

# Swan Island Training Center and Vigor Industrial Master Plan

Kristie Anderson, Kent Wu, Roseva Saa • Arch 449 • Profs. von Bargen & Bartley

The Swan Island Training Center will **activate** the site with people, **embrace** its industrial heritage, and **provide** for **the future of industry** in Portland.

Vigor Industrial partnered with Portland Community College to create a welding training facility that takes advantage of the industrial setting and amenities of Swan Island. This program's success has led Vigor and PCC to consider an expanded technical training center, providing students with training in a wide variety of technical skills and trades. This facility will be the catalyst for the revitalization of Swan Island.

# Site Analysis

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[http://www.usbarge.com/US\\_Barge\\_history.html](http://www.usbarge.com/US_Barge_history.html)

**1940:** Henry Kaiser buys a part of Swan Island and starts manufacturing Liberty ships for World War II

**1953:** Ship manufacturing shifts to Ship Repair with the addition of Dry Docks

**1979:** Additional facilities built in hopes to increase capacity

**1980s-1996:** Up and Down economy causes several companies move/acquired/ or declare bankruptcy, With Cascade General remaining on the site.

**Today:** Vigor Industrial, LLC. is the holding company comprising of Cascade General, U.S. Barge and other marine industries that support Ship building and repair.

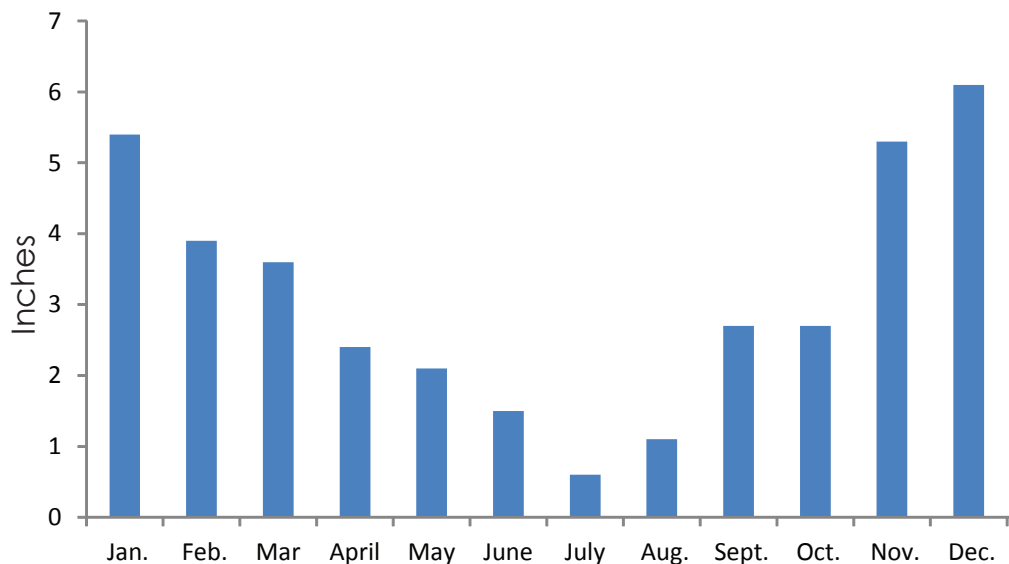


<http://www.vigorindustrial.com/>

## Vigor Industrial Master Plan

Temperature	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec	
Avg. High		45	51	56	60	67	74	78	80	74	64	52	45
Avg. Low		34	36	38	41	47	52	56	56	52	44	38	34
Mean		40	44	47	51	57	64	68	68	64	55	46	40
Avg. Precip		5.4	3.9	3.6	2.4	2.1	1.5	0.6	1.1	2.7	2.7	5.3	6.1
		WINTER			SPRING			SUMMER			WINTER		

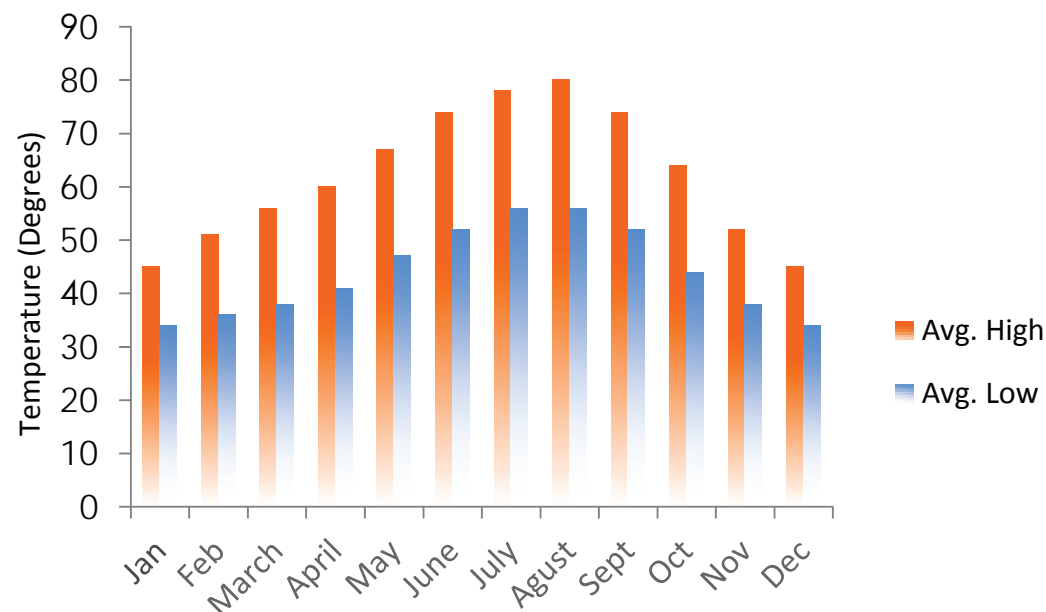
Avg. Precipitation



### Rainfall:

- \* 90% of the annual rainfall occurs between mid-October and mid-May.
- \* Only 3% of the rainfall occurs in July and August.
- \* Rain varies across the Portland metropolitan area.
- \* The West Hills received 60 inches of rain per year.
- \* The Airport receives about 36 inches.

Average High and Low Temperature



### Precipitation:









- \* Only four days per year records measurable snow.
- \* Snow accumulation is rarely more than two inches.
- \* Snow areas are mostly on high terrain above 500 feet (which include the West Hills), or near the Columbia George at Troutdale, located in Portland east edge.

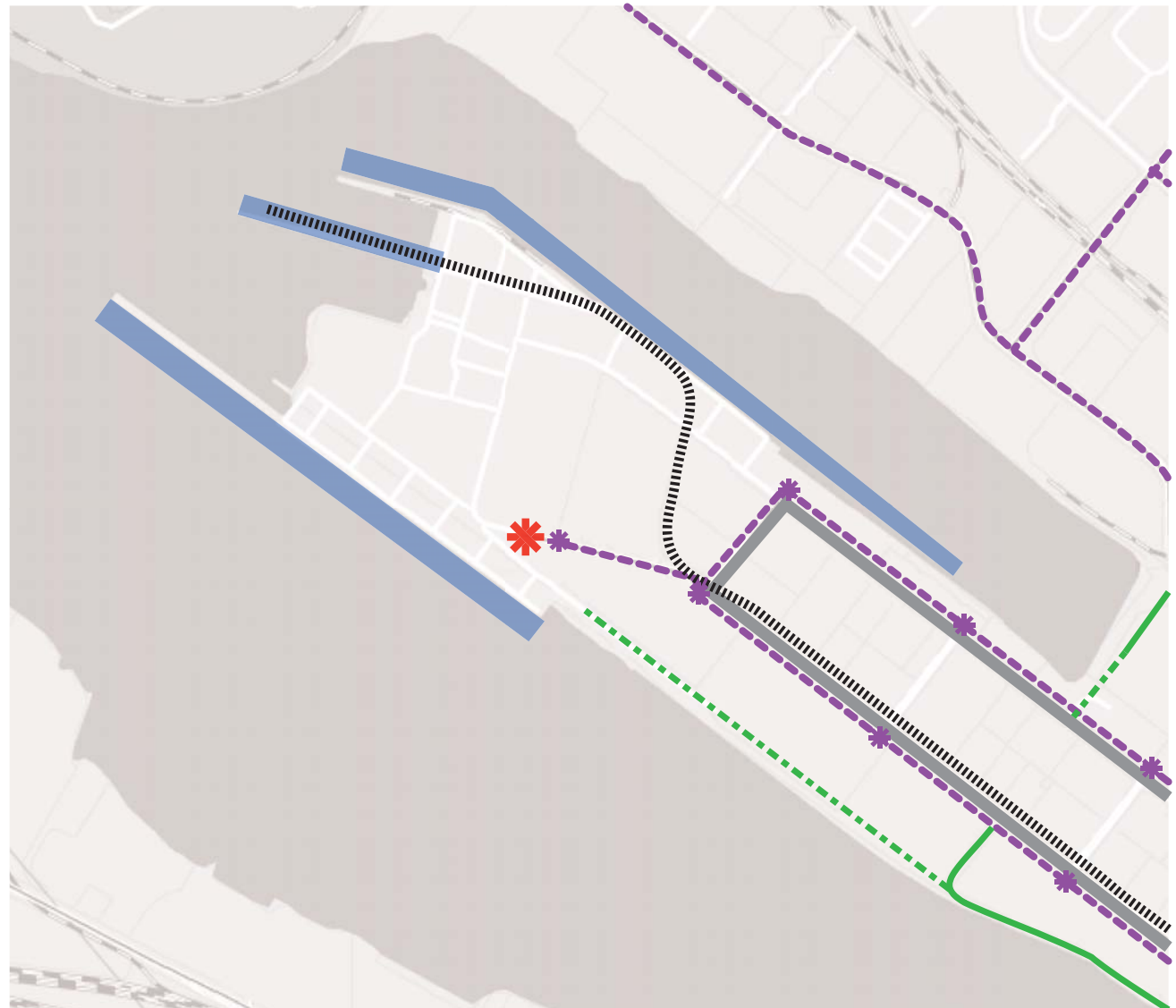
### Existing:

- Alternative transportation limited
- Confusing entry point
- Parking dispersed throughout site

### Areas of Improvement:

- Better pedestrian/ bike access
- Improve Bus stop area
- Clearer demarcation main entry
- Consolidate Parking

-  Ship Access
-  Pedestrian/ Bike path
-  Proposed Pedestrian/ Bike path
-  Bus Line
-  Bus Stop
-  Heavy Railway
-  Freight/ Car Access
-  Main Gate





