Design and Maintenance

CREATING A STONGER LINK

Andy Rasmussen, Weisman Design Group

Example Project : Machias Elementary School

Snohomish School District

Landscape Architect : Weisman Design Group

Architect: NAC Architecture

General Contractor: Graham Contracting

Landscape and Irrigation Contractor: Scapes Landscape

Maintenance: Snohomish School District Staff

Pre-design process

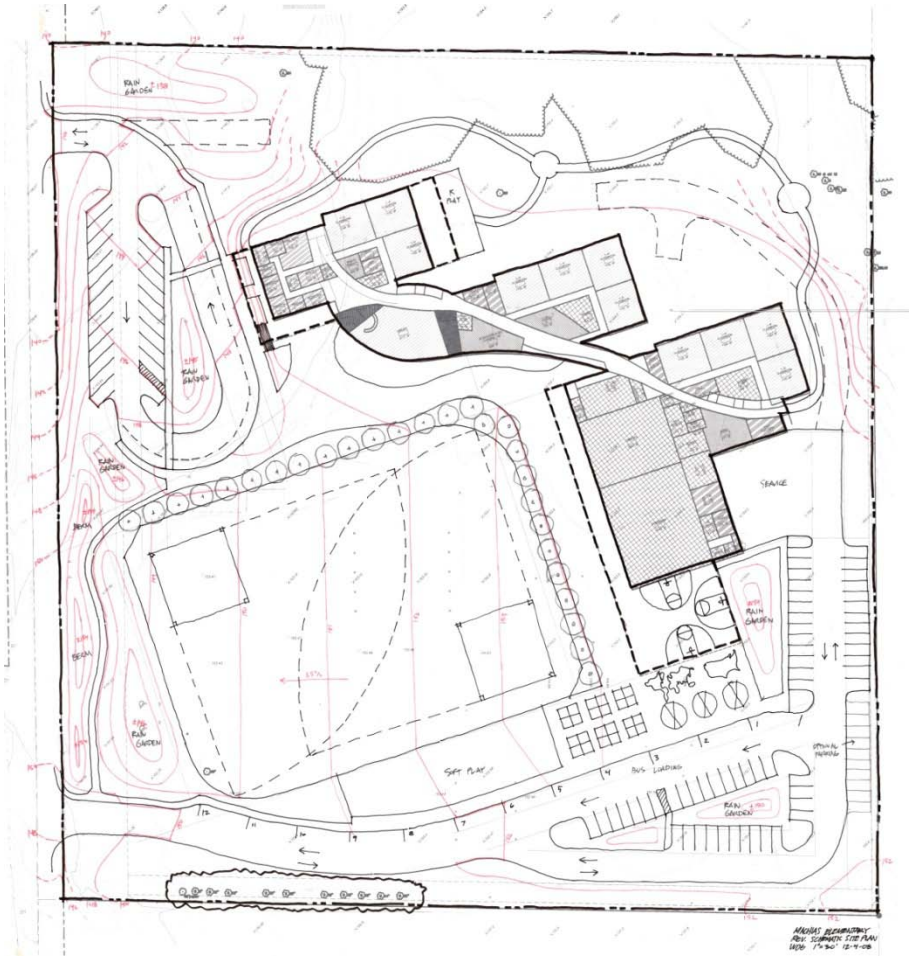
- WDG met with stakeholders to define use and maintenance goals.

