of the tract recorded in Volume 407 of Deeds, page 28, a distance of 342.6 feet to a concrete monument;
Thence South 20° 50' West along the Westerly line of the tract recorded in Volume 407 of Deeds, page 28, a distance of 329.42 feet;
Thence South 57° 34' East 290.04 feet;
Thence North 41° 38' East 320.86 feet to an intersection with the Northerly line of the tract recorded in Volume 407 of Deeds, page 28;
Thence North 65° 55' West along the said Northerly line 66.04 feet to the true point of beginning, LESS ROADS;

PLUS: A tract of land located in the West half of the Eldridge Donation claim, in Section 23, Township 38 North, Range 2 East of W.M., being more particularly described as follows:
Commencing at a point 30.00 feet North and 15.00 feet West of the point of intersection of the centerline of Maryland Street with the Westerly margin of Nome Avenue as shown upon the Plat of "Eldridge's Second Addition to the City of Bellingham" filed for record in the office of the Auditor of Whatcom County, Washington, April 9, 1907, being the Northeast corner of that certain tract conveyed to Antonio Tiscornia, Lawrence Tiscornia and Frank Tiscornia by Deed recorded October 11, 1943 under Auditor's File No. 582571 April 8, 1907; thence West at right angles to Nome Avenue along the North line of said tract, 462.5 feet; thence North 65 degrees 55' West along said North line, 268.13 feet; thence North 54 degrees 59' West along said North line, 342.6 feet to the Northwest corner of said tract; thence South 20 degrees 50' West along the Westerly boundary of said tract, 880.4, more or less, to the Northerly margin of the Old Marietta Road (Lindbergh Avenue) and the Point of Beginning of this legal description; thence North 66 degrees 42' West along said Northerly margin, 135.66 feet; thence North 48 degrees 21'53" East, 293.23 feet to intersect with the Westerly boundary of said Tiscornia tract; thence South 20 degrees 50' West along said Westerly boundary, 265.74 feet to the point of beginning.

All Situated in Whatcom County, Washington.
LEGAL DESCRIPTION

Easement

An easement reserved for public use including street, pedestrian and utility purposes over a parcel of land located in the West one-half of the Eldridge Donation Claim, being a portion of Section 23, Township 38 North, Range 2 East of the Willamette Meridian (WM), and more particularly described as follows:

A 15.00-foot wide strip of land lying northerly of the northerly Right-of-Way line of Lindbergh Avenue, southerly of the southerly Right-of-Way line of West Illinois Street and 15.00-foot westerly of and parallel to the centerline of Nome Avenue, all as shown on the Plat of "Eldridge's Second Addition to the City of Bellingham" as filed for record in Volume 5 of Plats, page 42 in the Office of the Auditor of Whatcom County, Washington, April 9th A.D. 1907; Said parcel of land also being shown on Record-of-Survey filed as A.F.#2011101982, in said Whatcom County Auditor's Office.

The above described parcel of land contains 22,034 square feet, more or less.

Situate in the County of Whatcom, State of Washington.
LEGAL DESCRIPTION

Offer of Dedication

A parcel of land located in the West one-half of the Eldridge Donation Claim, being a portion of Section 23, Township 38 North, Range 2 East of the Willamette Meridian (WM), is hereby dedicated to public use for street and utility purposes, over, under and across the following described property, being more particularly described as follows;

A 15.00-foot wide strip of land lying northerly of the projected northerly Right-of-Way line of Maryland Street, southerly of the southerly Right-of-Way line of West Illinois Street and westerly of and adjacent to the centerline of Nome Avenue, all as shown on the Plat of “Eldridge’s Second Addition to the City of Bellingham” as filed for record in Volume 5 of Plats, page 42 in the Office of the Auditor of Whatcom County, Washington, April 9th A.D. 1907; Said parcel of land also being shown on Record-of-Survey filed as A.F.#201101982, in said Whatcom County Auditor’s Office.

The above described parcel of land contains 5,996 square feet, more or less.

Situate in the County of Whatcom, State of Washington.
City of Bellingham
Comprehensive Plan - Partial
City of Bellingham
Neighborhood Plan - Partial
BIRCHWOOD NEIGHBORHOOD PLAN

I. NEIGHBORHOOD CHARACTER

The Birchwood Neighborhood is an interesting study in contrasts. The neighborhood has historically been an area consisting of single family homes built on extremely large lots. It is characterized by older, well-kept homes on lots often in excess of 400 feet deep. Mature landscaping, open fields and narrow streets lend a rural atmosphere to the neighborhood. In recent years the neighborhood has seen the growth of apartment complexes located primarily along Northwest Avenue, and other large complexes have been proposed recently on W. Maplewood. In addition, there is a rather large commercial area located in the vicinity of the intersection of Northwest, W. Maplewood and Birchwood Avenue. Other significant features of the neighborhood include the Golf and Country Club, a large gravel pit, the Squalicum Creek greenbelt, and three school sites located in the neighborhood. Identification with neighborhood character is perhaps strongest to the large single family residential area in the western portion of the neighborhood.

II. OPEN SPACE

The large lots in the Birchwood area give the neighborhood a spacious, rural feeling. Because of the lot size and the proximity to Cornwall Park, the need for additional open space and recreational lands are not as great as in some other areas in the city. Although there is a need for a neighborhood park facility in the northwest portion of the neighborhood, no specific site is recommended at this time. However, there are areas that should be preserved as open space. In order to minimize the potential problems inherent in the boundaries between land uses of different intensities, vegetated buffers are proposed at those boundaries. While most of these buffers are dealt with in the Urban Plan Element, there are occasional opportunities to create or preserve such buffer areas through open space designation.

IT IS RECOMMENDED THAT A TREED BUFFER BE ESTABLISHED BETWEEN THE INTERSTATE AND THE NEIGHBORHOOD AND ALONG THE RECOMMENDED ROEDER AVENUE RIGHT-OF-WAY. IN ADDITION, IF FUNDING IS AVAILABLE, THE BELLINGHAM GOLF AND COUNTRY CLUB SHOULD ALSO BE PRESERVED; IF NOT, THEN AN EAST/WEST CORRIDOR ALONG AN EXTENSION OF THE ALDERWOOD RIGHT-OF-WAY AND A NORTH/SOUTH CORRIDOR ALONG THE BAKER CREEK CHANNEL SHOULD BE MAINTAINED.

MAJOR RECREATIONAL RECOMMENDATIONS THAT PERTAIN TO THE NEIGHBORHOOD INCLUDE IMPROVED PLAYGROUND FACILITIES AND THE
CONSTRUCTION OF RESTROOMS AT THE SHUKSAN MIDDLE SCHOOL SITE. A TENNIS COURT SHOULD BE LOCATED AT ONE OF THE SCHOOL SITES, PREFERABLY SHUKSAN BECAUSE OF ACCESS AND PARKING.

Squalicum Creek is a resource that is important on both a neighborhood and a citywide basis. The existing Shoreline Management Master Program classifies the creek as Conservancy I to Meridian Street. This generally means that no fill, hard surfacing, permanent structures or storage can be located within 100 feet of the ordinary high water mark. In addition, the City's Comprehensive Drainage Plan (1973) recommends that a minimum setback of 150 feet be adopted to protect future development from flooding. The City, with assistance from the U.S. Department of Housing and Urban Development, is currently in the process of formulating flood plain boundaries on the basis of hydrologic criteria. Preliminary calculations indicate that the flood plain will include a majority of the bottomlands directly associated with the channel.

IT IS RECOMMENDED THAT THE ENTIRE SQUALICUM CREEK CHANNEL, FROM VALLEY WALL TO VALLEY WALL, BE PRESERVED AS AN OPEN SPACE AND RECREATIONAL CORRIDOR FOR BOTH FUNCTIONAL AND AESTHETIC PURPOSES.

The exception to this is through Area 16 where the railroad tracks should form the northern boundary.

THE CITY, IN CONJUNCTION WITH THE COUNTY, SHOULD DEVELOP THE NORTHWEST CORNER OF AREA 8, (LITTLE SQUALICUM PARK).

III. PUBLIC FACILITIES AND UTILITIES

Schools

The major improvements recommended for the school site is that toilet facilities be constructed at Shuksan similar in nature to the one recently completed at Battersby Field and that, if Area 7 is designated for Residential - Multi, a crosswalk with a variable speed sign above and below the walkway should be provided across W. Maplewood to the Shuksan site. If traffic loads warrant it in the future, then either warning lights or a pedestrian controlled traffic light should be installed.

Drainage

Many past drainage problems were dealt with as a part of the 1978 Street Overlay Program. The most severe drainage problem in Birchwood is the excessive
infiltration/inflow into the sewer system. The problem is caused by both groundwater and storm run-off, with the latter being the most significant. The effects of storm water infiltration, i.e. backing up of the system, have lasted up to nearly a week after a large storm. The City, through the Public Works Department, is currently studying the problem and will be taking action to minimize it wherever possible; however, their actions will occur only on public property. Watercourses that are identified in the public facilities and utilities element of the plan to remain as open channels are Squalicum, Baker, and Little Squalicum Creeks. No activities should be allowed that would reduce the capacity of these streams or after their present state.

**Water and Sewer**

The sewer trunks serving the Northwest Avenue and W. Maplewood areas are limited to the amount of additional discharge that they can handle. It is anticipated that the development of apartment units in those areas will fully utilize the remaining capacity thus limiting expansion to the north of the city.

There are no significant potable water distribution problems in the neighborhood although pressure is low in some areas.

**Libraries**

The Library Board has related that there is a need for a full service branch library to be built in the Birchwood area. No specific site has been recommended; however, the facility should be located in a readily accessible area optimally served by an arterial. The residents have expressed agreement with the idea of locating the facility in their neighborhood.
MAP ARTERIAL ROUTES
IV. CIRCULATION

Arterials

The arterial system serving both the Birchwood and surrounding areas has been established and is presently in use. As a result, the recommendations presented here relate to the correction of existing problems, rather than proposals for new routes, with the exception of Roeder Avenue.

One problem, which does exist is the condition of W. Maplewood and its ability to carry the additional traffic that will be generated by apartment construction south of Alderwood.

THE FOLLOWING STREET STANDARDS ARE RECOMMENDED FOR THE PORTION OF W. MAPLEWOOD FROM ITS INTERSECTION WITH NORTHWEST AVENUE TO ALDERWOOD: A RIGHT-OF-WAY OF 72 FEET SHOULD BE ACQUIRED (THE PRESENT RIGHT-OF-WAY IS 60 FEET) AND A 44 FOOT CURB-TO-CURB PAVED STREET THAT WOULD ALLOW FOR FOUR 11-FOOT TRAFFIC LANES.

Additional amenities constructed in association with the street would be a 4-foot minimum landscaped strip between the street and a 5-foot wide sidewalk. The sidewalks and landscaped strips should be located on both sides of the street. In addition curb cuts from new development should be combined or kept to a minimum.

W. MAPLEWOOD NORTH OF ALDERWOOD SHOULD ALSO BE RESURFACED; HOWEVER, IT IS NOT NECESSARY TO WIDEN IT AT THE PRESENT TIME.

Traffic flows and expected future conditions are presented in the land use section for Area 1.

The Roeder Avenue Truck Route Report, published in June, 1978, deals in depth with the need for the construction of a route between Roeder Avenue and Marine Drive and the effects on the Birchwood area. A map showing the general location of the route is included in this section of the Birchwood Plan. Four alternative routes were examined and the alternative running east/west W. Illinois Street was selected because of the benefits of the route as compared to its adverse impacts on the neighborhood.

The advantages of the alignment include enhanced access to the commercial properties east of Lafayette Street (the gravel pit area) and west of Nome. It provides the opportunity for improved access to the Vocational Technical Institute and the proposed Little Squaicum Park and should reduce the amount of traffic circulating through the neighborhood.
The main disadvantage of the proposed route is that W. Illinois Street from Lafayette Street to Nome is currently a residential street. Many of the homes along W. Illinois are built near the street right-of-way, which is 60 feet wide. The construction of this route would require the acquisition of seven homes and adjoining properties to mitigate the impacts of traffic generated noise. It will also be desirable to construct noise attenuating berms and landscaping to isolate the remaining residences from the effects of the traffic noise and from visual impacts.

For more information concerning the route, copies of the study are available at the Public Works Office.

**Neighborhood Street Standards**

As was mentioned earlier in this plan, a majority of the circulation problems relating to neighborhood streets have been solved by the overlay program. A list of the streets in this program and a cross section of the paving widths are included in this report to show both the street widths and the improvements that have been done. The remaining streets are generally in good condition, with the exception of W. Maplewood.

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**THE ULTIMATE RESIDENTIAL STREET STANDARD FOR RESIDENTIAL STREETS IN THE BIRCHWOOD NEIGHBORHOOD SHOULD BE 28 FEET WIDE WITH CONCRETE CURBS, GUTTERS, STORM DRAINAGE AND SIDEWALKS.**

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**CONSTRUCTION OF WALKWAYS OR BICYCLE LANES AS THE NEED BECOMES APPARENT SHOULD BE ALLOWED.**

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No recommendations are made relating to standards in Area 5 because the widths of streets should be designed in conjunction with the anticipated traffic. Standards will be recommended when a site plan for the area is presented to the Planning Office.

**Bikeways**

A 1978 report entitled Bicycle Facilities Planning done for the Bellingham Office of Planning and Community Development, details on both a five and a 25 year focus what actions are required to provide a safe and adequate bicycle transportation system citywide.

The general focus of the five year program is to provide for safe cycling on existing streets, while the 25 year focus is a combination of bikeways and open space and greenbelts that will serve as both a recreational facility and as a transportation system.

The recommendations presented here are excerpted from that report and are included
to present the type of development that will be required in the neighborhood to meet its aforementioned five and 25 year goals.

THE FIVE YEAR PLAN IDENTIFIED IMPROVEMENTS FOR ARTERIALS ONLY, AND THE ONES THAT RELATE TO THE NEIGHBORHOOD ARE AS FOLLOWS:

1. PAVE RAMP AT NORTH END OF THE WEST WALKWAY ON BRIDGE AT THE INTERSECTION OF SQUALICUM PARKWAY AND ELDRIDGE AVENUE.

2. INSTALL SHARED USE LANE SIGNING ON THE FOLLOWING ARTERIALS IN THE BIRCHWOOD NEIGHBORHOOD: SQUALICUM PARKWAY, NORTHWEST AVENUE, W. MAPLEWOOD AVENUE, ELDRIDGE AVENUE, AND MERIDIAN STREET.

3. UPGRADE ELDRIDGE AVENUE/MARINE DRIVE FROM ITS INTERSECTION WITH SQUALICUM PARKWAY.

4. STRIPE AND RETROFIT ARTERIAL STORM SEWER GRATES TO ALERT CYCLISTS OF THEIR POSSIBLE DANGER ALONG NORTHWEST AVENUE, W. MAPLEWOOD AVENUE, MERIDIAN STREET, AND W. ILLINOIS STREET.

THE 25 YEAR PLAN IDENTIFIES A MERIDIAN STREET/NORTHWEST AVENUE CONNECTOR WITH BELLINGHAM GOLF AND COUNTRY CLUB PROPERTY AND THE SEABELL INVESTMENT'S PROPERTY DEVELOPMENT.
MAP, BIRCHWOOD LAND USE
SECTION V. SUBAREA DESCRIPTIONS AND LAND USE DESIGNATIONS

Area 1

This low-density residential area makes up the bulk of the Birchwood Neighborhood and gives it much of this character. The lots in this area generally exceed 35,000 square feet with many of them approaching one acre in size. The lots are long and narrow and the combined open spaces in the rear of the lots contribute heavily to the rural character of the neighborhood. The lots generally are too narrow to be divided in width, so any subdivision would require multiple lot ownership and would result in the intrusion of residences into the interior open spaces. To maintain the existing development patterns in this area it is designated Residential, Single with a density of 20,000 square feet of ground area per dwelling unit.

This area includes the corridor along W. Maplewood Avenue from Alderwood Avenue north to the city limits. It is characterized by sound single family homes. Despite the opening of the Bakerview interchange, traffic volumes on W. Maplewood have not shown significant increases and in fact remain much lower than many of the city's other arterials where substantial single family areas exist. As to the question of whether or not commercial development in the adjacent county area near the interchange will result in significant increases in traffic volumes on W. Maplewood, it is felt it will not. While future commercial development near the interchange would, without doubt, increase the use of the interchange, it is unlikely that a large percentage of that traffic will leave the interchange area via W. Maplewood. Rather, the traffic that does exit at Bakerview will return to the freeway to continue to other activities at Meridian, Sunset, Lakeway, the Central Business District and Samish Way. When other alternatives are available, strip commercial and/or high density residential development should not be encouraged along every street which is speculated to have increased traffic volumes.

AREA 1 LAND USE DESIGNATION: SINGLE FAMILY RESIDENTIAL, LOW DENSITY

Area 2

This area is currently a single-family area characterized by long, deep lots, south of McLeod Road and smaller lots north of McLeod. The 7,200 square foot density maintains the current pattern of development. Wherever possible, a vegetated buffer should be maintained or enhanced along Interstate 5.

AREA 2 LAND USE DESIGNATION: SINGLE FAMILY RESIDENTIAL, MEDIUM DENSITY
Area 3

The presence of several apartment complexes characterizes much of Area 3. The existing densities vary according to parcel size. The land use designation will allow one unit for every 1,500 square feet, which is equivalent to 29 units per acre.

The density appears to fit the character of the area and would allow the existing pattern of development to continue.

High-density residential development and the resultant traffic increases close to Shuksan Middle School are an additional concern in this area.

Multiple family uses that are proposed in this area should be carefully reviewed to provide for adequate usable open space, landscaping, and other design standards to ensure their compatible integration with the site and the surrounding lots.

The Alderwood Avenue right-of-way, connecting Northwest Avenue to the existing Country Club should be preserved as development occurs.

---

**AREA 3 LAND USE DESIGNATION: MULTIFAMILY RESIDENTIAL, HIGH DENSITY**

---

Area 4

This area has been deleted.

---

Area 5

This is the site of the Bellingham Golf and Country Club, which has been granted open space tax status. Because of the size of the parcel, the well-landscaped grounds and the desirability of preserving the existing clubhouse, it is felt that a Planned Residential classification is an appropriate designation. This would allow, if and when the property is developed, the flexibility in dwelling location that is necessary to take full advantage of the area. Access from this area should be carefully designed to minimize traffic problems. The Baker Creek flood plain should be protected from encroachment.

---

**AREA 5 LAND USE DESIGNATION: MULTIFAMILY RESIDENTIAL, HIGH DENSITY**

---

Area 6

This area is the site of a motel and a currently vacant grocery store. It is felt that Area 6 is large enough to meet the demand for neighborhood commercial uses in this portion of the Birchwood Neighborhood.
Area 7

This area is characterized by a mix of single family homes, apartments, and scattered repair and service facilities. Commercial areas exist on either end of this area, which should provide sufficient land for those uses in this neighborhood. As stated in the Area 1 description, it is not desirable to encourage a Commercial land use classification along large portions of arterials when other options are available. The designation for this area would allow multiple family housing at a density dependent on the combination of existing lots of record. This designation would generate less traffic than a Commercial designation, which would help minimize the impact on school children walking to Shuksan Middle School. The increases in traffic on W. Maplewood Avenue are anticipated to be generated to a great extent by this residential multiple area. The street standard discussed in the Circulation section of this plan will provide a safe, efficient arterial to serve this area. The prerequisite consideration in the Land Use and Development Code relates to this improvement. Access onto W. Maplewood should be consolidated where possible to minimize the number of driveways. Single family uses should be buffered from new multi family construction where possible.

AREA 7 LAND USE DESIGNATION: MULTIFAMILY RESIDENTIAL, HIGH DENSITY

Area 7A

This area was formerly commercially designated property but because of a lack of demand has been reclassified for apartment use. It is similar to the classification and description of Area 7 (and those comments apply here) but is different in that additional flexibility is given in the required interior side yard setbacks, so that the building design is not "barrack" like in appearance. For both building and parking areas residential multi setbacks should be applied. Wooden fences 6 feet high along the rear property line should also be required during site plan review. The adequacy of subsurface geology (from previous coal mine use) must be determined prior to any building permit issuance.

AREA 7A LAND USE DESIGNATION: MULTIFAMILY RESIDENTIAL, HIGH DENSITY

Area 8

This is the Shuksan Middle School site and is designated as public.

BIRCHWOOD NEIGHBORHOOD – January 1, 2005


**Area 8 Land Use Designation:** Public

---

**Area 9**

The area is currently in public ownership and is the site of the Birchwood Elementary School.

---

**Area 9 Land Use Designation:** Public

---

**Area 10**

This area, together with the adjacent commercial area in the Columbia Neighborhood, currently provides much of the retail and service needs of the northeastern portion of the City. Recent development in the Guide Meridian Neighborhood also meets this demand. It is felt that the size of a commercial area in this portion of the neighborhood should not extend the full length of any designated arterial route in accordance with a citywide goal of discouraging strip commercial development.

Much of this area has been mined in the past by the Bellingham Coal Company. There is a State law that presents standards for the reclamation of the shafts running from the surface to the ore bed. There is, at this time, a question concerning the adequacy of the reclamation of the shafts because of the potential for subsidence and the damage that could result, a prerequisite consideration is recommended for Areas 10 and 11 addressing the ability of the land to support development in its present condition.

---

**Area 10 Land Use Designation:** Commercial

---

**Area 11**

Because of the undeveloped nature of the property, the adverse effects that traffic generating commercial uses would have on the existing nursing home and the residentially classified area to the north, and the condition of Birchwood Avenue, the land use designation for this area is appropriate. Under a Planned Residential designation, most of the adverse impacts could be mitigated, the physical character and amenities of the property could be preserved, and the development potential of the property could be realized.

---

**Area 11 Land Use Designation:** Multifamily Residential, no density specified

---

**Area 12**

BIRCHWOOD NEIGHBORHOOD – January 1, 2005
The designation for this area is Single-Family - Detached at 10,000 square feet per unit. This designation and the density reflect the existing pattern of development and the platting characteristics for the area. Little Squalicum Channel passes through this area and should be protected as development occurs. Drainage in general should be of concern as this area develops.

AREA 12 LAND USE DESIGNATION: SINGLE FAMILY RESIDENTIAL, LOW DENSITY

Area 13

The area is publicly owned and is used as the campus for the Bellingham Technical College. Parking for the school should not adversely affect the surrounding neighborhood. Access to and from the school on Eldridge Avenue is of particular concern for this area.

AREA 13 LAND USE DESIGNATION: PUBLIC

Area 13A

Area 13A was annexed to Bellingham in January 2002. It is approximately 7.5 acres in size and is bounded on the north by West Illinois Street and on the east by Nome Street. Bellingham Technical College (BTC) campus is adjacent to the area on the south. The area is publicly owned and is part of the BTC campus. Currently some parking is available in the area for college students and staff. The College anticipates considerable growth in student enrollment and expanded programs and has designated Area 13A for future expansion of the campus. Development of the area will include new classrooms, parking facilities, and relocation of the primary access from Nome Street to West Illinois Street. Improvement of West Illinois Street will be required before development of the area is allowed. Drainage systems should be developed and improved with roadway improvements and building or parking lot construction. The college will be required to provide a public, non-motorized pedestrian and bicycle access across this area as a connection to Little Squalicum Creek Park.

AREA 13A LAND USE DESIGNATION: PUBLIC

Area 13B

This area was annexed to Bellingham in January 2002. It is approximately .41 acre and is located between the Bellingham Technical College main campus and Little Squalicum Creek Park. A portion of Lindberg Avenue extending from the College property to

BIRCHWOOD NEIGHBORHOOD – January 1, 2005
Marine Drive is part of this area. Area 13B is publicly owned and is part of the Bellingham Technical College campus. Currently, student and staff parking is located on this site. Drainage systems should be developed and improved with roadway improvements and future building or parking lot construction.

**AREA 13B LAND USE DESIGNATION:** Public

**Area 14**

This area is platted into 4,480 square foot lots north of W. Connecticut Street and 5,600 foot lots south of Nequalicum. The zoning designation for the area would allow single-family structures at 4,000 and duplexes at 4,000 square feet per unit or 8,000 square feet per structure. The density reflects the existing pattern of development.

There are currently access problems to this area. The only way in and out of Area 14 is either through the neighborhood or out Nequalicum to Eldridge. In the first case, access is through a residential area; and, in the latter case, there are problems at an intersection with sight lines and with turning left off Nequalicum. Two possibilities exist for alleviating the problem; the improvement of the intersection at Nequalicum and Eldridge Avenues and the construction of the Roeder Avenue route or an acceptable alternative. When the latter is undertaken, care should be taken to minimize the impact on surrounding residences.

**AREA 14 LAND USE DESIGNATION:** Multifamily Residential, Medium Density

**Area 15**

This area is currently utilized as a gravel pit and is designated as a Planned Industrial area. Future plans for the area should be designed with the Roeder Avenue extension in mind. Squalicum Creek flows near this area and its shoreline and flood plain should be protected as development occurs. A vegetated buffer should be encouraged where the property abuts residential uses.

**AREA 15 LAND USE DESIGNATION:** Industrial

**Area 16**

This area along Eldridge Avenue consists of established single family homes, some with good views of the bay. These views should be protected where possible. Access is a concern at the intersection of Nequalicum and Eldridge Avenue, where a sight distance

BIRCHWOOD NEIGHBORHOOD – January 1, 2005
problem exists. This intersection is important because it serves as an access to the vocational school and the residential area to the east of the school.

**AREA 16 LAND USE DESIGNATION: SINGLE FAMILY RESIDENTIAL, MEDIUM DENSITY**

**Area 17**

This is a residential area of large, older, well kept homes built on large lots, most of which have been short platted. In some cases, two dwelling units are built on one lot of record. A designation allowing duplexes is assigned to this area in order to allow the continuation of this pattern. A special condition for this area limits access to Eldridge Avenue to one access per existing lot of record. Views of the bay should be protected as well as the integrity of adjacent shoreline and flood plain areas.

**AREA 17 LAND USE DESIGNATION: MULTIFAMILY RESIDENTIAL, LOW DENSITY**

**Area 18, Area 19 and Area 20**

Areas 18, 19, and 20 in the Birchwood Neighborhood are linear strips of properties that include the Squalicum Creek Channel. The optimum use for all three of the areas is open space; however, because the property is in private ownership it is recommended that no development be allowed to occur until the flood plain boundaries have been delineated by an ongoing study by the U.S. Department of Housing and Urban Development. For land use classification purposes the areas have been designated the same as the adjacent properties in the Columbia Neighborhood. This was done because those uses are basically more compatible with the environmentally sensitive creek bottom area than are the more intensive uses in the Birchwood Neighborhood. Access to Squalicum Parkway should be designed with maximum traffic safety in mind.

**Area 18**

**AREA 18 LAND USE DESIGNATION: SINGLE FAMILY RESIDENTIAL, LOW DENSITY**

**Area 19**

**AREA 19 LAND USE DESIGNATION: SINGLE FAMILY RESIDENTIAL, LOW DENSITY**

BIRCHWOOD NEIGHBORHOOD – January 1, 2005
Area 20

**AREA 20 LAND USE DESIGNATION:** SINGLE FAMILY RESIDENTIAL, LOW DENSITY

Area 21

**AREA 21 LAND USE DESIGNATION:** MULTIFAMILY RESIDENTIAL, HIGH DENSITY

Area 22

**AREA 22 LAND USE DESIGNATION:** COMMERCIAL

Area 23

This is the site of the fire station serving Birchwood and surrounding neighborhoods.

**AREA 23 LAND USE DESIGNATION:** PUBLIC

As adopted by Ordinance No. 8868 and amended by Ordinance Nos. 8946, 9023, 9271 and 9491, 9686, 9772, 9991, 10490, 2000-12-094, 2001-12-088 and 2004-12-087.
APPENDIX B

2013 Facility Conditions Assessment
2013 FACILITY CONDITION SURVEY

BELLINGHAM TECHNICAL COLLEGE

SURVEY CONDUCTED BY:
Steve Lewandowski
State Board for Community and Technical Colleges
Olympia, Washington
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>i</td>
</tr>
<tr>
<td>SECTION 1</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>EXECUTIVE SUMMARY</td>
<td>6</td>
</tr>
<tr>
<td>FACILITY REPLACEMENT AND RENOVATION</td>
<td>22</td>
</tr>
<tr>
<td>FACILITY MAINTENANCE MANAGEMENT</td>
<td>24</td>
</tr>
<tr>
<td>SURVEY METHODOLOGY</td>
<td>31</td>
</tr>
<tr>
<td>SECTION 2</td>
<td>37</td>
</tr>
<tr>
<td>FACILITY DEFICIENCY SUMMARY</td>
<td>38</td>
</tr>
<tr>
<td>FACILITY DEFICIENCY DETAIL</td>
<td>46</td>
</tr>
<tr>
<td>SITE/BUILDING CONDITION</td>
<td>58</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>105</td>
</tr>
<tr>
<td>APPENDIX A</td>
<td>106</td>
</tr>
<tr>
<td>DEFICIENCY SCORING METHOD</td>
<td>106</td>
</tr>
<tr>
<td>APPENDIX B</td>
<td>111</td>
</tr>
<tr>
<td>BUILDING/SITE CONDITION RATINGS</td>
<td>111</td>
</tr>
<tr>
<td>APPENDIX C</td>
<td>115</td>
</tr>
<tr>
<td>CAPITAL REPAIR REQUEST VALIDATION CRITERIA</td>
<td>115</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS

The following individuals are acknowledged for their participation in and contribution to the Bellingham Technical College Facility Condition Survey.

**State of Washington**

**State Board for Community and Technical Colleges**

1300 Quince St. SE, Olympia, WA 98504  (360) 704-4382

Wayne Doty, Capital Budget Director

Steve Lewandowski, Chief Architect

**Bellingham Technical College**

3028 Lindbergh Ave, Bellingham, WA 98225 (360) 752-7000

Debra Jones, Vice-President for Administrative Services

David Jungkuntz, Facilities Manager
SECTION 1

NARRATIVE SUMMARY

IN THIS SECTION:

- Introduction
- Executive Summary
  - College Overview
  - Deficiency Survey Update Summary
  - Capital Repair Requirement Deficiency Overview
  - Additional Deficiency Concerns
  - Major Infrastructure Overview
  - Consistency of Repair Requests with Facility Master Plan
  - Building Condition Rating Overview
  - Maintenance Management Concerns
  - Facility Condition Survey Report Format
- Facility Replacement and Renovation
  - Facility Replacement Priority Overview
  - Facility Renovation Priority Overview
- Facility Maintenance Management
  - Maintenance Staffing and Expenditure Overview
  - Maintenance Staffing
  - Maintenance Expenditures
  - Work Management Overview
Preventive Maintenance Overview
Maintenance Philosophy

Survey Methodology
Survey Process
Repair/Maintenance Standards
Deficiency Documentation
Survey Data Management and Reporting
INTRODUCTION

This facility condition survey is the thirteenth biannual survey conducted by the State Board for Community and Technical Colleges (SBCTC). In 1989 the SBCTC directed that a facility condition survey be performed on all state-owned community college facilities. The intent of the survey was to provide a determination of the physical condition of state-owned community college facilities, and to identify capital repair project candidates for funding consideration for the bi-annual state budget cycle. Starting in 1991, the five technical colleges and Seattle Vocational Institute were also included in this process.

The current survey continues the process begun in 1989 as a method of identifying and budgeting capital repair needs by applying a uniform process to all colleges system-wide. The capital repair candidate validation process uses a condition evaluation protocol and deficiency prioritization methodology applied in a consistent manner across all of the two-year institutions. The process was initiated with a detailed baseline condition survey conducted at each college in 1989, followed by updates conducted every two years. In 1995 a detailed baseline survey was conducted once again. Updates have been conducted every two years since 1995.