# NEIGHBORING BUSINESSES

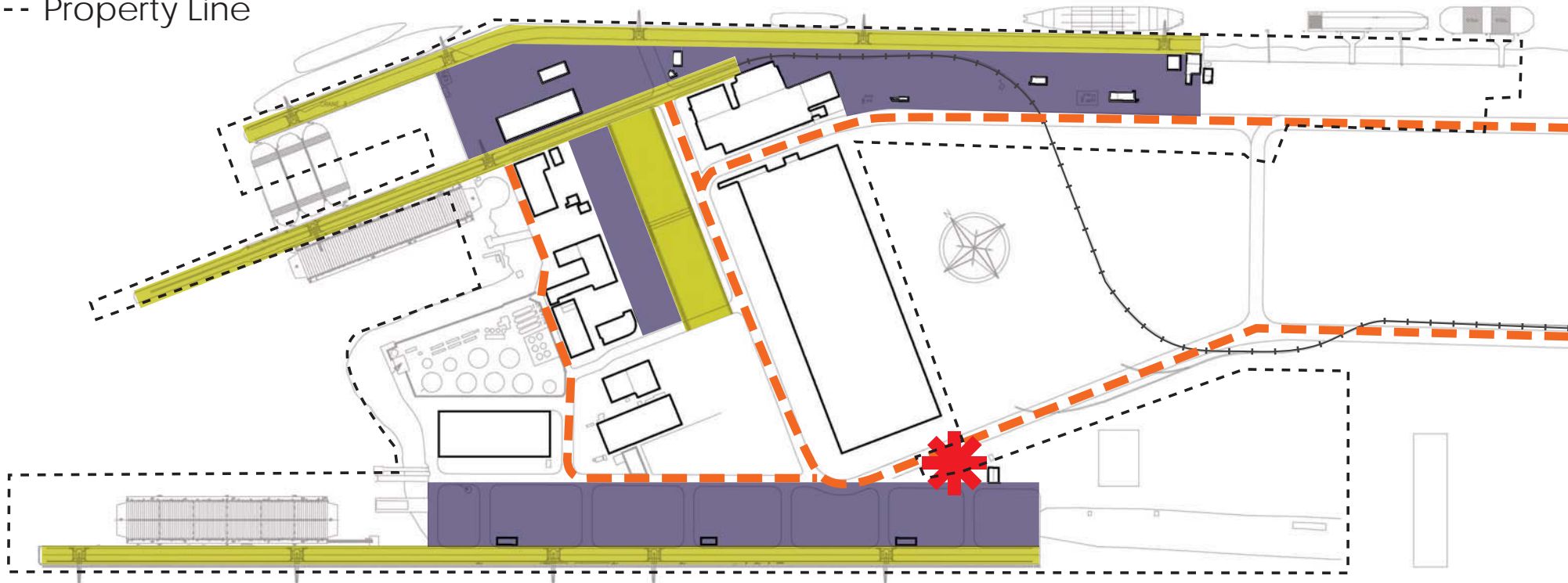
Swan Island Technical Center



-  Laydown areas
-  Crane access
-  Main entrance
-  Major access roads
-  Railroad
-  Property Line

The organization of the site is ad hoc and inefficient. Disused buildings take up valuable laydown space, and others lie in the path of cranes and other equipment.

The crane way and laydown space at the south edge of the site is more efficiently arranged, and can be considered a model for the rest of the site

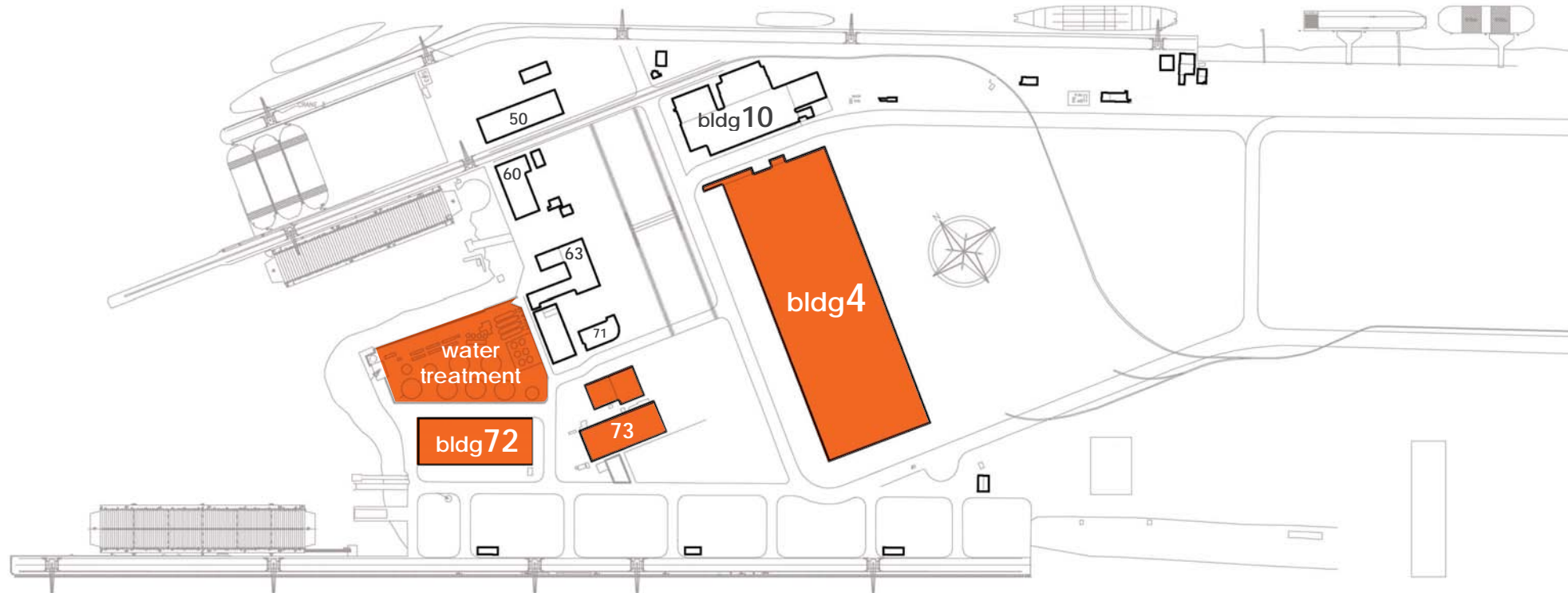


0' 500' 1000'



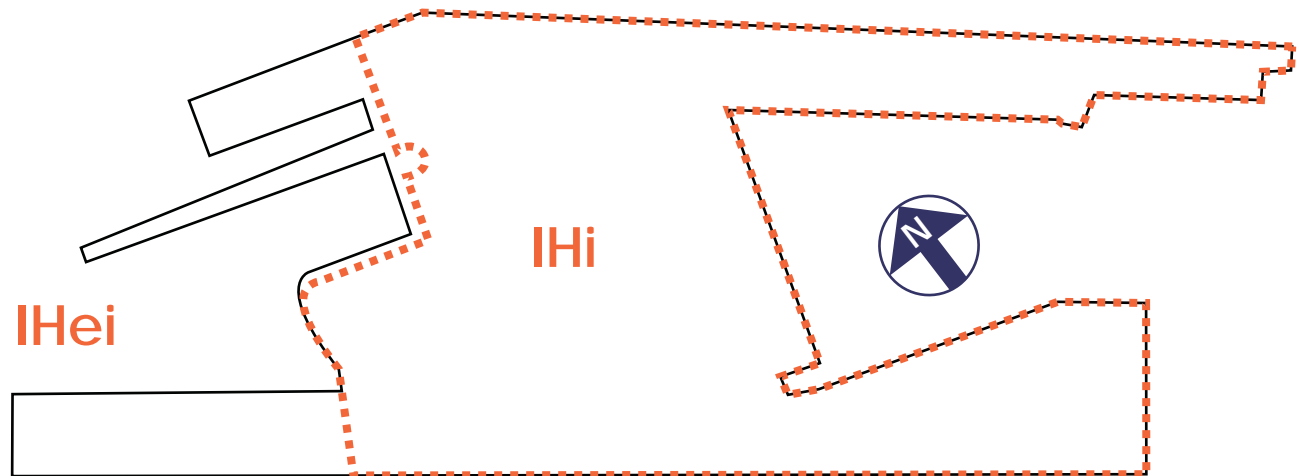
### Structures to retain

Many of the buildings on the site are poorly placed, lying in the path of cranes or in the middle of otherwise useful laydown areas. A few of the buildings are important to retain, however. Building 4 is large and well-used as a workshop and warehouse many industrial companies. Building 72 is a newly built administration building; though we will propose to move admin. functions, the structure can easily be used for other purposes. This building, like building 73, does not lie in an obtrusive place.



### Major Impacts

- A small part of any new land construction cost must be put towards vegetation, green roof, or a public fund up to the point that 15% of the site is vegetated.
- Any water-based (IHei )construction is severely limited and usually requires consulting a review board.



Current Zoning	Zone Boundary
Heavy Industrial	Full site, plus surrounding water
River Industrial Greenway Overlay	Full site, plus surrounding water
Swan Island Plan District	Full site, plus surrounding water

Proposed Zoning	Zone Boundary	Primary Use	Setbacks	Vegetation Requirement	Building Restrictions
Heavy Industrial (IH)	Full site, plus surrounding water	Industrial	5' from street; 0' from OS, C, E, or I-zoned lot; 15' from R lot	10' if abutting an R-zoned lot	None
River Industrial Zone Overlay (i)	Full site, plus surrounding water	River-related or River-dependent	None	The lesser of 1% project cost or \$200,000 spent on vegetation, ecoroof, or donation to city. Not req if 15% of site is vegetated.	None specified
River Environmental Overlay Zone (e)	Water surrounding site (zone ends at water's edge)	None specified	N/A (setbacks are relative to top of bank; entire zone is in water)	Mitigation required for destruction of vegetation	Standardized development and current uses and maintenance allowed; all else subject to review.