Maintenance staff objectives	Sustainability committee objectives
Basic low maintenance landscapes	Drought tolerant and native plants
More lawn and concrete	Less irrigation intensive lawns
Less planting beds	Rain gardens and on site infiltration
Mow strips to reduce string trimming	Visible stormwater as educational tool
Weed barrier under paths	Use less chemicals
Minimize features to maintain under	Reuse on site water
Anti-skateboard devices or features	Natural features/play areas
Lasting furniture and play equipment	Re-use on site materials
Irrigate lawn areas only Limit lawn slopes to 4:1 where possible	Temporary irrigation at shrub areas

Context

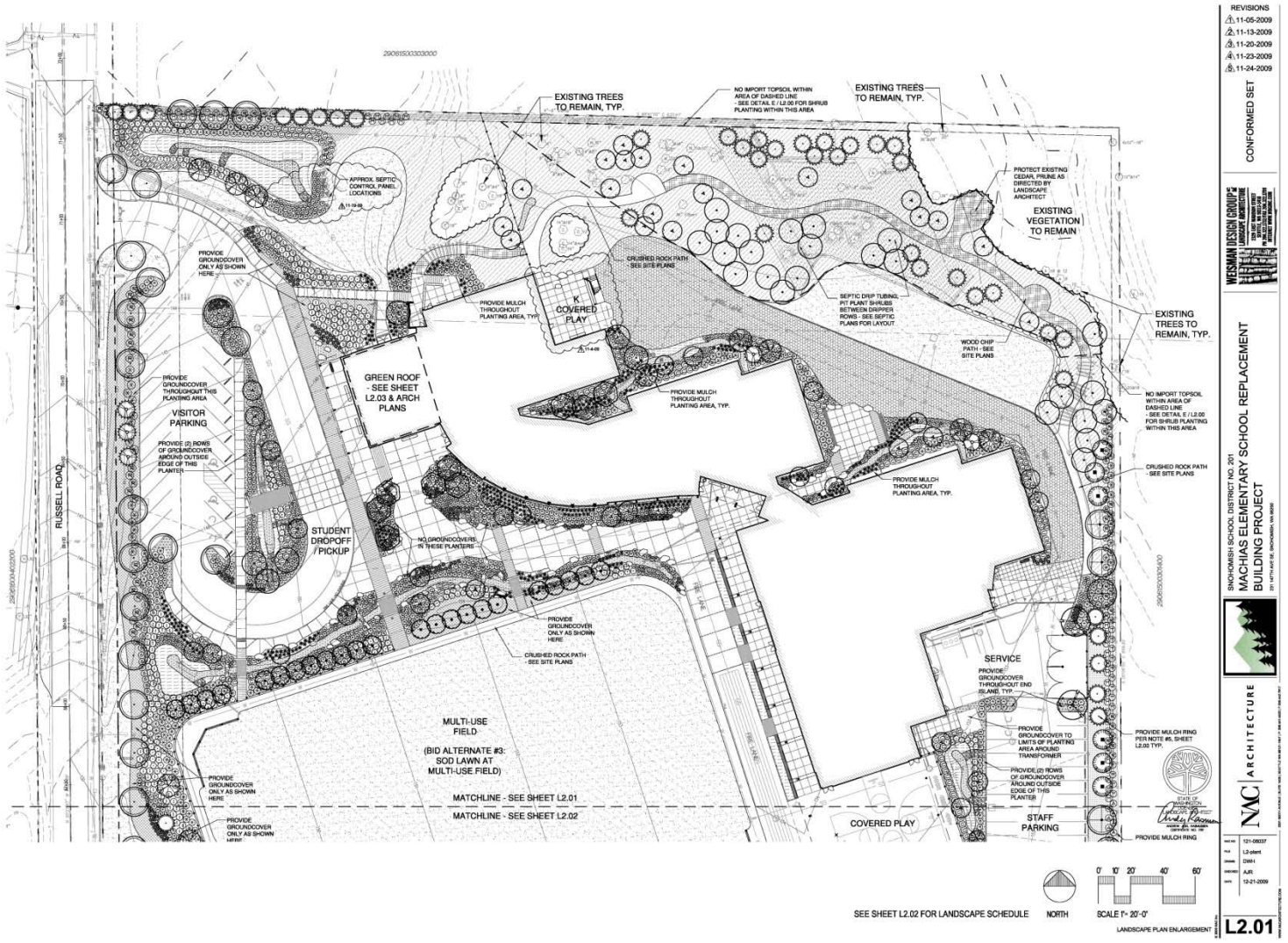
Neighbors are farms, large lots, and Pilchuck River