In 2001 the survey was augmented by a facility condition rating process whereby the overall condition of each college facility is rated by evaluating the condition of 20 separate technical adequacy characteristics. A score is calculated for each facility based on this evaluation. The condition rating process continues to be an integral part of the condition survey update process.

The focus of the 2013 survey update includes:

- Reviewing deficiencies documented in the 2011 survey that have either not been funded or only partially funded for the current biennium, and evaluating the current condition of those deficiencies;
- Updating the relative severity/priority of those deficiencies to result in a deficiency score to be used as a guide for repair request prioritizing and timing;
- Modifying the recommended corrective action for unfunded deficiencies if necessary, and updating the estimate of repair costs for capital repair project requests;
- Reviewing, validating, prioritizing, and estimating corrective costs for “emerging” deficiencies identified by the college as potentially requiring capital repairs;
• Updating the building and site condition ratings.

This survey is intended to assist the SBCTC in establishing the relative severity of each capital repair deficiency to allow system-wide prioritizing of each college repair request. The SBCTC will also be able to estimate in advance the probable level of magnitude of the cost of the projects likely to be requested by each college for inclusion into its 2015-2017 capital repair requests.

The focus of the condition survey update, as determined by the SBCTC, includes major building systems, utility distribution systems, and some site elements. It does not include dormitories, parking lots, asbestos hazard identification, ADA compliance, new construction, construction currently under warranty, or facilities less than eight years old or purchased less than eight years ago.
EXECUTIVE SUMMARY

The campus visit and validation assessment for this facility condition survey update for Bellingham Technical College campus was conducted in August, 2013.

The survey had a dual focus. First, deficiencies identified during the 2011 survey that are not being funded for repairs, or only partially funded, were reviewed to determine any changes in the scope of these deficiencies since the 2011 survey. Changes were documented and cost estimates for correcting the deficiencies updated. Each deficiency was also re-prioritized using the prioritizing system that was developed by the consultant and the SBCTC in 1995, and modified in 1999 and 2001. Second, review, analysis and documentation of validated “emerging” deficiencies identified by the college were conducted. “Emerging” deficiencies that qualified as capital repairs were also prioritized, and cost estimates for correcting those deficiencies were developed. The prioritization process included a determination as to whether a deficiency should be funded for the 2015-2017 biennium or backlogged for funding after 2017.

Campus areas and facilities not owned or managed by the State, dormitories, parking lots, potential asbestos problems covered by the SBCTC hazardous material/asbestos abatement pool, deficiencies covered under existing warranties, and new construction project deficiencies were not addressed as part of this effort.

COLLEGE OVERVIEW

Bellingham Technical College serves the greater Bellingham area, as well as communities throughout Whatcom County. The main campus, located in the city of Bellingham, has been in operation since 1955. The college also operates a Fisheries Technology program at an off-campus site in Bellingham called the Whatcom Creek Hatchery.

The main campus is located on a 33-acre site that houses eighteen permanent facilities and two modular facilities. The permanent facilities range in size from 5,406 GSF to 50,065 GSF. Fifteen of the permanent facilities are considered instructional/academic facilities, one is a student support facility one is a maintenance facility, and one is a storage facility. (See campus map on the following page.) One of the modular facilities houses the campus bookstore and one the Parent Education program.

A satellite site, the Whatcom Creek Hatchery, is located in downtown Bellingham on the site of a former wastewater treatment plant. The site houses one 1,780 GSF facility owned by the college, and currently used for storage.
DEFICIENCY SURVEY UPDATE SUMMARY

PREVIOUS SURVEY

Eight deficiencies were identified in the previous facility condition survey for the Bellingham Technical College. Typically, the survey data for all college deficiencies are included in a single list and prioritized by severity. The prioritized list is then pared down to the most severe deficiencies based on the total dollar amount identified in the State Board’s capital budget request for Minor Works Preservation projects.

The portion of the funding request related to an individual campus is determined by adding up all of the projects that are included in the pared down list for each campus. After the list is correctly sized, colleges are given the opportunity to make modifications to their preliminary list of projects, but are constrained by the pre-determined budget amount for their college. The State Board then uses the modified project data to help develop the final capital budget Minor Works Preservation request.

To address the worst deficiencies identified in the previous survey, the State Board submitted seven of these deficiencies as Minor Works Preservation projects in the 2013-15 capital budget request (two of these have been combined into one sub-projects in the budget request):

- Replace the two boilers with one appropriately sized high efficiency boiler. MACC estimate of $91,000.
- Replace the units with packaged equipment sized to meet current and anticipated future heating and cooling requirements. MACC estimate of $69,000.
- Replace units coordinated with a re-roofing project planned for this facility. MACC estimate of $111,000.
- Replace window units with new double-glazed units. MACC estimate of $19,000.
- Repair gutters, install larger drains, rebuild damaged soffits and fascia and shingles on Building G. MACC estimate of $68,000.
- Replace roofs on buildings A and including the portion of the covered overhang belonging to Building A and the covered walkway adjacent to the building B, but not the 2001 addition membrane. MACC estimate of $372,000.
SURVEY UPDATE

This condition survey update validated additional repair deficiencies and recommendations for funding. Seven of the deficiencies have been recommended for funding in the 2015–2017 capital budget, however, any deferrable deficiencies should also be included in the budget in order of severity as funds allow.

The following table summarizes by funding category the number of deficiencies, average severity score, and estimated repair cost. Projects not recommended for funding are not included.

FACILITY CONDITION SURVEY - COLLEGE DEFICIENCY SUMMARY BY FUNDING CATEGORY

Bellingham Technical College

<table>
<thead>
<tr>
<th>SITE NAME/ FUNDING</th>
<th>AVG. SVR.</th>
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<tr>
<td>CATEGORY</td>
<td># OF DEF.</td>
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</table>

Bellingham Campus

| Facility | 7 | 67 | $390,000 |
| Roof     | 2 | 65 | $120,000 |

SITE TOTAL

| 9 | 66 | $510,000 |

COLLEGE TOTAL

| 9 | 66 | $510,000 |
The deficiencies identified during this survey are summarized below:

**FACILITY CONDITION SURVEY**

**DEFICIENCY DETAIL SUMMARY**

**Bellingham Technical College**

**SURVEY DATE:** 8/13

**FACILITY: 250J** Science/Technology

**DEFICIENCY:** F06 Facility $90,000 **SCORE** 64 Critical

HVAC units

The three, 20 year old rooftop HVAC units are near the end of their useful life. The facility staff indicated that the units require a high level of maintenance and repairs to maintain their function. The units should be replaced.

**Roof**

**FACILITY: 250MDA** Marine Drive Annex

**DEFICIENCY:** R01 Roof $80,000 **SCORE** 50 Fund in Next Biennium

Roofing

The metal and fiberglass panel roofing has deteriorated and is near the end of its useful life. A small section of TPO roofing is also near the end of its useful life. The facility has recently replaced the exposed roof fasteners to extend the life of the metal roof. The fiberglass panels are severely deteriorated. The recent repairs should extend the useful life, but the entire building roofing should be replaced within 5 years.

**Roof**
**FACILITY: 250T**  
**Building T (Diesel)**

**DEFICIENCY: R02**  
Roof  
$40,000  
**SCORE 80**  
Critical  
Roofing  
20 SQ

The majority of the roof was recently replaced on this building. The small remaining section of 30 year old roof is at the end of it’s useful life. This older section of roof has had many repairs and has been resurfaced with an elastomeric product. The roofing should be replaced. There is also an accessory building adjacent to this building with roofing in the same condition. The accessory building roofing should also be replaced.

**FACILITY: 250Z**  
**College Services**

**DEFICIENCY: F03**  
Facility  
$22,000  
**SCORE 80**  
Critical  
Stucco  
8000 SF

The exterior stucco has numerous cracks that compromise the building envelope. Many cracks have become enlarged because of seasonal conditions where water infiltrates the material and then freezes to expand the cracks. The stucco cracks should be repaired. The stucco finish should be repaired using an elastomeric paint.

**DEFICIENCY: F04**  
Facility  
$131,000  
**SCORE 60**  
Critical  
HVAC  
1 LS

Two rooftop HVAC units and integrated exhaust fan are more than twenty years old and are near the end of their useful life. The facility staff indicated that the units have required a high level of maintenance to maintain function. The units exhibit exterior corrosion that indicates years of weathering. The units should be replaced.

**FACILITY: MULTIPLE**  
**Multiple**

**DEFICIENCY: F07**  
Facility  
$22,000  
**SCORE 80**  
Critical  
Door hardware

Many exterior doors have hardware that is failing. The hardware is no longer available for these doors, so the parts have to be fabricated to make repairs.

**Exterior doors**
**DEFICIENCY: F01  Facility $41,000  SCORE 80  Critical**

**Entry doors**

Six total exterior doors on buildings B, and A are at the end of their useful life. The door frames were cast in place when the building was constructed, making it difficult to replace them. The frames can remain, but must be modified to accommodate new doors. The deteriorated doors and hardware should be replaced.

*Exterior building shell*

**DEFICIENCY: F05  Facility $44,000  SCORE 68  Critical**

**Lighting controls**

The lighting controls do not work consistently in the DMC and MC buildings. In many cases the light switches do not function without rebooting the main lighting control panel. This could easily become a life safety issue. The lighting control panels should be replaced.

**DEFICIENCY: F02  Facility $40,000  SCORE 34  Fund in Next Biennium**

**Windows**

Twenty eight total windows in buildings C, M and K are at the end of their useful life. Some of the window frames have deteriorated and have become very difficult to operate. Other windows have failed and leak. Many windows have been screwed shut. The windows should be replaced.

*Building exterior*
The following table summarizes the average severity score and estimated repair cost. The data is sorted by facility the number of deficiencies.

**FACILITY CONDITION SURVEY - COLLEGE DEFICIENCY SUMMARY BY BUILDING**

Bellingham Technical College

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<th>SITE NAME/ FACILITY</th>
<th>FACILITY NAME</th>
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<td>250MDA Marine Drive Annex</td>
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<td></td>
<td>250Z College Services</td>
<td>2</td>
<td>70</td>
<td>$153,000</td>
<td>4.2%</td>
</tr>
<tr>
<td></td>
<td>STATE UFI: A06652</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SITE TOTAL</strong></td>
<td></td>
<td>5</td>
<td>67</td>
<td>$363,000</td>
<td></td>
</tr>
<tr>
<td><strong>COLLEGE TOTAL</strong></td>
<td></td>
<td>5</td>
<td>67</td>
<td>$363,000</td>
<td></td>
</tr>
</tbody>
</table>

FCI (Facility Condition Index) = Repair Cost/Building Current Replacement Value (CRV)

The lower the FCI %, the better the overall facility condition. The higher the FCI %, the greater the repair and/or renovation requirements.
The following table summarizes the number of deficiencies, average severity score and estimated repair cost. The data is sorted by probable deficiency cause.

### FACILITY CONDITION SURVEY - COLLEGE DEFICIENCY SUMMARY BY CAUSE

Bellingham Technical College

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>AVG. SVR.</th>
<th>SCORE</th>
<th># OF DEF.</th>
<th>REPAIR COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellingham Campus</td>
<td></td>
<td>80</td>
<td>1</td>
<td>$40,000</td>
</tr>
<tr>
<td>Age/Wear</td>
<td></td>
<td>62</td>
<td>7</td>
<td>$448,000</td>
</tr>
<tr>
<td>Weather</td>
<td></td>
<td>80</td>
<td>1</td>
<td>$22,000</td>
</tr>
<tr>
<td>SITE TOTAL</td>
<td></td>
<td>66</td>
<td>9</td>
<td>$510,000</td>
</tr>
<tr>
<td>COLLEGE TOTAL</td>
<td></td>
<td>66</td>
<td>9</td>
<td>$510,000</td>
</tr>
</tbody>
</table>

Since capital repair funding is derived largely from long-term State bond indebtedness, the investment of capital repair dollars in a facility should likewise result in a long-term benefit, a minimum of thirteen years according to OFM guidelines. This means that facilities for which capital repair dollars are being requested should have a reasonable remaining life expectancy to recover the repair dollar investment. Therefore, capital repair requests for facilities that a college has identified as a high priority for renovation or replacement are carefully scrutinized to determine whether the requests should instead be incorporated into any renovation or replacement proposal that is submitted. Typically, capital repair requirements identified in a facility that is being considered for renovation or replacement are backlogged pending receipt of renovation or replacement funding.

### MAJOR INFRASTRUCTURE OVERVIEW

The current master plan for the college, completed in 2007, discusses utility systems and related issues in a summary format. The document indicates that future capital projects will be focused on overall replacement of antiquated systems as necessary.
Cascade Natural Gas serves the campus via an 8-inch high pressure line. The utility has an on-going program with the college to change out the three master meters on campus and replace them with individual building meters. The plan document indicates that there are still some locations where gas piping is deteriorating at the joints. These lines will be replaced or abandoned as future capital projects occur. The plan proposes to transfer ownership of existing site or service gas lines to the gas utility as they are replaced. Maintenance and future extensions for new buildings would be the responsibility of the utility via fees assessed to the college.

Electric power is delivered by the local electric utility to a primary metering cabinet located west of Building A. Primary meters run from this cabinet to a 15KV pad mounted switch nearby. From here, the primary feeders serve the entire campus via 11 pad-mounted transformers and secondary feeders to buildings. Two feeder loops serve the campus. One serves the north portion and seven of the eleven transformers. The other serves the south portion and two transformers. The remaining transformers, serving buildings A, B, and Y, have a direct feeder.

Ampacity rating for the #2 wires used for most of the primary feeders is 155 amps. At this time it is sufficient to handle capacity for all feeders. However, this has to be re-evaluated whenever significant loads are added to the system. At the point in the future when capacity is exceeded, a second service from the utility will be required. Most of the pad-mounted transformers are nearing the end of their anticipated life span according to the plan document. However, they are currently in good condition and are thought to have several more years of useful life.

The college has installed a 10-inch water line to provide adequate fire protection for present and future campus facilities. The City also has 6-inch and 8-inch water mains in the streets surrounding the campus to supply domestic water. These mains provide enough capacity for present and future water demands. The City owns and maintains the main loop and the college owns and maintains service lines to each building. No condition-related issues have been identified.

The existing campus drainage system is divided into three zones—southwest, southeast and north. The southwest zone drains directly into the City's storm drain system. The southeast zone also drains into the City’s storm drain system, but only after passing through a biofiltration swale and underground detention basin. Flow from the northern zone is treated in an underground, canister treatment vault system before entering the City’s system.

Future capital projects will require updated drainage studies for the southeast and southwest drainage zones to analyze capacity of the City’s facilities, as well as treatment/detention requirements. The north zone was addressed in a study conducted in 2002.
The college is served by a gravity sanitary sewer running east/west along the southern portion of the campus. This sewer main discharges into the City's system at the southwest corner of the campus. According to the master plan document, portions of this southernmost sewer system are deteriorating and will require redesign and replacement to accommodate future buildings planned for this area as future capital projects are executed.

CONSISTENCY OF REPAIR REQUESTS WITH FACILITY MASTER PLANNING

One of the criteria used for the capital repair request validation process is to review the college's master or facilities plan to determine what the medium and long-term planning and programming objectives of the college are with respect to the facilities for which capital repair dollars are being considered. The primary focus is to determine what the college considers the remaining life of these facilities to be, which will determine whether or not the proposed capital repair projects have economic merit.

The deficiencies identified in this condition survey update and recommended for funding are in buildings and locations that will likely be utilized for at least the next fifteen years or are in buildings that are slated for renovation or replacement, but require minor repairs to continue basic use of the space.

BUILDING CONDITION RATING OVERVIEW

The condition rating of the facilities at Bellingham Technical College that are included in this condition survey update ranges from “Replace or Renovate” to “Superior”, and varies significantly, as shown in the following table. The rating scores presented in this summary were generated by the condition analysis conducted as part of the 2013 condition survey update.
# BUILDING CONDITION RATING SUMMARY

Bellingham Technical College

<table>
<thead>
<tr>
<th>FACILITY #</th>
<th>FACILITY NAME</th>
<th>GSF</th>
<th>SITE</th>
<th>SCORE</th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>250MC</td>
<td>Morse Center</td>
<td>50,065</td>
<td>Bellingham Campus</td>
<td>146</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>250N</td>
<td>Haskell Center</td>
<td>30,742</td>
<td>Bellingham Campus</td>
<td>146</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>250P</td>
<td>Desmond McArdle Center</td>
<td>30,000</td>
<td>Bellingham Campus</td>
<td>146</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>250CC</td>
<td>Campus Center</td>
<td>68,093</td>
<td>Bellingham Campus</td>
<td>158</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250Z</td>
<td>Building Z (College Services)</td>
<td>12,904</td>
<td>Bellingham Campus</td>
<td>210</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>250G</td>
<td>Building G (Culinary/Café)</td>
<td>17,197</td>
<td>Bellingham Campus</td>
<td>218</td>
<td>218</td>
<td></td>
</tr>
<tr>
<td>250M</td>
<td>Building M (Automotive Technology)</td>
<td>15,954</td>
<td>Bellingham Campus</td>
<td>270</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td>250T</td>
<td>Building T (Diesel)</td>
<td>16,789</td>
<td>Bellingham Campus</td>
<td>278</td>
<td>278</td>
<td></td>
</tr>
<tr>
<td>250U</td>
<td>Building U (Refrigeration)</td>
<td>9,495</td>
<td>Bellingham Campus</td>
<td>278</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>250B</td>
<td>Building B (Vocational)</td>
<td>31,149</td>
<td>Bellingham Campus</td>
<td>296</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td>250K</td>
<td>Building K (Facilities)</td>
<td>4,302</td>
<td>Bellingham Campus</td>
<td>296</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td>250H</td>
<td>Building H (Health Occupations)</td>
<td>9,158</td>
<td>Bellingham Campus</td>
<td>298</td>
<td>314</td>
<td></td>
</tr>
<tr>
<td>250C</td>
<td>Building C (Dental)</td>
<td>5,511</td>
<td>Bellingham Campus</td>
<td>310</td>
<td>286</td>
<td></td>
</tr>
<tr>
<td>250R</td>
<td>Portable R (Bookstore)</td>
<td>1,826</td>
<td>Bellingham Campus</td>
<td>354</td>
<td>706</td>
<td></td>
</tr>
<tr>
<td>250J</td>
<td>Building J (Engineering/Electrical)</td>
<td>11,558</td>
<td>Bellingham Campus</td>
<td>360</td>
<td>348</td>
<td></td>
</tr>
<tr>
<td>250A</td>
<td>Building A (ITRC)</td>
<td>11,535</td>
<td>Bellingham Campus</td>
<td>430</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>250MDA</td>
<td>Marine Drive Annex</td>
<td>5,500</td>
<td>Bellingham Campus</td>
<td>456</td>
<td>456</td>
<td></td>
</tr>
<tr>
<td>250Y</td>
<td>Portable Y (Parent Education)</td>
<td>1,836</td>
<td>Bellingham Campus</td>
<td>488</td>
<td>730</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL GSF AND WEIGHTED AVERAGE SCORE**

333,614  219

146 - 175 = Superior

176 - 275 = Adequate

276 - 350 = Needs Improvement Through Additional Maintenance

351 - 475 = Needs Improvement Through Renovation

>475 = Replace or Renovate
The rating scores for permanent college facilities that were rated range from a low of 146 to a high of 488, with a lower score indicating a better overall condition rating. (See the Site/Building Condition Scoring Overview and Ratings section for a breakdown of the rating scores.) In general, the better scores were received by the newer facilities and by facilities that have undergone remodels in recent years.

Furthermore, buildings in the construction phase of a major renovation at the time of the survey were rated based on the anticipated condition of the facility after the project is completed. This concept was also applied to major system renovations. Partial renovations and additions were rated based on the average condition of the existing and renovated components of the facility.

The weighted average score for all rated facilities is 219 for this survey. This indicates that the average condition of the college facilities is adequate. Seven of the Eighteen college facilities are rated as either Superior or Adequate. In the previous survey, the weighted average score for all facilities was 253.

MAINTENANCE MANAGEMENT CONCERNS

The State of Washington capital and operating budgets have been significantly impacted by the recent recession. The impact of the recession has directly affected the level of funding appropriated to the community and technical colleges. As a result, facility maintenance budgets have been reduced accordingly.

The reduction in maintenance funding may likely result in an increase in deferred maintenance. Another result of the temporarily reduced funding level is the trend to approach maintenance with a “repair by replacement” strategy, which is a more expensive approach to maintaining a facility and merely replaces the operating costs with higher capital costs.

Comparatively, all of the nation's colleges are feeling the pinch of the economic downturn, and maintenance and operations (M&O) budgets especially are under pressure. According to American School & University's 38th annual Maintenance & Operations Cost Study (completed in 2009), the median college allocates 10 percent of its total budget to M&O, down from 11 percent the year before. While lower energy costs helped colleges' bottom lines, rising payroll and benefits costs strained budgets.
Custodial and maintenance staff are being required to do more. The amount of square feet maintained per full-time custodian increased by 16 percent; the amount of square feet maintained per full-time maintenance worker increased by 13 percent from the previous study completed in 2007.

Troubleshooting equipment and taking the time to effect repairs may not be seen as a priority when funding is not available for these activities. However, the resulting long-term costs are far higher than following a prudent policy of balancing reasonable and cost-effective repairs and justifiable replacement.

Many facilities have older large equipment, especially HVAC equipment such as air handlers. This equipment, when manufactured, was very well constructed, often to industrial standards, as compared to commercial equipment manufactured today, which is very often much less robust. Much of this older equipment can be cost-effectively repaired. Fans, motor, dampers, heating/cooling coils, shafts and bearings in air handlers can all be replaced as they fail, without the added expense of replacing the case, which often requires expensive structural work because of size and location. Why throw away a chiller, when only the compressors are bad, and when they can often be rebuilt? A lot of smaller unitized equipment can similarly be repaired instead of simply replaced.

This tendency toward replacement rather than repair also too often extends to roofs. Many times the problems that occur with roof membranes can be satisfactorily resolved with repairs or partial replacement instead of wholesale replacement of the entire membrane. This will require more rigorous investigation to determine the extent of problems, often by employing thermal scanning and/or core sampling to determine the extent of leaks or membrane condition as well as condition of underlying insulation. This does cost some money, but if it can save $175,000 to $275,000 for the average replacement cost of a roof, or if repairs can extend the life of the membrane for five to ten more years, it is certainly money well spent.

With roof membranes low first cost often seems to win out over alternatives that may have a higher initial cost but a lower life-cycle cost. The use of single-ply PCV or TPO membranes seems to be a preferred design option for new buildings and for membrane replacements. These may be a low cost option, but not a good choice for many applications. On a building with a lot of rooftop equipment and penetrations single-ply membranes have a short life due to the abuse they sustain by people constantly walking and working around equipment on the roof. Such roofs almost always fare better with a torch-down membrane with a mineral-surfaced cap sheet, which are somewhat more costly initially, but typically last much longer and have lower life-cycle maintenance costs.

If the expertise to troubleshoot and to really analyze the condition of building systems does not exist within the maintenance organization, the organization must make sure that the consultants it hires have the experience and expertise to provide effective troubleshooting and diagnosis, and that they can provide reasonable alternative solutions to a problem. Having design expertise is simply not enough. The same is true of contractors. A contractor should not be allowed to take the easy way out and simply recommend replacement when there could
be cost-effective repair alternatives. The emphasis should be on contractors and consultants who can provide more than one solution to a maintenance problem, and insure that those solutions are reasonable and cost-effective.

Another increasing concern is DDC control systems. There appears to be a built-in obsolescence factor in these systems, such that manufacturers seem to be recommending replacement about every twelve years. Over the last two to three biennia the survey team has found that colleges are being told that their systems are “obsolete” and will no longer be supported, that replacement parts will no longer be manufactured and that the college needs to upgrade to the latest system, often at very high cost. Attempting to determine the truth of these claims from manufacturers and their distributors has proved very difficult. To test these claims the survey consultant, starting in 2009, asked colleges that requested DDC replacements to have the manufacturer and distributor provide written, signed confirmation that a system would no longer be supported as of a given date, that replacement parts would no longer be available as of a given date, and that there was no third party source of replacement parts. To date no such documentation has been forthcoming from either manufacturers or distributors.

It is highly likely that college maintenance organizations will have to make do with less for the foreseeable future. This being the case, they need to make sure that their available maintenance funds are allocated in the most cost-effective manner possible. In practice this will mean giving a lot more thought to what should and can reasonably be rebuilt or repaired rather than simply replaced. It will also mean starting to apply the principles of life-cycle cost analysis and alternatives analysis to repair and replacement decisions.

FACILITY CONDITION SURVEY REPORT FORMAT

This facility condition survey report is divided into two major sections that present the survey data in varying degrees of detail. Section I is titled “Narrative Summary” and includes four subsections. Section II is titled “Summary/Detail Reports” and includes three subsections.

Section I - Narrative Summary

This “Introduction and Executive Summary” is the first subsection. It includes an overview of the survey objectives; an overview of the college; a summary update of deficiencies funded from the previous survey; an overview of capital repair requests being submitted for the 2015-2017 biennium; a discussion of major infrastructure issues; significant maintenance/repair issues identified by the college maintenance organization,
which the survey team determined could not be addressed through the capital repair process; a discussion of the consistency of repair requests with facility master planning; and a building condition rating overview.

The second subsection is titled “Facility Replacement and Renovation Proposals” and discusses facilities that are viewed by the college as prime candidates for replacement and major renovation.

The third subsection is titled “Facility Maintenance Management Overview.” It presents an overview and discussion of maintenance staffing and funding; and an overview and discussion of facility maintenance management issues.

The fourth subsection is titled “Survey Methodology” and discusses the methodology of the condition survey, including the survey process; deficiency documentation; deficiency severity scoring; cost estimating; and data management and reporting.

Section II - Summary/Detail Reports

The “Summary/Detail Reports” section of the report presents both summary and detail deficiency data. The first subsection is titled “Repair Programming Summary” and provides a summary deficiency cost estimate by building and by the criticality or deferability assigned to each deficiency, and a facility repair programming summary report. The repair programming summary report provides both descriptive and cost deficiency data for each facility, categorized by the criticality or deferability assigned to each deficiency.

The second subsection is titled “Detailed Deficiency Data” and contains the detailed deficiency data for each facility wherein deficiencies were identified. Each individual deficiency report page provides detailed information on a single deficiency.

The third subsection is titled “Site/Building Condition Scoring Overview and Ratings” and contains a discussion of the facility and site rating process; an overview of facility and site condition; the site rating sheet for the main campus and any satellite campuses; and the building condition rating sheets for each facility.

The report also contains three appendices. Appendix A provides a detailed overview of the deficiency severity scoring methodology employed by the survey team. Appendix B provides an overview of the building/site condition analysis process, including the evaluation standards and forms used in the analysis. Appendix C
contains the capital repair request validation criteria that were first developed for the 2001 survey process to insure a consistent approach in identifying candidates for capital repair funding.
Development of the campus of Bellingham Technical College has taken place over a fifty-six year period, starting in 1955 with the construction of Buildings A and B, followed by the construction of three facilities in the 1960s. The second major phase of construction occurred in the 1970s, which saw the construction of nine facilities. Three additional facilities were constructed in the 1990s.

The newest facilities are the Haskell Center, built in 2003, the Desmond McArdle Center, built in 2004, and the Morse center, built in 2007.

Construction is currently underway on the Instructional Resource Center. This 72,885 GSF facility will be a 3-story building containing instructional space for professional/technical programs and a new college library. A COP is also being funded to add approximately 4,000 GSF to this building for a bookstore and student government offices. Once the new facility is complete, three existing buildings, D, E, and F will be demolished, quite likely in 2012.

The Whatcom Creek Hatchery site has been in operation since the late 1940s, when the site was a wastewater treatment plant for the city of Bellingham. In 1978 the treatment plant was converted into a hatchery. The college currently owns one of the three buildings on the site, which is used for storage. It leases the other two buildings. Matching funds in the amount of $2 million have been received by the college for construction of a 6,610 GSF, two-story building that will house the Fisheries Technology program, replace the existing storage building and provide parking for 24 vehicles.

The most current master plan for the college was completed in 2007. The college will update the master plan in 2013.

Most of the facilities at Bellingham Technical College are in relatively good condition. There are no replacement projects being proposed at this time.
The college facility staff indicated that they anticipate focusing on the Engineering/Electrical (J) building as a good candidate for renovation during the master plan update.
FACILITY MAINTENANCE MANAGEMENT

A questionnaire was sent to each college soliciting input from the college maintenance organization on maintenance staffing, the status of the PM program, annual workload, how work is managed, and annual maintenance expenditures. The responses from Bellingham Technical College have been analyzed and are discussed below. The data is used to generate an overview of facility maintenance management effectiveness at the college, and is also used to compare all colleges statewide.

The maintenance questionnaire provides data to evaluate and compare maintenance staffing levels and maintenance expenditures. College responses are compared with benchmarking data available from national organizations to help identify variances.

MAINTENANCE STAFFING AND EXPENDITURE OVERVIEW

The benchmarking data for maintenance staffing and expenditures used in previous condition survey updates has come primarily from the International Facility Management Association (IFMA). This organization periodically collects and publishes comparative data gathered through in-depth surveys of a wide variety of maintenance organizations. IFMA completed the last major facility operations and maintenance survey in 2008. That data was reported in a publication titled “Operations and Maintenance Benchmarks – Research Report #32,” published in mid-2009.

Similar comparative data was found to be available from an annual maintenance and operations cost study for colleges conducted through a national survey by American School & University (ASU) magazine. The most recent data from this source is their 38th annual study published in April of 2009.

MAINTENANCE STAFFING

The Bellingham Technical College facility encompasses approximately 333,614 GSF, not including leased facilities. The campus maintenance staff has the following composition:

1 Maintenance Supervisor, half-time
Many colleges supplement the maintenance staff effort by hiring outside contractors to complete some of the maintenance activities. A comparative analysis of total maintenance effort at the colleges requires that the outside contractor data be included in the total maintenance effort. See the “Overall Maintenance Comparison” section below for the comparative analysis.

IFMA SURVEY COMPARISON

For comparison with the community colleges, the size range of 250,000 to 500,000 GSF was selected from the IFMA data as representative of the average size of a state campus. The average total maintenance staffing reported by IFMA in 2009 for this size of plant was 8.7 FTEs. Dividing the upper end of the selected range (500,000 GSF) by the FTE staffing provides the number of GSF maintained per FTE -- 57,471 GSF.

In its 2009 report, IFMA also provided comparative data for average maintenance staffing by specific categories of maintenance personnel (e.g. electricians, painters, etc.), using the same ranges of physical plant size as for total staffing. This data, which is presented below, could be useful for evaluating their existing staffing in terms of specific trades/capabilities and staffing numbers.

<table>
<thead>
<tr>
<th>Category</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor (incl. Foremen)</td>
<td>1.75</td>
</tr>
<tr>
<td>Administrative Support (incl. Help Desk)</td>
<td>2.38</td>
</tr>
<tr>
<td>Electricians</td>
<td>1.28</td>
</tr>
<tr>
<td>Plumbers</td>
<td>1.13</td>
</tr>
<tr>
<td>Controls Techs.</td>
<td>0.94</td>
</tr>
<tr>
<td>HVAC and Central Plant</td>
<td>1.93</td>
</tr>
<tr>
<td>Painters</td>
<td>1.25</td>
</tr>
<tr>
<td>Carpenters</td>
<td>1.28</td>
</tr>
<tr>
<td>General Workers</td>
<td>3.22</td>
</tr>
<tr>
<td>Locksmiths</td>
<td>0.96</td>
</tr>
</tbody>
</table>
ASU SURVEY COMPARISON

The American School & University (ASU) magazine cost study provides data on the average number of maintenance employees and the average GSF of physical plant maintained per employee. However, unlike the IFMA data, this data is not broken down by size ranges of physical plant. The average number of maintenance employees in the 37th annual study was reported as 8 FTEs. The corresponding data was not available in the most recent, 38th annual study. The average number of GSF maintained per FTE was reported as 79,293 in the 38th annual study.