# Master Plan

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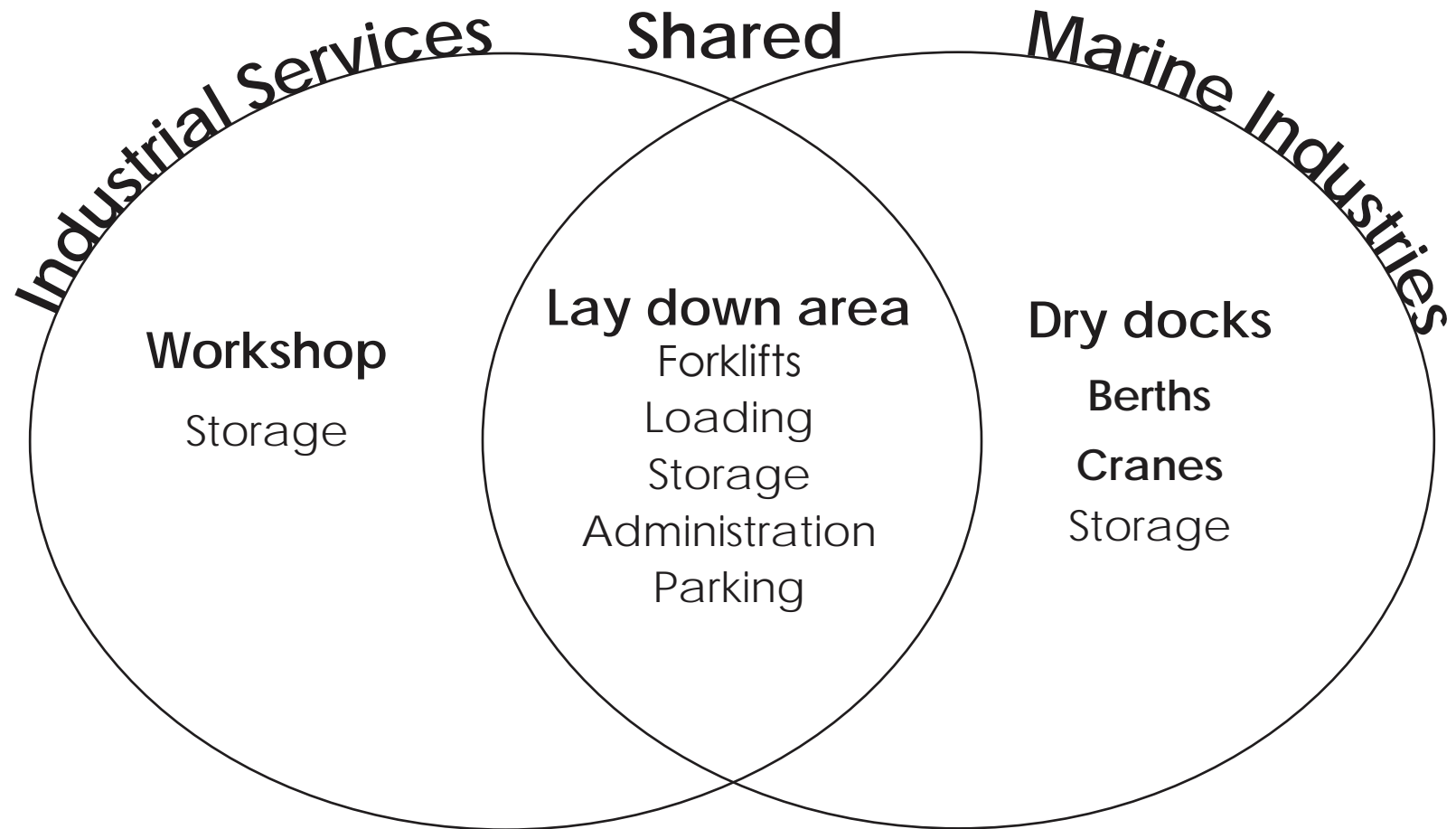
# Values Chart

Vigor Industrial Master Plan

Values	Goals	Facts	Needs	Ideas
Human	Center of employment	Currently slow industry	Job training	Larger on-site training facility
	Increase industrial synergies	Intermittent workflow	Accessibility and connectivity	Distinct paths of circulation
Environmental	Environment & industry are mutually supportive	EPA Superfund site	Improve ecological infrastructure	Bio swales, green roofs
		River ecology	Improve water/land interface	
		Industrial sanctuary		
Cultural	Promote industrial & public interaction	Lack public transit & access	Better relationship w/public	Extend bike path
		Security system hurts access		Interpretive center
		Not a pedestrian friendly environment		View point to downtown
Technology	Increase efficiency	Equipment is large & expensive	Proper storage	Consolidate industries into more efficient facilities & laydown areas
		Limited usable storage	Improved infrastructure & facilities	
Temporal	To secure growth in global economy	Global market demands change	Ability to train & adapt workforce	Build a versatile training facility
	Ability to change rapidly	Change can be expensive	Flexible & permanence	Infrastructure allows for maximum flexibility
Economic	Revenue Generator	Boom & bust industry	Continual activity	Build flex workspace for complementary industries
Aesthetic	To maintain industrial heritage	Previously not a priority	To welcome the public	Entrance improvements
		Industrial appeal		Landscape features
Safety	Safe working environment	A lot of potential Hazards	Legible access points for people & materials	Administration building close to main entry
		Expensive materials & equipment	Better organization	Relocate some facilities out of the way of operations

- Create industrial synergies through strong community partnerships
- Stimulate economic activities between industrial and marine services
- Find a viable balance between industrial and environmental needs

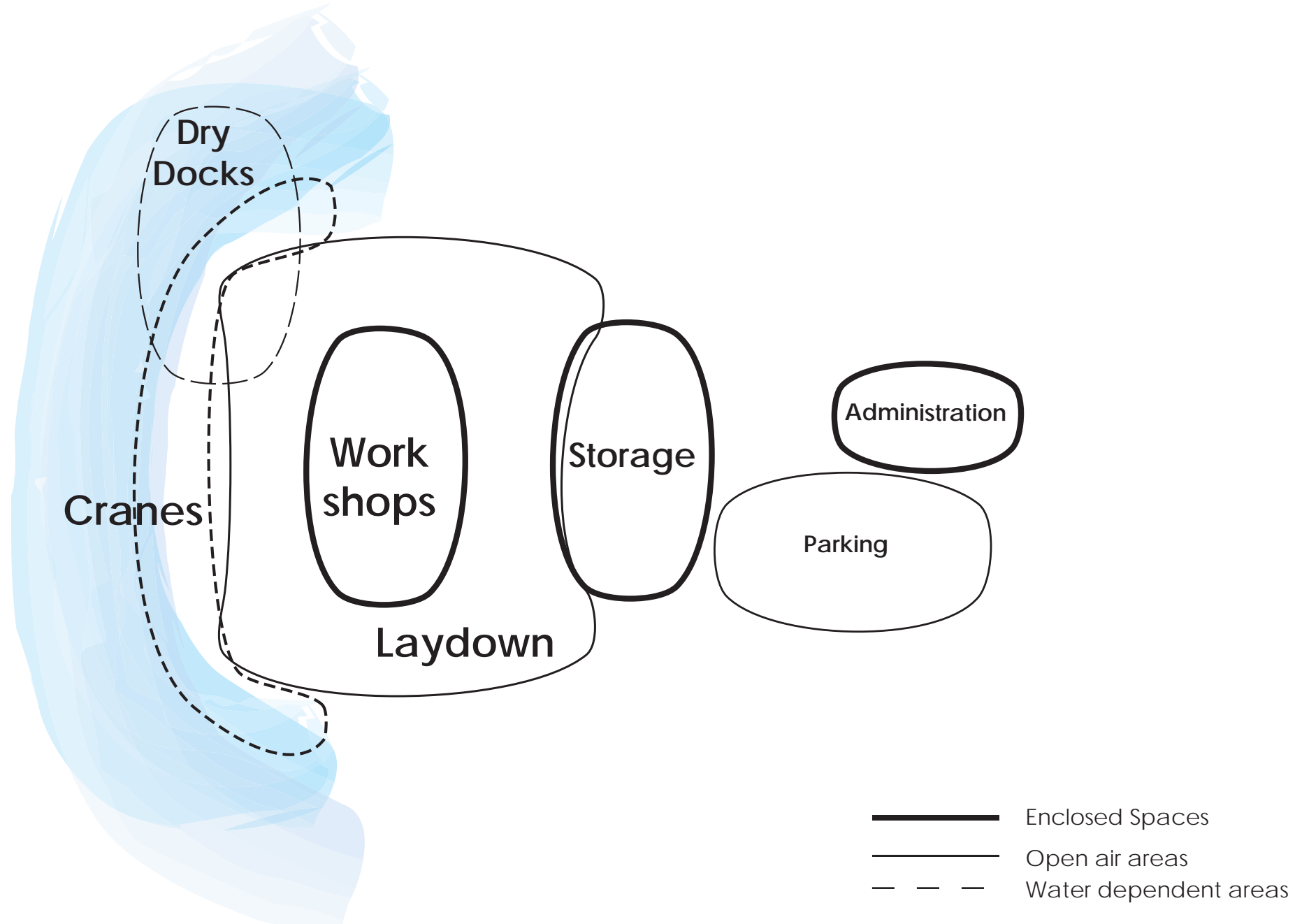




- Many needs are shared between Industrial services and Marine services, and possibly be consolidated

