

**CONSTRUCTION COST ESTIMATE**

for

**RAINWATER COLLECTION SYSTEM  
BOTANY GREENHOUSES**

**CAMPUS: SEATTLE**

**PROJECT PHASE: COST PLAN**

**UW Project Number: N/A**

**Original Submission: Monday, April 08, 2013**

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## EXECUTIVE SUMMARY

### PROJECT DESCRIPTION

**Project Identification:** RAINWATER COLLECTION SYSTEM  
**Campus:** SEATTLE

**BOTANY GREENHOUSES**

**Documents Reviewed:**

**Drawings:** Floor plan of greenhouse (two versions)  
Plan and elevation of proposed system  
Section through tanks and downspout  
**Quotations:** Ewing Irrigation Products & Industrial Plastics  
Seattle Pump and Equipment  
**emails:** Douglas Ewing to mark Miller / Clara Simon  
**Brochures** ADS N-12 1B pipe

	Date
Dept. of Botany	Undated
Dept. of Botany	Undated
Dept. of Botany	Undated
	02/15/13
	02/27/13
	01/29/13
Advanced Drainage Systems	Undated

### SCOPE OF WORK

New rainwater collection system to do the majority of the irrigation grown in the botany greenhouse

### CONSTRUCTION SCHEDULE

Construction NTP	07/01/13
Substantial Completion	09/01/13

### ITEMS NOT INCLUDED IN CONSTRUCTION COST ESTIMATE

**Standard Exclusions:**

Legal consultation fees  
Architect or other design professional consulting fees  
Project management fees  
Testing and inspection fees  
Plan review fees  
Building permit fees  
Any work to subsequent future phases of the project  
Builder's risk insurance over amount of policy deductible  
Contingencies for change orders  
Cost escalation beyond planned start date of construction

**Specific Exclusions:**

Hazardous materials abatement  
Seismic restraints on 30" diameter pipes  
Forklift to move the pipe sections  
Replacing or increasing the size of the existing gutter  
Testing / verification that system is functioning as designed

**Work Planned to be Undertaken by Students:**

Access to greenhouse through doors on north elevation  
Remove and resetting tables and shrubs at location of proposed 30" pipes  
Removal of gravel below tables to accommodate 30" diameter pipe  
Unloading and setting 3' 0" diameter pipes in final location  
Backfilling existing gravel at sides of 30" pipes

**EXECUTIVE SUMMARY**

**CONTRACT GENERAL REQUIREMENTS**

Procurement will be by uw UW Plumbing Shop or a Job Order Contractor with portions done by Students  
 Contractor will be required to pay wages prevailing at the project location  
 There are no special phasing requirements  
 Contractor will be granted full access to the site at all times

**CONSTRUCTION COST SUMMARY**

Bid Item	Description	Total Cost
1	BASE BID	\$36,678
Total Construction Cost excluding WSST		\$36,678

**TOTAL PROJECT COST SUMMARY**

Total project cost includes construction cost and the following "soft costs"

- Engineering design costs (proposed to be undertaken by CPO design services)
- CPO Project Management
- Management Reserve & Contingencies
- Miscellaneous Permits
- Washington State Sales Tax

The rule of thumb to convert construction cost to total project cost is to multiply the construction cost by a factor of 1.85%. Upon preliminary acceptance of this cost plan CPO will prepare a Form C - 100 to verify the project cost multiplier

Bid Item	Description	Total Cost
1	BASE BID	\$67,853
Total Project Cost including WSST		\$67,853

**ALTERNATE TO HAVE WORK INSTALLED BY CERTIFIED PLUMBERS**

If the retention piping and associated sump pump etc are required to be installed by qualified plumbers in lieu of work being performed by the students then add \$11,150 LS to the Base Bid.