MAINTENANCE EXPENDITURES

Based on the reported number of staff, classifications and hours worked per week and cost of outside maintenance contracts, the amount expended annually for facility maintenance/repair labor over the last full fiscal year was $425,000, or approximately $1.49 per GSF of space maintained. The amounts expended annually for material costs were not reported.

Staff costs were calculated using current Department of Personnel job classification salary data and estimated benefits costs (salary x 1.36 = total cost). If the college did not have the ability to track or did not provide outside maintenance contract expenses, this cost data may be roughly 10% to 30% below actual total maintenance costs. Staff repair efforts related to capital projects (likely funded by Capital Budget bill appropriations) is included in this calculation and varies by college, but this data was difficult to isolate at the time of this survey.

OVERALL MAINTENANCE COMPARISON

The following table compares the college maintenance staff FTEs and area per FTE (GSF/FTE) to other colleges and to the IFMA and ASU averages. Since some colleges spent maintenance funds on outside contracts to supplement their staff efforts, an estimated contract FTE number was generated based on the average annual total contracted amount. If the college did not have the ability to accurately track or did not provide outside maintenance contract expenses, the “Equivalent Contract FTE” data is inaccurate (zero FTEs). This “Equivalent Contract FTE” calculation assumes that the external contracts were primarily labor only. The “Combined Total FTEs” data attempts to reflect the combined in-house and contracted maintenance effort. This analytical approach allows data
comparisons between facilities that complete all work with internal staff to facilities that contract out some of their work.

<table>
<thead>
<tr>
<th></th>
<th>No. of College Maintenance FTEs</th>
<th>Estimated No. of Equivalent Contract FTEs **</th>
<th>Combined Total FTEs</th>
<th>GSF / Combined Total FTEs</th>
<th>Maintenance Cost / GSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>4.1</td>
<td>2.6</td>
<td>6.7</td>
<td>42,334</td>
<td>$1.49</td>
</tr>
<tr>
<td>Average for All Colleges</td>
<td>6.3</td>
<td>0.8</td>
<td>7.1</td>
<td>75,591</td>
<td>$0.90</td>
</tr>
<tr>
<td>IFMA</td>
<td></td>
<td>8.7</td>
<td></td>
<td>57,471</td>
<td>*</td>
</tr>
<tr>
<td>ASU</td>
<td></td>
<td>8</td>
<td></td>
<td>69,873</td>
<td>*</td>
</tr>
</tbody>
</table>

* Not comparable because the data includes material cost which is not tracked by colleges.

** Estimated by dividing the average total fiscal year cost of contracted maintenance work by the statewide average cost of college maintenance FTEs.

This data will likely include some level of inaccuracy because of inconsistent data recording methods implemented at each college. It is also difficult to compare college data to the IFMA and ASU data because of similar reasons. The college comparison should become more accurate as the statewide maintenance tracking system is implemented.

MAINTENANCE PHILOSOPHY

As part of its responses to the 2013 maintenance questionnaire, the college maintenance organization was asked to self-rate the level of maintenance at the college based on a review of a matrix developed by the APPA that was included with the questionnaire. The matrix identifies five maintenance levels and asks the organization to determine which level applies to his/her institution for each of eleven different measures of maintenance performance, and as a whole. The five maintenance levels are:

1) Showpiece Institution;
2) Comprehensive Stewardship;

3) Managed Care;

4) Reactive Management;

5) Crisis Response.

It is felt that this rating, which measures a very comprehensive set of maintenance performance indicators, reflects to a great extent the overall maintenance philosophy that exists at each college. This is viewed as a useful metric for comparing maintenance effectiveness among the community and technical colleges.

The Bellingham Technical College maintenance organization has rated the college as a “Managed Care” campus. The elements that define this rating can be viewed on the following pages.
<table>
<thead>
<tr>
<th>Description</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAINTENANCE LEVEL MATRIX (Based on APPA Guidelines)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>Showpiece Institution</td>
<td>Comp. Stewardship</td>
<td>Managed Care</td>
<td>Reactive Management</td>
<td>Crisis Response</td>
</tr>
<tr>
<td><strong>Customer Service/Response Time</strong></td>
<td>Able to respond to virtually any type of service; immediate response</td>
<td>Average response time for most service needs, including limited non-maintenance activities is one week or less</td>
<td>Services available only by reducing maintenance, with average response times of two weeks or less</td>
<td>Services available only by reducing maintenance, with average response times of one month or less</td>
<td>Service not available unless directed from administration; none provided except for emergencies</td>
</tr>
<tr>
<td><strong>Customer Satisfaction</strong></td>
<td>Proud of facilities; high level of trust for the facilities organization</td>
<td>Satisfied with facilities related services; usually complementary</td>
<td>Accustomed to basic level of facilities care. Generally able to perform mission duties but lack pride in physical environment</td>
<td>Generally critical of cost, response limited and quality of services</td>
<td>Consistent customer ridicule and mistrust of facilities services</td>
</tr>
<tr>
<td><strong>Preventive Maintenance</strong></td>
<td>100% PM</td>
<td>75-100% PM</td>
<td>50-75% PM</td>
<td>25-50% PM</td>
<td>0% PM</td>
</tr>
<tr>
<td><strong>Corrective Maintenance Ratio</strong></td>
<td>0-25% Corrective</td>
<td>25-50% Corrective</td>
<td>50-75% Corrective</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance Mix</strong></td>
<td>All recommended PM scheduled and performed on time. Reactive maintenance minimized to things that are unavoidable or minimal.</td>
<td>Well-developed PM program with most PM done at a frequency or slightly less than defined schedule of system failures. Effort still made to do PM.</td>
<td>Reactive maintenance predominates due to system failing to perform, especially during harsh seasons. Significant time spent procuring parts and performing systems. Significant frequency of occurrences.</td>
<td>Worn-out systems require staff to be scheduled to react to poorly performing systems. Significant amount of systems approaching failure.</td>
<td>No PM performed due to more pressing problems. Reactive maintenance predominates due to worn out systems that fail frequently. Good emergency response due to extreme frequency of occurrences.</td>
</tr>
<tr>
<td><strong>Interior Aesthetics</strong></td>
<td>Like-new finishes</td>
<td>Clean/crisp finishes</td>
<td>Average finishes</td>
<td>Dingy finishes</td>
<td>Neglected finishes</td>
</tr>
<tr>
<td><strong>Exterior Aesthetics</strong></td>
<td>Window s, doors, trim and exterior walls are like new and clean. Good Watertight and clean. Good Minor leaks and blemishes Somewhat drafty and leaky. Rough unoperable, leaky windows Inoperable, leaky windows</td>
<td>Exterior appearance</td>
<td>Average appearance</td>
<td>Looking exterior. Extra painting routinely necessary</td>
<td>Inoperable, leaky windows</td>
</tr>
<tr>
<td><strong>Lighting Aesthetics</strong></td>
<td>Bright, clean attractive lighting</td>
<td>Bright, clean attractive lighting</td>
<td>Small percentage of lights are routinely out, but generally well and clean</td>
<td>Numerous lights generally out, some missing diffusers; second areas are dark</td>
<td>Dark, lots of shadows, bulbs and diffusers missing, damaged and missing hardware</td>
</tr>
<tr>
<td>Service Efficiency</td>
<td>Maintenance activities highly organized and focused. Typical equipment/building components are fully functional and in excellent operating condition. Service and maintenance calls are responded to immediately. Buildings and equipment are upgraded to keep current with modern standards and usage.</td>
<td>Maintenance activities organized with direction. Equipment and building components are in excellent operating condition. Service and maintenance calls are responded to in a timely manner. Buildings and equipment are upgraded but no enough to control the effects of normal usage and deterioration.</td>
<td>Maintenance activities are somewhat organized, but remain people dependent. Equipment and building components are mostly functional, but suffer occasional breakdowns. Service and maintenance calls are typically not responded to in a timely manner. Normal usage and equipment routinely upgraded to keep current with modern standards/usage but no enough to control the effects of normal usage and deterioration.</td>
<td>Maintenance activities are chaotic and without direction. Equipment and building components are frequently broken and inoperative. Service and maintenance calls are never responded to in a timely manner. Normal usage and equipment periodically or often fail. Repairs are only instituted for life safety issues.</td>
<td>Maintenance activities are chaotic and without direction. Equipment and building components are frequently broken and inoperative. Service and maintenance calls are never responded to in a timely manner. Normal usage and equipment periodically or often fail. Repairs are only instituted for life safety issues.</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Building System</td>
<td>Breakdown maintenance is rare and limited to vandalism and abuse repairs. Building and system components are periodically or often fail. Constant need for repair. Repair backlog exceeds resources.</td>
<td>Breakdown maintenance is rare and limited to vandalism and abuse repairs. Building and system components are periodically or often fail. Constant need for repair. Repair backlog exceeds resources.</td>
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</tr>
<tr>
<td>Reliability</td>
<td>&gt;4% Facility Maintenance Operating Budget as a % of Current Replacement Value</td>
<td>3.5-4.0% Facility Maintenance Operating Budget as a % of Current Replacement Value</td>
<td>3.0-3.5% Facility Maintenance Operating Budget as a % of Current Replacement Value</td>
<td>2.5-3.0% Facility Maintenance Operating Budget as a % of Current Replacement Value</td>
<td>&lt;2.5% Facility Maintenance Operating Budget as a % of Current Replacement Value</td>
</tr>
</tbody>
</table>
SURVEY METHODOLOGY

The 2013 facility condition survey update has two objectives. They are, first, updating the scope and estimated cost of corrective action, and the relative priority of capital repair deficiencies identified during the 2011 survey that are still unfunded or only partially funded. The second objective is incorporating emergent deficiencies identified by the college that qualified as capital repair needs into this update. Deficiencies were prioritized using a scoring algorithm to derive a deficiency score for each deficiency. This score is intended to assist the SBCTC in its allocation deliberations for capital repair funding.

SURVEY PROCESS

The facility condition survey itself was conducted as a five-part process. First, a listing of facilities for each campus was obtained in order to verify the currency and accuracy of facility identification numbers and names, including the new assigned State ID numbers, and facility GSF.

Second, a proposed field visit schedule was developed and transmitted to the facility maintenance directors at each college. Once any feedback as to schedule suitability was received, the schedule was finalized.

Third, the field visit to each colleges consisted on an in-brief, an evaluation and validation of the capital repair deficiencies proposed by the college, a building condition rating update, and a debrief. The in-brief consisted of a meeting with college maintenance personnel to review the funded and unfunded 2011 deficiencies, discuss the emergent capital repair deficiency candidates to be validated and evaluated, and arrange for escorts and space access. The survey was conducted by the SBCTC chief architect. During the survey process the chief architect interacted with college maintenance personnel to clarify questions, obtain input as to equipment operating and maintenance histories, and discuss suspected non-observable problems with hidden systems and/or components.

In addition to the condition survey update, a building condition rating update was also conducted. The objective of this update is to provide an overall comparative assessment of each building at a college, as well as a comparison of facility condition among colleges. Each facility is rated on the overall condition of some 20 separate building system and technical characteristics. A total rating score is generated for each facility to serve as a baseline of overall condition that is used to measure improvements as well as deterioration in facility condition over time.
A site condition analysis was also conducted of each separate site at a college. The site analysis rates some eight separate site characteristics to provide an overall adequacy and needs evaluation of each college site. **The rating and scoring processes for both analyses are discussed in Appendix B.**

Upon conclusion of the field evaluations, an exit debriefing was held with college maintenance personnel to discuss the deficiencies that would be included in the condition survey update by the chief architect and to answer any final questions.

The fourth part of the process consisted of developing or updating MACC costs for each deficiency and preparing the deficiency data for entry into the database management system.

The last step in the process involved the preparation of the final deficiency reports represented by this document.

The condition survey methodology used is comprised of four basic elements:

1) A set of repair and maintenance standards intended to provide a baseline against which to conduct the condition assessment process;

2) A deficiency scoring methodology designed to allow consistent scoring of capital repair deficiencies for prioritization decisions for funding allocation;

3) A “conservative” cost estimating process;

4) A database management system designed to generate a set of standardized detail and summary reports from the deficiency data.

**REPAIR/MAINTENANCE STANDARDS**

Repair and maintenance standards originally developed for the 1995 baseline survey continue to be used by the survey teams as a reference baseline for conducting the condition survey. The standards were designed as a tool to assist facility condition assessment personnel by identifying minimum acceptable standards for building system condition. The standards provide a series of benchmarks that focus on:
• Maintaining a facility in a weather tight condition;
• Providing an adequate level of health and safety for occupants;
• Safeguarding capital investment in facilities;
• Helping meet or exceed the projected design life of key facility systems;
• Providing a baseline for maintenance planning.

DEFICIENCY DOCUMENTATION

Documentation of emerging capital repair deficiencies was accomplished using a field data collection protocol. The deficiency data collection protocol includes five elements:

1) Campus/building identification information and deficiency designation;
2) Capital repair category and component identification;
3) Deficiency description, location, and associated quantity information;
4) Deficiency prioritization scoring choices;
5) Alternative repair information, if applicable and a MACC cost estimate.

DEFICIENCY SCORING

To assist in the process of allocating capital repair funding, each deficiency receives a score that reflects its relative severity or priority compared to other deficiencies. The scoring system is designed to maximize the objectivity of the surveyor.

A two-step scoring process has been developed for this purpose. First, a deficiency is designated as immediate, deferrable or future, based on the following definitions:

**Immediate** - A deficiency that immediately impacts facility systems or programs and should be corrected as soon as possible. This type of deficiency is recommended to be included in the 2015-2017 proposed capital budget;
Deferrable - A deficiency that does not immediately impact facility systems or programs where repairs or replacement can be deferred. This type of deficiency is recommended to be included in the 2017–2019 capital budget.

Future - A deficiency that does not immediately impact facility systems or programs where repairs or replacement can be deferred beyond the 2017-2019 biennium.

Second, a Priority is assigned to the deficiency by selecting either one or two potential levels of impact in descending order of relative importance:

- Health/Safety
- Building Function Use
- System Use
- Increased Repair/Replacement Cost
- Increased Operating Cost
- Quality of Use

Each impact choice is relatively less important than the one preceding it, and is assigned a percentage. If two priorities are chosen, they must total 100%.

A score is calculated for each deficiency by multiplying the deficiency category score by the priority score.

A detailed discussion of the deficiency severity scoring methodology is provided in Appendix A.

COST ESTIMATES

The MACC cost estimates that have been provided for each deficiency represent the total labor and material cost for correcting the deficiency, including sub-contractor overhead and profit. The estimates are based either on the R.S. Means series of construction and repair and remodeling cost guides for 2013, data from campus consultants provided to the SBCTC by the college, or the
consultant's own cost database. In some cases cost estimates are also obtained directly from vendors or construction specialists.

The cost estimates provided have been developed to be “conservative” in terms of total cost. However, since the condition survey is based on a visual assessment, there are often aspects of a deficiency that cannot be ascertained as they are hidden from view and a clear picture of the extent of deterioration cannot be determined until such time as a repair is actually undertaken. An example of this would be roof insulation or decking. Typically a roof membrane replacement will not require insulation or decking replacement. However, there are instances where once the membrane is removed it is determined that the decking and/or insulation must also be replaced. In most cases the estimate for membrane replacement will not include insulation and/or decking unless it is apparent through visual indications on the surface of the deck via blisters or indication on the underside via extensive staining, that the deck and/or insulation are also deteriorated. Or it may be determined that the roof has inadequate slope or crickets for drainage that can only be remedied through additional rigid insulation.

In some cases, if it is strongly suspected or evident that an unobservable condition exists, the cost estimate is increased to include this contingency. However, assumptions about underlying conditions are often difficult to make and, unless there is compelling evidence, such as a detailed engineering or architectural assessment, the estimate will not reflect non-observable or non-ascertainable conditions. Similarly, the extent of many structural deficiencies that may be behind walls, above ceilings, or below floors is not visible and there are often no apparent signs of additional damage beyond what is apparent on the surface. In such situations the cost estimate only includes the observable deficiency unless documentation to the contrary is provided. This can, and has in many instances, resulted in what may be termed “latent conditions,” where the actual repair cost once work is undertaken is higher than the original MACC estimate. Typically a contingency amount is added into the MACC estimate. However, even this may not be enough in some cases to cover some unforeseen costs.

Alternatively, “scope creep” sometimes occurs due to college decisions to change the scope of the repair after funding is received compared to what the deficiency write-up envisioned. Such modifications may occur for a variety of reasons. However, since the survey consultant is not performing a design when developing the deficiency write-up, changes in scope once a deficiency is finalized will result in inadequate funding for that repair.

In some cases the SBCTC may also request that the college retain an architectural or engineering consultant to conduct a more detailed analysis of the problem and develop an appropriate corrective recommendation and associated cost estimate for submittal to the SBCTC.
SURVEY DATA MANAGEMENT AND REPORTING

The deficiency data identified and documented during the survey process is entered into a computerized database management system developed for the 1995 baseline survey and updated for the 1999 survey. The DBMS is currently built with Microsoft’s Access 2007 database software.

Data reporting from the database system is accomplished through a set of standardized detail and summary reports that provide a significant amount of information useful for capital repair as well as maintenance planning and programming.
SECTION 2

SUMMARY / DETAIL REPORTS

IN THIS SECTION:

- Facility Deficiency Summary
- Facility Deficiency Details
- Site / Building Condition
  - Facility Condition Overview
The individual deficiency pages presented in this subsection of the report are divided into two parts.

1) The first part includes a summary report showing the facility deficiencies grouped by location.

2) The second part includes a summary level list of all facility deficiencies, sorted by severity score (highest to lowest).
# FACILITY CONDITION SURVEY - SITE REPAIR PROGRAMMING SUMMARY BY BUILDING

## Bellingham Technical College

<table>
<thead>
<tr>
<th>SITE NAME/ ASSET NAME</th>
<th>CRITICAL 2015</th>
<th>2017</th>
<th>BACKLOG</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACILITY</td>
<td>COST</td>
<td>COST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bellingham Campus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250J Science/Technology</td>
<td>$90,000</td>
<td>$0</td>
<td>$0</td>
<td>$90,000</td>
</tr>
<tr>
<td><strong>STATE UFI:</strong> A09956</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250MDA Marine Drive Annex</td>
<td>$0</td>
<td>$80,000</td>
<td>$0</td>
<td>$80,000</td>
</tr>
<tr>
<td><strong>STATE UFI:</strong> A05710</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250T Building T (Diesel)</td>
<td>$40,000</td>
<td>$0</td>
<td>$0</td>
<td>$40,000</td>
</tr>
<tr>
<td><strong>STATE UFI:</strong> A09961</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250Z College Services</td>
<td>$153,000</td>
<td>$0</td>
<td>$0</td>
<td>$153,000</td>
</tr>
<tr>
<td><strong>STATE UFI:</strong> A06652</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MULTIPL Multiple</td>
<td>$107,000</td>
<td>$40,000</td>
<td>$0</td>
<td>$147,000</td>
</tr>
<tr>
<td><strong>STATE UFI:</strong> Multi</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SITE TOTAL</td>
<td>$390,000</td>
<td>$120,000</td>
<td>$0</td>
<td>$510,000</td>
</tr>
<tr>
<td>COLLEGE</td>
<td>$390,000</td>
<td>$120,000</td>
<td>$0</td>
<td>$510,000</td>
</tr>
</tbody>
</table>
The three, 20 year old rooftop HVAC units are near the end of their useful life. The facility staff indicated that the units require a high level of maintenance and repairs to maintain their function. The units should be replaced.
FACILITY CONDITION SURVEY - FACILITY REPAIR PROGRAMMING SUMMARY COST REPORT

Bellingham Technical College

Bellingham Campus

STATE UFI: A05710

FACILITY: 250MDA  Marine Drive Annex

YR. BUILT

CRV/SF $175

CURRENT REPLACEMENT VALUE: $962,500

SEVER.

SCORE SYSTEM DEF. NO. DEFICIENCY/CORRECTION COST 2015 - 2017 BACKLOG TOTAL

50 Roof R01 Roofing The metal and fiberglass panel roofing has deteriorated and is near the end of its useful life. A small section of TPO roofing is also near the end of its useful life. The facility has recently replaced the exposed roof fasteners to extend the life of the metal roof. The fiberglass panels are severely deteriorated. The recent repairs should extend the useful life, but the entire building roofing should be replaced within 5 years. $80,000

NO. OF DEFICIENCIES = 1 Average Severity Score = 50 FACILITY TOTAL $0 $80,000 $0 $80,000

FACILITY CONDITION INDEX (Repair Cost as a % of Current Replacement Value) 8.3% Repair Cost Per SF = $14.55

FCI (Facility Condition Index) = Repair Cost/Building Current Replacement Value (CRV)
The lower the FCI %, the better the overall facility condition. The higher the FCI %, the greater the repair and/or renovation requirements.
The majority of the roof was recently replaced on this building. The small remaining section of 30 year old roof is at the end of its useful life. This older section of roof has had many repairs and has been resurfaced with an elastomeric product. The roofing should be replaced. There is also an accessory building adjacent to this building with roofing in the same condition. The accessory building roofing should also be replaced.

FACILITY CONDITION INDEX (Repair Cost as a % of Current Replacement Value) = 0.8%

Repair Cost Per SF = $2.38

The lower the FCI %, the better the overall facility condition. The higher the FCI %, the greater the repair and/or renovation requirements.
### FACILITY CONDITION SURVEY - FACILITY REPAIR PROGRAMMING SUMMARY COST REPORT

**Bellingham Technical College**

**Bellingham Campus**

**STATE UFI:** A06652

**FACILITY:** 250Z

**College Services**

**YR. BUILT:** 1993

**CRV/SF:** $285

**CURRENT REPLACEMENT VALUE:** $3,677,640

---

#### SEVER.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CRITICAL</th>
<th>2015</th>
<th>2017</th>
<th>BACKLOG</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCORE</strong></td>
<td><strong>SYSTEM</strong></td>
<td><strong>DEF. NO.</strong></td>
<td><strong>DEFICIENCY/CORRECTION</strong></td>
<td><strong>COST</strong></td>
<td><strong>COST</strong></td>
</tr>
<tr>
<td>80</td>
<td>Facility</td>
<td>F03</td>
<td>Stucco</td>
<td></td>
<td>$22,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The exterior stucco has numerous cracks that compromise the building envelope. Many cracks have become enlarged because of seasonal conditions where water infiltrates the material and then freezes to expand the cracks. The stucco cracks should be repaired. The stucco finish should be repaired using an elastomeric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Facility</td>
<td>F04</td>
<td>HVAC</td>
<td></td>
<td>$131,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Two rooftop HVAC units and integrated exhaust fan are more than twenty years old and are near the end of their useful life. The facility staff indicated that the units have required a high level of maintenance to maintain function. The units exhibit exterior corrosion that indicates years of weathering. The units should be</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**NO. OF DEFICIENCIES = 2**

**Average Severity Score = 70**

**FACILITY TOTAL**

$153,000 $0 $0 $153,000

**FACILITY CONDITION INDEX (Repair Cost as a % of Current Replacement Value)**

4.2%

**Repair Cost Per SF = $11.86**

---

FCI (Facility Condition Index) = Repair Cost/Building Current Replacement Value (CRV)

The lower the FCI %, the better the overall facility condition. The higher the FCI %, the greater the repair and/or renovation requirements.
<table>
<thead>
<tr>
<th>SCORE</th>
<th>FACILITY</th>
<th>DEF. NO.</th>
<th>COMPONENT</th>
<th>DEFICIENCY/CORRECTION</th>
<th>CRITICAL</th>
<th>2015</th>
<th>2017</th>
<th>BACKLOG</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>Facility</td>
<td>F07</td>
<td>Door hardware</td>
<td>Many exterior doors have hardware that is failing. The hardware is no longer available for these doors, so the parts have to be fabricated to make repairs.</td>
<td></td>
<td></td>
<td></td>
<td>$22,000</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Facility</td>
<td>F01</td>
<td>Entry doors</td>
<td>Six total exterior doors on buildings B, and A are at the end of their useful life. The door frames were cast in place when the building was constructed, making it difficult to replace them. The frames can remain, but must be modified to accommodate new doors. The deteriorated doors and hardware should be replaced.</td>
<td></td>
<td></td>
<td></td>
<td>$41,000</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Facility</td>
<td>F05</td>
<td>Lighting controls</td>
<td>The lighting controls do not work consistently in the DMC and MC buildings. In many cases the light switches do not function without rebooting the main lighting control panel. This could easily become a life safety issue. The lighting control panels should be replaced.</td>
<td></td>
<td></td>
<td></td>
<td>$44,000</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Facility</td>
<td>F02</td>
<td>Windows</td>
<td>Twenty eight total windows in buildings C, M and K are at the end of</td>
<td></td>
<td></td>
<td></td>
<td>$40,000</td>
<td></td>
</tr>
</tbody>
</table>
their useful life. Some of the window frames have deteriorated and have become very difficult to operate. Other windows have failed and leak. Many windows have been screwed shut. The windows should be replaced.

<table>
<thead>
<tr>
<th>NO. OF DEFICIENCIES</th>
<th>Average Severity Score</th>
<th>FACILITY TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>66</td>
<td>$107,000</td>
</tr>
</tbody>
</table>

FACILITY CONDITION INDEX (Repair Cost as a % of Current Replacement Value) = 

FCI (Facility Condition Index) = Repair Cost/Building Current Replacement Value (CRV)
The lower the FCI %, the better the overall facility condition. The higher the FCI %, the greater the repair and/or renovation requirements.
The individual deficiency pages presented in this subsection of the report are divided into five parts.

3) The first part identifies the college and campus; facility number and name; primary building use; and provides the date of the field survey.

4) The second part identifies the assigned deficiency number; the applicable capital repair funding category; the deferability recommendation; the affected component; and the affected building system.

5) The third part provides a description of the deficiency and recommended corrective action, and any applicable sizing data.

6) The fourth part identifies the deficiency location; the probable cause of the deficiency; estimated remaining life and life expectancy when repaired or replaced; the quantity involved; and estimated replacement dates over a 50 year life cycle if a replacement rather than a repair is recommended.

7) The fifth part provides the MACC cost estimate and the deficiency score for that deficiency based on the priority assignment and percentage allocation for the assigned priorities.
FACILITY CONDITION SURVEY

DETAIL

Bellingham Technical College
Bellingham Campus

FACILITY: 250J Science/Technology

SURVEY DATE: 8/13

STATE UFI: A09956

DEFICIENCY: F06 Facility Fund in 2015-17 biennium

UNIFORMAT BUILDING SYSTEM: D30-HVAC Science Labs

AFFECTED COMPONENT: HVAC units

DEFICIENCY/CORRECTION:
The three, 20 year old rooftop HVAC units are near the end of their useful life. The facility staff indicated that the units require a high level of maintenance and repairs to maintain their function. The units should be replaced.

LOCATION: Roof

Probable Cause of Deficiency is Age/Wear

ESTIMATED REMAINING LIFE: 3 Yrs.  LIFE EXPECTANCY NEW: 20 Yrs.

QUANTITY: 50Yr. Life Cycle Replace in 2016 2036 2056 3 EA

PRIORITY
Bldg. Function Use 20
System Use 80
Deficiency Severity 64
Estimated MACC Repair Cost in 2013 = $90,000
**FACILITY CONDITION SURVEY**

**DETAIL**

Bellingham Technical College  
Bellingham Campus  

SURVEY DATE: 8/13  
STATE UFI: A05710

**FACILITY:** 250MDA Marine Drive Annex  

**DEFICIENCY:** R01  

**UNIFORMAT BUILDING SYSTEM:** B30-Roofing Storage  

**AFFECTED COMPONENT:** Roofing

**DEFICIENCY/CORRECTION:**
The metal and fiberglass panel roofing has deteriorated and is near the end of its useful life. A small section of TPO roofing is also near the end of its useful life. The facility has recently replaced the exposed roof fasteners to extend the life of the metal roof. The fiberglass panels are severely deteriorated. The recent repairs should extend the useful life, but the entire building roofing should be replaced within 5 years.

**LOCATION:** Roof  

Probable Cause of Deficiency is Age/Wear  

**ESTIMATED REMAINING LIFE:** 5 Yrs. **LIFE EXPECTANCY NEW:** 25 Yrs.  

**QUANTITY:** 55 SQ

**PRIORITY**

<table>
<thead>
<tr>
<th>Bldg. Function Use</th>
<th>100</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Deficiency Severity</th>
<th>Estimated MACC Repair Cost in 2013 = $80,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>
FACILITY CONDITION SURVEY

DETAIL

Bellingham Technical College
Bellingham Campus

FACILITY: 250T Building T (Diesel)
STATE UFI: A09961

SURVEY DATE: 8/13

DEFICIENCY: R02 Roof Fund in 2015-17 biennium
UNIFORMAT BUILDING SYSTEM: B30-Roofing Vocational Training
AFFECTED COMPONENT: Roofing

DEFICIENCY/CORRECTION:
The majority of the roof was recently replaced on this building. The small remaining section of 30 year old roof is at the end of its useful life. This older section of roof has had many repairs and has been resurfaced with an elastomeric product. The roofing should be replaced. There is also an accessory building adjacent to this building with roofing in the same condition. The accessory building roofing should also be replaced.

LOCATION: Roof

Probable Cause of Deficiency is

ESTIMATED REMAINING LIFE: 3 Yrs.
LIFE EXPECTANCY NEW: 30 Yrs.
QUANTITY: 50Yr. Life Cycle Replace in 2016 2046

50 SQ

PRIORITY
Bldg. Function Use 100
Deficiency Severity 80

Estimated MACC Repair Cost in 2013 = $40,000
**FACILITY CONDITION SURVEY**

**DETAIL**

Bellingham Technical College  
Bellingham Campus  
SURVEY DATE: 8/13  
Page 4

**FACILITY:** 250Z  
**College Services**  
**STATE UFI:** A06652

**DEFICIENCY:** F03  
**Facility Fund in 2015-17 biennium**

**UNIFORMAT BUILDING SYSTEM:** B20-Exterior Enclosure  
**Student Center**

**AFFECTED COMPONENT:** Stucco

**DEFICIENCY/CORRECTION:**
The exterior stucco has numerous cracks that compromise the building envelope. Many cracks have become enlarged because of seasonal conditions where water infiltrates the material and then freezes to expand the cracks. The stucco cracks should be repaired. The stucco finish should be repaired using an elastomeric paint.

**LOCATION:** Exterior shell

Probable Cause of Deficiency is Weather

**ESTIMATED REMAINING LIFE:** 3 Yrs.  
**LIFE EXPECTANCY NEW:** 30 Yrs.  
**QUANTITY:** 8000 SF

**PRIORITY**

Bldg. Function Use 100

0

Deficiency Severity 80  
Estimated MACC Repair Cost in 2013 = $22,000
Bellingham Technical College
Bellingham Campus

FACILITY: 250Z College Services
STATE UFI: A06652

DEFICIENCY: F04 Facility Fund in 2015-17 biennium
UNIFORMAT BUILDING SYSTEM: D30-HVAC Student Center
AFFECTED COMPONENT: HVAC

DEFICIENCY/CORRECTION:
Two rooftop HVAC units and integrated exhaust fan are more than twenty years old and are near the end of their useful life. The facility staff indicated that the units have required a high level of maintenance to maintain function. The units exhibit exterior corrosion that indicates years of weathering. The units should be replaced.