# Adjacency Diagram

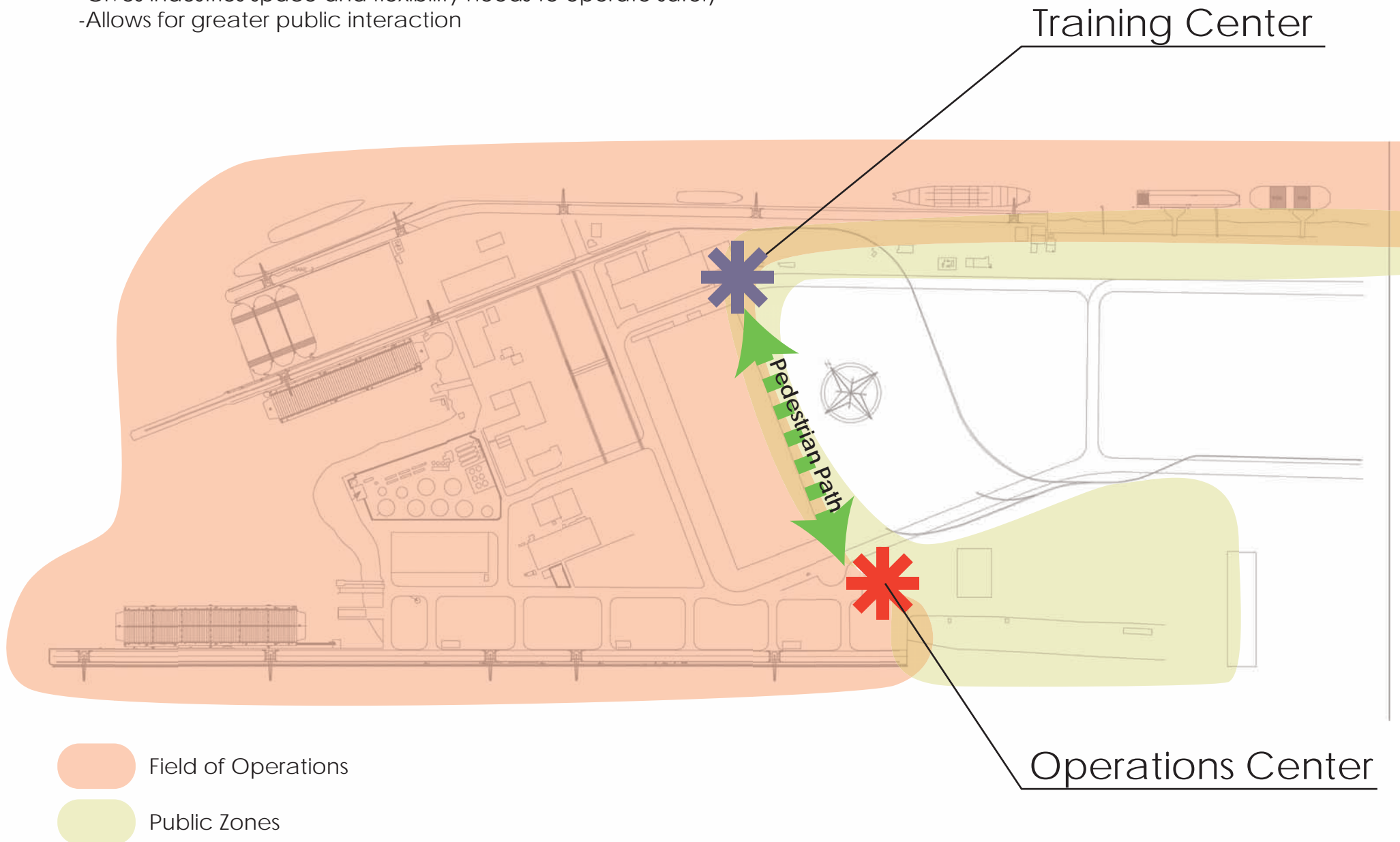
Vigor Industrial Master Plan



# Site Concept

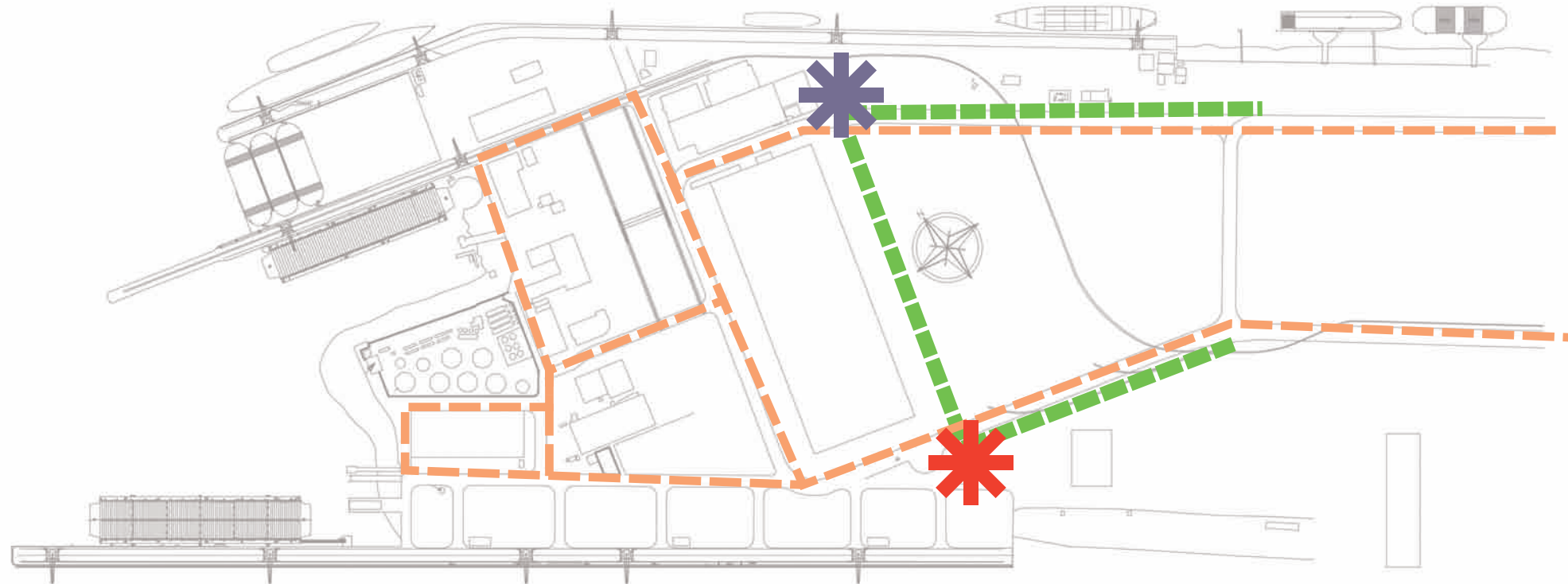
Vigor Industrial Master Plan


- Creates and connects two nodes, one for operations and one for the training center
- Gives industries space and flexibility needs to operate safely
- Allows for greater public interaction



# Circulation Concept

Vigor Industrial Master Plan



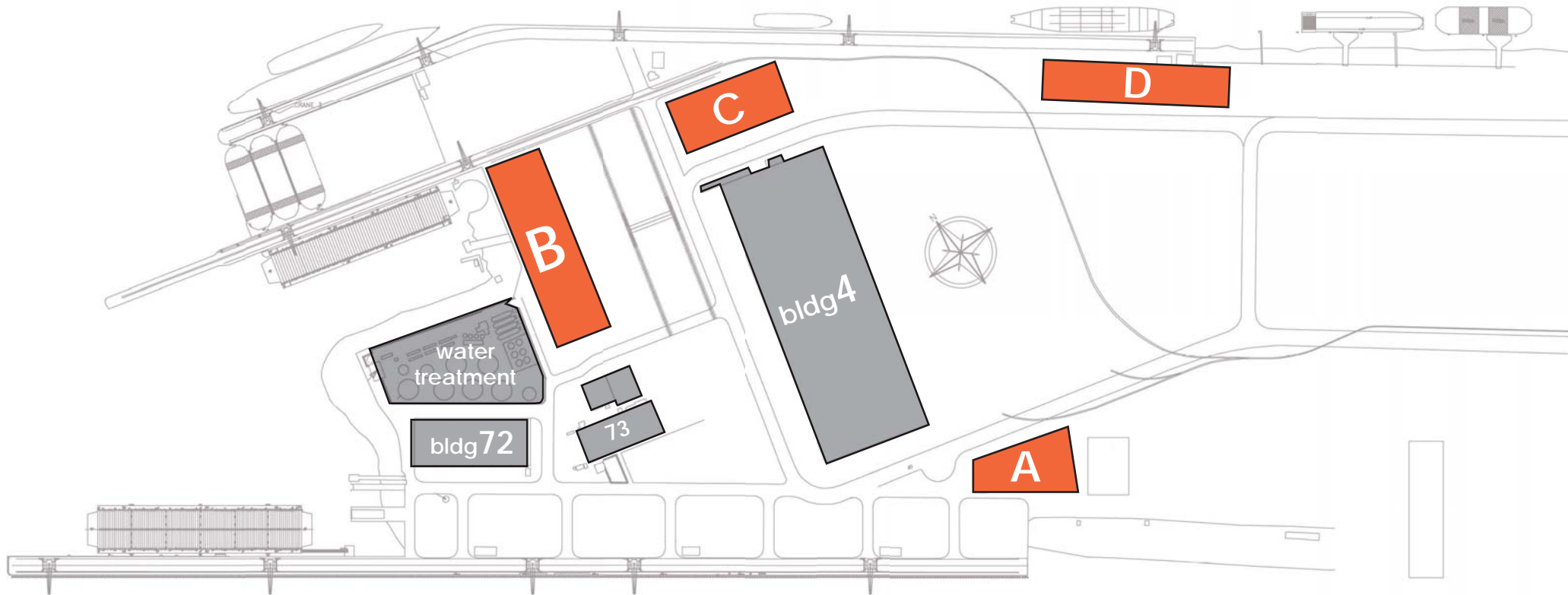
-  Operations Center
-  Training Center
-  Industrial Circulation
-  Pedestrian Circulation

# Schematic Master Plan

Vigor Industrial Master Plan

- Existing Structures to retain
- Proposed Structures

- [A] Welcoming Center
- [B] Designated rental space
- [C] New Storage
- [D] Swan Island Technical Center

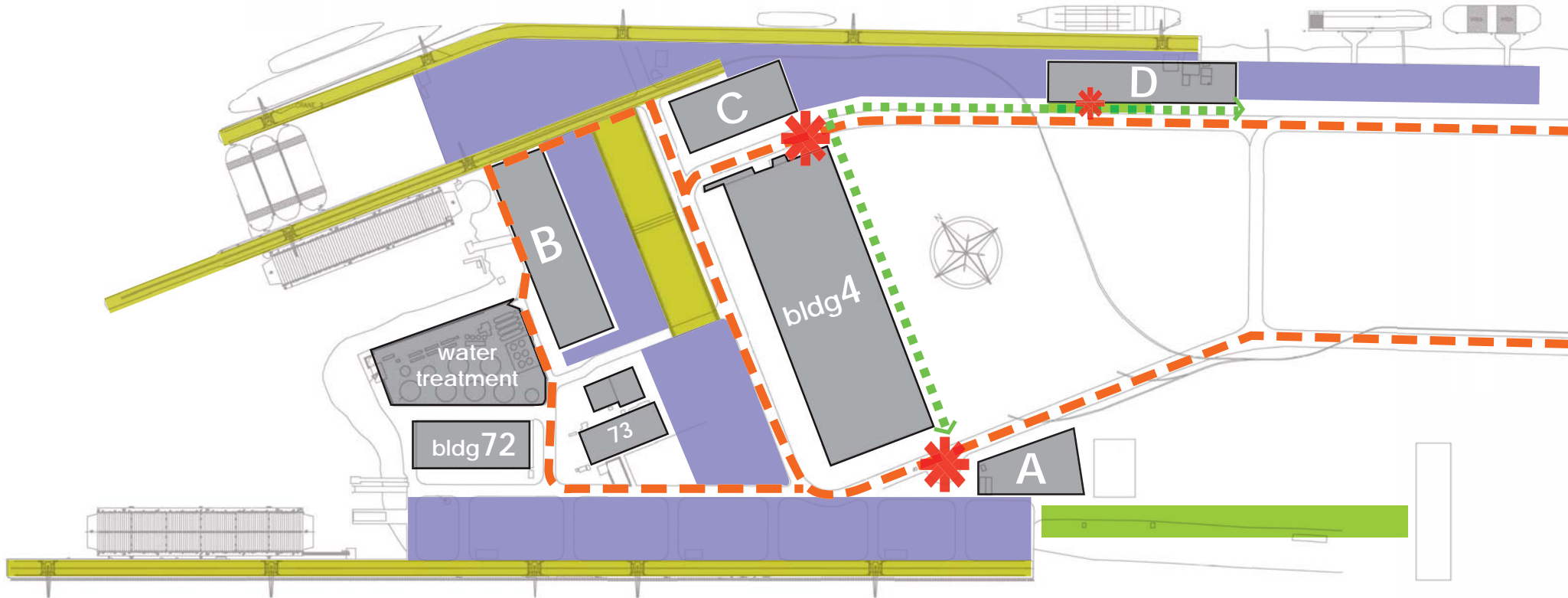




# Schematic Master Plan

Vigor Industrial Master Plan

- Structures
- Laydown areas
- Crane access
- Bioswale
- Main entrances
- Major access roads
- Pedestrian Route



0' 500' 1000'