<i>Individual &amp; Group Element Summary</i>	<i>Quantity</i>	<i>U/M</i>	<i>Unit Cost</i>	<i>Total</i>	<i>Element \$</i>
				0	
<b>B30 ROOFING &amp; WATERPROOFING</b>				<b>0</b>	
<i>Roof Coverings</i>				0	\$ 235
<i>Downspouts</i>				0	
New PVC down spout to tank #1	14	<i>lf</i>	12.00	168	
3" dia rainwater gutter shoe	1	<i>ea</i>	42.00	42	
Connect 3" dia down spout to sheet metal gutter	1	<i>ea</i>	25.00	25	
Connect 3" dia down spout to existing down spout	1	<i>ea</i>	25.00	25	
				0	
					<b>Roofing &amp; Waterproofing \$ 235</b>
<b>D20 PLUMBING</b>				<b>0</b>	
<i>Water System</i>				0	\$ 125
Tie into copper piping at side of fertilizer container	1	<i>ea</i>	125.00	125	
				0	
				0	
					<b>Plumbing \$ 125</b>
<b>D50 ELECTRICAL POWER, LIGHTING &amp; COMMUNICATIONS</b>				<b>0</b>	
<i>Connections for machines &amp; Equipment Power</i>				0	\$ 500
<i>Mechanical equipment connections</i>				0	
Conduit, wire and disconnections	1	<i>ls</i>	500.00	500	
				0	\$ -
				0	
					<b>Electrical Power, Lighting &amp; Communications \$ 500</b>
<b>G10 SITE PREPARATION &amp; COMPLETE BUILDING DEMOLITION</b>				<b>0</b>	
<i>Selective Plumbing Demolition</i>				0	\$ 106
<i>Downspout</i>				0	
Remove & disconnect 2 1/2' sheet metal down spout	6	<i>lf</i>	6.00	36	
Cap off existing gutter at existing down spout	2	<i>ea</i>	35.00	70	
				0	
					<b>Site Preparation &amp; Complete Building Demolition \$ 106</b>
<b>G20 RAINWATER COLLECTION SYSTEM</b>				<b>0</b>	
<i>Irrigation Piping</i>				0	\$ 20,745
<i>Corrugated polyethylene retention piping N-12 WT 18</i>				0	
30" dia pipe in 30" lengths w/ polymer wrap	180	<i>lf</i>	61.00	10,980	
30" dia water tight end cap	12	<i>ea</i>	520.00	6,240	
Insertia tee at air vent	1	<i>ea</i>	89.00	89	
Screen at top of insertia tee	1	<i>ea</i>	50.00	50	
Drain in retention piping	6	<i>ea</i>	125.00	750	
30" dia pump sump 6' 0" deep	6	<i>lf</i>	72.00	432	
<i>Drain piping</i>				0	
2" dia drain to plumb tanks together	70	<i>lf</i>	12.00	840	
2" dia tee	6	<i>ea</i>	20.00	120	
2" dia clean out	1	<i>ea</i>	20.00	20	
Union	6	<i>ea</i>	18.00	108	
Connect 2" dia pipe w/ tank adaptor	6	<i>ea</i>	22.00	132	
<i>Sump pump</i>				0	
Gould's model JR55K 1/2 HP jet pump w/ 13.9 gal tank	1	<i>ea</i>	762.00	762	
Low level float switch w/ 15' cord	1	<i>ea</i>	73.55	74	
Float WT	1	<i>ea</i>	9.05	9	
Pump restart relay	1	<i>ea</i>	64.65	65	
Shipping & handling from Seattle Pump	1	<i>ls</i>	75.00	75	
				0	
					<b>Rainwater Collection System \$ 20,745</b>

<i>Individual &amp; Group Element Summary</i>	<i>Quantity</i>	<i>U/M</i>	<i>Unit Cost</i>	<i>Total</i>	<i>Element \$</i>
				0	
<b>G30 CIVIL / MECHANICAL / ELECTRICAL UTILITIES ON SITE</b>					
<i>Connections for machines &amp; Equipment Power</i>				0	\$ 500
<i>Mechanical equipment connections</i>				0	
Conduit, wire and disconnections	1	ls	500.00	500	
				0	
<b>Civil / Mechanical / Electrical utilities On Site</b>					<b>\$ 500</b>
<b>F20 SELECTIVE BUILDING DEMOLITION</b>					
<i>Selective Demolition of Building Components</i>				0	\$ 900
<i>Structural cutting and coring</i>				0	
Saw cut existing concrete slab incl patching	72	lf	12.50	900	
				0	
<b>Selective Building Demolition</b>					<b>\$ 900</b>
				0	
<b>BUILDING CONSTRUCTION DIRECT COST:</b>					<b>\$ 23,111</b>
<b>Z10 INDIRECT COSTS</b>					
<i>General Conditions</i>				20.0%	\$ 4,622
<i>Contractor's Overhead &amp; Profit</i>				15.0%	\$ 4,160
<i>Performance Bond</i>				1.3%	\$ 415
<b>TOTAL ESTIMATED CONSTRUCTION COST EXCLUDING CONTINGENCY</b>					<b>\$ 31,894</b>
<i>Contingency for Development of Design</i>				15.0%	\$ 4,784
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$ 36,678</b>
<i>Escalation Allowance to Start of Construction</i>				0.0%	\$ -
<b>TOTAL ESTIMATED CONSTRUCTION COST EXCL W.S.S.T. 07/01/13</b>					<b>\$ 36,678</b>