LOCATION: Roof

Probable Cause of Deficiency is Age/Wear

ESTIMATED REMAINING LIFE: 3 Yrs. LIFE EXPECTANCY NEW: 20 Yrs. QUANTITY:
50Yr. Life Cycle Replace in 2016 2036 2056 1 LS

PRIORITY
System Use 100

Deficiency Severity 60 Estimated MACC Repair Cost in 2013 = $131,000
<table>
<thead>
<tr>
<th>FACILITY CONDITION SURVEY</th>
<th>DEFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellingham Technical College</td>
<td>SURVEY DATE: 8/13</td>
</tr>
<tr>
<td>Bellingham Campus</td>
<td>Page 6</td>
</tr>
</tbody>
</table>

**FACILITY:** MULTIPLE  
**STATE UFI:** Multi

**DEFICIENCY:** F07  
**Facility Fund in 2015-17 biennium**

**UNIFORMAT BUILDING SYSTEM:** B20-Exterior Enclosure  
**MULTIPLE**

**AFFECTED COMPONENT:** Door hardware

**DEFICIENCY/CORRECTION:**
Many exterior doors have hardware that is failing. The hardware is no longer available for these doors, so the parts have to be fabricated to make repairs.

**LOCATION:** Exterior doors

Probable Cause of Deficiency is Age/Wear

**ESTIMATED REMAINING LIFE:** 3 Yrs.  
**LIFE EXPECTANCY NEW:** 30 Yrs.

**50Yr. Life Cycle** Replace in 2016 2046

**QUANTITY:**

**PRIORITY**

<table>
<thead>
<tr>
<th>Bldg. Function Use</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Deficiency Severity **80**  
Estimated MACC Repair Cost in 2013 = $22,000
FACILITY CONDITION SURVEY

DEFICIENCY

Bellingham Technical College
Bellingham Campus

SURVEY DATE: 8/13
Page 7

FACILITY: MULTIPLE

STATE UFI: Multi

DEFICIENCY: F01
Facility Fund in 2015-17 biennium

UNIFORMAT BUILDING SYSTEM: B20-Exterior Enclosure
Multiple

AFFECTED COMPONENT: Entry doors

DEFICIENCY/CORRECTION:
Six total exterior doors on buildings B, and A are at the end of their useful life. The door frames were cast in place when the building was constructed, making it difficult to replace them. The frames can remain, but must be modified to accommodate new doors. The deteriorated doors and hardware should be replaced.

LOCATION: Exterior building shell

Probable Cause of Deficiency is Age/Wear

ESTIMATED REMAINING LIFE: 3 Yrs.
LIFE EXPECTANCY NEW: 30 Yrs.
QUANTITY: 50Yr. Life Cycle Replace in 2016 2046 6 EA

PRIORITY

Bldg. Function Use 100
0

Deficiency Severity 80 Estimated MACC Repair Cost in 2013 = $41,000
FACILITY CONDITION SURVEY
DETAIL

Bellingham Technical College
Bellingham Campus

SURVEY DATE: 8/13

FACILITY: MULTIPLE
STATE UFI: Multi

DEFICIENCY: F05 Facility Fund in 2015-17 biennium
UNIFORMAT BUILDING SYSTEM: D50-Electrical
AFFECTED COMPONENT: Lighting controls

DEFICIENCY/CORRECTION:
The lighting controls do not work consistently in the DMC and MC buildings. In many cases the light switches do not function without rebooting the main lighting control panel. This could easily become a life safety issue. The lighting control panels should be replaced.

LOCATION:
Probable Cause of Deficiency is Age/Wear

ESTIMATED REMAINING LIFE: 3 Yrs.  LIFE EXPECTANCY NEW: 20 Yrs.  QUANTITY:
50Yr. Life Cycle Replace in 2016 2036 2056 2 EA

PRIORITY
System Use 80
Health/Safety 20
Deficiency Severity 68 Estimated MACC Repair Cost in 2013 = $44,000
DEFICIENCY: F02 Facility Fund in 2017-19 Biennium
UNIFORMAT BUILDING SYSTEM: B20-Exterior Enclosure multiple
AFFECTED COMPONENT: Windows

DEFICIENCY/CORRECTION:
Twenty eight total windows in buildings C, M and K are at the end of their useful life. Some of the window frames have deteriorated and have become very difficult to operate. Other windows have failed and leak. Many windows have been screwed shut. The windows should be replaced.

LOCATION: Building exterior
Probable Cause of Deficiency is Age/Wear
ESTIMATED REMAINING LIFE: 5 Yrs. LIFE EXPECTANCY NEW: 25 Yrs. QUANTITY: 50Yr. Life Cycle Replace in 2018 2043 2068 28 EA

PRIORITY
Bldg. Function Use 20
>Repair/Replacement Cost 80
Deficiency Severity 34 Estimated MACC Repair Cost in 2013 = $40,000
F01 – Exterior doors at multiple locations

F02 – Windows in multiple buildings

F03 – Stucco on the Student Center (Z) building

F04 – HVAC units on the Student Center (Z) building

F05 – Lighting controls in multiple buildings

F06 – HVAC units on the Science/Technology (N) building
F07 – Exterior door closers at multiple locations

R01 – Metal and fiberglass roofing on the Marine Drive Annex building

R02 – Roofing on the Vocational Training (T) building
As part of the condition survey update, the building condition scores for college facilities are updated. This condition score is derived from an evaluation of 17 building system adequacy components, one maintenance condition rating component, one estimate of remaining life, and an appearance rating, with a numerical rating assigned to each component. Each individual component rating is adjusted by a multiplier to produce a score for that component. The scores of all components are totaled to provide an overall condition score for each facility, which can range between 146 points and 730 points. The higher the score received by a facility the poorer its overall condition. The entire score range is divided into five sub-sets of score ranges, and a condition rating designation is assigned to each range. The ranges and associated condition ratings are as follows:

- 146 – 175 = Superior;
- 176 - 275 = Adequate;
- 276 – 350 = Needs Improvement/Additional Maintenance;
- 351 – 475 = Needs Improvement/Renovation (If facility merits keeping);
- 476 – 730 = Replace or Renovate.

Originally the condition ratings were developed to provide an overall picture of the physical condition of a facility and allow a comparison among colleges of overall condition. However, over time the rating scores were viewed more and more by both the SBCTC and the colleges as a key element in determining funding for facility replacement or renovation. The original intent of a simple comparative process became subject to pressure to score facilities low (high score) to support college plans for replacement and/or renovation. This pressure made it increasingly difficult for the consultant to remain objective. The buildings currently being targeted by colleges for replacement or renovation may deserve replacement or renovation consideration from a functional, program adequacy, design, or simply age point of view. However they may also be in reasonably good physical condition, largely because most colleges have continued to replace/update building systems and perform on-going repairs or replacement of system components out of necessity.

In 2011 three rating elements of the 23 original rating elements were removed. Two, named “Adaptability” and “Adequacy for Education” evaluated the functional adequacy of a building for educational use. The third, named “ADA”, evaluated the overall ADA compliance of a college. Buildings are now being rated only on their comparative objective physical condition. If a building that is a high priority for replacement or renovation has newer or adequate building system components, the score for the affected rating elements and for the building will reflect that fact.

Functional adequacy, program adequacy, age, design, classroom size, office size, building size, ADA considerations and grandfathered code considerations will be considered separately from the building condition ratings. This should once again allow greater objectivity in the condition rating process.
One result of this modification is a slight change in total score from last biennium for some buildings. This is because the intent was to keep the scoring range the same-146 to 730. However, the elimination of three rating items required a redistribution of the scoring range among fewer items, which necessitated revising several of the weightings associated with several rating elements. For example, where a score of 1 may have had a weighting of 6, it became a 7. Overall, however, the changes should not impact the various scoring ranges unless the previous score was right on the boundary between ranges.

In addition to comments for a rating element, which was all that was printed on the reports in the past, the rating description associated with a 1, 3 or 5 score for each rating element is now also included. Any comments are now in italics below this description.

An average building condition score is also calculated for a college as a whole. This score is a weighted average rather than an arithmetic average. It was decided to use a weighted average because, in many instances, the arithmetic average was not truly reflective of the “average” condition of a college. Smaller buildings, such as portables that were in poor condition, could increase (worsen) the average score for a college, even if most other larger facilities were in good condition. The weighted average score is calculated by summing the GSF of all buildings rated and dividing that total by the total of all individual building scores.

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**FACILITY CONDITION OVERVIEW**

**BUILDING CONDITIONS**

Individual facility scores for the permanent facilities ranged from a low of 146 for several of the newer buildings to a high of 488 for the Parent Education portable (Y bldg.). Building scores are derived from the summation of 20 building component scores.

Building component scores change from previous scores for various reasons. Scores tend to increase as buildings age and deteriorate. Scores may increase because of recent renovations. Scores may also vary slightly based on the interpreted conditions, which may be affected by the level of maintenance.

The condition rating reports for each individual facility are provided on the following pages. Photos of each building rated are provided at the end of this section.
## BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250A Building A (ITRC)  
**STATE UFI:** A01046  
**11,535 SF**  
**BUILT:** 1955  
**REMODELED:** 2000  
**PREDOMINANT BLDG. USE:** Multi-Use  
**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $301  
**CURRENT REPLACEMENT VALUE:** $3,472,035  
**MGMT. CODE:** Replace - $150-$350/SF

### Component | Score | Comment
---|---|---
**Primary Systems**
Structure | 24 | Minor to moderate cracking evident, but does not affect structural integrity; visible defects but not structural  
*Concrete tilt-up, steel columns; steel roof joists; seismic concerns*
Exterior | 8 | Walls, doors, finishes and windows are weather-tight and well maintained with minimal closure  
*Concrete; stucco panels*
Roofing | 50 | Membrane leaks and significant deterioration is evident; replacement is warranted  
*Hypalon single-ply roof; extensive deterioration; needs replacement*

**Subtotal = 82**

### Secondary Systems
Floor Finishes | 18 | Floor surfaces exhibit random moderate wear and random surface deterioration  
*Vinyl tile; carpet-worn; sheet vinyl; ceramic tile*
Walls | 6 | Wall surfaces are in good condition with minimal finish deterioration, wear or damage  
*Concrete and gypsum board; CMU*
Ceiling | 18 | Ceiling surfaces exhibit random finish deterioration and moderate wear and/or component  
*Metal pan roof deck; lay-in tiles*
Doors | 18 | Door surfaces exhibit random finish deterioration and moderate wear and/or component  
*Interior wood/HM doors w HM frames; exterior HM doors/frames; metal OH door*

**Subtotal = 60**

### Service Systems
Elevators | 6 | One story building  
**Plumbing** | 24 | Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required  
*Galvanized, steel, cast iron and copper piping; porcelain fixtures*
**HVAC** | 40 | Equipment is generally deteriorated and there may be inadequate capacity, zoning and distribution; ventilation is generally inadequate and there is no A/C  
*Rooftop packaged HVAC units w split A/C; 2 HW boilers*
**Electrical** | 8 | Service and distribution capacity is adequate for current and future needs  
**Service** | | 1200amp, 208v
<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Lights/Power**     | 24    | Generally adequate illumination but mostly older light fixtures  
|                      |       | *Lay-in, hanging and ceiling-mount fluorescent lighting*                                                                                                           |
| **Subtotal**         | 102   |                                                                                                                                                                    |
| **Safety Systems**   | 30    | Building generally meets codes for vintage of construction                                                                                                         |
| **Fire Safety**      | 30    | Fire alarm/pull stations but no sprinklers, illuminated exit signs and/or emergency lights  
|                      |       | *East half of building only has addressable fire alarm*                                                                                                            |
| **Haphazard**        | 21    | Modifications are of average quality; HVAC and electrical service only partially support space  
| **Modification**     |       | *Some modifications appear not well thought out*                                                                                                                   |
| **Subtotal**         | 81    |                                                                                                                                                                    |
| **Quality Standards**| 21    | Routine maintenance is required; deferred maintenance is evident; impact is minor to  
| **Remaining**        | 30    | Life expectancy is less than 5 years; significant building system deterioration  
| **Life**             |       | *Size and design not suitable for instructional use*                                                                                                               |
| **Appearance**       | 18    | Average building construction; exterior and/or interior spaces are of average attractiveness  
| **Subtotal**         | 69    |                                                                                                                                                                    |
| **Energy**           | 18    | Insulation is present, but not to current standards  
| **Wall/Ceiling**     |       | *Mix of deteriorating single-glazed and newer double glazed aluminum windows*                                                                                   |
| **Insulation**       |       |                                                                                                                                                                    |
| **Glazing**          | 18    | Windows are double-glazed, but frames do not minimize conductivity  
| **Subtotal**         | 36    |                                                                                                                                                                    |
| **Total Score**      | 430   | *(Score Range = 146 - 430)*  
| **Previous Biennium**| 430   |                                                                                                                                                                    |
| **Recommended Rating**| Needs Improvement Through Renovation |
**BUILDING CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus

**BLDG:** 250B  
**BUILDING:** Building B (Vocational)

**STATE UFI:** A00826

**SF:** 31,149  
**BUILT:** 1955  
**REMODELED:** 2001  
**PREDOMINANT BLDG. USE:** Vocational Arts

**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $316  
**CURRENT REPLACEMENT VALUE:** $9,843,084

**MGMT. CODE:** Small Renovation, Tenant Improvement - $60-$80/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Concrete tilt-up; steel columns; steel roof joists</em></td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td><em>Concrete; stucco panels; brick; corrugated metal siding; dryvit panels</em></td>
</tr>
<tr>
<td>Roofing</td>
<td>30</td>
<td>Minor to moderate deterioration of membrane and/or flashings is evident; maintenance is Hypalon single-ply membrane; deteriorated; needs replacement except on addition</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Subtotal = 46</strong></td>
</tr>
<tr>
<td>Secondary Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Finishes</td>
<td>6</td>
<td>Floor surfaces have a nice appearance and exhibit minimal random wear</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vinyl tile, carpet, concrete</em></td>
</tr>
<tr>
<td>Walls -</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td>Gypsum board; concrete; CMU; ceramic tile</td>
</tr>
<tr>
<td>Ceiling</td>
<td>6</td>
<td>Ceiling surfaces are in good condition with minimal finish deterioration, wear or component</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gypsum board lay-in tile; exposed steel structure; good condition</td>
</tr>
<tr>
<td>Doors-</td>
<td>18</td>
<td>Door surfaces exhibit random finish deterioration and moderate wear and/or component</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td>Damage; hardware exhibits minor to moderate deterioration, maintenance is required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Interior and exterior HM doors/frames; metal OH doors</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Subtotal = 36</strong></td>
</tr>
<tr>
<td>Service Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>6</td>
<td>One story building</td>
</tr>
<tr>
<td>Plumbing</td>
<td>24</td>
<td>Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Galvanized, steel, cast iron and copper piping; porcelain fixtures</em></td>
</tr>
</tbody>
</table>
HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate:
- Rooftop heating/ventilation units
- Hydronic classroom heating/ventilation
- Rooftop packaged HVAC unit w VAVs

Service and distribution capacity is adequate for current and future needs:
- 1200amp 480/277v

Contemporary lighting with good work area and instructional space illumination:
- Lay-in, hanging and ceiling mount fluorescent lights
- Metal halide in shop areas

Subtotal = 54

Building generally meets codes for vintage of construction:
- Fire alarm/pull stations but no sprinklers
- Illuminated exit signs and/or emergency lights

Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces:
- 2001 rear addition and updated front exterior well-thought out & constructed

Subtotal = 67

Routine maintenance is required; deferred maintenance is evident; impact is minor to moderate building system deterioration:
- Life expectancy is between 5 and 15 years

Average building construction; exterior and/or interior spaces are of average attractiveness:
- Major systems older but maintained, RUL 5-15 years

Subtotal = 57

Insulation is present, but not to current standards:
- Windows are double-glazed, but frames do not minimize conductivity

Total Score = 296

Recommended Rating is: Fair, But Needs Improvement Through Additional Maintenance
## BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250C Building C (Dental)  
**STATE UFI:** A03588  
**5,511 SF**  
**BUILT:** 1965  
**REMODELED:** 2007  
**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $316  
**CURRENT REPLACEMENT VALUE:** $1,741,476  
**MGMT. CODE:** Small Renovation, Tenant Improvement - $60-$80/SF

<table>
<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Structural brick, roof trusses, wood frame partitions</em></td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td>8</td>
<td><em>Brick; textured exterior gypsum board soffits; marblecrete fascia</em></td>
</tr>
<tr>
<td>Roofing</td>
<td>30</td>
<td>Minor to moderate deterioration of membrane and/or flashings is evident; maintenance is</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Single-ply hypalon roof - installed in 2000; excessive mold on membrane</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>46</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Finishes</td>
<td>18</td>
<td>Floor surfaces exhibit random moderate wear and random surface deterioration</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vinyl tile, vinyl asbestos tile; carpet; sheet vinyl</em></td>
</tr>
<tr>
<td>Walls</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishers</td>
<td>6</td>
<td><em>Gypsum board and brick</em></td>
</tr>
<tr>
<td>Ceiling</td>
<td>6</td>
<td>Ceiling surfaces are in good condition with minimal finish deterioration, wear or component</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Gypsum board; lay-in tile; direct adhered tile</em></td>
</tr>
<tr>
<td>Doors</td>
<td>6</td>
<td>Door finishes are in good condition and exhibit only minor random wear; door hardware is in</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td><em>Interior wood doors/frames; exterior HM doors/frames</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>36</td>
<td></td>
</tr>
<tr>
<td><strong>Service Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>6</td>
<td>One story building</td>
</tr>
<tr>
<td>Plumbing</td>
<td>24</td>
<td>Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Galvanized, steel, cast iron and copper piping; porcelain fixtures</em></td>
</tr>
</tbody>
</table>

**Subtotal** = **46**
### HVAC

- **Score:** 24
- HVAC system is generally adequate but older; minor to moderate deterioration of components is evident; maintenance/repair is required
- **HVAC system details:**
  - HW univent-served from Building A; mix of vintages; no A/C

### Electrical

- **Score:** 8
- Service and distribution capacity is adequate for current and future needs
- **Service details:**
  - 400amp 208/120v

### Safety Systems

- **Score:** 30
- Building generally meets codes for vintage of construction
- **Safety components:**
  - Fire alarm/pull stations but no sprinklers, illuminated exit signs and/or emergency lights
  - Fire Alarm panel in Building D
  - Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces

### Quality Standards

- **Score:** 7
- Facility appears to be well maintained
- **Remaining details:**
  - Life expectancy is between 5 and 15 years; moderate building system deterioration

### Energy

- **Score:** 18
- Insulation is present, but not to current standards
- **Glazing details:**
  - Windows have single-glazing
  - Frames bent

---

**Total Score = 310**  
(Score Range = 146 - Previous Biennium 286)

**Recommended Rating is:** Fair, But Needs Improvement Through Additional Maintenance
BUILDING CONDITION RATING

COLLEGE: Bellingham Technical College
BLDG: 250CC    Campus Center
SITE: Bellingham Campus
STATE UFI: A10998

68,093 SF    BUILT: 2012    REMODELED: 
CONSTRUCTION TYPE: Medium    CRV/SF: $379
CURRENT REPLACEMENT VALUE: $25,807,247

MGMT. CODE: Manage with RMI Repair and Minor Works

Component  Score  Comment

Primary Systems
Structure  8  No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound
Masonry, steel
Exterior  8  Walls, doors, finishes and windows are weather-tight and well maintained with minimal
Closure  8  Brick; metal panel
Roofing  10  Membrane appears water-tight and flashings and penetrations are sound; drainage is positive

Subtotal = 26

Secondary Systems
Floor Finishes  6  Floor surfaces have a nice appearance and exhibit minimal random wear
Ceramic and vinyl tile; concrete; carpet; sheet flooring
Wall surfaces are in good condition with minimal finish deterioration, wear or damage
Finishes  6  Gypsum board; brick, ceramic tile; CMU
Ceiling  6  Ceiling surfaces are in good condition with minimal finish deterioration, wear or component
Finishes
Lay-in ceiling tile and gypsum
Doors-  6  Door finishes are in good condition and exhibit only minor random wear; door hardware is in
Hardware  good working order
Interior wood doors w HM frames; exterior HM doors/frames
Subtotal = 24

Service Systems
Elevators  6  Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition

Plumbing  8  Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition
HVAC  8  HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate

Electrical  8  Service and distribution capacity is adequate for current and future needs

Service

Lights/Power  8  Contemporary lighting with good work area and instructional space illumination
  Lay-in, hanging and wall-mount fluorescent lighting

  \textbf{Subtotal} = 38

Safety Systems

Life/Safety  10  Building appears to meet current codes

Fire Safety  10  Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas; illuminated exit signs and/or emergency lights

Haphazard  7  Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces

  \textbf{Subtotal} = 27

Quality Standards

Maint. Quality  7  Facility appears to be well maintained

Remaining  6  Life expectancy is greater than 15 years; building systems in good condition

Life

Appearance  6  Well constructed building; generally attractive exterior and interior spaces

  \textbf{Subtotal} = 19

Energy

Wall/Ceiling  6  Insulation generally meets current standards

Insulation

Glazing  18  Windows are double-glazed, but frames do not minimize conductivity

  \textbf{Subtotal} = 24

\textbf{Total Score} = 158  \textit{(Score Range = 146 - Previous Biennium)}

Recommended Rating is: \textbf{Superior}
## BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus

**BLDG:** 250G  
**SVCS:** Building G (Culinary/Café)  
**STATE UFI:** A06429

**BUILT:** 1981  
**REMODELED:** 2002  
**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $316  
**CURRENT REPLACEMENT VALUE:** $5,434,252  
**MGMT. CODE:** Manage with RMI Repair and Minor Works

### Component Score Comment

#### Primary Systems

- **Structure**  
  Score: 8  
  No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound  
  *Structural brick, roof trusses*

- **Exterior**  
  Score: 24  
  Exterior walls, doors, windows, soffits and finishes are sound and weatherproof, but with moderate deterioration evident  
  *Brick; stucco upper wall panels; dryvit gypsum board soffits-some damage*

- **Roofing**  
  Score: 10  
  Membrane appears water-tight and flashings and penetrations are sound; drainage is positive  
  *3-tab composition shingles; TPO single-ply membrane on flat areas; skylights*

- **Subtotal = 42**

#### Secondary Systems

- **Floor Finishes**  
  Score: 6  
  Floor surfaces have a nice appearance and exhibit minimal random wear  
  *Ceramic and vinyl tile; concrete; carpet-puckered; sheet flooring*

- **Walls**  
  Score: 6  
  Wall surfaces are in good condition with minimal finish deterioration, wear or damage  
  *Gypsum board; brick, ceramic tile; CMU*

- **Ceiling**  
  Score: 6  
  Ceiling surfaces are in good condition with minimal finish deterioration, wear or component  
  *Lay-in and direct-adhered ceiling tile*

- **Doors**  
  Score: 6  
  Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order  
  *Interior wood doors w HM frames; exterior HM doors/frames*

- **Subtotal = 24**

#### Service Systems

- **Elevators**  
  Score: 6  
  One story building

- **Plumbing**  
  Score: 8  
  Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition  
  *Copper, steel, cast iron, ABS and galvanized piping; porcelain fixtures*
HVAC  8  HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate
  Hot water boiler; AHUs with DX split A/C; VAVs; gas rooftop furnaces
Electrical  8  Service and distribution capacity is adequate for current and future needs
Service
  1200amp 408/277v
Lights/Power  8  Contemporary lighting with good work area and instructional space illumination
  Lay-in, hanging and wall-mount fluorescent lighting
  
Subtotal = 38
Safety Systems
Life/Safety  10  Building appears to meet current codes
Fire Safety  30  Fire alarm/pull stations but no sprinklers, illuminated exit signs and/or emergency lights
Haphazard  7  Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces
  Modifications appear to be in compliance with codes and well-constructed
  
Subtotal = 47
Quality Standards
Maint. Quality  7  Facility appears to be well maintained
Remaining  6  Life expectancy is greater than 15 years; building systems in good condition
Life
  Classroom and office 2,600 GSF addition completed, 2002; should have 20+ years of life
Appearance  18  Average building construction; exterior and/or interior spaces are of average attractiveness
  
Subtotal = 31
Energy
Wall/Ceiling  18  Insulation is present, but not to current standards
  Insulation
Glazing  18  Windows are double-glazed, but frames do not minimize conductivity
  
Subtotal = 36
Total Score = 218  (Score Range = 146 - 288)
  
Recommended Rating is: Adequate
**BUILDING CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250H  
**BUILT:** 1979  
**REMODELED:** 2003  
**STATE UFI:** A07404  
**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $301  
**CURRENT REPLACEMENT VALUE:** $2,756,558  
**MGMT. CODE:** Small Renovation, Tenant Improvement - $60-$80/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Structural brick, roof trusses, wood frame partitions</em></td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td><em>Brick; textured gypsum board soffits; marblecrete fascia</em></td>
</tr>
<tr>
<td>Roofing</td>
<td>10</td>
<td>Membrane appears water-tight and flashings and penetrations are sound; drainage is positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>New PTO roof 2013</em></td>
</tr>
<tr>
<td><strong>Subtotal =</strong></td>
<td>26</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Finishes</td>
<td>18</td>
<td>Floor surfaces exhibit random moderate wear and random surface deterioration</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vinyl tile; carpet and carpet tile; ceramic tile; sheet vinyl</em></td>
</tr>
<tr>
<td>Walls</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td><em>Gypsum board; laminate panels</em></td>
</tr>
<tr>
<td>Ceiling</td>
<td>18</td>
<td>Ceiling surfaces exhibit random finish deterioration and moderate wear and/or component</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Gypsum board; direct-adhered tile</em></td>
</tr>
<tr>
<td>Doors</td>
<td>18</td>
<td>Door surfaces exhibit random finish deterioration and moderate wear and/or component</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td>Damage; hardware exhibits minor to moderate deterioration, maintenance is required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Interior wood doors w HM frames; exterior HM doors/frames</em></td>
</tr>
<tr>
<td><strong>Subtotal =</strong></td>
<td>60</td>
<td></td>
</tr>
<tr>
<td><strong>Service Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>6</td>
<td>One story building</td>
</tr>
<tr>
<td>Plumbing</td>
<td>8</td>
<td>Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Copper, cast iron, steel and ABS piping; porcelain fixtures</em></td>
</tr>
</tbody>
</table>
HVAC 

Equipment is generally deteriorated and there may be inadequate capacity, zoning and distribution; ventilation is generally inadequate and there is no A/C

*Four of five packaged rooftop gas pack units are deteriorated*

Electrical 

Service and distribution capacity is adequate for current and future needs

Service

*600amp 480/277v*

Lights/Power 

Generally adequate illumination but mostly older light fixtures

*Surface mount fluorescent fixtures*

Subtotal = 86

Safety Systems

Life/Safety 

Building appears to meet current codes

Fire Safety 

Fire alarm/pull stations but no sprinklers, illuminated exit signs and/or emergency lights

Haphazard 

Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces

*2003 renovation appears to be in compliance with codes and well-constructed*

Subtotal = 47

Quality Standards

Maint. Quality 

Facility appears to be well maintained

Remaining 

Life expectancy is between 5 and 15 years; moderate building system deterioration

Life

Appearance 

Average building construction; exterior and/or interior spaces are of average attractiveness

*Very spartan exterior; interior is average*

Subtotal = 43

Energy

Wall/Ceiling 

Insulation is present, but not to current standards

Insulation

Glazing 

Windows are double-glazed, but frames do not minimize conductivity

Subtotal = 36

**Total Score = 298**  
*(Score Range = 146 - 314)*

Recommended Rating is: Fair, But Needs Improvement Through Additional Maintenance
### BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250J  
**BUILT:** 1977  
**REMODELED:**  
**STATE UFI:** A03143  
**CONSTRUCTION TYPE:** Light  
**CRV/SF:** $301  
**CURRENT REPLACEMENT VALUE:** $3,478,958  
**MGMT. CODE:** Replace - $150-$350/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Structure      | 24    | Minor to moderate cracking evident, but does not affect structural integrity; visible defects but not structural  
Structural brick, roof trusses, wood frame partitions; seismic concerns |
| Exterior       | 8     | Walls, doors, finishes and windows are weather-tight and well maintained with minimal closure  
Brick; textured ext. gypsum board soffits; marblecrete fascia-minor damage |
| Roofing        | 10    | Membrane appears water-tight and flashings and penetrations are sound; drainage is positive  
New TPO single-ply membrane in 2011 |
| **Subtotal**   | **42**|                                                                                                                                       |
| **Secondary Systems** |       |                                                                                                                                       |
| Floor Finishes | 18    | Floor surfaces exhibit random moderate wear and random surface deterioration  
Vinyl tile, carpet-wear throughout, ceramic tile, concrete; VAT |
| Walls          | 6     | Wall surfaces are in good condition with minimal finish deterioration, wear or damage  
Gypsum board and laminate panels |
| Ceiling        | 6     | Ceiling surfaces are in good condition with minimal finish deterioration, wear or component  
Gypsum board |
| Finishes       |       |                                                                                                                                          |
| Doors          | 18    | Door surfaces exhibit random finish deterioration and moderate wear and/or component  
Interior wood doors w HM frames; exterior HM doors/frames |
| **Subtotal**   | **48**|                                                                                                                                          |
| **Service Systems** |       |                                                                                                                                       |
| Elevators      | 6     | One story building  
Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required  
Galvanized, cast iron, steel and copper piping; porcelain fixtures |

Subtotal = 42

Subtotal = 48
<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC</td>
<td>24</td>
<td>HVAC system is generally adequate but older; minor to moderate deterioration of components is evident; maintenance/repair is required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Rooftop packaged HVAC units</em></td>
</tr>
<tr>
<td>Electrical</td>
<td>8</td>
<td>Service and distribution capacity is adequate for current and future needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>600amp 480/27v; six breaker rule</em></td>
</tr>
<tr>
<td>Lights/Power</td>
<td>24</td>
<td>Generally adequate illumination but mostly older light fixtures</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Surface-mount fluorescent lighting</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>86</strong></td>
<td></td>
</tr>
<tr>
<td>Safety Systems</td>
<td>30</td>
<td>Building generally meets codes for vintage of construction</td>
</tr>
<tr>
<td>Fire Safety</td>
<td>30</td>
<td>Fire alarm/pull stations but no sprinklers, illuminated exit signs and/or emergency lights</td>
</tr>
<tr>
<td>Haphazard</td>
<td>7</td>
<td>Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>No major modifications to date</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>67</strong></td>
<td></td>
</tr>
<tr>
<td>Quality Standards</td>
<td>21</td>
<td>Routine maintenance is required; deferred maintenance is evident; impact is minor to</td>
</tr>
<tr>
<td>Remaining</td>
<td>30</td>
<td>Life expectancy is less than 5 years; significant building system deterioration</td>
</tr>
<tr>
<td>Life</td>
<td></td>
<td><em>Building is not adequate for vocational training programs</em></td>
</tr>
<tr>
<td>Appearance</td>
<td>30</td>
<td>Average construction, but generally unattractive exterior and interior spaces</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>81</strong></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>18</td>
<td>Insulation is present, but not to current standards</td>
</tr>
<tr>
<td>Wall/Ceiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glazing</td>
<td>18</td>
<td>Windows are double-glazed, but frames do not minimize conductivity</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>36</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td><strong>360</strong></td>
<td>(Score Range = 146 - 348)</td>
</tr>
</tbody>
</table>

Recommended Rating is: Needs Improvement Through Renovation
## BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250K Building K (Facilities)  
**STATE UFI:** A05384  
**Built:** 1978  
**Remodeled:**  
**Construction Type:** Medium  
**CRV/SF:** $211  
**Current Replacement Value:** $907,722  
**MGMT. CODE:** Small Renovation, Tenant Improvement - $60-$80/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Structure      | 8     | No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound.  
**Engineered metal building; steel frame** |
| Exterior       | 8     | Walls, doors, finishes and windows are weather-tight and well maintained with minimal     |
| Closure        |       | **Metal siding-minor dents**                                                              |
| Roofing        | 10    | Membrane appears water-tight and flashings and penetrations are sound; drainage is positive **Metal roof** |
| **Subtotal**   | **26**|                                                                                             |
| **Secondary Systems** |     |                                                                                             |
| Floor Finishes | 6     | Floor surfaces have a nice appearance and exhibit minimal random wear  
**Concrete, vinyl tile; carpet** |
| Walls -        | 6     | Wall surfaces are in good condition with minimal finish deterioration, wear or damage     |
| Finishes       |       | **Gypsum board; exposed steel structure; plywood; encapsulated insulation**               |
| Ceiling        | 6     | Ceiling surfaces are in good condition with minimal finish deterioration, wear or component |
| Finishes       |       | **Gypsum board; exposed steel structure; encapsulated insulation**                        |
| Doors-         | 18    | Door surfaces exhibit random finish deterioration and moderate wear and/or component      |
| Hardware       |       | damage; hardware exhibits minor to moderate deterioration, maintenance is required  
**Interior wood doors/frames; exterior HM doors/frames; metal OH door** |
| **Subtotal**   | **36**|                                                                                             |
| **Service Systems** |     |                                                                                             |
| Elevators      | 6     | Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition  
**1 story w/ mezzanine** |
| Plumbing       | 8     | Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition  
**Copper, steel, and cast iron piping; porcelain fixtures** |