# Pedestrian Corridor

Vigor Industrial Master Plan



VEIW through pedestrian corridor

Landschaftspark, Duisburg, Germany



<http://www.landschaftspark.de/>

Highline Park, New York



<http://www.thehighline.org/>

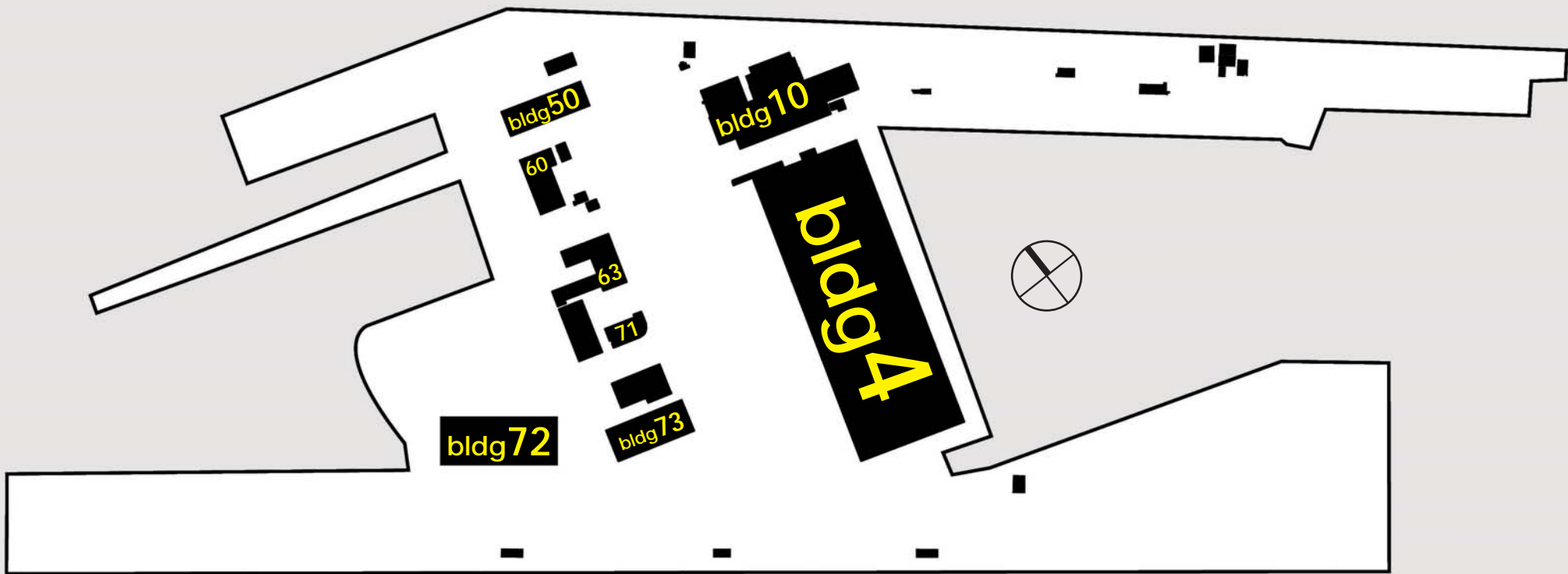
# Site Existing and Proposed Areas

## Vigor Industrial Master Plan

Program Organization	width	length	area	N. Bays	Bldg #	water access	crane access	loading access	Dry docks Access	Proposed Sq	Notes
CWI (Columbia Iron & Wire)	322	79	25438	1	4	x	x	x		25438	Keep
TYCO	322	79	25438	1	4	x		x		25438	Keep
O.I.W	322	79	50876	2	4		x	x		50876	Keep
US Barge	322	79	101752	4	4	x	x	x		101752	Keep
Harris Thermal	322	79	25438	1	4			x		25438	Keep
Cascade General	322	79	50876	2	4	x	x	x	x	50876	Keep
Building 10	433	167	72311	1	10					0	Replace sf
Spartan Environmental	40	88	3520	1	80					3520	Relocate sf out of laydown area
Building 50	79	248	19592	1	50					0	Remove-- in crane-way
Building 58	31	52	1612	1	58					0	SF consolidated
Building 60	98	171	16758	1	60			x		0	SF consolidated
Building 61	36	30	1080	1	61				x	0	SF consolidated
Building 62	36	30	1080	1	62				x	0	SF consolidated
Building 63	76	152	11552	1	63					0	SF consolidated
Building 63 Annex	75	50	3750	1	63 Annex					0	Remove
Building 9	75	165	12375	1	9			x		0	Remove from circ path, relocate
Building 71	120	64	7680	1	71					0	SF consolidated
Building 73	239	100	23900	1	73			x		23900	Keep
Building 90	153	88	13464	1	90					13464	Keep
Building 72	338	140	47320	1	72					47320	Uses relocated, new tenants
Project Office	63	25	4725	3			x	x		4725	Keep or relocate as desired
Miscellaneous buildings (A)	33	46	3036	2	MS					3036	Integrate with new master plan
Miscellaneous buildings (B)	30	15	3150	7	MS					0	Removed, not replaced
Water Treatment Plant	447	265	118455	1	WTP					118455	Keep
Building 6	79	30	2370	1	6					2370	Relocate sf
Hazardous Waste storage	45	79	3555	1	HWS					3555	Relocate sf
Miscellaneous Storage	43	47	6063	3	MSS					6063	Integrate with rentable storage
New Rentable Space	553	79	43687	1						43687	New bldg/ expansion of existing
New Rentable Storage	440	170	74800	1						74800	
New Training Facility	350	100		1						35000	
Welcoming Facility	300	100	30000	1						30000	
<b>Total Building Square footage</b>			<b>657166</b>							<b>689713</b>	
Main Parking Lot	968	367	355256	1	Parking					1421024	Reduce by ¼
Total Laydown area			1125090							1125090	Consolidated, more efficient