Early Design Decisions

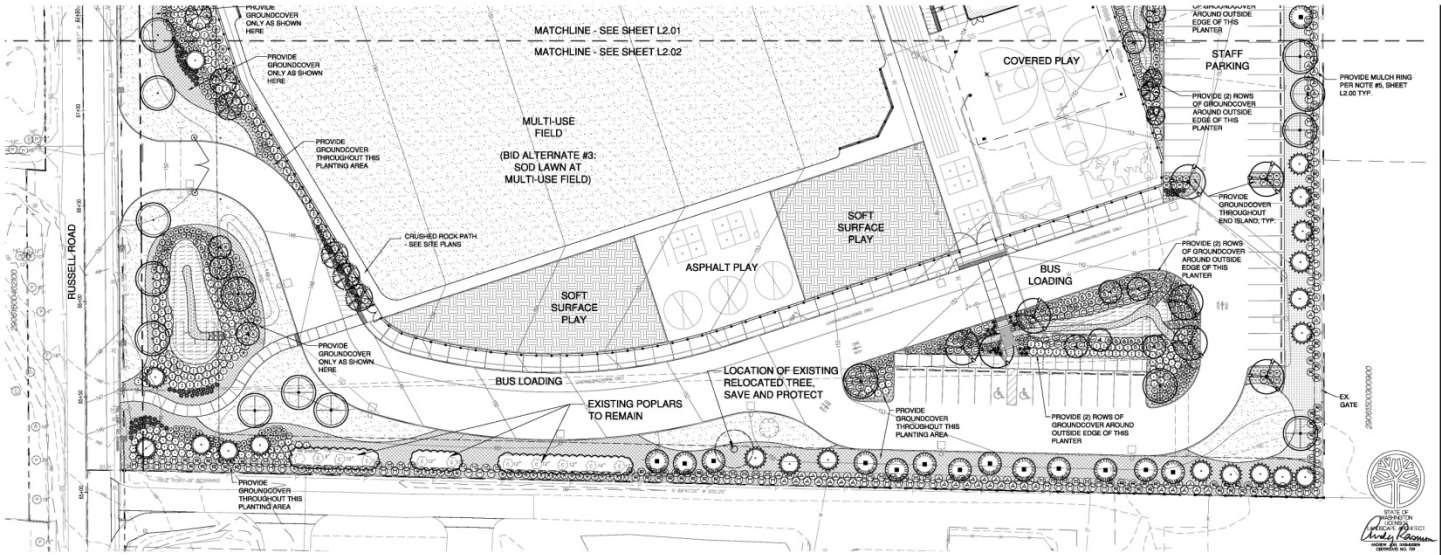


Consolidate lawn at play field. Preserve trees in corner of site. Nature path concept