74
### HVAC
- Equipment is in good condition, easily controlled, and serves all required spaces;
- Ventilation is adequate
  - Ceiling radiant heat; pad-mount packaged gas heating unit

### Electrical
- Service and distribution capacity is adequate for current and future needs
- Service: 225amp 480/277v

### Safety Systems
- Building generally meets codes for vintage of construction
- Fire Safety: No fire alarm of fire extinguishers; no illuminated exit signs
- Haphazard: Modifications are of average quality; HVAC and electrical service only partially support space
- Mezzanine may not meet code

### Quality Standards
- Facility appears to be well maintained
- Life expectancy is between 5 and 15 years; moderate building system deterioration
  - Should have 15+ year life
- Average building construction; exterior and/or interior spaces are of average attractiveness

### Energy
- Insulation is present, but not to current standards
- Windows are double-glazed, but frames do not minimize conductivity

### Total Score
- Total Score = 296
- (Score Range = 146 - Previous Biennium 296)

**Recommended Rating is: Fair, But Needs Improvement Through Additional Maintenance**
**BUILDING CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus

**BLDG:** 250M  
**STATE UFI:** A03613

**SITE:** Bellingham Campus

**BUILT:** 1977  
**REMODELED:**

**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $316  
**CURRENT REPLACEMENT VALUE:** $5,041,464

**PREDOMINANT BLDG. USE:** Vocational Arts

**MGMT. CODE:** Small Renovation, Tenant Improvement - $60-$80/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Structural brick; glue-lam beams; wood and steel columns</em></td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td><em>Brick</em></td>
</tr>
<tr>
<td>Roofing</td>
<td>10</td>
<td>Membrane appears water-tight and flashings and penetrations are sound; drainage is positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>TPO single-ply membrane-new in 2011</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>26</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Finishes</td>
<td>6</td>
<td>Floor surfaces have a nice appearance and exhibit minimal random wear</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Concrete; vinyl tile; ceramic tile</em></td>
</tr>
<tr>
<td>Walls</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td><em>Gypsum board; brick; CMU; wood paneling; T1-11; vinyl panels; ceramic tile</em></td>
</tr>
<tr>
<td>Ceiling</td>
<td>6</td>
<td>Ceiling surfaces are in good condition with minimal finish deterioration, wear or component</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td><em>Gypsum board and lay-in tiles</em></td>
</tr>
<tr>
<td>Doors</td>
<td>6</td>
<td>Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td><em>Interior/exterior HM doors/frames; OH metal doors w new motors in 2009</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>Service Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>18</td>
<td>Elevator car interiors exhibit wear and controls experience moderate malfunction; maintenance is required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>2 story; offices &amp; storage 2nd floor</em></td>
</tr>
<tr>
<td>Plumbing</td>
<td>24</td>
<td>Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Copper, cast iron, steel, galvanized and ABS piping; porcelain fixtures</em></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate

Gas make-up air units; linear ceiling radiant heating

HVAC

Service and distribution capacity is adequate for current and future needs

Electrical

Service

600amp, 480/277v; six disconnect rule; fed from another building

Lights/Power

Generally adequate illumination but mostly older light fixtures

Ceiling mount and hanging fluorescent lights; metal halide in shops

Subtotal = 82

Safety Systems

Building generally meets codes for vintage of construction

Life/Safety

Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas;

illuminated exit signs and/or emergency lights

Sprinklers installed in 2010

Fire Safety

Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces

Haphazard

No major modifications to date

Subtotal = 47

Quality Standards

Facility appears to be well maintained

Maint. Quality

Life expectancy is between 5 and 15 years; moderate building system deterioration

Remaining

Life

Should have 15 year+ life

Appearance

Average building construction; exterior and/or interior spaces are of average attractiveness

Some spaces are not very functional; building is very spartan on exterior

Subtotal = 43

Energy

Insulation is present, but not to current standards

Wall/Ceiling

Insulation

Windows have single-glazing

Seals broken

Glazing

Subtotal = 48

Total Score = 270

(Score Range = 146 - 246)

Recommended Rating is: Adequate
BUILDING CONDITION RATING

COLLEGE: Bellingham Technical College
SITE: Bellingham Campus
BLDG: 250MC Morse Center
STATE UFI: A03694
50,065 SF BUILT: 2007 REMODELED: Vocational Arts
CONSTRUCTION TYPE: Heavy CRV/SF: $316 CURRENT REPLACEMENT VALUE: $15,820,540
MGMT. CODE: Manage with RMI Repair and Minor Works

Component   Score   Comment
Primary Systems
Structure 8  No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound

| Structural steel frame, CMU, open web steel joists |

Exterior 8  Walls, doors, finishing and windows are weather-tight and well maintained with minimal

| Brick veneer; integral colored pre-cast concrete panels; aluminum panels; metal sunshades |

Closure 8  Brick veneer; integral colored pre-cast concrete panels; aluminum panels; metal sunshades

Roofing 10  Membrane appears water-tight and flashings and penetrations are sound; drainage is positive

| Single ply TPO membrane; fiberglass skylights |

Subtotal = 26

Secondary Systems
Floor Finishes 6  Floor surfaces have a nice appearance and exhibit minimal random wear

| Concrete; carpet; ceramic tile; linoleum |

Walls 6  Wall surfaces are in good condition with minimal finish deterioration, wear or damage

Finish 6  Gypsum board CMU, ceramic tile; good condition

Ceiling 6  Ceiling surfaces are in good condition with minimal finish deterioration, wear or component

Finishes 6  Gypsum board; lay-in tile; metal pan deck

Doors 6  Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order

| Interior wood/HM doors w HM frames; exterior aluminum doors/frames, HM doors/frames, metal and glazed OH doors; metal coiling doors |

Subtotal = 24

Service Systems
Elevators 6  Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition

| 2 stop |

Plumbing 8  Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition

| Copper, cast iron, steel, ABS and PVC piping; porcelain fixtures |

Subtotal = 24
HVAC
8  HVAC equipment is in good condition, easily controlled, and serves all required spaces;
ventilation is adequate
*Hot water boilers, AHUs; hot water wall radiators; radiant floor heating in shops; split system w
DX cooling*

Electrical
8  Service and distribution capacity is adequate for current and future needs

Service
2500amp 480/277v

Lights/Power
8  Contemporary lighting with good work area and instructional space illumination
*Ceiling mount, recessed, can, hanging circular and hanging pendant fluorescent fixtures*

Subtotal = 38

Safety Systems
Life/Safety
10  Building appears to meet current codes

Fire Safety
10  Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas;
illuminated exit signs and/or emergency lights

Haphazard
7  Modifications appear to be well constructed and in compliance with codes; HVAC and
Modification
  electrical service fully support spaces
*None evident to date*

Subtotal = 27

Quality Standards
Maint. Quality
7  Facility appears to be well maintained

Remaining
6  Life expectancy is greater than 15 years; building systems in good condition

Life
*Very well constructed vocational building; high quality components*

Appearance
6  Well constructed building; generally attractive exterior and interior spaces

Subtotal = 19

Energy
Wall/Ceiling
6  Insulation generally meets current standards

Insulation

Glazing
6  Windows are double-glazed, with frames that minimize conductivity
*Some operable windows; glass block*

Subtotal = 12

Total Score = 146  (Score Range = 146 - Previous Biennium 146

Recommended Rating is: Superior
BUILDING CONDITION RATING

COLLEGE: Bellingham Technical College
SITE: Bellingham Campus
BLDG: 250MDA Marine Drive Annex
5,500 SF BUILT: 1956 REMODELED: STATE UFI: A05710
PREDOMINANT BLDG USE: Storage
CONSTRUCTION TYPE: Medium CRV/SF: $185 CURRENT REPLACEMENT VALUE: $1,017,500
MGMT. CODE: Replace - $150-$350/SF

Component  Score  Comment

Primary Systems
Structure 8 No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound
Cast concrete; brick; wood roof framing
Exterior 24 Exterior walls, doors, windows, soffits and finishes are sound and weatherproof, but with
Closure moderate deterioration evident
Concrete; brick
Roofing 30 Minor to moderate deterioration of membrane and/or flashings is evident; maintenance is
Corrugated metal w fiberglass light panels; replaced fasteners & neoprene washers 2013

Subtotal = 62

Secondary Systems
Floor Finishes 30 A majority of floor surfaces exhibit extensive wear and deterioration and should no longer be
maintained
Vinyl tile-well worn; concrete
Walls - 6 Wall surfaces are in good condition with minimal finish deterioration, wear or damage
Finishes Gypsum board CMU, ceramic tile; good condition
Ceiling 6 Ceiling surfaces are in good condition with minimal finish deterioration, wear or component

Subtotal = 60

Service Systems
Elevators 6 One story building
Plumbing 24 Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required
Galvanized and cast iron piping to rest room; porcelain fixtures
<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC</td>
<td>40</td>
<td>Equipment is generally deteriorated and there may be inadequate capacity, zoning and distribution; ventilation is generally inadequate and there is no A/C FAG furnace</td>
</tr>
<tr>
<td>Electrical</td>
<td>24</td>
<td>Service capacity is adequate, but there may be distribution panel capacity issues</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td>100amp 208/120v</td>
</tr>
<tr>
<td>Lights/Power</td>
<td>24</td>
<td>Generally adequate illumination but mostly older light fixtures Ceiling mount fluorescent fixtures</td>
</tr>
<tr>
<td>Safety Systems</td>
<td></td>
<td>Building generally meets codes for vintage of construction</td>
</tr>
<tr>
<td>Life/Safety</td>
<td>30</td>
<td>No fire alarm of fire extinguishers; no illuminated exit signs</td>
</tr>
<tr>
<td>Fire Safety</td>
<td>50</td>
<td>Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces Building interior appears not to have had any renovations over the years</td>
</tr>
<tr>
<td>Haphazard</td>
<td>7</td>
<td>Moderate building system deterioration</td>
</tr>
</tbody>
</table>

**Subtotal = 87**

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Standards</td>
<td></td>
<td>Routine maintenance is required; deferred maintenance is evident; impact is minor to</td>
</tr>
<tr>
<td>Maint. Quality</td>
<td>21</td>
<td>Life expectancy is between 5 and 15 years; moderate building system deterioration</td>
</tr>
<tr>
<td>Remaining</td>
<td>18</td>
<td>Very well constructed storage building, but not useful for anything else due to design and construction</td>
</tr>
<tr>
<td>Life</td>
<td></td>
<td>Average construction, but generally unattractive exterior and interior spaces</td>
</tr>
</tbody>
</table>

**Subtotal = 69**

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td></td>
<td>Building is not insulated</td>
</tr>
<tr>
<td>Wall/Ceiling</td>
<td>30</td>
<td>Windows have single-glazing</td>
</tr>
</tbody>
</table>

**Subtotal = 60**

**Total Score = 456** (Score Range = 146 - Previous Biennium 456)

Recommended Rating is: Needs Improvement Through Renovation
**BUILDING CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250N Haskell Center  
**STATE UFI:** A09956  
**BUILT:** 2003  
**REMODELED:**  
**CONSTRUCTION TYPE:** Heavy  
**CRV/SF:** $391  
**CURRENT REPLACEMENT VALUE:** $12,020,122  
**MGMT. CODE:** Manage with RMI Repair and Minor Works

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Structure | 8 | No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound  
*Structural steel; concrete frame* |
| Exterior | 8 | Walls, doors, finishes and windows are weather-tight and well maintained with minimal |
| Closure | | *Brick; concrete; enameled steel building panels; ext. gypsum board soffits,* |
| Roofing | 10 | Membrane appears water-tight and flashings and penetrations are sound; drainage is positive  
*Hypalon single ply; metal standing seam; metal deck on steel framed entrance canopy* |
| **Subtotal = 26** | | |
| **Secondary Systems** | | |
| Floor Finishes | 6 | Floor surfaces have a nice appearance and exhibit minimal random wear  
*Ceramic tile; carpet; sheet vinyl; vinyl tile* |
| Walls | 6 | Wall surfaces are in good condition with minimal finish deterioration, wear or damage |
| Finishes | | *Gypsum board; ceramic tile* |
| Ceiling | 6 | Ceiling surfaces are in good condition with minimal finish deterioration, wear or component |
| Finishes | | *Gypsum board; acoustic texture; ventwood; plywood panels; lay-in and direct-adhered tile* |
| Doors | 6 | Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order  
*Interior wood doors/frames; exterior aluminum sliding doors/frames; HM doors/frames* |
| **Subtotal = 24** | | |
| **Service Systems** | | |
| Elevators | 6 | Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition  
*2 stop* |
| Plumbing | 8 | Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition  
*Copper, cast iron, steel and ABS piping; porcelain fixtures* |
<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC</td>
<td>8</td>
<td>HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 HW boilers; packaged chiller and AHUs</td>
</tr>
<tr>
<td>Electrical</td>
<td>8</td>
<td>Service and distribution capacity is adequate for current and future needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1200amp 480/277v</td>
</tr>
<tr>
<td>Lights/Power</td>
<td>8</td>
<td>Contemporary lighting with good work area and instructional space illumination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hanging strip, wall mount, hanging circular and recessed can fluorescent lights</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>38</strong></td>
<td></td>
</tr>
<tr>
<td>Safety Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life/Safety</td>
<td>10</td>
<td>Building appears to meet current codes</td>
</tr>
<tr>
<td>Fire Safety</td>
<td>10</td>
<td>Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas; illuminated exit signs and/or emergency lights</td>
</tr>
<tr>
<td>Haphazard</td>
<td>7</td>
<td>Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>27</strong></td>
<td>No major modifications to date</td>
</tr>
<tr>
<td>Quality Standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maint. Quality</td>
<td>7</td>
<td>Facility appears to be well maintained</td>
</tr>
<tr>
<td>Remaining Life</td>
<td>6</td>
<td>Life expectancy is greater than 15 years; building systems in good condition</td>
</tr>
<tr>
<td>Appearance</td>
<td>6</td>
<td>Well constructed building; generally attractive exterior and interior spaces</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>19</strong></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall/Ceiling</td>
<td>6</td>
<td>Insulation generally meets current standards</td>
</tr>
<tr>
<td>Insulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glazing</td>
<td>6</td>
<td>Windows are double-glazed, with frames that minimize conductivity</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>12</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td><strong>146</strong></td>
<td>(Score Range = 146 - Previous Biennium 146)</td>
</tr>
<tr>
<td><strong>Recommended Rating</strong></td>
<td><strong>Superior</strong></td>
<td></td>
</tr>
</tbody>
</table>
BUILDING CONDITION RATING

COLLEGE: Bellingham Technical College
SITE: Bellingham Campus
BLDG: 250P Desmond McArdle Center
STATE UF#: A04501
30,000 SF BUILT: 2004 REMODELED: PREDOMINANT BLDG USE: General Classroom
CONSTRUCTION TYPE: Heavy CRV/SF: $301 CURRENT REPLACEMENT VALUE: $9,030,000
MGMT. CODE: Manage with RMI Repair and Minor Works

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMU, steel ceiling joists and metal decking</td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td>Brick veneer and pre-cast concrete and aluminum panels</td>
</tr>
<tr>
<td>Roofing</td>
<td>10</td>
<td>Membrane appears water-tight and flashings and penetrations are sound; drainage is positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single ply TPO membrane</td>
</tr>
<tr>
<td>Subtotal</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

Secondary Systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor Finishes</td>
<td>6</td>
<td>Floor surfaces have a nice appearance and exhibit minimal random wear</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vinyl tile; carpet; ceramic tile; ground architectural concrete; ceramic tile</td>
</tr>
<tr>
<td>Walls -</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td>Gypsum board; CMU, ceramic tile</td>
</tr>
<tr>
<td>Ceiling</td>
<td>6</td>
<td>Ceiling surfaces are in good condition with minimal finish deterioration, wear or component</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td>Lay-in tile; gypsum board; exposed steel deck pan</td>
</tr>
<tr>
<td>Doors-</td>
<td>6</td>
<td>Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td>Interior wood/HM doors w HM frames; exterior HM doors/frames; OH glazed aluminum doors</td>
</tr>
<tr>
<td>Subtotal</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Service Systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevators</td>
<td>6</td>
<td>Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 story and mezzanine</td>
</tr>
<tr>
<td>Plumbing</td>
<td>8</td>
<td>Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Copper, cast iron, steel and ABS piping; porcelain fixtures</td>
</tr>
</tbody>
</table>
HVAC  8  HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate

     Heating and ventilation only; no A/C; fan powered VAVs

Electrical  8  Service and distribution capacity is adequate for current and future needs

Service

     1200amp 480/120v

Lights/Power  8  Contemporary lighting with good work area and instructional space illumination

     Hanging, wall mount and recessed can fluorescent lights; metal halide in shops

     Subtotal = 38

Safety Systems

Fire Safety  10  Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas; illuminated exit signs and/or emergency lights

Haphazard  7  Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces

     No modifications to date

     Subtotal = 27

Quality Standards

Maint. Quality  7  Facility appears to be well maintained

Remaining  6  Life expectancy is greater than 15 years; building systems in good condition

Life

     RUL >35 years; 5,555 GSF addition w two classrooms and 2 shops under construction; completion in 12/2011

Appearance  6  Well constructed building; generally attractive exterior and interior spaces

     Subtotal = 19

Energy

Wall/Ceiling  6  Insulation generally meets current standards

     Insulation

Glazing  6  Windows are double-glazed, with frames that minimize conductivity

     Subtotal = 12

Total Score = 146  (Score Range = 146 - Previous Biennium 146

Recommended Rating is: Superior
## BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250R Portable R (Veterinary)  
**STATE UFI:** 1,826 SF  
**BUILT:** 1990  
**REMODELED:** 2005  
**PREDOMINANT BLDG. USE:** Bookstore  
**CONSTRUCTION TYPE:** Temporary  
**CRV/SF:** $158  
**CURRENT REPLACEMENT VALUE:** $288,508  
**MGMT. CODE:** Replace - $150-$350/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Structure | 24 | Minor to moderate cracking evident, but does not affect structural integrity; visible defects but not structural  
Wood frame (portable) relocated on new concrete foundation 2005 |
| Exterior | 24 | Exterior walls, doors, windows, soffits and finishes are sound and weatherproof, but with |
| Closure | | moderate deterioration evident  
T1-11 wood siding |
| Roofing | 10 | Membrane appears water-tight and flashings and penetrations are sound; drainage is positive  
Composition shingle |
| **Subtotal** | = 58 | |
| **Secondary Systems** | | |
| Floor Finishes | 6 | Floor surfaces have a nice appearance and exhibit minimal random wear  
Carpet |
| Walls - | 6 | Wall surfaces are in good condition with minimal finish deterioration, wear or damage  
Gypsum board; slot wall paneling |
| Finishes | | |
| Ceiling | 6 | Ceiling surfaces are in good condition with minimal finish deterioration, wear or component  
Lay-in tile |
| Doors- | 6 | Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order  
Interior wood doors/frames; exterior HM doors/frames |
| Hardware | | |
| **Subtotal** | = 24 | |
| **Service Systems** | | |
| Elevators | 6 | One story building  
1 story |
| Plumbing | 24 | Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required  
Sink only, no restrooms |

---

86
### HVAC
- **24** HVAC system is generally adequate but older; minor to moderate deterioration of components is evident; maintenance/repair is required
  - Unit ventilators; no A/C

### Electrical
- **24** Service capacity is adequate, but there may be distribution panel capacity issues
  - 200amp 208/120v - 2 ea.

### Lights/Power
- **8** Contemporary lighting with good work area and instructional space illumination
  - Lay-in fluorescent lighting

**Subtotal = 86**

### Safety Systems
- **30** Building generally meets codes for vintage of construction
  - Fire alarm/pull stations but no sprinklers, illuminated exit signs and/or emergency lights
  - Addressable FA; no sprinklers

### Modification
- **21** Modifications are of average quality; HVAC and electrical service only partially support space
  - Inadequate life safety and HVAC provided during 2005 renovation

**Subtotal = 81**

### Quality Standards
- **21** Routine maintenance is required; deferred maintenance is evident; impact is minor to
- **30** Life expectancy is less than 5 years; significant building system deterioration
  - PORTABLE STRUCTURE; WAS SCHEDULED TO BE REPLACED IN 2012

### Appearance
- **30** Average construction, but generally unattractive exterior and interior spaces

**Subtotal = 81**

### Energy
- **18** Insulation is present, but not to current standards
  - Insulation
- **6** Windows are double-glazed, with frames that minimize conductivity
  - Double glazed vinyl windows

**Subtotal = 24**

**Total Score = 354**  
*Score Range = 146 - 706*

**Recommended Rating is:** Needs Improvement Through Renovation
### BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College

**SITE:** Bellingham Campus

**BLDG:** 250T  Building T (Diesel)

**SITE UFI:** A09961

**SF:** 16,789  **BUILT:** 1971  **REMODELED:** 1999

**CONSTRUCTION TYPE:** Medium  **CRV/SF:** $316  **CURRENT REPLACEMENT VALUE:** $5,305,324

**MGMT. CODE:** Manage with RMI Repair and Minor Works

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structural brick; steel columns; glu-lam beams</td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td>8</td>
<td>Brick; EIFS at addition; corrugated metal siding</td>
</tr>
<tr>
<td>Roofing</td>
<td>30</td>
<td>Minor to moderate deterioration of membrane and/or flashings is evident; maintenance is Hypalon single-ply roof -1999; excessive mold growth; BUR</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>= 46</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Finishes</td>
<td>18</td>
<td>Floor surfaces exhibit random moderate wear and random surface deterioration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concrete; vinyl tile; ceramic tile; carpet-puckering everywhere</td>
</tr>
<tr>
<td>Walls</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishes</td>
<td>6</td>
<td>Brick; gypsum board; ceramic tile; moveable partition walls</td>
</tr>
<tr>
<td>Ceiling</td>
<td>6</td>
<td>Ceiling surfaces are in good condition with minimal finish deterioration, wear or component</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exposed structure; lay-in tile; gypsum board; car deck wood</td>
</tr>
<tr>
<td>Doors</td>
<td>6</td>
<td>Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interior and exterior HM/wood doors w HM frames; metal OH and coiling doors</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>= 36</td>
<td></td>
</tr>
<tr>
<td><strong>Service Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>6</td>
<td>One story building</td>
</tr>
<tr>
<td>Plumbing</td>
<td>8</td>
<td>Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Copper, cast iron, steel and galvanized piping; porcelain fixtures</td>
</tr>
<tr>
<td>Category</td>
<td>Score</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>HVAC</td>
<td>24</td>
<td>HVAC system is generally adequate but older; minor to moderate deterioration of components is evident; maintenance/repair is required. Ceiling radiant heat; rooftop split system HVAC units; make-up air units; furnaces; no A/C</td>
</tr>
<tr>
<td>Electrical</td>
<td>24</td>
<td>Service capacity is adequate, but there may be distribution panel capacity issues.</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td>400amp 480/277V -2ea.</td>
</tr>
<tr>
<td>Lights/Power</td>
<td>8</td>
<td>Contemporary lighting with good work area and instructional space illumination. Lay-in, ceiling mount and hanging strip fluorescent fixtures; metal halide lights</td>
</tr>
<tr>
<td>Subtotal</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Safety Systems</td>
<td>30</td>
<td>Building generally meets codes for vintage of construction.</td>
</tr>
<tr>
<td>Life/Safety</td>
<td>10</td>
<td>Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas; illuminated exit signs and/or emergency lights</td>
</tr>
<tr>
<td>Fire Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haphazard</td>
<td>7</td>
<td>Modifications appear to be well constructed and in compliance with codes; HVAC and electrical service fully support spaces. Newer addition in 1999 appears well constructed</td>
</tr>
<tr>
<td>Modification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Quality Standards</td>
<td>7</td>
<td>Facility appears to be well maintained.</td>
</tr>
<tr>
<td>Maint. Quality</td>
<td>18</td>
<td>Life expectancy is between 5 and 15 years; moderate building system deterioration.</td>
</tr>
<tr>
<td>Remaining</td>
<td></td>
<td>Structurally sound building; 15 year life.</td>
</tr>
<tr>
<td>Life</td>
<td>18</td>
<td>Average building construction; exterior and/or interior spaces are of average attractiveness</td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>18</td>
<td>Insulation is present, but not to current standards. Windows are double-glazed, but frames do not minimize conductivity. Kalwall clerestory at addition</td>
</tr>
<tr>
<td>Wall/Ceiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glazing</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td><strong>278</strong></td>
<td>(Score Range = 146 - 278) Previous Biennium 278</td>
</tr>
<tr>
<td><strong>Recommended Rating</strong></td>
<td><strong>Fair, But Needs Improvement Through Additional Maintenance</strong></td>
<td></td>
</tr>
</tbody>
</table>
**BUILDING CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus

**BLDG:** 250U  
**Building:** U (Refrigeration)  
**STATE UFI:** A00708

9,495 SF  
**BUILT:** 1979  
**REMODELED:** 1999  
**PREDOMINANT BLDG. USE:** Vocational Arts

**CONSTRUCTION TYPE:** Medium  
**CRV/SF:** $316  
**CURRENT REPLACEMENT VALUE:** $3,000,420

**MGMT. CODE:** Manage with RMI Repair and Minor Works

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Structural brick; steel columns; glu-lam beams</em></td>
</tr>
<tr>
<td>Exterior</td>
<td>8</td>
<td>Walls, doors, finishes and windows are weather-tight and well maintained with minimal</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td><em>Brick</em></td>
</tr>
<tr>
<td>Roofing</td>
<td>30</td>
<td>Minor to moderate deterioration of membrane and/or flashings is evident; maintenance is <em>Hypalon single ply-1999; excessive mold growth on membrane</em></td>
</tr>
<tr>
<td><strong>Subtotal =</strong></td>
<td><strong>46</strong></td>
<td></td>
</tr>
</tbody>
</table>

| **Secondary Systems** |       |                                                                         |
| Floor Finishes      | 18    | Floor surfaces exhibit random moderate wear and random surface deterioration |
|                     |       | *Concrete; vinyl tile; carpet-general staining*                        |
| Walls               | 6     | Wall surfaces are in good condition with minimal finish deterioration, wear or damage |
| Finishes            |       | *Gypsum board; hardboard; ceramic tile*                               |
| Ceiling             | 6     | Ceiling surfaces are in good condition with minimal finish deterioration, wear or component |
|                     |       | *Gypsum board and direct-adhered tile*                                |
| Doors               | 18    | Door surfaces exhibit random finish deterioration and moderate wear and/or component |
| Hardware            |       | damage; hardware exhibits minor to moderate deterioration, maintenance is required |
|                     |       | *Interior wood/HM doors w HM frames; exterior H doors/frames; metal OH doors* |
| **Subtotal =**      | **48**|                                                                         |

| **Service Systems** |       |                                                                         |
| Elevators          | 6     | Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition |
|                     |       | *1 story with storage mezzanine*                                       |
| Plumbing           | 8     | Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition |
|                     |       | *Copper, cast iron, steel and PVC piping; porcelain fixtures*          |
HVAC 8 HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate

Univent; DX A/C; gas furnaces

Electrical 8 Service and distribution capacity is adequate for current and future needs

Service

800amp 480/277v

Lights/Power 8 Contemporary lighting with good work area and instructional space illumination

Ceiling mount and pendant mounted fluorescent fixtures

Subtotal = 38

Safety Systems

Life/Safety 10 Building appears to meet current codes

Fire Safety 50 No fire alarm of fire extinguishers; no illuminated exit signs

Fire alarm malfunctions frequently; parts not available; fire alarm replacement funded

Haphazard 7 Modifications appear to be well constructed and in compliance with codes; HVAC and

Modification electrical service fully support spaces

Modifications appear to be in compliance with codes and well-constructed

Subtotal = 67

Quality Standards

Maint. Quality 7 Facility appears to be well maintained

Remaining 18 Life expectancy is between 5 and 15 years; moderate building system deterioration

Life

Building is structurally sound; 15 yr. life

Appearance 18 Average building construction; exterior and/or interior spaces are of average attractiveness

Subtotal = 43

Energy

Wall/Ceiling 18 Insulation is present, but not to current standards

Insulation

Glazing 18 Windows are double-glazed, but frames do not minimize conductivity

Subtotal = 36

Total Score = 278 (Score Range = 146 - Previous Biennium 266)

Recommended Rating is: Fair, But Needs Improvement Through Additional Maintenance
**BUILDING CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus

**BLDG:** 250Y  
**PORTABLE Y (Parent Education)**  
**SITE:** Bellingham Campus

**STATE UFI:**  
**1,836 SF**  
**BUILT:** 1991  
**REMODELED:** 1997  
**PREDOMINANT BLDG. USE:** Early Learning

**CONSTRUCTION TYPE:** Temporary  
**CRV/SF:** $158  
**CURRENT REPLACEMENT VALUE:** $290,088  
**MGMT. CODE:** Replace - $150-$350/SF

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>24</td>
<td>Minor to moderate cracking evident, but does not affect structural integrity; visible defects but not structural</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wood frame (portable)</td>
</tr>
<tr>
<td>Exterior</td>
<td>24</td>
<td>Exterior walls, doors, windows, soffits and finishes are sound and weatherproof, but with moderate deterioration evident</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td>moderate deterioration evident</td>
</tr>
<tr>
<td>Roofing</td>
<td>30</td>
<td>Minor to moderate deterioration of membrane and/or flashings is evident; maintenance is Composition shingle</td>
</tr>
<tr>
<td><strong>Subtotal =</strong></td>
<td><strong>78</strong></td>
<td></td>
</tr>
</tbody>
</table>

| **Secondary Systems**                                   |       |                                                                         |
| Floor Finishes  | 18    | Floor surfaces exhibit random moderate wear and random surface deterioration Carpet, sheet vinyl |
| Walls -         | 18    | Wall surfaces exhibit random finish deterioration and moderate wear and/or damage; |
| Finishes        |       | maintenance is required Wood paneling                                    |
| Ceiling         | 6     | Ceiling surfaces are in good condition with minimal finish deterioration, wear or component Lay-in tile |
| Finishes        |       |                                                                         |
| Doors-          | 18    | Door surfaces exhibit random finish deterioration and moderate wear and/or component |
| Hardware        |       | damage; hardware exhibits minor to moderate deterioration, maintenance is required Interior wood doors/frames; exterior HM doors/frames |
| **Subtotal =**  | **60**|                                                                         |

| **Service Systems**                                    |       |                                                                         |
| Elevators      | 6     | Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition 1 story |
| Plumbing       | 24    | Piping is older but serviceable; some recurring leaks are reported or some pipe deterioration is evident; fixtures show some wear but are serviceable; maintenance is required Serviceable |

92
HVAC 24 HVAC system is generally adequate but older; minor to moderate deterioration of components is evident; maintenance/repair is required
   *Exterior wall mounted HVAC*

Electrical 8 Service and distribution capacity is adequate for current and future needs