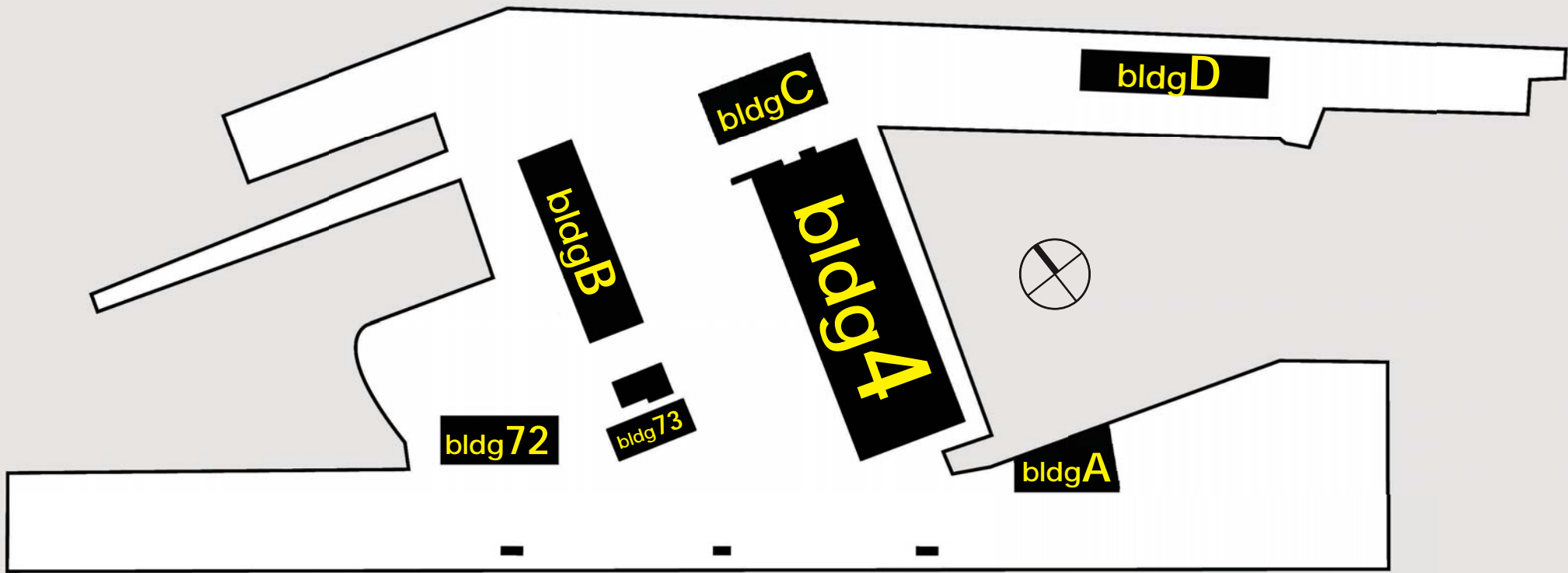
# Existing Conditions Figure-Ground

Vigor Industrial Master Plan



# Proposed Figure-Ground

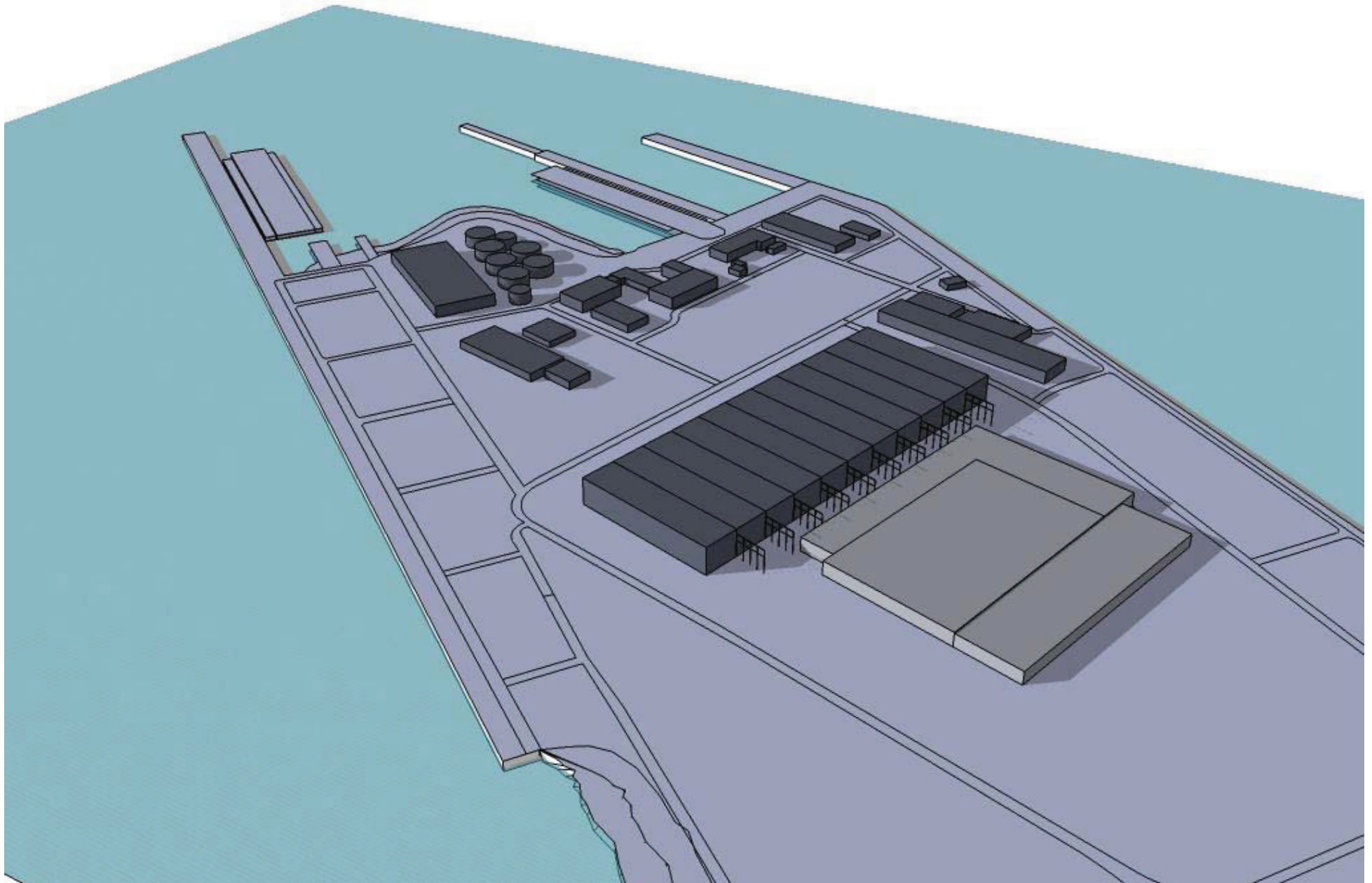
Vigor Industrial Master Plan





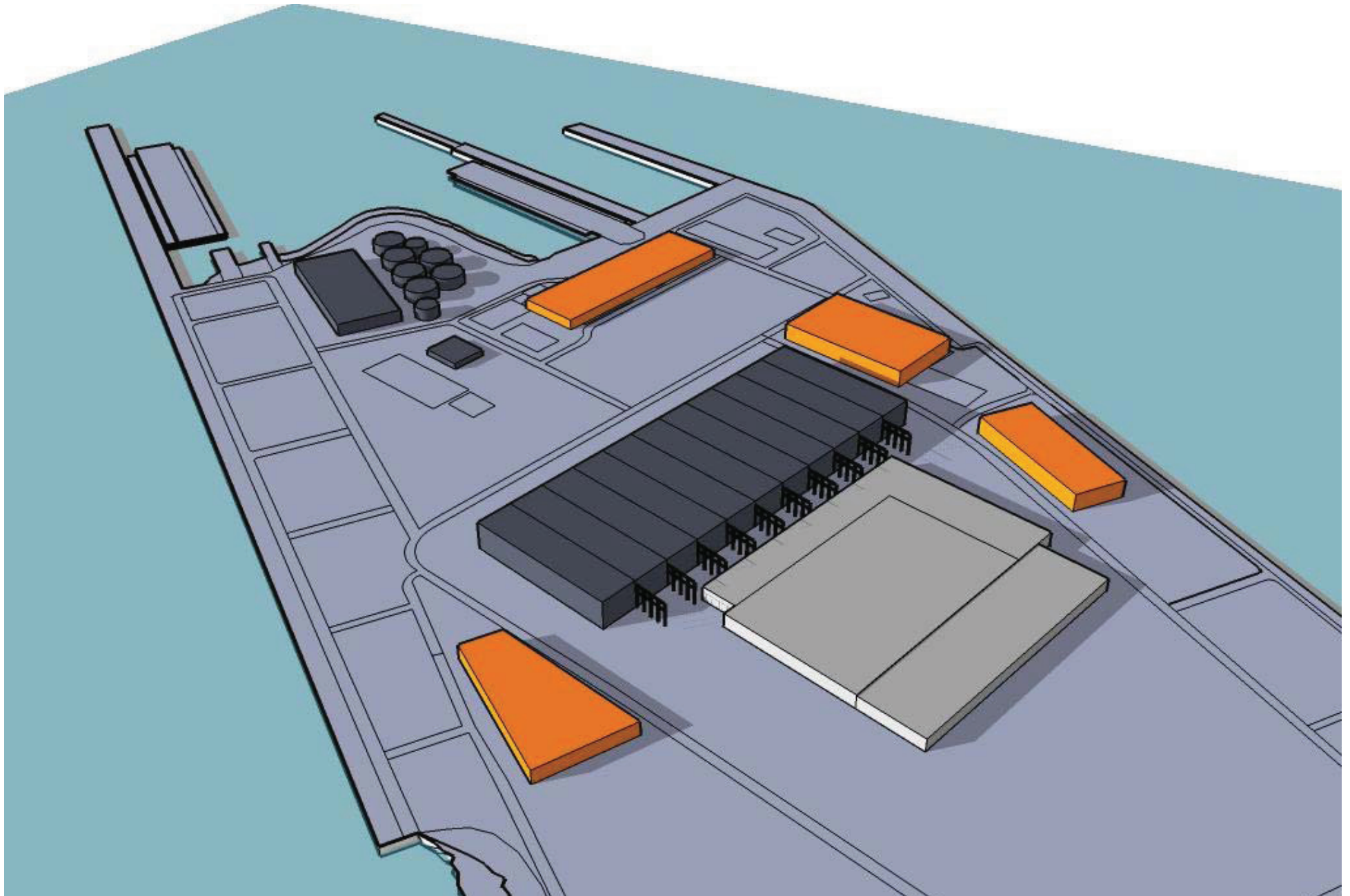
# Existing Site

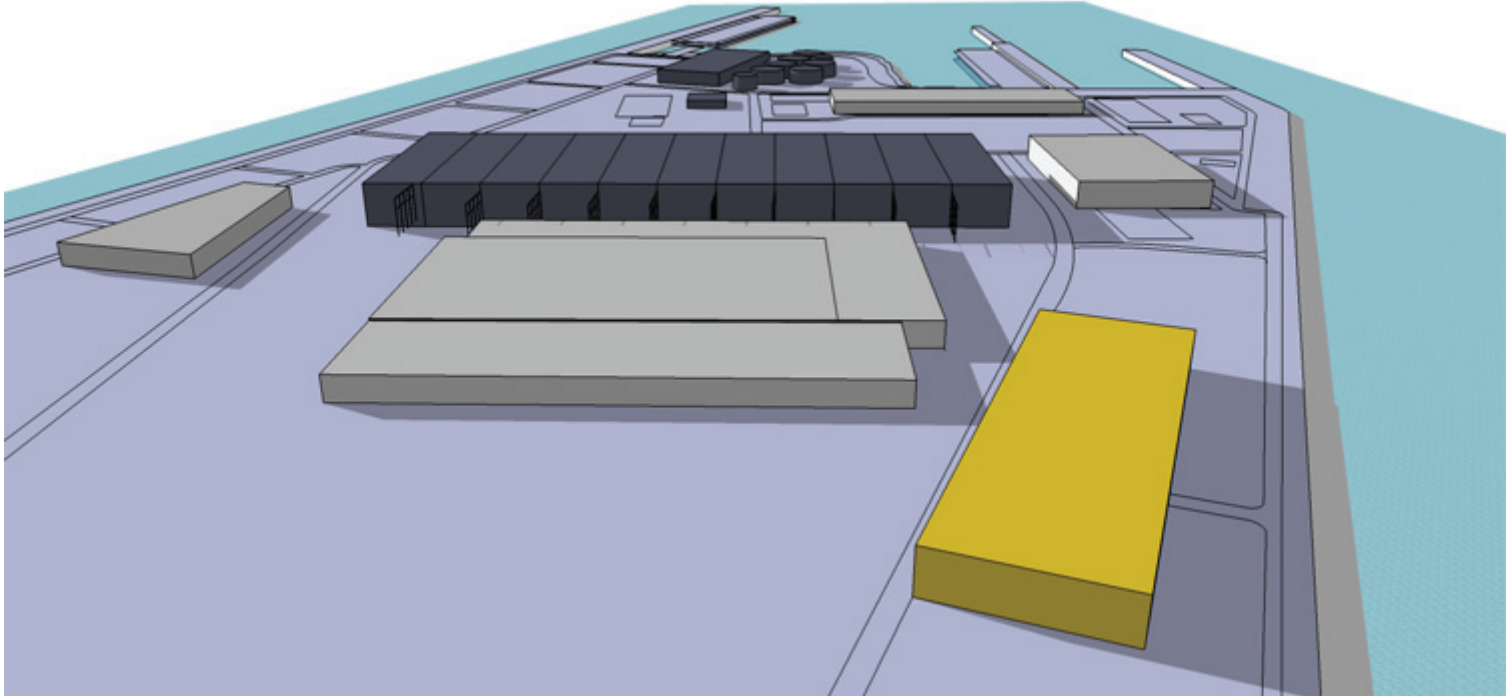
Vigor Industrial Master Plan



# Proposed Site

Vigor Industrial Master Plan





# Training Center

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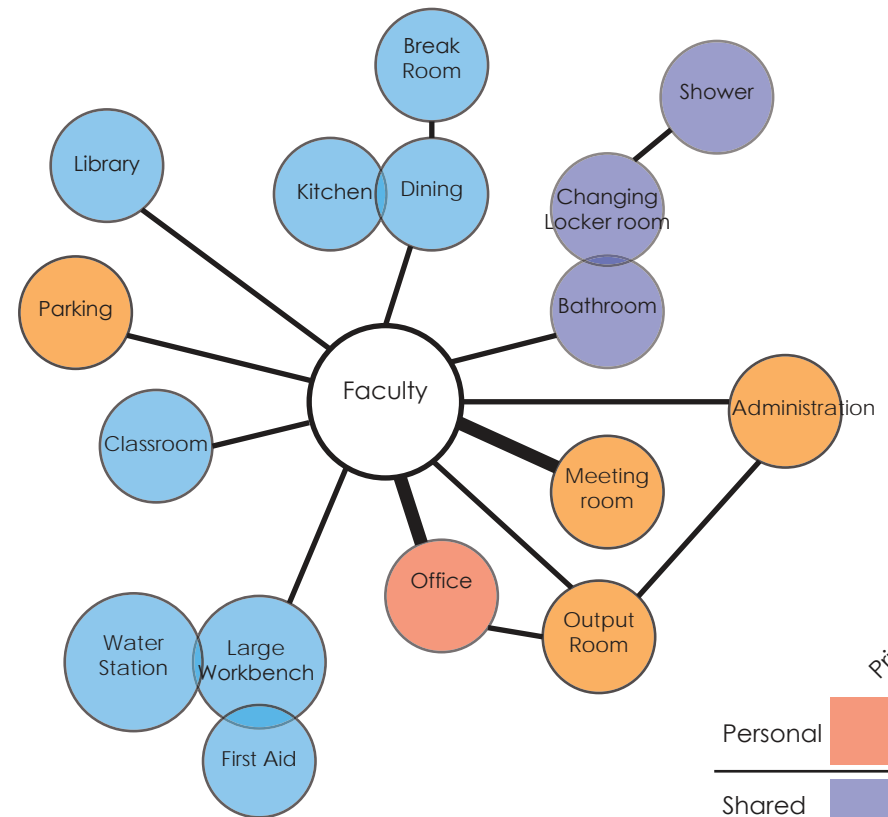
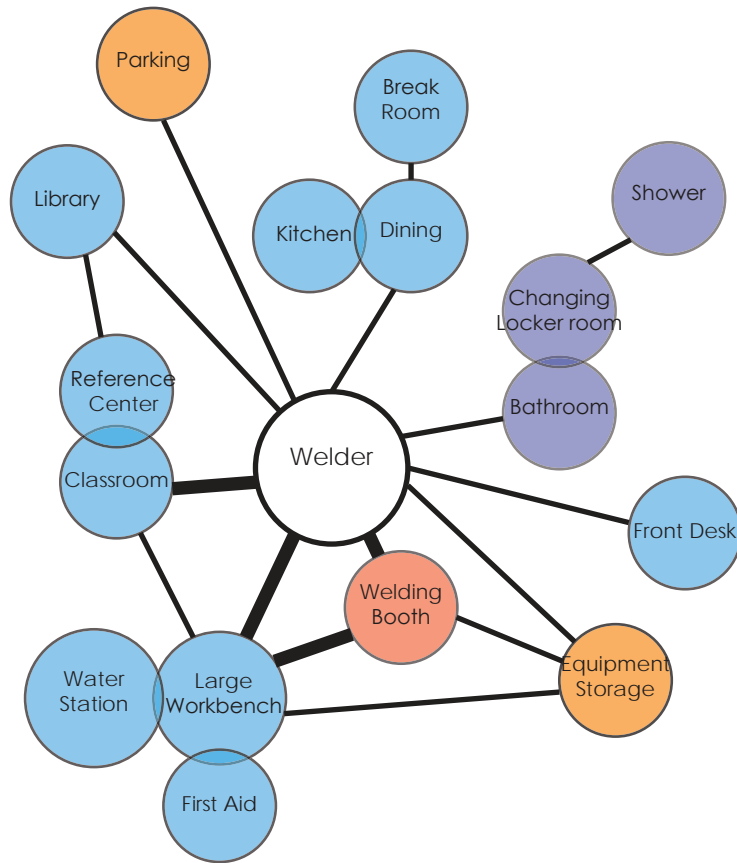
# Values Chart