Final Site-Landscape Plan North



Final Site-Landscape Plan South



LANDSCAPE SCHEDULE

SYMBOL	BOTANICAL/COMMON NAME	SIZE/CONDITION/REMARKS
	DECIDUOUS SHADE TREES	SPACING AS SHOWN ON PLAN
	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	MIN. 2" CALIPER, 12'-14' HT. MIN., WELL-BRANCHED, B&B.
	FRAXINUS PENN. 'PATMORE' PATMORE GREEN ASH	MIN. 2" CALIPER, 12'-14' HT. MIN., WELL-BRANCHED, B&B.
	BETULA JACQUEMONTII JACQUEMONTI BIRCH	SPECIMEN, MIN. 3" CALIPER, 20' HT. MIN., WELL-BRANCHED, B&B.
	POPULUS NIGRA 'ITALICA' LOMBARDY POPLAR	SPECIMEN, MIN. 4" CALIPER, 20' HT. MIN., WELL-BRANCHED, B&B. SEE SPECIFICATIONS FOR REQUIREMENTS REGARDING PURCHASING THESE TREES.
	POPULUS TREMULOIDES QUAKING ASPEN	MIN. 2" CALIPER, 12'-14' HT. MIN., WELL-BRANCHED, B&B.
	QUERCUS COCCINEA SCARLET OAK	MIN. 2" CALIPER, 12'-14' HT. MIN., WELL-BRANCHED, B&B.
	DECIDUOUS ORNAMENTAL TREES	SPACING AS SHOWN ON PLAN
	ACER CIRCINATUM VINE MAPLE	MULTI-STEMMED, MIN. (3) 1-1/2" CALIPER TRUNKS, 10-12' HT. MIN., WELL-BRANCHED, B&B.
	AMELANCHIER ALNIFOLIA SASKATOON SERVICEBERRY	MULTI-STEMMED, MIN. (3) 1-1/2" CALIPER TRUNKS, 10-12' HT. MIN., WELL-BRANCHED, B&B.
	EVERGREEN TREES	SPACING AS SHOWN ON PLAN
	PSEUDOTSUGA MENZIESII DOUGLAS FIR	MIN. 8' HT., FULL & BUSHY TO BASE, B&B
	THUJA PLICATA 'HOGAN' HOGAN CEDAR	MIN. 8' HT., FULL & BUSHY TO BASE, B&B
	THUJA PLICATA WESTERN RED CEDAR	MIN. 8' HT., FULL & BUSHY TO BASE, B&B
	LARGE AND MEDIUM SHRUBS	SPACING AS SHOWN ON PLAN
A	ARBUTUS UNEDO 'COMPACTA' COMPACT STRAWBERRY TREE	MIN. 24-30" HT., FULL & BUSHY, B&B OR CONT.
B	CORNUS SERICEA 'ISANTI' ISANTI RED TWIG DOGWOOD	MIN. 18-24" HT. & SPR, FULL & BUSHY, B&B OR CONT.
C	MAHONIA AQUIFOLIUM TALL OREGON GRAPE	MIN. 24-30" HT. & SPR, FULL & BUSHY, B&B OR CONT.
D	MYRICA CALIFORNICA PACIFIC WAX MYRTLE	MIN. 24-30" HT., FULL & BUSHY, B&B OR CONT.
E	RIBES SANGUINEUM RED FLOWERING CURRANT	MIN. 24-30" HT., FULL & BUSHY, B&B OR CONT.
F	ROSA NUTKANA NOOTKA ROSE	MIN. 18-24" HT. & SPR., FULL & BUSHY, B&B OR CONT.