Service

   *200amp 208/120v*

Lights/Power 24 Generally adequate illumination but mostly older light fixtures

**Subtotal = 86**

**Safety Systems**

   **Life/Safety** 50 Building does not meet minimum life/safety requirements

   **Fire Safety** 50 No fire alarm of fire extinguishers; no illuminated exit signs
   *No FA system; no sprinklers*

   **Haphazard** 35 Modifications are not well thought out or constructed; HVAC and electrical service are

**Modification**

**Subtotal = 135**

**Quality Standards**

   **Maint. Quality** 21 Routine maintenance is required; deferred maintenance is evident; impact is minor to

   **Remaining** 30 Life expectancy is less than 5 years; significant building system deterioration

   **Life**

   **Appearance** 30 Average construction, but generally unattractive exterior and interior spaces
   *Functional and well maintained spaces; structure is not attractive*

**Subtotal = 81**

**Energy**

   **Wall/Ceiling** 30 Building is not insulated

   **Insulation**

   *Insulation present but not to current standards*

   **Glazing** 18 Windows are double-glazed, but frames do not minimize conductivity
   *Double glazed vinyl windows*

**Subtotal = 48**

**Total Score = 488** *(Score Range = 146 - 730)*

**Previous Biennium** 730

**Recommended Rating is: Replace or Renovate**
## BUILDING CONDITION RATING

**COLLEGE:** Bellingham Technical College  
**SITE:** Bellingham Campus  
**BLDG:** 250Z  
**STATE UFI:** A06652  
**CONSTRUCTION TYPE:** Light  
**CRV/SF:** $301  
**CURRENT REPLACEMENT VALUE:** $3,884,104  
**MGMT. CODE:** Manage with RMI Repair and Minor Works

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>8</td>
<td>No settlement or cracking evident; no abrupt vertical changes; bearing walls and roof structure are sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wood frame</td>
</tr>
<tr>
<td>Exterior</td>
<td>24</td>
<td>Exterior walls, doors, windows, soffits and finishes are sound and weatherproof, but with moderate deterioration evident</td>
</tr>
<tr>
<td>Closure</td>
<td></td>
<td>moderate deterioration evident</td>
</tr>
<tr>
<td>Roofing</td>
<td>10</td>
<td>Membrane appears water-tight and flashings and penetrations are sound; drainage is positive TPO single-ply membrane-2008</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>42</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Finishes</td>
<td>18</td>
<td>Floor surfaces exhibit random moderate wear and random surface deterioration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vinyl tile; carpet tile; carpet-general wear downstairs; ceramic tile</td>
</tr>
<tr>
<td>Walls -</td>
<td>6</td>
<td>Wall surfaces are in good condition with minimal finish deterioration, wear or damage</td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td>Gypsum board and ceramic tile; good condition</td>
</tr>
<tr>
<td>Ceiling</td>
<td>6</td>
<td>Ceiling surfaces are in good condition with minimal finish deterioration, wear or component</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gypsum board; lay-in tile; direct-adhered tile</td>
</tr>
<tr>
<td>Doors-</td>
<td>6</td>
<td>Door finishes are in good condition and exhibit only minor random wear; door hardware is in good working order</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td>Interior laminate doors w HM frames; exterior aluminum doors/frames</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>36</td>
<td></td>
</tr>
<tr>
<td><strong>Service Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>6</td>
<td>Elevators are appropriate and functional for use; car interiors have minimal deterioration and controls are in good condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 stop</td>
</tr>
<tr>
<td>Plumbing</td>
<td>8</td>
<td>Piping appears in generally good condition, with no recurring leak problems; fixtures are in good condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Copper, cast iron, steel and ABS piping; porcelain fixtures</td>
</tr>
</tbody>
</table>

94
HVAC 8  HVAC equipment is in good condition, easily controlled, and serves all required spaces; ventilation is adequate
Rooftop packaged HVAC units and fan powered VAVs

Electrical 8  Service and distribution capacity is adequate for current and future needs
Service

400amp 480/277v

Lights/Power 8  Contemporary lighting with good work area and instructional space illumination
Wall mounted vapor proof fixtures; wall mount, lay-in and recessed can fluorescent lighting

Subtotal = 38

Safety Systems
Life/Safety 10  Building appears to meet current codes
Fire Safety 10  Fire alarm present w locally monitored detection; sprinklers at minimum in high hazard areas;
illuminated exit signs and/or emergency lights

Haphazard 7  Modifications appear to be well constructed and in compliance with codes; HVAC and
Modification  electrical service fully support spaces
2003 remodel was well designed and executed; 1,983 GSF addition currently under
construction; completion in 12/2011

Subtotal = 27

Quality Standards
Maint. Quality 7  Facility appears to be well maintained
Remaining 18  Life expectancy is between 5 and 15 years; moderate building system deterioration
Life
Low first cost construction quality; RUL <25 years
Appearance 18  Average building construction; exterior and/or interior spaces are of average attractiveness

Subtotal = 43

Energy
Wall/Ceiling 6  Insulation generally meets current standards
Insulation

Glazing 18  Windows are double-glazed, but frames do not minimize conductivity
Some operable sections

Subtotal = 24

Total Score = 210  (Score Range = 146 - 210)
previous Biennium 210

Recommended Rating is: Adequate
SITE CONDITION

A similar analysis was conducted for the college site by evaluating and rating eight site characteristics. These ratings also translated into a site condition score that ranges between 36 and 175. As with the facility condition analysis, the lower the score the better the overall condition.

The site condition rating reports for each campus are provided on the following pages.
## SITE CONDITION RATING

**College:** Bellingham Technical College  
**Site:** Bellingham Campus  
**Survey Date:** 8/13

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>6</td>
<td>Site is adequate for future growth</td>
</tr>
</tbody>
</table>
| Traffic Flow | 18   | Traffic flow has some inefficiencies, but is adequate  
*Traffic flow in south area of campus could use improvement* |
| Parking   | 6     | Parking and circulation are efficient and adequate for future expansion |
| Needs     |       | |
| Security  | 12    | Site lighting is adequate, but there are no security phones  
*Site lighting is adequate; no security booths or emergency phones* |
| Drainage  | 5     | Generally positive slope away from buildings; roofs drain to downspouts; surface drainage is to catch basins or swales |
| Paving    | 4     | Paved pedestrian walkways provide circulation between buildings, and parking lots are  
*New pedestrian routes through parking area* |
| Site      | 6     | Landscaping appears adequate, but maintenance needs improvement  
*Minimal landscaping in south campus area; newer planting near recent bldgs. in east* |
| Signage   | 2     | Building numbers and/or names are identified; parking and ADA signage exists; rooms are numbered and exits properly marked |

**Total Score:** 59  
(Score Range = 36 - 175)  
**Previous Biennium:** 67
**SITE CONDITION RATING**

**COLLEGE:** Bellingham Technical College  
**SITE:** Whatcom Creek Hatchery  
**SURVEY DATE:** 8/13

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>18</td>
<td>Site is reasonably sized for the foreseeable future</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Site has some room for expansion, but may be constrained by local land-use controls</em></td>
</tr>
<tr>
<td>Traffic Flow</td>
<td>18</td>
<td>Traffic flow has some inefficiencies, but is adequate</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Access is off one street through an industrial area with heavy truck traffic</em></td>
</tr>
<tr>
<td>Parking</td>
<td>6</td>
<td>Parking and circulation are efficient and adequate for future expansion</td>
</tr>
<tr>
<td>Security</td>
<td>20</td>
<td>Site lighting is inadequate and there are no emergency phones</td>
</tr>
<tr>
<td>Drainage</td>
<td>15</td>
<td>Ponding is observable at some buildings or between buildings; a number of buildings have no downspouts; inadequate catch basins</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Site was former sewage treatment plant for City of Bellingham</em></td>
</tr>
<tr>
<td>Paving</td>
<td>12</td>
<td>Inadequate paved pedestrian walkways between buildings; Some parking areas are unpaved</td>
</tr>
<tr>
<td>Site</td>
<td>2</td>
<td>Site is landscaped and appears well-maintained</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Appears well maintained as a reuse site</em></td>
</tr>
<tr>
<td>Signage</td>
<td>10</td>
<td>Lack of adequate building identification; poor emergency and ADA signage</td>
</tr>
</tbody>
</table>

**Total Score:** 101  
(Score Range = 36 - 175)  
**PREVIOUS BIENNIAL** 101
WEIGHTED AVERAGE AND COMPARISON

Based on the criteria scores collected during this survey, the weighted average condition score for the facilities at Bellingham Technical College is 219. This score indicates that the average facility condition at the college is generally adequate.

The State Board has a long term goal of improving the condition of all college facilities, bringing the condition scores up to “adequate” condition levels. Historical data indicates that this trend is occurring. After this goal is achieved, the average weighted condition scores at each campus would likely exceed the “adequate” rating. The following table shows all college weighted average scores for comparison.

BUILDING CONDITION RATING SUMMARY - ALL COLLEGES

<table>
<thead>
<tr>
<th>COLLEGE</th>
<th>2013 WEIGHTED COLLEGE SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>010</td>
<td>Peninsula College 231</td>
</tr>
<tr>
<td>020</td>
<td>Grays Harbor College 251</td>
</tr>
<tr>
<td>030</td>
<td>Olympic College 239</td>
</tr>
<tr>
<td>040</td>
<td>Skagit Valley College 277</td>
</tr>
<tr>
<td>050</td>
<td>Everett Community College 220</td>
</tr>
<tr>
<td>062</td>
<td>Seattle Central Community College 277</td>
</tr>
<tr>
<td>063</td>
<td>North Seattle Community College 346</td>
</tr>
<tr>
<td>064</td>
<td>South Seattle Community College 293</td>
</tr>
<tr>
<td>065</td>
<td>Seattle Vocational Institute 320</td>
</tr>
<tr>
<td>070</td>
<td>Shoreline Community College 290</td>
</tr>
<tr>
<td>080</td>
<td>Bellevue College 234</td>
</tr>
<tr>
<td>089</td>
<td>SBCTC 298</td>
</tr>
<tr>
<td>090</td>
<td>Highline Community College 273</td>
</tr>
<tr>
<td>100</td>
<td>Green River Community College 251</td>
</tr>
<tr>
<td>111</td>
<td>Pierce College at Fort Steilacoom 240</td>
</tr>
<tr>
<td>112</td>
<td>Pierce College at Puyallup 179</td>
</tr>
<tr>
<td>121</td>
<td>Centralia College 249</td>
</tr>
<tr>
<td>130</td>
<td>Lower Columbia College 256</td>
</tr>
<tr>
<td>140</td>
<td>Clark College 245</td>
</tr>
<tr>
<td>150</td>
<td>Wenatchee Valley College 283</td>
</tr>
<tr>
<td>160</td>
<td>Yakima Valley Community College 227</td>
</tr>
<tr>
<td>171</td>
<td>Spokane Community College 290</td>
</tr>
<tr>
<td>172</td>
<td>Spokane Falls Community College 274</td>
</tr>
<tr>
<td>180</td>
<td>Big Bend Community College 301</td>
</tr>
<tr>
<td>190</td>
<td>Columbia Basin College 213</td>
</tr>
<tr>
<td>200</td>
<td>Walla Walla Community College 254</td>
</tr>
<tr>
<td>School</td>
<td>Score</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Whatcom Community College</td>
<td>189</td>
</tr>
<tr>
<td>Tacoma Community College</td>
<td>252</td>
</tr>
<tr>
<td>Edmonds Community College</td>
<td>232</td>
</tr>
<tr>
<td>South Puget Sound Community College</td>
<td>200</td>
</tr>
<tr>
<td>Bellingham Technical College</td>
<td>219</td>
</tr>
<tr>
<td>Lake Washington Institute of Technology</td>
<td>205</td>
</tr>
<tr>
<td>Renton Technical College</td>
<td>284</td>
</tr>
<tr>
<td>Bates Technical College</td>
<td>282</td>
</tr>
<tr>
<td>Clover Park Technical College</td>
<td>274</td>
</tr>
<tr>
<td>Cascadia Community College</td>
<td>197</td>
</tr>
</tbody>
</table>

### Average Weighted Score

- **146 - 175** = Superior
- **176 - 275** = Adequate
- **276 - 350** = Needs Improvement By Additional Maintenance
- **351 - 475** = Needs Improvement By Renovation
- **>475** = Replace or Renovate
Bldg. 250G
Culinary/Cafe

Bldg. 250H
Health Occupations

Bldg. 250HSI
Whatcom Creek Hatchery Storage

Bldg. 250J
Engineering/Electrical

Bldg. 250K
Facilities

Bldg. 250M
Automotive Technology
SBCTC 2013 Facility Condition Survey

Bldg. 250MC
Morse Center

Bldg. 250N
Haskell Center

Bldg. 250P
Desmond McArdle Center

Bldg. 250R
Veterinary Portable

Bldg. 250T
Diesel

Bldg. 250U
Refrigeration

Bellingham Technical College
Bldg. 250Y
Parent Education Portable

Bldg. 250Z
College Services

Bldg. 250CC
Campus Center
• Appendix A
  o Deficiency Scoring Method

• Appendix B
  o Building Condition Ratings

• Appendix C
  o Capital Repair Request Validation Criteria
DEFICIENCY SCORING METHOD

In most facility maintenance environments funding available for facility maintenance and repair never matches need in terms of identified requirements. This is no less true for capital repair funding for the state community and technical colleges. Therefore, a key component of a sound maintenance planning and programming system must be the ability to prioritize capital repair deficiencies for system-wide programming over a multi-year period. The key objective in conducting the bi-annual condition assessment is to validate and prioritize deficiencies identified by the colleges so that capital repairs can be accomplished in a timely manner, and potentially more costly repairs can be forestalled. For this reason, the SBCTC determined that a method of assigning a relative severity score to each capital repair deficiency was necessary to allow equitable allocation of funding for capital repairs among all the colleges. It was determined that such a scoring system needed to be “transparent” to the facility condition assessment personnel, so that it could be applied in a consistent manner to establish deficiency severity. It was further determined that such a system needed to have a range of severity scores that would allow some level of differentiation among scores.

At the request of the SBCTC, a deficiency scoring system was developed by the SBCTC’s consultants in 1995, and updated in 1999. This system is designed to allow the person validating a deficiency to assign a relative severity score to each deficiency in an objective fashion, based on a clearly defined set of severity criteria. The primary concern in designing the scoring system was insuring the timely accomplishment of repair work so that current deficiencies do not degrade to the point where more costly corrective action is required. A collateral concern was to reduce or eliminate any identified health and safety risks.

The core of the scoring process that was developed consists of:

- A reasonable set of definitions that are easily subscribed to by all members of the assessment management and execution team;
- A manageable number of priority levels, each of which is clearly distinct from the other;
- A clear implication of the potential impacts if corrective action is not taken.

Field prioritization of deficiencies is accomplished using a two-step scoring process. This process involves, first, determining whether a deficiency is Immediate or Deferrable and, second, prioritizing the criticality or deferability using a priority ranking system.
A deficiency is categorized as **Immediate** if it must be corrected within a short period of time after being identified. An “Immediate” deficiency should meet the following criteria:

1. If the deficiency is not corrected within a short time, a significant health and/or safety risk will develop.
2. If the deficiency is not corrected within a short time, a significant increase in the cost of corrective action could result.
3. If the deficiency is not corrected within a short time, the deficiency could significantly degrade to the point where an entire building system could be impacted.

All deficiencies degrade over time if they are not corrected, and often the cost of deferring corrective action will increase. **However, the magnitude of the degradation or cost increase is the key consideration in determining if a deficiency is “Immediate”.** For example, a built-up roof with significant blisters and felts that are beginning to separate is deteriorating. However, if that deterioration is in its early stages, and interior leaks are not yet present, roof replacement/repair can be legitimately deferred. If, however, the roof has been deteriorating for some time, and leaks have become so common that they have begun to cause deterioration in other building systems, the roof should be classified as “Immediate”. The cost of replacing that roof will not increase. However, the total cost of repairs associated with the leakage caused by that roof will in all likelihood increase significantly. Not only will the roof continue to degrade, but there will also be associated roof insulation, roof deck, or interior structural degradation, as well as possible damage to mechanical or electrical system components.

A deficiency is categorized as **Deferrable** if corrective action can be postponed to the 2017-2019 biennium or later. Since deficiencies can degrade over time, their associated corrective costs can also increase. Therefore, a “Deferrable” deficiency should meet the following criteria:

1. The degree of degradation over the deferrable time frame will be at a relatively constant rate, or at least will not increase significantly from year to year.
2. The degree of corrective cost increase over the deferrable time frame will be at a relatively constant rate, or at least will not increase significantly from year to year.
3. Potential health/safety impacts will be minor, and will not increase as to severity over the deferrable time frame.
4. There will be little, if any, mission impact over the deferrable time frame.

The point at which noticeable changes in the character of a deficiency can be projected with respect to the above considerations is the end point of the deferability time frame, because at that point the character of a deficiency can be assumed to change from “Deferrable” to “Immediate”.

A deficiency categorized as **Immediate** should be considered for submission to the SBCTC as a project request in the 2015-2017 capital budget. A deficiency categorized as **Deferrable** could be postponed for corrective action until the 2017-2019 biennium. Furthermore, a deficiency categorized as **Future** could be postponed until after the 2017-2019 biennium if it is anticipated to degrade very slowly and does not restrict the use of the facility.

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**PRIORITIZING DEFICIENCIES**

Once a deficiency is categorized as Immediate, Deferrable or Future, the next step in the scoring process is to assign a priority designating relative importance for planning and programming purposes. A six-level prioritizing system was developed for assigning a priority to a deficiency:

1. **Health/Safety** This designation is the highest priority level assigned to a deficiency. It designates a deficiency as having potentially adverse health and/or safety impacts on building occupants or users if the deficiency is not corrected within the designated time frame.

2. **Building Function (Use)** This priority designates a deficiency as having a potentially adverse impact on the ability to fully utilize a facility if the deficiency is not corrected within the recommended time-frame.

3. **System Use** This priority designates a deficiency as having a potentially adverse impact on a building system’s ability to operate properly if the deficiency is not corrected within the recommended time frame.

4. **Repair/Repl. Cost** This priority designates that the repair or replacement cost associated with correcting a deficiency will escalate sharply after the time period recommended for correction of the deficiency. In all probability this will occur because degradation of associated components or systems will occur.

5. **Operating Cost** This priority designates that the operating cost associated with correcting a deficiency will escalate sharply after the time period recommended for correction the deficiency.
6. **Quality of Use** This is the lowest level priority assigned to a deficiency. It designates that the deficiency should be corrected as part of a “prudent owner” strategy within the time recommended.

For programming purposes, each priority level is assumed to be relatively more important than the next. It is also assumed that more than one of the priority choices can apply to establishing the overall priority for a deficiency. It was determined that up to two selections could be made from the priority choices for each deficiency. Each of the selections would be assigned a percentage value, with the total of the selections equaling 100%. To avoid having to consider all possible combinations of numbers from 1 to 100 for a priority choice, it was determined that a finite set of numbers would be used for scoring. For a single priority choice a score of 100 would always be assigned. For two priority choices combinations of 50/50, 70/30, 60/40 or 75/25 would typically be used.

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**SEVERITY SCORING**

A severity score is calculated for each capital repair deficiency by formula that was programmed into the database management system used for the survey. The formula calculates a severity score based on a numerical value assigned to each of the DEFERABILITY and PRIORITY choices.

The numerical values assigned to the Deferability choices are:

- Immediate 4
- Deferrable 2.5
- Future 1

The numerical values assigned to the Priority choices are:

- Health/Safety 25
- Facility Use 20
- System Use 15
- Increased Repair/Replacement Cost 12
- Increased Operating Cost 10
A deficiency score is calculated by multiplying the value of the selected deferability choice by the value of the selected priority choice. Where more than one priority choice is applied to a deficiency, the percentage of each priority applied is multiplied by the corresponding priority value. The results are added together, and the sum is multiplied by the value of the deferability choice.

For example, for a deficiency with an assigned deferability of “Deferred” and a 100% assigned priority of “System Use” the deficiency score is 38. This score is calculated as:

**Step 1** 1 x 15 = 15, where 15 is the value of “System Use,” and 1 is 100%, since only one priority choice was selected.

**Step 2** 15 x 2.5 = 38 rounded, where 15 is the value of “System Use,” and 2.5 is the value of the deferability choice of “Deferred.”

If more than one priority choice is assigned to a deficiency, say 30% “System Use” and 70% “Increased Repair/Replacement Cost”, with an assigned deferability category “Deferred”, the score would be calculated as:

**Step 1** (0.3 x 15) + (0.7 x 12) = 12.9, where 15 is the value of “System Use,” 12 is the value of “Increased Repair/Replacement Cost,” 0.3 is the 30% assigned to “System Use,” and 0.7 is the 70% assigned to “Increased Repair/Replacement Cost.”

**Step 2** - 12.9 x 2.5 = 32 rounded, where 2.5 is the value of a deferability category “Deferred.”

The possible calculated severity score ranges for a deficiency are shown below:

<table>
<thead>
<tr>
<th></th>
<th>Immediate</th>
<th>Deferred</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible severity score range:</td>
<td>20-100</td>
<td>13-63</td>
<td>5-25</td>
</tr>
</tbody>
</table>

This demonstrates that a deficiency with a deferability category of “Deferred” could have a severity score that is higher than a deficiency with a deferability category of “Immediate”. All deficiencies are ranked using the severity score.
APPENDIX B

BUILDING/SITE CONDITION RATINGS

As part of the facility condition survey update, a building condition analysis was also conducted for each building on a campus. The objective of this analysis is to provide an overall comparative assessment of the condition and adequacy each building on a campus, and a method of comparing facilities among campuses.

The condition analysis was performed by rating the condition or adequacy of 20 building system and operating characteristics. Three evaluation criteria were developed for each characteristic to provide a relative ranking of the standard of good, average or poor. A rating of 1, 3 or 5 was assigned to each of the three evaluation criteria for each characteristic. Each facility is rated by applying the evaluation criteria to each of the 20 separate building systems and operating characteristics. If a characteristic does not apply, (e.g. a one story building that does not have an elevator or a building that does not have a plumbing system) a rating of 0 is assigned to that element. Each characteristic has an associated weighting score that is multiplied by the rating assigned to that characteristic to generate a score for that characteristic. The scores for all 20 characteristics are totaled to provide an overall rating score for a facility.

The scoring range for a facility, based on the weighted scores for all 20 characteristics, multiplied by the rating for each characteristic, is between 146 and 730. The lower the score, the better the relative overall condition of a facility. It is intended that these ratings will serve as a baseline benchmark of overall condition, which can be used to measure improvements or deterioration in facility condition over time.

In addition to the building condition analysis, a site condition analysis was also conducted of each campus. Eight site characteristics were selected for the analysis, and three evaluation criteria were developed for each characteristic to provide a relative ranking of good, average or poor. A rating of 1, 3 or 5 was also assigned to each of the three evaluation criteria for the site characteristics. Each site was rated by applying the evaluation criteria to each of the eight characteristics. Each site characteristic also had an associated weighting score that was multiplied by the rating assigned to that characteristic to generate a score for that characteristic. The scores for all eight characteristics were totaled to provide an overall rating score for a site.

The evaluation criteria associated with the building and site ratings are presented on the following pages.
## FACILITY EVALUATION CRITERIA

<table>
<thead>
<tr>
<th>Primary System</th>
<th>RTNG</th>
<th>WGHT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structure</td>
<td>1</td>
<td>8</td>
<td>No signs of settlement or cracking, no abrupt vertical changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Columns, bearing walls and roof structure appears sound/free of defects</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Some cracking evident but does not affect structural integrity</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Visible defects apparent but are non-structural</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Visible settlement and potential structural failure; potential safety hazard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Structural defects apparent in superstructure</td>
</tr>
<tr>
<td>2. Exterior Closure</td>
<td>1</td>
<td>8</td>
<td>Weatherproof, tight, well-maintained exterior walls, doors, windows/finishes</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Sound and weatherproof but with some deterioration evident</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Significant deterioration, leaking and air infiltration apparent</td>
</tr>
<tr>
<td>3. Roofing</td>
<td>1</td>
<td>10</td>
<td>Flashing and penetrations appear sound and membrane appears watertight;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>drainage is positive and there are overflow scuppers</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Some deterioration is evident in membrane and flashings; maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is needed</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Leaking and deterioration is to point where new roof is required</td>
</tr>
<tr>
<td>Secondary Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Floor Finishes</td>
<td>1</td>
<td>6</td>
<td>Nice appearance, smooth transitions, level subfloors, no cracks/separating</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Some wear and minor imperfections are evident; beginning deterioration</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Extensive deterioration and unevenness</td>
</tr>
<tr>
<td>5. Walls-Finishes</td>
<td>1</td>
<td>6</td>
<td>Maintainable surfaces in good condition</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Aging surfaces but sound; some maintenance is required</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Surfaces are deteriorated and require resurfacing or rebuilding</td>
</tr>
<tr>
<td>6. Ceiling Finishes</td>
<td>1</td>
<td>6</td>
<td>Maintainable surfaces in good condition; good alignment and appearance</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Some wear and tear and minor deterioration</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Deteriorated, stained or sagging; inappropriate for occupancy</td>
</tr>
<tr>
<td>7. Doors-Hardware</td>
<td>1</td>
<td>6</td>
<td>Appropriate hardware, closers, panic devices; in good working order</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Functional but dated</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Inoperable, deteriorating and outdated; non-secure</td>
</tr>
<tr>
<td>Service Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Elevators/Conveying</td>
<td>1</td>
<td>6</td>
<td>Appropriate and functional for occupancy and use</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Elevators provided but functionality is inadequate</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>No elevator access for upper floors</td>
</tr>
<tr>
<td>9. Plumbing</td>
<td>1</td>
<td>8</td>
<td>Fixtures and piping appear to be in good condition; no evidence of leaks</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Fixtures are functional but dated; some leaks; maintenance required</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Extensive pipe leaks; deteriorated fixtures; inadequate fixtures</td>
</tr>
<tr>
<td>10. HVAC</td>
<td>1</td>
<td>8</td>
<td>Equipment in good condition; easily controlled; serves all required spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All necessary spaces are adequately ventilated; A/C provided</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>System generally adequate; some deterioration; needs balancing</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Inadequate capacity, zoning and distribution; equipment deteriorating</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No A/C in office areas; no ventilation in hazardous areas</td>
</tr>
<tr>
<td>11. Elect. Service and</td>
<td>1</td>
<td>8</td>
<td>Adequate service and distribution capacity for current/future needs</td>
</tr>
<tr>
<td>Distribution</td>
<td>3</td>
<td></td>
<td>Service capacity meets current needs but inadequate for future</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Loads exceed current capacity</td>
</tr>
<tr>
<td>FACILITY EVALUATION CRITERIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Lighting/Power</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  8  Contemporary lighting with good work area illumination; ample outlets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Adequate work area illumination; adequate outlets for current use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Unsafe levels of illumination; inadequate outlets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Life/Safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  10  Appears to meet current codes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Generally meets codes for vintage of construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Does not meet minimum health/safety requirements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Fire Safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  10  Locally monitored detection; alarm present; sprinklers in high hazard areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Extinguishers and signed egress; no violations; no alarm/sprinklers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Violations exist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Haphazard Modification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  7  Modifications appear to be in compliance with codes and sound construction practices; HVAC/electrical service properly provided</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Some modifications lack code compliance; HVAC service is not fully functional.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Modifications not well thought out or constructed; inadequate HVAC and electrical service provided</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Quality of Maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  7  Facility appears well maintained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Routine maintenance is required; deferred maintenance is evident; impact is minor to moderate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  General deterioration is evident; lack of adequate maintenance is evident; impact is moderate to severe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Remaining Life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  6  Life expectancy is &gt;15 years; minor system deterioration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Life expectancy is 5-15 years; moderate system deterioration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Life expectancy is &lt;5 years; significant system deterioration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  6  Well constructed building; generally attractive interior and exterior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Average construction; average interior and exterior appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Average construction, but very unattractive exterior and interior spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Conservation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Walls/Ceilings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  6  Insulation is up to current standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Insulation present, but not to current standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  No insulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Glazing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  6  Double glazing with window frames that minimize conductivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Double glazing with aluminum/metal window frames</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Single glazing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

730 Max points

146-175 = Superior
176-275 = Adequate
276-350 = Needs Improvement/Additional Maintenance
351-475 = Needs Improvement/Renovation
476-730 = Replace or Renovate
<table>
<thead>
<tr>
<th>Campus Site</th>
<th>RTNG</th>
<th>WGHT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Location</td>
<td>1</td>
<td>6</td>
<td>Site is adequate for future growth</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Site is reasonably sized for foreseeable future</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Site is inadequate, fails to meet current demand. Lack of future expansion capability; threatened by incompatible adjacent development</td>
</tr>
<tr>
<td>B. Traffic Flow</td>
<td>1</td>
<td>6</td>
<td>Traffic flow poses no apparent safety hazards and is efficient</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Traffic flow has some inefficiencies but is adequate</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Traffic flow is inefficient and unsafe</td>
</tr>
<tr>
<td>C. Parking Needs</td>
<td>1</td>
<td>6</td>
<td>Parking and circulation are efficient and adequate for future expansion</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Parking is adequate for present needs; circulation is adequate</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>No expansion potential for parking; circulation is inefficient</td>
</tr>
<tr>
<td>D. Security</td>
<td>1</td>
<td>4</td>
<td>Site lighting is adequate; site has security booths and emergency phones</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Site lighting is adequate; some security booths or emergency phones</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Site lighting is inadequate; no security booths or emergency phones</td>
</tr>
<tr>
<td>E. Drainage</td>
<td>1</td>
<td>5</td>
<td>Positive slope away from buildings; roof drainage to underground system; surface drainage to catch basins or swales</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Some ponding is observable; flat slope allows standing water at buildings or between buildings</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Extensive pooling of water adjacent to buildings; poor slope and drainage</td>
</tr>
<tr>
<td>F. Paving</td>
<td>1</td>
<td>4</td>
<td>Pedestrian walkways provided for circulation between buildings; paved parking areas</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Pedestrian walkways do not provide for adequate circulation between buildings; only partial paved parking</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>No paved pedestrian walkways; no paved parking</td>
</tr>
<tr>
<td>G. Site Maintenance</td>
<td>1</td>
<td>2</td>
<td>Site is landscaped and appears well maintained</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Landscaping is adequate but maintenance needs improvement</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Little site landscaping; does not appear well maintained</td>
</tr>
<tr>
<td>H. Signage</td>
<td>1</td>
<td>2</td>
<td>Building numbers/names identified; parking and disabled signage exists; Rooms are numbered; exits properly marked</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>Signage is minimal, except for emergency exit identification</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Lack of adequate building/room identification; poor emergency signage</td>
</tr>
</tbody>
</table>
CAPITAL REPAIR REQUEST VALIDATION CRITERIA

Achieving consistency in the facility condition survey and repair request validation process has long been a key SBCTC objective. The effort to achieve consistency in this process has focused on two main elements:

1) The surveyor in evaluating capital repair deficiencies,

2) The individual colleges in identifying candidates for capital repair funding.

In order to assist both the colleges and the surveyor to be more consistent in identifying legitimate candidates for capital repair funding, the SBCTC in 2001 developed a set of guidelines for use in the condition survey updates. The guidelines reiterate the objective of capital repair funding, and are intended to help the surveyor and the colleges to determine whether work is to be funded from operating dollars such as RMI or M&O, or from a capital repair request by identifying circumstances that do not meet the intent of capital repair funding.

Achieving consistency in the facility condition survey/capital repair request validation process has been a key objective of the SBCTC since the first survey was initiated in 1989. Over the years, every effort has been made to insure that a consistent approach is followed by the survey teams in evaluating capital repair deficiencies at each college. However, to achieve this objective, it is also necessary that the individual colleges are consistent in identifying candidates for capital repair funding.

The repair category represents funding to replace or repair major components and systems, as well as building and infrastructure failures. This category of repair is NOT intended for renovation or remodel of facilities. In addition, capital repairs must conform to the OFM definition of an allowable capital expense. Smaller repairs need to be accommodated with operations and maintenance dollars from the operating budget. Finally it is critical that capital repairs be coordinated with the facility master plan and not be wasted in a building that will be renovated or replaced in the short term.