Swan Island Technical Center

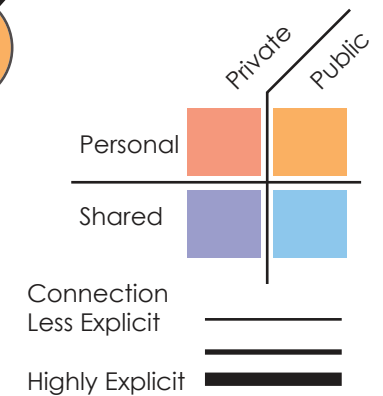
Values	Goals	Facts	Needs	Ideas
Human	Open to all/ Equal opportunity	Diverse range of students	Outreach strategy	Student Union
		Socio-Economic Differences	Financial Aid	Career Center
		5% of the students are women		
Environmental	Low-Impact Building	Superfund Site	Clean up site	South orientation to maximize day light
		Swan Island	Mitigate fumes and pollutants	Ecoroof
				Bioswales
Cultural	Increase its role within the Portland Industrial community	Currently the union offer only limited training	establish a strong relationship with the union and industries	Integrate students union into Vigor's administration building
			Increase visibility of student work	Welding facility provide training for Vigor employees
				Showcase gallery
Technology	Provide proper equipment to the students	Technology is expensive	Storage for students/ equipment	Practice berth
		Technology changes over time	Funding	Mobile work station
Temporal	Adaptable building for new technology and trades	School will expand as it becomes more involve in the Portland industrial community	Flexibility	Open plan with partition walls
				Room for expansion
Economic	To become the premier welding training center on the Pacific Northwest	High demand for welding training	Needs a way to make money	Host regional training events
Aesthetic	Reflect use/ Character, Be expressive	Is the north gate of the site	Needs to have a public interface	Use of industrial materials
		There are a lot of material available for reuse onsite		Use of recycle material
Safety	Appropriate to use and users	Arc welding needs visual protection	Safety procedures	Demonstration/ training center
		Fire hazards	First Aid kits	Safety designated area
		Chemical ventilation	Fire proofing	
			Proper tool training	

- Connecting student and tradespeople to professional development opportunities
- Celebrates the tradition and trades of industrial crafts
- Responds to changing industry demands



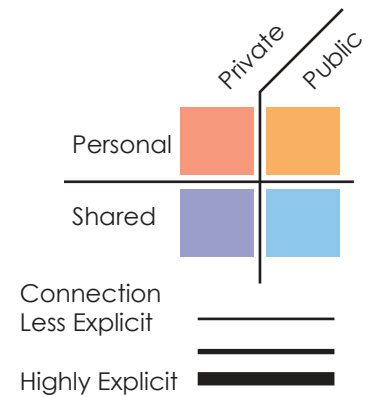
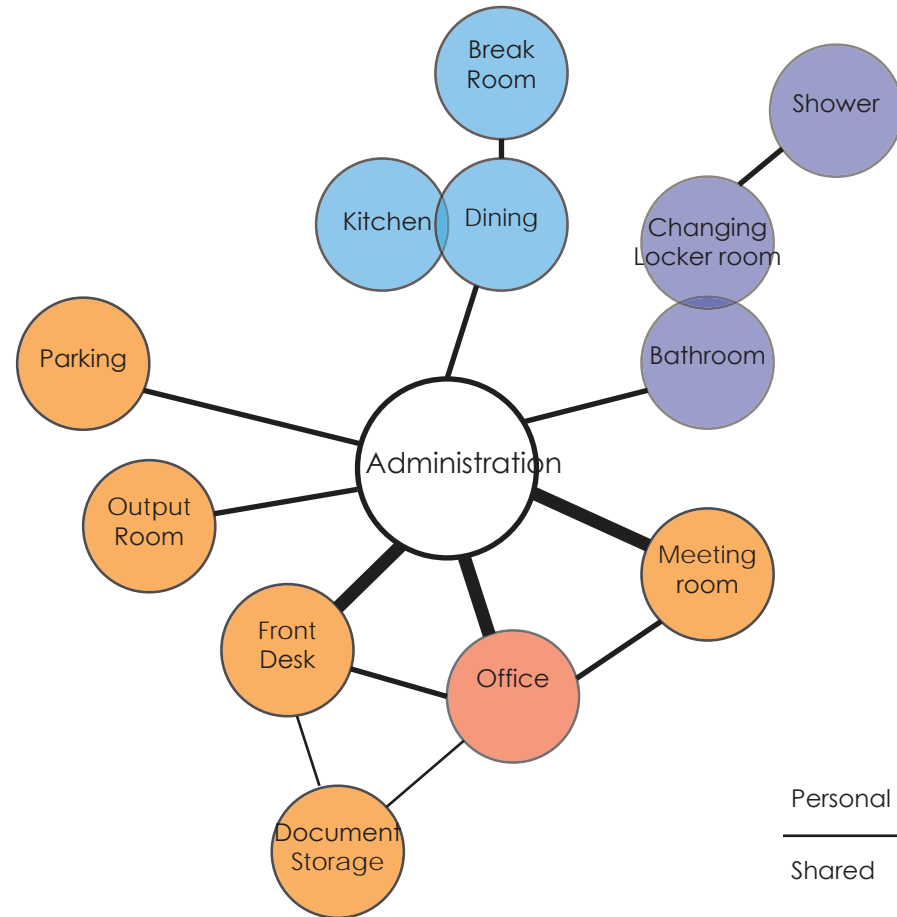
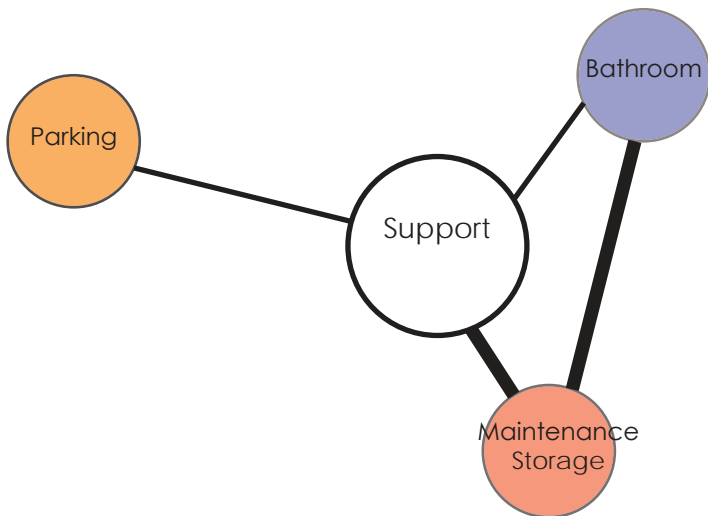
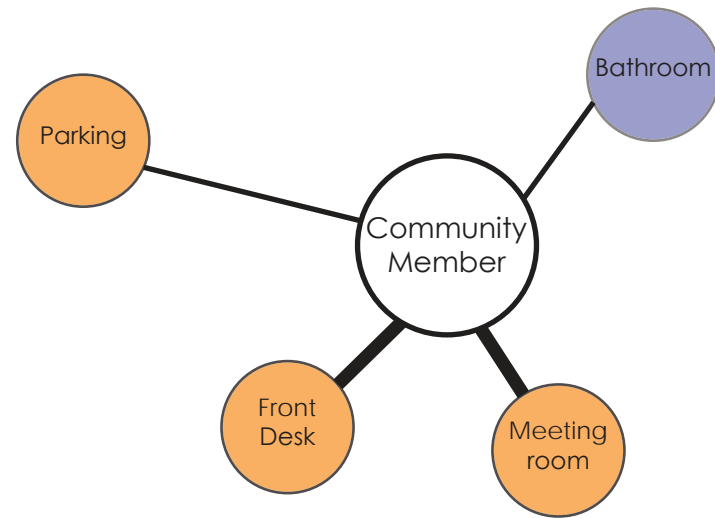


There are a lot of shared/public space meaning many of the needs coincide and can be consolidated into groups.