SYMBOL	BOTANICAL/COMMON NAME	SIZE/CONDITION/REMARKS
	LARGE AND MEDIUM SHRUBS (CONT.)	SPACING AS SHOWN ON PLAN
①	ROSA RUGOSA RUGOSA ROSE	MIN. 18-24" HT., FULL & BUSHY, B&B OR CONT.
②	RUBUS SPECTABILIS SALMONBERRY	MIN. 18-24" HT., FULL & BUSHY, B&B OR CONT.
③	SYMPHORICARPUS ALBUS COMMON SNOWBERRY	MIN. 18-24" HT., FULL & BUSHY, B&B OR CONT., MIN. (3) CANES
	SMALL SHRUBS AND ACCENT PLANTS	SPACING AS SHOWN ON PLAN
⊙	CORNUS STOLONIFERA 'KELSEY' KELSEY DOGWOOD	MIN. 2 GAL. CONT., MIN. 12-15" HT. & SPR., FULL & BUSHY
⊗	MAHONIA A. 'COMPACTA' COMPACT OREGON GRAPE	MIN. 2 GAL. CONT., MIN. 18" HT. & SPR., FULL & BUSHY
✱	HELICTOTRICHON SEMPERVIRENS BLUE OAT GRASS	MIN. 2 GALLON CONT., FULL AND BUSHY
✶	POLYSTICHUM MUNITUM SWORD FERN	MIN. 2 GALLON CONT., MIN. (10) HEALTHY FRONDS, FULL AND BUSHY
	GROUNDCOVER MIX	
	ARCTOSTAPHYLOS UVA URSI KINNIKINNICK FRAGARIA CHILOENSIS WILD STRAWBERRY GAULTHERIA SHALLON SALAL MAHONIA REPENS CREEPING MAHONIA POLYSTICHUM MUNITUM SWORD FERN	1 GAL. POTS @ 18" O.C. TRIANGULAR SPACING, START FIRST ROW 18" FROM EDGE OF PLANTING AREA. PROVIDE EQUAL QUANTITIES OF EACH. PLANT IN DRIFTS OF 7-10.
	NATIVE UNDERSTORY MIX	2 GAL. POTS, MIN. 18" HT. @ 30" O.C. PROVIDE EQUAL QUANTITIES OF EACH. SEE DETAIL E / L2.00 FOR SHRUB PLANTING WITHIN DASHED LIMITS OF "NO IMPORT TOPSOIL".
	AMELANCHIER ALNIFOLIA SASKATOON SERVICEBERRY CORYLUS CORNUTA WESTERN HAZELNUT VACCINIUM OVATUM EVERGREEN HUCKLEBERRY	RUBUS SPECTABILIS SALMONBERRY POLYSTICHUM MUNITUM SWORD FERN GAULTHERIA SHALLON SALAL
		OEMLERIA CERASIFORMIS INDIAN PLUM MAHONIA NERVOSA DULL OREGON GRAPE CORNUS SERICEA REDTWIG DOGWOOD
	KINNIKINNICK GROUNDCOVER	
	ARCTOSTAPHYLOS UVA URSI KINNIKINNICK	1 GAL. POTS @ 18" O.C. TRIANGULAR SPACING, START FIRST ROW 18" FROM EDGE OF PLANTING AREA.

SYMBOL	BOTANICAL/COMMON NAME	SIZE/CONDITION/REMARKS
	SEEDED LAWN (BASE BID)	SEE SPECIFICATIONS
	(BID ALTERNATE #3: SOD LAWN AT MULTI-USE FIELD)	
	ROUGH SEED	SEE SPECIFICATIONS
	BIO-INFILTRATION AREA PLANTING MIX	
	CAREX OBNUPTA (BOTTOM / BANK) SLOUGH SEDGE CAREX STIPATA (BOTTOM) SAWBEAK SEDGE ELEOCHARIS PALUSTRIS (BANK) COMMON SPIKERUSH JUNCUS ACUMINATUS (BOTTOM) TAPERED RUSH	PROVIDE EQUAL QUANTITIES OF EACH. 1 GAL. POTS @ 18" O.C., TRIANGULAR SPACING. PLANT SPECIES THAT TOLERATE DEEPER WATER LEVELS AT BOTTOM OF SWALE.
	GREEN ROOF PLANTINGS	ETERA SEDUM TILE VEGETATIVE MAT. INSTALL OVER 4" SOIL DEPTH HYDROTECH GREEN ROOF SYSTEM. SEE ARCH. DRAWINGS AND SHEET L2.03. SEE SPEC SECTION 07556 VEGETATED ROOFING SYSTEM FOR INSTALLATION REQUIREMENTS.
	"ALL SEASONS BLEND" PREVEGETATED MAT.	
	"TUFF STUFF" PREVEGETATED MAT.	
	ADDITIONAL MATERIALS	
	BOULDERS	SEE SPECIFICATIONS AND SITE PLAN FOR SIZES AND LOCATIONS
	GRASS PAVE FIRE LANE	PROVIDE AS SPECIFIED AND HYDROSEED - SEE SPECIFICATIONS AND DETAIL
	DECORATIVE GRAVEL	SEE SPECIFICATIONS & DETAIL
	RIVER ROCK OUTFALL	SEE SPECIFICATIONS AND SITE PLAN, SEE CIVIL FOR DETAIL
⊙ ①	EXISTING TREES TO REMAIN	SAVE AND PROTECT, SEE CIVIL FOR TREE PROTECTION REQUIREMENTS
	EXISTING VEGETATION TO REMAIN	SAVE AND PROTECT, SEE CIVIL FOR EXACT LIMITS OF CLEARING