The following criteria have been developed to reiterate the objective of capital repair funding and to assist the colleges and the surveyor to identify legitimate candidates for capital repair funding. Again, it is important to know when work is to be funded from operating dollars or from a capital request category. The guidelines and conditions included herein are provided to help identify circumstances that do not meet the intent of capital repair funding.
GENERAL GUIDELINES

Capital Repair funds may be used for repair/replacement of building systems and fixed equipment, or campus infrastructure, if one or more of the following conditions exist:

1) The system or equipment is experiencing increasing incidence of breakdown due to age and general deterioration. However, if the deterioration is not readily visible, the college must provide documentation as to the age of the system or component, and substantiate increasing repair costs.

2) The overall quality of the system or equipment is poor, resulting in deterioration sooner than normal design life expectancy would otherwise indicate.

3) The system or equipment is no longer cost-effective to repair or maintain. This implies that the cost of repair is estimated to be 50% or more of the cost of replacement, or replacement parts are virtually impossible to obtain or are at least 150% of the cost of parts for similar contemporary equipment.

4) For a deficiency to be considered a capital repair, the estimated MACC cost of corrective action should exceed $20,000 for a single item. However, the same individual items in one building (e.g. door closer mechanisms) can be combined into a single deficiency if they are all experiencing the same problems and are deteriorated to the same degree.

The following additional considerations apply to the facility condition survey deficiency validation process:

1) If a building system or major piece of equipment is experiencing component failure at a rate greater than what is considered normal, the entire piece of equipment should be replaced. However, maintenance/repair records should be available to support the rate of component failure.

2) If replacement of a piece of equipment is being considered because of the inability to obtain replacement parts, vendor confirmation should be available.

3) If a system or equipment operation problem exists that may lead to replacement consideration, but the cause of the problem/s is not readily evident, any troubleshooting and/or testing to identify the problem and its cause should be completed prior to the survey. The surveyor is not responsible for detailed analysis or troubleshooting. Recurring equipment problems should be documented by the college.
4) Any operational problems with equipment (e.g. air flow/ventilation or system balancing) that may require equipment replacement should be identified prior to the surveyor visiting the campus.

5) If a major system replacement is requested (e.g. a steam distribution system), the campus should first conduct an engineering/cost analysis to determine whether replacement with the same system will be cost-effective over the life-cycle of the replacement or whether an alternative system would be more cost-effective.

6) While piecemeal replacement of systems and components may be necessary operationally, replacement programming should nevertheless conform to an overall campus facility maintenance plan that addresses the maintenance and replacement of major systems such as HVAC from a campus-wide perspective.

7) If structural problems are suspected with respect to foundations, substructure, superstructure components, exterior closure components or roof systems, a structural engineering evaluation should be conducted by the college prior to the visit of the surveyor. Any resulting reports should be made available to the team at the time of their visit.

8) Capital repair funds will NOT be used for facility remodel/improvements.

9) Capital repair funds will NOT be used to repair facilities acquired by a college (e.g. gift from a foundation, COP, local capital) until they have been in state ownership for a minimum of seven years.

10) Capital repair funds shall NOT be used solely to achieve energy conservation, ADA compliance, hazardous materials abatement, or code compliance.

11) Capital repair funds shall NOT be used to repair or replace systems or equipment used predominantly for instructional purposes.

In addition, it should be understood that the surveyor will not be conducting a baseline condition survey for a college. The college should have identified capital repair deficiencies it considers candidates for funding prior to the arrival of the surveyor. The surveyor will validate these candidates and may, during their facility walk-through to rate facility condition, identify additional candidates. However, the prime responsibility for determining repair needs is with the college.

In order to provide a common focus for all colleges on the types of deficiencies and project recommendations they propose as a candidate for capital repair funding, specific conditions for which capital repair funds will not be used have been identified. These conditions are provided below by major building system.
EXTERIOR CLOSURE SYSTEMS/COMPONENTS

Capital repair funds will NOT be available for the following conditions:

1) Painting of exterior wall surfaces, unless the substrate also needs to be replaced due to damage.

2) Upgrading of door/closure hardware if the existing hardware is still functional. If hardware must be replaced because parts can no longer be obtained, the use of capital repair funds may be permissible.

3) Masonry cleaning, other than to prep a surface for restoration work. Masonry cleaning, such as for mildew removal, is considered part of the on-going maintenance responsibility of a campus. **Exterior masonry wall restoration, such as tuckpointing, is a valid use of capital repair funds**

4) Patching, sealing and re-coating of EFIS or plaster or stucco surfaces.

5) Repair/renovation of building sealants, damp proofing or coatings.

6) Door or window replacement for energy conservation only.

7) Wall or ceiling insulation retrofits.

INTERIOR CLOSURE/FLOOR SYSTEMS/COMPONENTS

Capital repair funds will NOT be available for the following conditions:

1) Painting of interior wall surfaces, unless the substrate also needs to be replaced due to damage or deterioration.

2) Upgrading of door/closure hardware if the existing hardware is still functional. If hardware must be replaced because parts can no longer be obtained, the use of capital repair funds may be permissible.

3) Patching/minor repairs to interior wall and ceiling surfaces.

4) Replacement of suspended ceiling tiles that are dirty or stained, unless the suspension system also needs replacement.

5) Repair/replacement of movable partitions.
6) Moving of interior walls/modification of spaces (This remodeling should be part of a matching fund, minor works program, local capital or renovation project).

7) Repair or replacement of wall coverings, window coverings, draperies, casework and office partitions.

8) Replacement of floor coverings, unless the floor structure underneath must also be repaired.

**ROOF SYSTEM/COMPONENTS**

Capital repair funds will **NOT** be available for the following conditions:

1) Repair of blisters or tears in built-up or single-ply membrane roofs,

2) Minor replacement of shingles or tiles.

3) Gutter/downspout repairs or repairs to curbs, flashings or other roof appurtenances. Replacement will generally be done as part of a total roof replacement.

4) Moisture testing. This is the responsibility of the campus as part of its annual roof maintenance strategy. If evidence of moisture is suspected under the membrane, but is not readily apparent, the campus should have a moisture survey performed to provide data to the survey team.

5) Repair to low spots on flat roofs, unless the condition can be shown to result in water infiltration and damage to underlying components.

Each college is encouraged to implement an annual roof maintenance program that includes roof surface cleaning, gutter and downspout or roof drain cleaning, minor repairs to membrane and flashing and spot re-coating of UV retardants where these are worn. Each college is also encouraged to implement a roof management plan that includes standardization of roof membrane types and tracking of wear, repairs and manufacturer’s warranties.

**PLUMBING SYSTEMS/COMPONENTS**

Capital repair funds will **NOT** be available for the following conditions:
1) Replacement of functional fixtures such as lavatories, urinals, toilets, faucets and trim simply because they are older.

2) Replacement of water supply piping simply because of age, unless it can be shown through pipe samples or other evidence of significant leaks in several areas in a building that piping failures are generalized throughout the system. Otherwise, piping replacement should be part of a comprehensive building renovation.

3) Replacement of domestic hot water heaters of 80 gallons or smaller.

4) Drinking fountain replacement.

HVAC SYSTEMS/EQUIPMENT

Capital repair funds will **NOT** be available for the following conditions:

1) Expansion of system capacity due to building/space modifications driven by instructional programs if the existing system is in good condition. Such system expansion should be funded out of operating or program related funds, or be included in a minor works project.

2) Bringing building/spaces up to current ventilation or indoor air quality standards. However, if system replacement is warranted due to age and condition, the replacement system should meet all current standards, code, and other requirements.

3) Providing heating/cooling for buildings/spaces where none currently exists. If however, a building currently has no cooling, but the heating/ventilation system must be replaced, the new system may include cooling.

4) Adding heating/cooling requirements to individual spaces due to changes in the use of space. This should be funded out of operating or program related funds.

5) Integrating incompatible DDC systems unless there is no vendor to support one or more of the existing systems. Written vendor confirmation must be available.

6) Expanding/upgrading a DDC system, except for HVAC system/equipment replacement where the new equipment can be tied into the existing DDC system.

7) Replacement/upgrading of an existing DDC system will be considered only if the manufacturer provides written documentation that the existing system will no longer be supported for repairs/maintenance as of a certain date, and that replacement parts will no longer be available through the manufacturer or through a third-party vendor as of a certain date.

8) Testing, balancing or general commissioning of HVAC equipment.
ELECTRICAL SYSTEMS/COMPONENTS

Capital repair funds will **NOT** be available for the following conditions:

1) Addition of emergency/exit lighting where none currently exists. This is a campus responsibility, to be funded with campus funds.

2) Addition of GFI outlets near sinks to replace regular outlets. This is a campus responsibility to be funded with campus funds.

3) Adding circuits to an individual space to address capacity problems due to space use or program use changes. Space modifications undertaken by a campus should include funds to address electrical upgrades required as part of the modification.

4) Adding lighting to an individual space where lighting is inadequate due to space use or program use changes. Lighting upgrades should be addressed as part of the space modification process and funding as a local fund project, conservation project, renovation project, or minor works program project.

5) Replacing functional lighting fixtures simply because they are older. Colleges should work with General Administration to provide an energy audit and potentially use ESCO (performance contracts) to upgrade energy systems, lighting, etc.

6) If a request is made to replace older distribution or lighting panels that are still functional because replacement breakers are no longer available, documentation must be available supporting that claim.

7) Additions to site lighting around buildings and campus walkways are allowable for security considerations. However, the college must support the need with a lighting study that identifies specific inadequacies and quantifies light levels. The survey team is not charged with undertaking light level studies. Additions to parking lot lighting must be funded out of parking fees.

FIRE/SAFETY SYSTEMS/COMPONENTS

Capital repair funds will **NOT** be available for the following conditions:

1) Installation of a fire sprinkler system where none currently exists, unless the local fire marshal has mandated in writing that a system be installed and a specific compliance date is part of that mandate.
2) Installation of a fire alarm system where none currently exists, unless the local fire marshal has mandated such installation in writing and a specific compliance date is part of that mandate.

3) Replacement/upgrading of an existing fire alarm system will be considered only if the manufacturer provides written documentation that the existing system will no longer be supported for repairs/maintenance as of a certain date, and that replacement parts will no longer be available through the manufacturer or through a third-party vendor as of a certain date.

4) Installation of a security, telecommunications or information technology system where none currently exists.

5) Repairs to or expansion/enhancement of existing security, telecommunications or information technology systems.

PAVING/SITE COMPONENTS

Capital repair funds will **NOT** be available for the following conditions:

1) Parking lot maintenance and repair, including pavement repairs, crack sealing, seal coating, striping, signage and lighting. Colleges should fund all parking lot maintenance/repair through parking fees or facility fees.

2) Repair of trip hazards on sidewalks, or repairs caused by tree root damage.

3) Tennis court repair/resurfacing (O&M or local funds, or student supported COPs).

4) Running track repair/resurfacing (O&M or local funds, or student supported COPs).

5) Repairs/replacement of landscape irrigation systems, replacement of turf and landscape plantings, athletic fields, lighting systems and scoreboards.
TABLE OF CONTENTS

1.0 SUMMARY ................................................................................................................................. 3
2.0 RECOGNIZING TREATMENT CREDIT FOR TREATING EXISTING PARKING LOT .......... 3
3.0 RUNOFF TREATMENT BMP SELECTION .................................................................................. 4
   Figure 1 - Treatment Facility Selection Flow Chart ................................................................... 5
4.0 WATER QUALITY DESIGN FLOW RATE .............................................................................. 5
4.0 WATER QUALITY DESIGN FLOW RATE .............................................................................. 5
   Calculation of Water Quality Design Flow Rate ........................................................................ 6
5.0 RUNOFF TREATMENT BMP DESIGN AND IMPLEMENTATION .................................................. 6
   Number of Cartridges for 20 Year Site Build Out ...................................................................... 6
   Implementation of Cartridges ....................................................................................................... 6
7.0 SWMM MINIMUM REQUIREMENTS ....................................................................................... 7

APPENDICES

APPENDIX A – MAPS

BELLINGHAM TECHNICAL COLLEGE 20-YEAR PLAN
TREATMENT SERVICE AREA AND BASINS
RECORD DRAWING OF CITY 30" STORM DRAIN

APPENDIX B – WATER QUALITY FLOW RATE CALCULATIONS

APPENDIX C – CONVEYANCE SYSTEM SIZING CALCULATIONS

APPENDIX D – SUPPORTING DOCUMENTS
1.0 SUMMARY

This intent of this drainage report is to document the design and implementation of a comprehensive stormwater treatment system that will serve all future development on the campus. The treatment BMP is a media filter system contained in underground vaults as manufactured by Stormwater Management Inc.

Initially there will be 24 cartridges installed to serve existing impervious areas and proposed north access road within the treatment service area. As the campus is developed, additional media filter cartridges will be added to the vaults to treat the additional runoff. When the campus is fully built out, as generally shown on the 20 Year Plan, a total of 52 cartridges will be in the vaults which will provide treatment for all impervious areas within the treatment service area.

The intent of this drainage report is not to comprehensively address detention as this time. In preliminary discussions with the City of Bellingham Public Works engineers, it is probably possible to document that detention is not required for the campus for several reasons: (1) close proximity to Bellingham Bay, (2) peak flow from developed campus (relatively small compared to total basin peak flow) discharges to Bay before total basin peak flow arrives, and (3) providing detention for the campus will delay the release of campus runoff to coincide with the total basin peak flow thereby adding to the overall peak flow at the point of discharge to Little Squalicum Creek. The City of Bellingham Public Works generally agrees with the basic principles that detention is not required if supported by field surveying and hydraulic calculations. Public Works suggested that such a study be coordinated with Department of Fish and Wildlife and Department of Ecology. Bellingham Technical College will begin a study coordinating with all three regulatory agencies for support and direction.

No detention is provided for the proposed north access road since it will more than likely not be required. However, if the future drainage study and regulating agencies do require detention, Bellingham Technical College will install detention facilities for the north access road and all future development.

2.0 RECOGNIZING TREATMENT CREDIT FOR TREATING EXISTING PARKING LOT

The comprehensive treatment system will serve the existing 3.7 acre parking lot located in the West Basin. The parking lot currently does not have any treatment facilities, nor are there any requirements to treat the parking lot unless it is redeveloped. The 20 Year Plan shows no redevelopment occurring on the west half of the parking lot which is approximately 2 acres.

The Southwest Basin contains almost all of the existing development on the campus. Runoff travels south via catch basins, manholes, and storm pipe to the storm system in Lindberg Avenue. The drains are deep, and installing a centralize treatment facility to serve the Southwest Basin is economically unfeasible.

There may be some remodeling or redevelopment of some small areas in the Southwest Basin during the next 20 years. At the time of future redevelopment permit applications, the College
would like the City to recognize that the existing parking lot runoff is treated and that some of that treatment credit might be used for redevelopment projects in the Southwest Basin. Each redevelopment case can be studied individually, as it is submitted to the City, to evaluate if any treatment credit can be applied.

3.0 RUNOFF TREATMENT BMP SELECTION

Figure 1 documents runoff treatment BMP selection. It is based on 2001 SWMM Volume V, Figure 2.1 – Treatment Facility Selection Flow Chart.
Figure 1 - Treatment Facility Selection Flow Chart

Step 1: Determine Receiving Waters and Pollutants of Concern.
Proposed treatment facility will discharge into existing City of Bellingham 30" storm drain system. Approximately 800 feet west, the storm drain system discharges into Little Squalicum Creek. Little Squalicum Creek flow southwest approximately 1500 feet and discharges into Bellingham Bay.

Step 2: Determine if an Oil Control Facility if Required.
NOT REQUIRED
- Facilities are expected to have less than 100 vehicles per 1000 square feet of gross building area.
- Facilities are not expected to store or transfer 1500 gallons of petroleum per year, not including routinely delivered heating oil.
- Facilities are not subject to parking, storage, or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc)
- Facilities do not have any road intersections with an average daily traffic

Step 3: Determine if Infiltration for Pollutant Removal is Practical.
NOT PRACTICAL
The NRCS soil survey indicates silt loam and loam with some possibility of sand lenses. No field geotechnical investigations were made. Per SWMM Figure 7.1, these soil types are not recommended for infiltration BMPs.

Step 4: Determine if Phosphorus Control is Required.
NOT REQUIRED
There are no known City of Bellingham phosphorus removal requirements.

Step 5: Determine if Enhanced Treatment is Required.
NOT REQUIRED
The facility is a college campus with access roads and parking facilities for students' and faculties' private vehicles. The campus does not have any other pollution-generation sources such as industrial activities, customer parking, storage of erodible or leachable material, wastes or chemicals. (See SWMM Volume V, Section 3.5 – Basic Treatment Menu, for provisions.)

Step 6: Apply Basic Treatment Facility.
- Biofiltration Swales
- Filter Strips
- Basic Wetponds
- Wetvault
- Treatment Wetlands
- Combined Detention/Wetpond
- Sand Filters
- Media Filters
4.0 WATER QUALITY DESIGN FLOW RATE

The water quality design flow rate was determined using the procedure outlined in Department of Ecology's 2001 SWMM, Chapter 4 of Volume 5.

Department of Ecology's continuous runoff model, Western Washington Hydrology Model, was used to estimate the flow rate at or below which 91% of the runoff volume will be treated. The SWMM recommends using 15-minute time step intervals. However, as of October 2002, only 1-hour time step intervals are available and were used to estimate the flow rate.

The WWHM model inputs and results are attached in the appendix.

Calculation of Water Quality Design Flow Rate

\[ Q_{WQ} = \text{Ratio} \times Q_{2 \text{ Year}} = 0.29 \times 3.0 \text{ cfs} = 0.87 \text{ cfs} \]

Where:
- Ratio = 0.29 (From Table 4.1, EIA = 11.4/16.2 = 70%, Hourly data)
- \( Q_{2 \text{ Year}} = 3.0 \text{ cfs} \)

5.0 RUNOFF TREATMENT BMP DESIGN AND IMPLEMENTATION

Stormwater Management Inc StormFilter media filters will be used as the BMP to provide runoff treatment. The media filters are a Department of Ecology approved treatment BMP.

Number of Cartridges for 20 Year Site Build Out

Cartridge design flow rate = 7.5 gpm/cartridge
\[ Q_{WQ} = 0.87 \text{ cfs} \times (448.83 \text{ gpm/cfs}) = 390 \text{ gpm} \]
Number of Cartridges = 390 gpm / 7.5 gpm/cartridge = **52 cartridges**

Pre-cast concrete vaults will be installed to hold a maximum of 52 cartridges.

Implementation of Cartridges

Over the next 20 years, the college will develop the site as generally shown on the 20 Year Plan. The treatment system, when all 52 cartridges are installed, will treat the fully built-out campus within its service area. To simplify stormwater treatment calculations for all future development within the treatment system service area, a ratio of square foot impervious per cartridge will be applied. As build out progresses, one cartridge will be added to the vaults for every 9,550 square feet of newly developed impervious area. When the service area is fully built-out, all 52 cartridges will be installed.

11.4 acres of impervious represents a fully built-out 20 year plan
11.4 acres x 43560 sf/acre = 496,584 sf
496,584 sf / 52 cartridges = 9,550 sf / cartridge

Currently there is 5.25 acres (228,690 square feet) of impervious area in the service area. This includes the existing parking lot, buildings, roads, as well as the proposed north access road. So, to start, 24 cartridges will be installed in the vault to provide treatment for the existing impervious areas.

228,690 sf / 9,550 sf/cartridge = 24 cartridges

### 7.0 SWMM MINIMUM REQUIREMENTS

This project will create or add more than 5,000 square feet of new impervious surface. Therefore, all minimum requirements apply to the new impervious surfaces and converted pervious surfaces. Minimum requirements are per the 2001 SWMM.

**Minimum Requirement #1: Preparation of Stormwater Site Plan.** This document is the stormwater site plan.

**Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP).** A construction stormwater pollution prevention plan for the installation of treatment facilities is attached to the plan set. As the campus is built out, individual construction stormwater pollution prevention plans will be prepared for each improvement as necessary.

**Minimum Requirement #3: Source Control of Pollution.** The college minimizes source pollution by using common sense, good housekeeping practices, preventative maintenance of facilities, recycling, and enclosing pollutant sources inside buildings.

**Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls.** Natural drainage patterns will be maintained and discharges from the project site occurs at the natural location.

**Minimum Requirement #5: On-Site Stormwater Management.** Due to poor draining soils onsite, infiltration of roof runoff will not be implemented.

**Minimum Requirement #6: Runoff Treatment.** Campus build out will create more than 5,000 square feet of pollution generating impervious surface. Therefore, runoff treatment is required. The treatment facilities are sized to provide treatment for 91% of the runoff volume.

**Minimum Requirement #7: Flow Control.** Campus detention probably not required. Campus detention requirements will be addressed in future drainage study.

**Minimum Requirement #8: Wetlands Protection.** Campus stormwater discharges into City storm system.

**Minimum Requirement #9: Basin/Watershed Planning.** No basin plans known.

**Minimum Requirement #10: Operations and Maintenance.** Operation and maintenance manuals for the treatment system will be provided by Stormwater Management Inc.
APPENDIX – A

MAPS
APPENDIX – B

WATER QUALITY FLOW RATE CALCULATIONS
Western Washington Hydrology Model

Step 1
Using the map, select location of development. Drag the flag icon and drop it on the desired location on the map.
Western Washington Hydrology Model for Whatcom County

**Name of Development:** BTC

**Development Address:**

**City / County:**

**Predeveloped Acres**
- Outwash A&B: 0
- Till C/D: 16.2
- Saturated: 0
- Total Acres: 16.2

**Nonstandard-Residential/Commercial**
- Impervious Area: 0
- Landscaped Area: 0
- Streets/Sidewalks/Parking: 0
- Forest: 0
- Pasture: 0

**Basins**
- Design Basin
- Bypass
- Offsite Inflow

**Estimated Pond Area**
- Outwash A&B: 0
- Till C: 0

**Pavement Credit**
- Porous

**Project Description**

**WDM Time Series Data Type**
- Standard Residential
- Non-standard/Commercial

---

**Western Washington Hydrology Model**

**Step 2**
Fill in site information and list acres for each type of development.
### Flow Frequency Analysis for Redeveloped and Pre-Around Conditions

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<th>(CFS)</th>
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<td>100 Year</td>
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**Note:**
The Western Washington Hydrology Model does not currently include algorithms to size stormwater facilities. Until these algorithms are included in the model, it is recommended that the user use a commercial software package to compute the size and discharge characteristics of the facility.

See manual for more details.

**Western Washington Hydrology Model**
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<td>0.24</td>
</tr>
<tr>
<td>45%</td>
<td>0.30</td>
<td>45%</td>
<td>0.25</td>
</tr>
<tr>
<td>50%</td>
<td>0.31</td>
<td>50%</td>
<td>0.26</td>
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<tr>
<td>54%</td>
<td>0.33</td>
<td>54%</td>
<td>0.27</td>
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<td>60%</td>
<td>0.34</td>
<td>60%</td>
<td>0.28</td>
</tr>
<tr>
<td>65%</td>
<td>0.36</td>
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<td>0.28</td>
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<tr>
<td>70%</td>
<td>0.37</td>
<td>70%</td>
<td>0.29</td>
</tr>
<tr>
<td>75%</td>
<td>0.38</td>
<td>75%</td>
<td>0.30</td>
</tr>
<tr>
<td>80%</td>
<td>0.39</td>
<td>80%</td>
<td>0.30</td>
</tr>
<tr>
<td>85%</td>
<td>0.40</td>
<td>85%</td>
<td>0.31</td>
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<tr>
<td>90%</td>
<td>0.41</td>
<td>90%</td>
<td>0.31</td>
</tr>
<tr>
<td>95%</td>
<td>0.42</td>
<td>95%</td>
<td>0.32</td>
</tr>
<tr>
<td>100%</td>
<td>0.43</td>
<td>100%</td>
<td>0.32</td>
</tr>
</tbody>
</table>

4.1.3 Flows Requiring Treatment

Runoff from pollution-generating impervious or pervious surfaces must be treated. Pollution-generating impervious surfaces (PGIS) are those impervious surfaces considered to be a significant source of pollutants in stormwater runoff. The glossary in Volume I provides additional definitions and clarification of these terms.

Such surfaces include those which are subject to: vehicular use; industrial activities; or storage of erodible or leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or blow-in of rainfall. Erodible or leachable materials, wastes, or chemicals are those substances which, when exposed to rainfall, measurably alter the physical or chemical characteristics of the rainfall runoff. Examples include erodible soils that are stockpiled, uncovered process wastes, manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage. Metal roofs are also considered to be PGIS unless they are coated with an inert, non-leachable material (e.g., baked enamel coating).

A surface, whether paved or not, shall be considered subject to vehicular use if it is regularly used by motor vehicles. The following are considered
APPENDIX – C

CONVEYANCE SYSTEM SIZING CALCULATIONS
ETC STORMWATER TREATMENT
FLOW SPLITTER OFFICE ENSI6

\[ V = C \sqrt{2gh} \]
\[ Q = CA \sqrt{2gh} \]
\[ A = \frac{Q}{C \sqrt{2gh}} \]

\[ Q = 0.87 \text{ cfs} \quad \text{(WATER QUALITY DESIGN FLOW RATE)} \]
\[ C = 0.62 \]
\[ g = 32.2 \text{ ft/s}^2 \]
\[ h = 1.0 \text{ feet} \]

\[ A = \frac{0.87 \text{ cfs}}{(0.62)(2 \times 32.2 \times 1)^{0.5}} \]

\[ A = 0.175 \text{ ft}^2 \]

\[ A = \pi R^2 \]
\[ R = \sqrt{\frac{A}{\pi}} = \sqrt{\frac{0.175 \text{ ft}^2}{3.14}} \]

\[ R = 0.236 \text{ ft} \]

\[ \text{DIA} = 5.66 \text{ inches} \]
### NW AREA Event Summary:

<table>
<thead>
<tr>
<th>BasinID</th>
<th>Peak Q</th>
<th>Peak T</th>
<th>Peak Vol</th>
<th>Area</th>
<th>Method /Loss</th>
<th>Raintype</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW AREA</td>
<td>1.25</td>
<td>7.83</td>
<td>0.4219</td>
<td>3.60</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>2 yr</td>
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<td>NW AREA</td>
<td>2.01</td>
<td>7.83</td>
<td>0.6791</td>
<td>3.60</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>10 yr</td>
</tr>
<tr>
<td>NW AREA</td>
<td>2.35</td>
<td>7.83</td>
<td>0.7952</td>
<td>3.60</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>25 yr</td>
</tr>
<tr>
<td>NW AREA</td>
<td>2.34</td>
<td>7.83</td>
<td>0.9999</td>
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<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>100 yr</td>
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### Drainage Area: NW AREA

**Hyd Method:** SBUH Hyd

**Peak Factor:** 484.00

**Storm Dur**

<table>
<thead>
<tr>
<th>Area</th>
<th>CN</th>
<th>hrs</th>
</tr>
</thead>
<tbody>
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<td>Pervious</td>
<td>0.7000 ac</td>
<td>86.00</td>
</tr>
<tr>
<td>Impervious</td>
<td>2.9000 ac</td>
<td>98.00</td>
</tr>
<tr>
<td>Total</td>
<td>3.6000 ac</td>
<td></td>
</tr>
</tbody>
</table>

**Supporting Data:**

- Landscape: 86.00
- Impervious CN Data: 98.00
- Impervious TC Data:
  - Flow type: Description:
  - Sheet: None Entered
  - Channel: None Entered
  - Length: 50.00 ft 1.00% 0.1500 9.90 min
  - Length: 500.00 ft 2.00% 42.0000 1.40 min

- Pervious TC Data:
  - Flow type: Description:
  - Sheet: None Entered
  - Channel: None Entered
  - Length: 100.00 ft 1.00% 0.0100 1.98 min
  - Length: 500.00 ft 2.00% 42.0000 1.40 min
### NE AREA Event Summary:

<table>
<thead>
<tr>
<th>BasinID</th>
<th>Peak Q (cfs)</th>
<th>Peak T (hrs)</th>
<th>Peak Vol (ac-ft)</th>
<th>Area (ac)</th>
<th>Method /Loss</th>
<th>Rain Type</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE AREA</td>
<td>1.34</td>
<td>7.83</td>
<td>0.4540</td>
<td>3.90</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>2 y</td>
</tr>
<tr>
<td>NE AREA</td>
<td>2.16</td>
<td>7.83</td>
<td>0.7320</td>
<td>3.90</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>10 y</td>
</tr>
<tr>
<td>NE AREA</td>
<td>2.52</td>
<td>7.83</td>
<td>0.8575</td>
<td>3.90</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>25 y</td>
</tr>
<tr>
<td>NE AREA</td>
<td>3.17</td>
<td>7.83</td>
<td>1.0790</td>
<td>3.90</td>
<td>SBUH/SCS</td>
<td>TYPE1A</td>
<td>100 y</td>
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</tbody>
</table>

### Drainage Area: NE AREA

- **Hyd Method:** SBUH Hyd
- **Peak Factor:** 484.00
- **Storm Dur:** 24.00 hrs

**Supporting Data:**

- **Pervious Area:** 0.8000 ac
- **Impervious Area:** 3.1000 ac
- **Total Area:** 3.9000 ac

- **Loss Method:** SCS CN Number
- **SCS Abs:** 0.20
- **CN:** 86.00
- **TC:** 0.19 hrs
- **TC:** 0.06 hrs

**Pervious CN Data:**

- **Landscape:** 86.00
- **0.8000 ac**

**Impervious CN Data:**

- **Imperv:** 98.00
- **3.1000 ac**

**Pervious TC Data:**

- **Length:** 50.00 ft
- **Slope:** 1.00%
- **Coeff:** 0.1500
- **Travel Time:** 9.90 min

**Impervious TC Data:**

- **Length:** 500.00 ft
- **Slope:** 2.00%
- **Coeff:** 42.0000
- **Travel Time:** 1.40 min
## NE AREA TRUNK
Worksheet for Circular Channel

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</thead>
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</tr>
<tr>
<td>Worksheet</td>
<td>Outlet</td>
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<tr>
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<td>Circular Channel</td>
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<tr>
<td>Method</td>
<td>Manning's Formula</td>
</tr>
<tr>
<td>Solve For</td>
<td>Full Flow Diameter</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Input Data</th>
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</thead>
<tbody>
<tr>
<td>Mannings Coefficient</td>
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<tr>
<td>Channel Slope</td>
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<tr>
<td>Discharge</td>
<td>3.17 cfs</td>
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<tr>
<td>Diameter</td>
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<tr>
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<tr>
<td>Wetted Perimeter</td>
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<tr>
<td>Top Width</td>
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<tr>
<td>Critical Depth</td>
<td>0.75 ft</td>
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<tr>
<td>Percent Full</td>
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<tr>
<td>Critical Slope</td>
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<tr>
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<td>FULL ft</td>
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<tr>
<td>Maximum Discharge</td>
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<tr>
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<td>3.17 cfs</td>
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<tr>
<td>Full Flow Slope</td>
<td>0.005000 ft/ft</td>
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USE 15" PIPE
## NW AREA TRUNK
### Worksheet for Circular Channel

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<tr>
<td><strong>Flow Element</strong></td>
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<tr>
<td><strong>Method</strong></td>
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<td><strong>Solve For</strong></td>
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</table>