NORTH

0' 10' 20' 40' 60'

SCALE 1" = 20'-0"

LANDSCAPE PLAN ENLARGEMENT

REVISIONS
1. 11-05-2009
2. 11-13-2009
3. 11-20-2009
4. 11-23-2009
5. 11-24-2009

CONFORMED SET

WEISMAN DESIGN GROUP

SNOHOMISH SCHOOL DISTRICT NO. 201
MACHIAS ELEMENTARY SCHOOL REPLACEMENT
BUILDING PROJECT
331 147TH AVE SE, SNOHOMISH, WA 98290

NAC ARCHITECTURE

NAC NO. 121-08037
FILE L2-plant
DRAWN DWH
CHECKED AJR
DATE 12-21-2009

L2.02

Overall Landscape Plan

MACHIAS ELEMENTARY SCHOOL LANDSCAPE PLAN RENDERING

WEISMANDESIGNGROUP

Nearly Completed

Sustainable design features

The school was designed to meet the Washington sustainable schools protocol

Building sustainable features	Site sustainable features
100 Kw photovoltaic system on gym roof	Drought tolerant and native plants
Ground source heating loop under field	50% reduction in irrigation water use
Low emitting materials	Rain gardens and 100% on site infiltration
Re-use of materials from existing school	Reduction in below grade storm water pipe
Natural day-lighting to reduce energy use	Reuse of existing materials
Super insulated building shell	Reuse of existing play equipment
View of nature from all classrooms	No offsite sewer discharge
Recycling during and after construction	Grass pave fire lane
No fossil fuel use for heating/cooling	Demonstration green roof

Sustainable design features

- On site storm water infiltration

Sustainable design features

- Outdoor learning areas

Sustainable design features

- Reuse of existing materials

Sustainable design features

- Demonstration green roof

Installation maintenance issues

- Removal of invasive blackberry

Installation maintenance issues

- Spring install of rain gardens

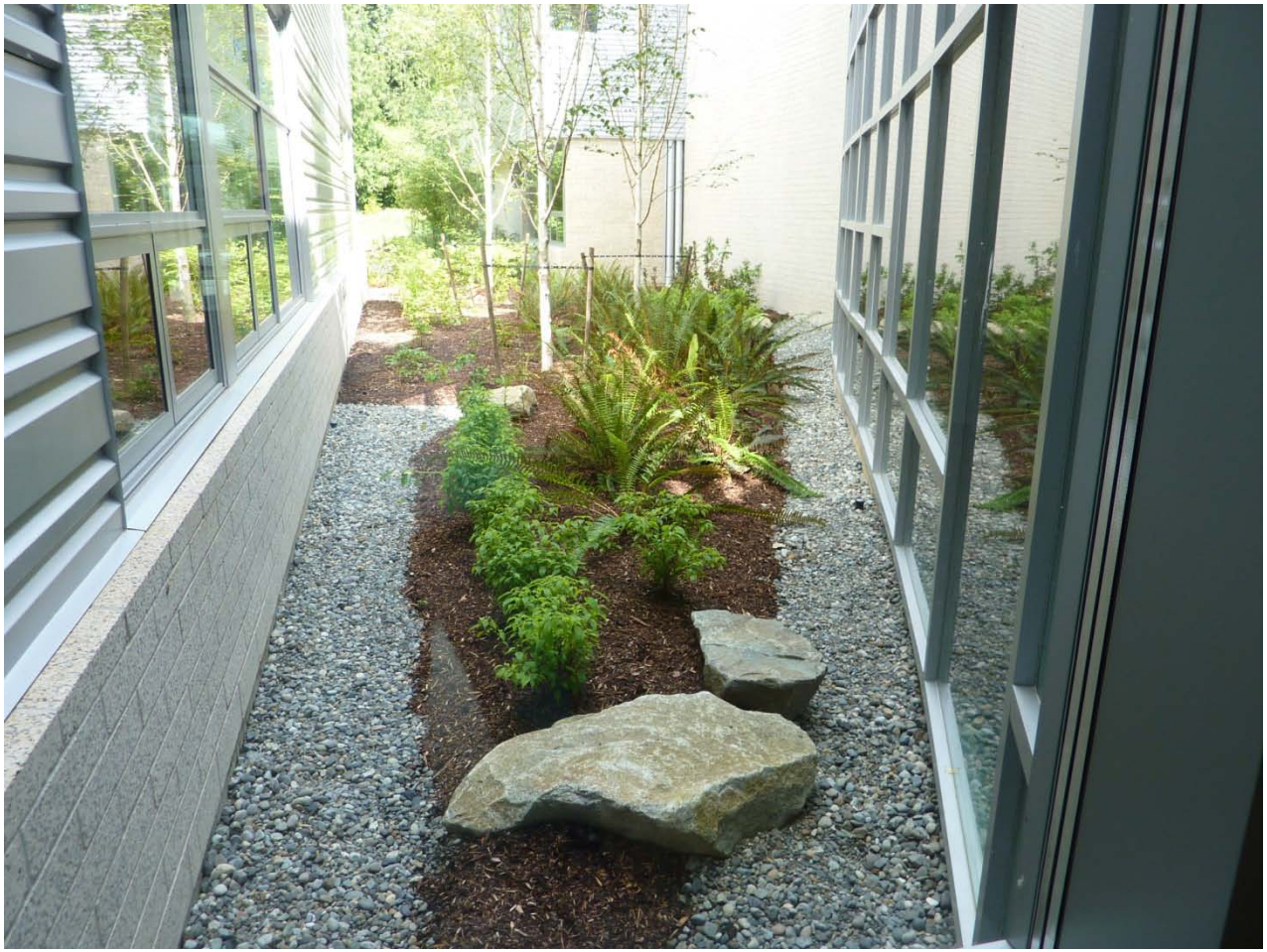
Ongoing maintenance issues

- Nature trail vs. blackberries

Ongoing maintenance issues

- Blackberry wins?

Ongoing maintenance issues



- Window and gutter cleaning

Maintenance issues

- Mowing around septic lids…

Ongoing maintenance issues

- Weed seeds washing into rain gardens

Maintenance issues

- Glu-lam benches delaminating

Maintenance issues

- Gravel jogging path edge

Maintenance issues

- Mowing corners of backstop

Ongoing maintenance issues

- Mowing around kindergarten grow box…

Ongoing maintenance issues

- String trim around sign?

Maintenance issues

- Wind blown weed seeds…

Lessons learned

- You can't have zero maintenance, but you can work to reduce the amount required while reducing your impact on the environment.

Design and maintenance successes	Maintenance issues to address
Amended soils will encourage plant growth and reduce fertilizer needs.	Techniques for the reduction of fertilizer use at lawns
The right native plants can reduce water use and amount of pruning	Wind blown weeds and district staff realities
Limited lawn areas still meet student active play needs.	Post construction meetings with all stakeholders
Extended maintenance by installer during warranty period can increase plant success and reduce future maintenance needs.	Set expectations and involve the user to take ownership of site maintenance issues
Temporary irrigation can work in perimeter areas.	Incentives for low impact design and maintenance practices.

QUESTIONS?

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