<table>
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<tr>
<td><strong>Mannings Coefficient</strong></td>
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<td><strong>Channel Slope</strong></td>
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<td><strong>Discharge</strong></td>
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<thead>
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<th>Results</th>
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<tbody>
<tr>
<td><strong>Depth</strong></td>
</tr>
<tr>
<td><strong>Diameter</strong></td>
</tr>
<tr>
<td><strong>Flow Area</strong></td>
</tr>
<tr>
<td><strong>Wetted Perimeter</strong></td>
</tr>
<tr>
<td><strong>Top Width</strong></td>
</tr>
<tr>
<td><strong>Critical Depth</strong></td>
</tr>
<tr>
<td><strong>Percent Full</strong></td>
</tr>
<tr>
<td><strong>Critical Slope</strong></td>
</tr>
<tr>
<td><strong>Velocity</strong></td>
</tr>
<tr>
<td><strong>Velocity Head</strong></td>
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<tr>
<td><strong>Specific Energy</strong></td>
</tr>
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</tr>
<tr>
<td><strong>Maximum Discharge</strong></td>
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<tr>
<td><strong>Full Flow Capacity</strong></td>
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<td><strong>Full Flow Slope</strong></td>
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*(USE 15" PIPE)*
## NW & NE AREA COMBINED TRUNK
### Worksheet for Circular Channel

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<tr>
<td><strong>Method</strong></td>
<td>Manning's Formula</td>
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<tr>
<td><strong>Solve For</strong></td>
<td>Full Flow Diameter</td>
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### Input Data

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<th>Channel Slope</th>
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<tr>
<td>0.013</td>
<td>0.010000 ft/ft</td>
<td>6.11 cfs</td>
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</table>

\[ Q_{100} = 3.94 + 3.17 = 6.11 \text{ cfs} \]

### Results

<table>
<thead>
<tr>
<th>Depth</th>
<th>Diameter</th>
<th>Flow Area</th>
<th>Wetted Perimeter</th>
<th>Top Width</th>
<th>Critical Depth</th>
<th>Percent Full</th>
<th>Critical Slope</th>
<th>Velocity</th>
<th>Velocity Head</th>
<th>Specific Energy</th>
<th>Froude Number</th>
<th>Maximum Discharge</th>
<th>Full Flow Capacity</th>
<th>Full Flow Slope</th>
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</thead>
<tbody>
<tr>
<td>14.7 in</td>
<td>14.69 in</td>
<td>1.18 ft²</td>
<td>3.85 ft</td>
<td>0.00 ft</td>
<td>1.00 ft</td>
<td>100.00</td>
<td>0.010031 ft/ft</td>
<td>5.19 ft</td>
<td>0.42 ft</td>
<td>FULL</td>
<td>FULL</td>
<td>6.57 cfs</td>
<td>6.11 cfs</td>
<td>0.010000 ft/ft</td>
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\[ \text{USE 15" PIPE} \]
# NW, NE, & E AREA COMBINED TRUNK
Worksheet for Circular Channel

**Project Description**

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<td>Method</td>
<td>Manning's Formula</td>
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<td>Full Flow Diameter</td>
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**Input Data**

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<tr>
<th>Mannings Coefficient</th>
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<tbody>
<tr>
<td>Channel Slope</td>
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<tr>
<td>Discharge</td>
<td>9.30 cfs</td>
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</table>

**Results**

| Depth     | 17.9 in |
| Diameter  | 17.93 in |
| Flow Area | 1.75 ft² |
| Wetted Perimeter | 4.69 ft |
| Top Width | 0.00 ft  |
| Critical Depth | 1.18 ft |
| Percent Full   | 100.00  |
| Critical Slope | 0.008598 ft/ft |
| Velocity  | 5.30 ft/s |
| Velocity Head | 0.44 ft |
| Specific Energy | FULL ft |
| Froude Number | FULL    |
| Maximum Discharge | 10.00 cfs |
| Full Flow Capacity | 9.30 cfs  |
| Full Flow Slope  | 0.008000 ft/ft |

**Notes:**

- Exit Basin is 4 acres, almost same size as NW or NE Basin.
- \( Q_{100} = \frac{A_{NW} + A_{NE} + E}{2.04 + 3.7 + 3} = 9.1 \text{ cfs} \).
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<th>Soil name and map symbol</th>
<th>Hydrologic group</th>
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<th>Duration</th>
<th>Months</th>
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<td>75</td>
<td>D</td>
<td>Frequent</td>
<td>Brief</td>
<td>Jan-Dec</td>
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<td>Jan-Dec</td>
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<tr>
<td>82*:*</td>
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<td>Nov-Apr</td>
</tr>
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<tr>
<td>85*:*</td>
<td>C</td>
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<td></td>
<td>1.5-3.0</td>
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<td>Nov-Apr</td>
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</tr>
<tr>
<td>Oso</td>
<td>C</td>
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<td>86, 87, 88</td>
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<td>Kline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91, 92</td>
<td>C</td>
<td>None</td>
<td></td>
<td></td>
<td>&gt;6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kulshan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>93</td>
<td>D</td>
<td>None</td>
<td></td>
<td></td>
<td>0-1.0</td>
<td>Perched</td>
<td>Nov-May</td>
</tr>
<tr>
<td>Laboury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>D</td>
<td>None</td>
<td></td>
<td></td>
<td>1.0-3.0</td>
<td>Perched</td>
<td>Nov-May</td>
</tr>
<tr>
<td>Laboury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>B</td>
<td>Occasional</td>
<td>Brief</td>
<td>Nov-Apr</td>
<td>&gt;6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larush</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>96, 97, 98</td>
<td>C</td>
<td>None</td>
<td></td>
<td></td>
<td>2.5-3.5</td>
<td>Apparent</td>
<td>Nov-Apr</td>
</tr>
<tr>
<td>Laxton</td>
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<td></td>
<td></td>
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<tr>
<td>99, 100</td>
<td>B</td>
<td>None</td>
<td></td>
<td></td>
<td>&gt;6.0</td>
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</tr>
<tr>
<td>Lynden</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101*:*</td>
<td>B</td>
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<td></td>
<td></td>
<td>&gt;6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lynden</td>
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</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Hydrologic group</th>
<th>Flooding</th>
<th>High water table</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Duration</td>
<td>Months</td>
</tr>
<tr>
<td>Skykomish</td>
<td>B</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Snohomish</td>
<td>D</td>
<td>Occasional</td>
<td>Brief</td>
</tr>
<tr>
<td>Snoqualmie</td>
<td>C</td>
<td>Occasional</td>
<td>Brief</td>
</tr>
<tr>
<td>Sorenson</td>
<td>B</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Springsteen</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Squalicum</td>
<td>B</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Urban land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squires</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Sumas</td>
<td>D</td>
<td>Occasional</td>
<td>Brief</td>
</tr>
<tr>
<td>Tacoma</td>
<td>D</td>
<td>Frequent</td>
<td>Long</td>
</tr>
<tr>
<td>Tacoma</td>
<td>D</td>
<td>Frequent</td>
<td>Brief</td>
</tr>
<tr>
<td>Tromp</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Twinsi</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Typic Cryorthods</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Typic Cryorthods</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typic Psammqueents</td>
<td>D</td>
<td>Frequent</td>
<td>Long</td>
</tr>
<tr>
<td>Urban land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban land.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whatcom</td>
<td>C</td>
<td>None</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
available, natural reforestation of cutover areas by western hemlock and Pacific silver fir occurs periodically. The Rock outcrop prevents the even distribution of reforestation. Because the rooting depth is restricted by the dense glacial till and bedrock in some areas, trees are occasionally subject to windthrow when the soils are wet and winds are strong.

The Typic Cryorthods are in capability subclass VIIe. The Rock outcrop is in capability subclass VIIIe.

170—Typic Psammaquents, tidal, 0 to 1 percent slopes. These very deep, poorly drained soils are on tidal flats. They formed in alluvium. The average annual precipitation is about 35 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 170 days. Elevation is sea level.

No single profile is representative of these soils. In one of the more commonly observed ones, however, the soil to a depth of 60 inches is gray and olive gray loamy sand and sand. The sand content ranges from 80 to 95 percent. The content of clay ranges from 0 to 2 percent. In some areas the soil has strata of sandy loam.

Included in this unit are small areas of water and Hydromaquents. Included areas make up about 10 percent of the total acreage.

Permeability is very rapid in the Typic Psammaquents. Available water capacity is low. The effective rooting depth is limited by a seasonal high water table, which is at or above the surface during periods of high tide. These soils are subject to frequent, long periods of flooding during high tides throughout the year.

This unit is used as wildlife habitat or for recreation. This map unit is in capability subclass VIIIe.

171—Urban land. This map unit is on terraces. Slopes are 0 to 3 percent. Elevation is near sea level to 220 feet above sea level. The average annual precipitation is about 35 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 170 days.

The Urban land consists of areas covered by streets, buildings, parking lots, and other structures that obscure the soils that identification of the soil series is not feasible.

Included in this unit are small areas of Labounty, Whatcom, Whitehorn, Birchbay, Everett, and Squalicum soils and small areas of Urban land that have slopes of more than 3 percent. Included areas make up about 10 percent of the total acreage.

This unit is used for urban development. This map unit is in capability subclass VIIIe.

Urban land—Whatcom-Labounty complex. 0 to 8 percent slopes. This map unit is on glaciomarine drift plains. The Whatcom soil is on 0 to 8 percent slopes, and the Labounty soil is on 0 to 2 percent slopes. The native vegetation is mainly trees and shrubs. Elevation is near sea level to 200 feet above sea level. The average annual precipitation is about 35 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 170 days.

This unit is 40 percent Urban land. 30 percent Whatcom silt loam, and 20 percent Labounty silt loam. Included areas are so intricately intermingled that mapping them separately was not practical at the selected scale of mapping.

Included in this unit are small areas of Squalicum, Bellingham, Everett, Birchbay, Chuckanut, and Kickerville soils and small areas of Whatcom soils that have slopes of more than 8 percent. Included areas make up about 10 percent of the total acreage.

The Urban land consists of areas covered by streets, buildings, parking lots, and other structures that obscure the soils that identification of the soil series is not feasible.

The Whatcom soil is very deep and moderately well drained. It formed in a mixture of loess and volcanic ash over glaciomarine deposits. Typically, the surface layer is dark brown silt loam 9 inches thick. The upper 7 inches of the subsoil is dark brown silt loam. The lower 10 inches is light olive brown, mottled loam. The upper 9 inches of the substratum is olive gray, mottled loam. The lower part to a depth of 60 inches is dark gray loam. In some areas the surface layer is loam or gravelly silt loam. In other areas the substratum has lenses of sandy material, is 10 to 18 percent clay, or is 5 to 10 percent cobbles, stones, or boulders.

Permeability is moderate in the upper part of the Whatcom soil and slow in the lower part. Available water capacity is high. The effective rooting depth is limited by a seasonal high water table, which is at a depth of 1.5 to 3.0 feet from December through April. Runoff is slow, and the hazard of water erosion is slight.

The Labounty soil is very deep and poorly drained. It formed in an admixture of loess, volcanic ash, and glaciomarine deposits. Typically, the surface layer is very dark grayish brown silt loam 10 inches thick. The upper 6 inches of the subsoil is grayish brown and light brownish gray, mottled loam. The lower 19 inches is grayish brown, olive gray, and light olive gray, mottled loam. The substratum to a depth of 60 inches is gray loam. In some areas the surface layer is loam. In other areas the substratum has lenses of sandy material, is 10 to 18 percent clay, or is 5 to 10 percent cobbles, stones, or boulders.
Permeability is moderately slow in the Labounty soil. Available water capacity is high. The effective rooting depth is limited by a seasonal high water table, which is at a depth of 1 to 3 feet from November through May. Runoff usually is very slow, but the soil may be ponded during the winter. There is no hazard of erosion.

The Whatcom and Labounty soils in this unit are used for lawns, gardens, parks, or vacant lots.

The main limitation affecting homeste development is the high water table. Tile drains and open drains can be used to lower the water table if a suitable outlet is available. The wetness can be reduced by building the house on a pad and by installing drainage tile around footings if a suitable outlet is available. The restricted permeability and the high water table increase the likelihood that the absorption field will fail. Installing absorption lines that are longer than normal helps to overcome these limitations.

The Urban land is in capability subclass VIIIb. The Whatcom soil is in capability subclass Ie. The Labounty soil is in capability subclass IIw.

173—Vanzandt very gravelly loam, 5 to 15 percent slopes. This moderately deep, moderately well drained soil is on foothill toe slopes and in valleys. It formed in volcanic ash, loess, and slope alluvium over glacial till derived dominantly from phyllite. The native vegetation is mainly conifers and shrubs. Elevation is 250 to 1,500 feet. The average annual precipitation is about 60 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 160 days.

Typically, the surface is covered with a mat of needles, leaves, and twigs 1 inch thick. When mixed to a depth of 7 inches, the surface layer is dark brown very gravelly loam. The subsoil is dark yellowish brown and dark brown very gravelly loam 16 inches thick. The substratum is light yellowish brown, mottled very gravelly loam about 8 inches thick. Dense glacial till that crushes to very gravelly loam is at a depth of 31 inches. The depth to dense glacial till ranges from 20 to 40 inches. The dense glacial till is similar to a cemented pan. In some areas the surface layer is gravelly loam or very gravelly silt loam. In other areas the soil has 15 to 35 percent rock fragments in the subsoil and the upper part of the substratum or is 40 to 60 inches deep to dense glacial till.

Included in this unit are small areas of Squires, Heisler, and Barnesot soils; Bellingham and Shalcar soils in depressions; soils that have a substratum of very gravelly sand; and Vanzandt soils that have slopes of more than 15 percent or less than 5 percent.

Included areas make up about 15 percent of the total acreage.

Permeability is moderate in the upper part of the Vanzandt soil and very slow in the dense glacial till. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is slow, and the hazard of water erosion is slight. Water is perched above the dense glacial till from December through April.

This unit is used as woodland. Douglas fir is the main woodland species. Among the trees of limited extent are red alder, western hemlock, western redcedar, and bigleaf maple. The common upland forest plants are Oregon grape, western swordfern, western brackenfern, vine maple, salal, red huckleberry, and salmonberry.

On the basis of a 100-year site curve, the mean site index for Douglas fir is 159. On the basis of a 50-year site curve, it is 125. The highest average growth rate in unmanaged, even-aged stands of Douglas fir is 169 cubic feet per acre per year, occurring at age 65.

The kind of equipment that can be used and the time of the year when it can be used normally are not restricted on this unit. Unsurfaced roads are soft and slippery when wet and are subject to deep rutting during rainy periods. Logging roads require suitable surfacing for year-round use. Rock for road construction is not readily available.

Seedling establishment is the main concern affecting timber production. Reforestation can be accomplished by planting Douglas fir or red alder seedlings. If seed trees are available, natural reforestation of cutover areas by red alder occurs readily. When openings are made in the canopy, the uncontrolled invasion and growth of competing plants can prevent the establishment of seedlings. Competing vegetation can be controlled by mechanical or chemical means.

Because the rooting depth is restricted by the dense glacial till, trees are occasionally subject to windthrow when the soil is wet and winds are strong.

This map unit is in capability subclass IVa.

174—Vanzandt very gravelly loam, 15 to 30 percent slopes. This moderately deep, moderately well drained soil is on foothill back slopes and toe slopes. It formed in volcanic ash, loess, and slope alluvium over glacial till derived dominantly from phyllite. The native vegetation is mainly conifers and shrubs. Elevation is 250 to 1,500 feet. The average annual precipitation is about 60 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 160 days.

Typically, the surface is covered with a mat of needles, leaves, and twigs 2 inches thick. When mixed to a depth of 8 inches, the surface layer is dark brown very gravelly loam. The subsoil is strong brown very gravelly loam 11 inches thick. The substratum is light
7.3.2 Design Infiltration Rate Determination

Infiltration rates for treatment can be determined using either a correlation to grain size distribution from soil samples, textural analysis, or by in-situ field measurements. Short-term infiltration rates up to 2.4 in./hr represent soils that typically have sufficient treatment properties. Long-term infiltration rates are used for sizing the infiltration pond based on maximum pond level and drawdown time. Long-term infiltration rates up to 2.0 inches per hour can also be considered for treatment if SSC-4 and SSC-6 are met, as defined in Section 7.3.3.

Historically, infiltration rates have been estimated from soil grain size distribution (gradation) data using the United States Department of Agriculture (USDA) textural analysis approach. To use the USDA textural analysis approach, the grain size distribution test must be conducted in accordance with the USDA test procedure (SOIL SURVEY
### Table III-1.3 SCS Western Washington Runoff Curve Numbers

(Published by SCS in 1982) Runoff curve numbers for selected agricultural, suburban and urban land use for Type IA rainfall distribution, 24-hour storm duration.

<table>
<thead>
<tr>
<th>LAND USE DESCRIPTION</th>
<th>CURVE NUMBERS BY HYDROLOGIC SOIL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Cultivated land (1): winter condition</td>
<td>86</td>
</tr>
<tr>
<td>Mountain open areas: low growing brush &amp; grasslands</td>
<td>74</td>
</tr>
<tr>
<td>Meadow or pasture:</td>
<td>65</td>
</tr>
<tr>
<td>Wood or forest land: undisturbed</td>
<td>42</td>
</tr>
<tr>
<td>Wood or forest land: young second growth or brush</td>
<td>55</td>
</tr>
<tr>
<td>Orchard: with cover crop</td>
<td>81</td>
</tr>
<tr>
<td>Open spaces, lawns, parks, golf courses, cemeteries, landscaping. Good condition: grass cover on &gt;75% of the area</td>
<td>68</td>
</tr>
<tr>
<td>Fair condition: grass cover on 50-75% of the area</td>
<td>77</td>
</tr>
<tr>
<td>Gravel roads &amp; parking lots</td>
<td>76</td>
</tr>
<tr>
<td>Dirt roads &amp; parking lots</td>
<td>72</td>
</tr>
<tr>
<td>Impervious surfaces, pavement, roofs etc.</td>
<td>98</td>
</tr>
<tr>
<td>Open water bodies: lakes, wetlands, ponds etc.</td>
<td>100</td>
</tr>
<tr>
<td>Single family residential (2):</td>
<td></td>
</tr>
<tr>
<td>Dwelling Unit/Gross Acre %Impervious(3)</td>
<td></td>
</tr>
<tr>
<td>1.0 DU/GA</td>
<td>15</td>
</tr>
<tr>
<td>1.5 DU/GA</td>
<td>20</td>
</tr>
<tr>
<td>2.0 DU/GA</td>
<td>25</td>
</tr>
<tr>
<td>2.5 DU/GA</td>
<td>30</td>
</tr>
<tr>
<td>3.0 DU/GA</td>
<td>34</td>
</tr>
<tr>
<td>3.5 DU/GA</td>
<td>38</td>
</tr>
<tr>
<td>4.0 DU/GA</td>
<td>42</td>
</tr>
<tr>
<td>4.5 DU/GA</td>
<td>46</td>
</tr>
<tr>
<td>5.0 DU/GA</td>
<td>48</td>
</tr>
<tr>
<td>5.5 DU/GA</td>
<td>50</td>
</tr>
<tr>
<td>6.0 DU/GA</td>
<td>52</td>
</tr>
<tr>
<td>6.5 DU/GA</td>
<td>54</td>
</tr>
<tr>
<td>7.0 DU/GA</td>
<td>56</td>
</tr>
<tr>
<td>PUD's, condos, apartments, commercial businesses &amp; industrial areas</td>
<td>separate curve number shall be selected for pervious &amp; impervious portions of the site or basin</td>
</tr>
</tbody>
</table>

(1) For a more detailed description of agricultural land use curve numbers refer to National Engineering Handbook, Sec. 4, Hydrology, Chapter 9, August 1972.

(2) Assumes roof and driveway runoff is directed into street/storm system.

(3) The remaining pervious areas (lawn) are considered to be in good condition for these curve numbers.
Figure 2.2 Flow Chart for Determining Requirements for New Development
Figure 2.1 Treatment Facility Selection Flow Chart
Amended Sand Filter – See Chapter 12

Note: Processed steel fiber and crushed calcitic limestone are the only sand filter amendments for which Ecology has data that documents increased dissolved metals removal. Though Ecology is interested in obtaining additional data on the effectiveness of these amendments, local governments may exercise their judgment on the extent to which to allow their use.

Stormwater Treatment Wetland – See Chapter 10

Two Facility Treatment Trains – See Table 3.2

<table>
<thead>
<tr>
<th>Table 3.2 -- Treatment Trains for Dissolved Metals Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Basic Treatment Facility</strong></td>
</tr>
<tr>
<td>Biofiltration Swale</td>
</tr>
<tr>
<td>Filter Strip</td>
</tr>
<tr>
<td>Linear Sand Filter</td>
</tr>
<tr>
<td>Basic Wet pond</td>
</tr>
<tr>
<td>Wet vault</td>
</tr>
<tr>
<td>Basic Combined Detention/Wet pool</td>
</tr>
<tr>
<td>Basic Sand Filter or Sand Filter Vault with a presettling cell if the filter isn’t preceded by a detention facility</td>
</tr>
</tbody>
</table>

Footnote:
(¹) The media must be of a nature that has the capability to remove dissolved metals effectively based on at least limited data. Ecology includes Stormfilter’s™ leaf compost and zeolite media in this category.

3.5 Basic Treatment Menu

Where Applied: The Basic Treatment Menu is generally applied to:

- Project sites that discharge to the ground (see Step 3), UNLESS:
  - The soil suitability criteria for infiltration treatment are met (see Chapter 7), or
  - The project uses infiltration strictly for flow control – not treatment - and the discharge is within ¼-mile of a phosphorus sensitive lake (use the Phosphorus Treatment Menu), or within ¼ mile of a fish-bearing stream, or a lake (use the Enhanced Treatment Menu).

- Residential projects not otherwise needing phosphorus control in Step 4 (See Chapter 2) as designated by USEPA, the Department of Ecology, or a local government; and
- Project sites discharging directly to salt waters, river segments, and lakes listed in Appendix V-A; and
- Project sites that drain to streams that are not fish-bearing, or to waters not tributary to fish-bearing streams;
- **Landscaped areas of industrial, commercial, and multi-family project sites, and parking lots of industrial and commercial project sites**, dedicated solely to parking of employees' private vehicles, that do not involve any other pollution-generating sources (e.g., industrial activities, customer parking, storage of erodible or leachable material, wastes or chemicals).

For developments with a mix of land use types, the Basic Treatment requirement shall apply when the runoff from the areas subject to the Basic Treatment requirement comprise 50% or more of the total runoff within a threshold discharge area.

**Performance Goal:** The Basic Treatment Menu facility choices are intended to achieve 80% removal of total suspended solids for influent concentrations that are greater than 100 mg/l, but less than 200 mg/l. For influent concentrations greater than 200 mg/l, a higher treatment goal may be appropriate. For influent concentrations less than 100 mg/l, the facilities are intended to achieve an effluent goal of 20 mg/l total suspended solids.

The performance goal applies to the water quality design storm volume or flow rate, whichever is applicable. The goal also applies on an average annual basis to the entire annual discharge volume (treated plus bypassed). The incremental portion of runoff in excess of the water quality design flow rate or volume can be routed around the facility (off-line treatment facilities), or can be passed through the facility (on-line treatment facilities) provided a net TSS reduction is maintained. Ecology encourages the design and operation of treatment facilities that engage a bypass at flow rates higher than the water quality design flow rate as long as the reduction in TSS loading exceeds that achieved with initiating bypass at the water quality design flow rate.

The performance goal assumes that the facility is treating stormwater with a typical particle size distribution. For a description of a typical particle size distribution, please refer to the stormwater monitoring protocol on the Department of Ecology website.

**Options:** Any one of the following options may be chosen to satisfy the basic treatment requirement:

- **Bio-infiltration Swale** – See Chapter 7
- **Infiltration** – See Chapter 7
- Sand Filters – See Chapter 8
- Biofiltration Swales – See Chapter 9
- Filter Strips – See Chapter 9
- Basic Wetpond – See Chapter 10
- Wetvault – See Chapter 10 (see note)
- Stormwater Treatment Wetland – See Chapter 10
- Combined Detention and Wetpool Facilities – See Chapter 10

Note: A wetvault may be used for commercial, industrial, or road projects if there are space limitations. Ecology discourages the use of wetvaults for residential projects. Combined detention/wetvaults are allowed; see Section 10.3.
Chapter 4 - General Requirements for Stormwater Facilities

Note: All Figures in Chapter 4 are courtesy of King County

This chapter addresses general requirements for treatment facilities. Requirements discussed in this chapter include design volumes and flows, sequencing of facilities, liners, and hydraulic structures for splitting or dispersing flows.

4.1 Design Volume and Flow

4.1.1 Water Quality Design Storm Volume

The volume of runoff predicted from a 24-hour storm with a 6-month return frequency (a.k.a., 6-month, 24-hour storm).

Wetpool facilities are sized based upon use of the NRCS (formerly known as SCS) curve number equations in Chapter 2 of Volume III, for the 6-month, 24-hour storm. Treatment facilities sized by this simple runoff volume-based approach are the same size whether they precede detention, follow detention, or are integral with the detention facility (i.e., a combined detention and wetpool facility).

Unless amended to reflect local precipitation statistics, the 6-month, 24-hour precipitation amount may be assumed to be 72 percent of the 2-year, 24-hour amount. Precipitation estimates of the 6-month and 2-year, 24-hour storms for certain towns and cities are listed in Appendix I-B of Volume I. For other areas, interpolating between isohyets for the 2-year, 24-hour precipitation and multiplying by 72% yields the appropriate storm size. Isohyets for 2-year, 24-hour amounts for Western Washington are reprinted in Volume III.

4.1.2 Water Quality Design Flow Rate

Downstream of Detention Facilities: The full 2-year release rate from the detention facility.

An approved continuous runoff model should identify the 2-year return frequency flow rate discharged by a detention facility that is designed to meet the flow duration standard.

Preceding Detention Facilities or when Detention Facilities are not required: The flow rate at or below which 91% of the runoff volume, as estimated by an approved continuous runoff model, will be treated. Design criteria for treatment facilities are assigned to achieve the applicable performance goal at the water quality design flow rate (e.g., 80 percent TSS removal).
- Off-line facilities: For treatment facilities not preceded by an equalization or storage basin, and when runoff flow rates exceed the water quality design flow rate, the treatment facility should continue to receive and treat the water quality design flow rate to the applicable treatment performance goal. Only the higher incremental portion of flow rates are bypassed around a treatment facility. Ecology encourages design of systems that engage a bypass at higher flow rates provided the reduction in pollutant loading exceeds that achieved with bypass at the water quality design flow rate.

Treatment facilities preceded by an equalization or storage basin may identify a lower water quality design flow rate provided that at least 91 percent of the estimated runoff volume in the time series of a continuous runoff model is treated to the applicable performance goals (e.g., 80 percent TSS removal at the water quality design flow rate and 80 percent TSS removal on an annual average basis).

- On-line facilities: Runoff flow rates in excess of the water quality design flow rate can be routed through the facility provided a net pollutant reduction is maintained, and the applicable annual average performance goal is likely to be met.

Estimation of Water Quality Design Flow Rate for Facilities Preceding Detention or when Detention Facilities are not required:

Until a continuous runoff model is available that identifies the water quality design flow rate directly, that flow rate shall be estimated using Table 4.1, and its following directions for use:

Step 1 Determine whether to use the 15-minute time series or the 1-hour time series. At the time of publication, all BMPs except wetpool-types should use the 15-minute time series.

Step 2 Determine the ratio corresponding with the effective impervious surface associated with the project. For effective impervious areas between two 5 percent increments displayed in the table, a straight line interpolation may be used, or use the higher 5 percent increment value.

Step 3 Multiply the 2-year return frequency flow for the post-developed site, as predicted by an approved continuous runoff model, by the ratio determined above.
Table 4.1 Ratio of 91% Flow Rate to 2-Year Frequency vs. Effective Impervious Area

<table>
<thead>
<tr>
<th>EIA Minutes</th>
<th>Ratio</th>
<th>EIA Hours</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>0.19</td>
<td>10%</td>
<td>0.19</td>
</tr>
<tr>
<td>15%</td>
<td>0.20</td>
<td>15%</td>
<td>0.20</td>
</tr>
<tr>
<td>20%</td>
<td>0.22</td>
<td>20%</td>
<td>0.20</td>
</tr>
<tr>
<td>25%</td>
<td>0.23</td>
<td>25%</td>
<td>0.21</td>
</tr>
<tr>
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<td>0.22</td>
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<tr>
<td>35%</td>
<td>0.26</td>
<td>35%</td>
<td>0.23</td>
</tr>
<tr>
<td>40%</td>
<td>0.28</td>
<td>40%</td>
<td>0.24</td>
</tr>
<tr>
<td>45%</td>
<td>0.30</td>
<td>45%</td>
<td>0.25</td>
</tr>
<tr>
<td>50%</td>
<td>0.31</td>
<td>50%</td>
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<tr>
<td>60%</td>
<td>0.34</td>
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<td>0.28</td>
</tr>
<tr>
<td>65%</td>
<td>0.36</td>
<td>65%</td>
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<tr>
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<tr>
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<tr>
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<td>80%</td>
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</tr>
<tr>
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<td>0.31</td>
</tr>
<tr>
<td>90%</td>
<td>0.41</td>
<td>90%</td>
<td>0.31</td>
</tr>
<tr>
<td>95%</td>
<td>0.42</td>
<td>95%</td>
<td>0.32</td>
</tr>
<tr>
<td>100%</td>
<td>0.43</td>
<td>100%</td>
<td>0.32</td>
</tr>
</tbody>
</table>

4.1.3 Flows Requiring Treatment

Runoff from pollution-generating impervious or pervious surfaces must be treated. Pollution-generating impervious surfaces (PGIS) are those impervious surfaces considered to be a significant source of pollutants in stormwater runoff. The glossary in Volume I provides additional definitions and clarification of these terms.

Such surfaces include those which are subject to: vehicular use; industrial activities; or storage of erodible or leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or blow-in of rainfall. Erodible or leachable materials, wastes, or chemicals are those substances which, when exposed to rainfall, measurably alter the physical or chemical characteristics of the rainfall runoff. Examples include erodible soils that are stockpiled, uncovered process wastes, manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage. Metal roofs are also considered to be PGIS unless they are coated with an inert, non-leachable material (e.g., baked enamel coating).

A surface, whether paved or not, shall be considered subject to vehicular use if it is regularly used by motor vehicles. The following are considered
regularly-used surfaces: roads, un vegetated road shoulders, bike lanes within the traveled lane of a roadway, driveways, parking lots, unfenced firelanes, vehicular equipment storage yards, and airport runways.

The following are not considered regularly-used surfaces: paved bicycle pathways separated from and not subject to drainage from roads for motor vehicles, fenced firelanes, and infrequently used maintenance access roads.

Pollution-generating pervious surfaces (PGPS) are any non-impervious surface subject to the use of pesticides and fertilizers or loss of soil. Typical PGPS include lawns, landscaped areas, golf courses, parks, cemeteries, and sports fields.

Summary of Areas Needing Treatment

- All runoff from pollution-generating impervious surfaces is to be treated through the water quality facilities specified in Chapter 2 and Chapter 3.
- Lawns and landscaped areas specified are pervious but also generate run-off into street drainage systems. In those cases the runoff from the pervious areas must be estimated and added to the runoff from impervious areas to size treatment facilities.
- Runoff from backyards can drain into native vegetation in areas designated as open space or buffers. In these cases, the area in native vegetation may be used to provide the requisite water quality treatment, provided it meets the requirements in Chapter 5 under the “Cleared Area Dispersion BMPs,” of BMP T5.30 Full Dispersion.
- Drainage from impervious surfaces that are not pollution-generating need not be treated and may bypass runoff treatment, if it is not mingled with runoff from pollution-generating surfaces.
- Roof runoff is still subject to flow control per Minimum Requirement #7. Note that metal roofs are considered pollution generating unless they are coated with an inert non-leachable material.
- Drainage from areas in native vegetation should not be mixed with untreated runoff from streets and driveways, if possible. It is best to infiltrate or disperse this relatively clean runoff to maximize recharge to shallow ground water, wetlands, and streams.
- If runoff from non-pollution generating surfaces reaches a runoff treatment BMP, flows from those areas must be included in the sizing calculations for the facility. Once runoff from non-pollution generating areas is mixed with runoff from pollution-generating areas, it cannot be separated before treatment.