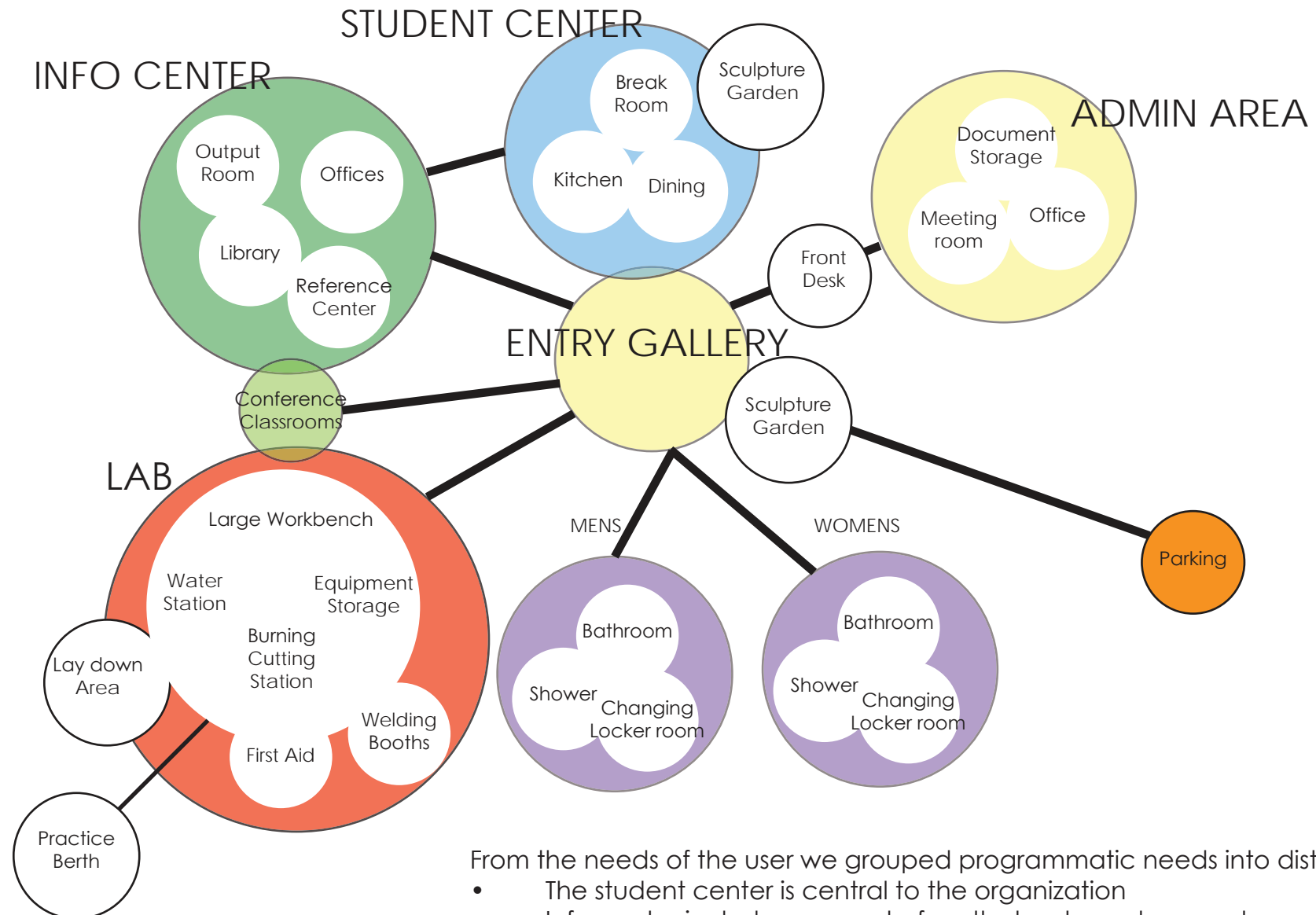
# User Diagrams

Swan Island Training Center



# Adjacency Diagram

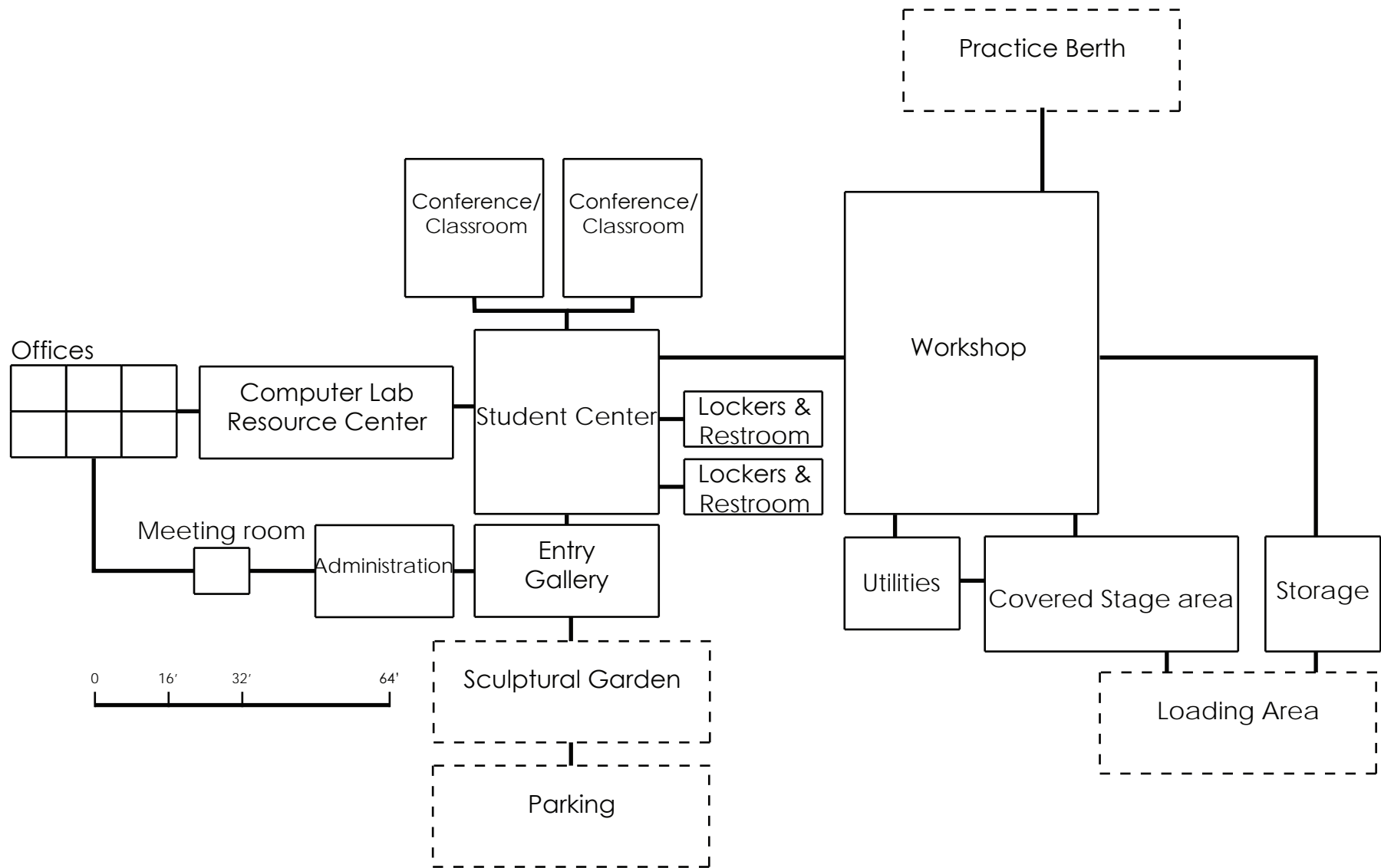
Swan Island Training Center



- From the needs of the user we grouped programmatic needs into distinct areas.
- The student center is central to the organization
  - Info center includes access to faculty, books and computers

# Scaled Relationships

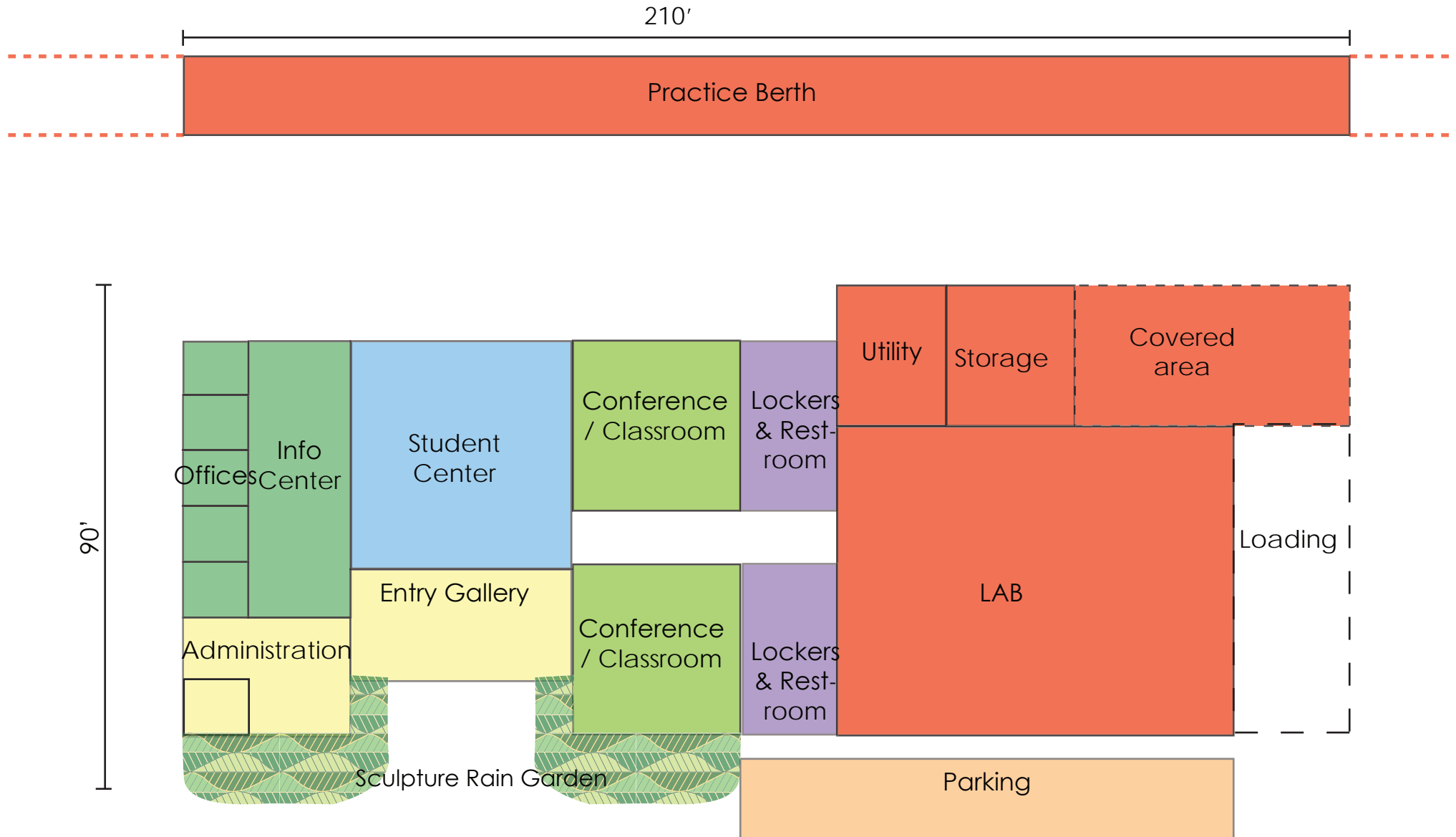
Swan Island Training Center



- The Workshop is a major programmatic component due to its size
- Student center is centrally located
- A procession from the parking lot through a garden and entry gallery to the student center
- Classroom/ Conference allows flexibility to host events that can connect to the student center

# Schematic Plan

Swan Island Training Center



The practice berth stretches to be seen from the student center making that visual connection to learning, training, practice, and work to showcase the training centers values to the visitors, prospective students and employers. Student center also functions as a place for shipyard workers to rest, meet, and wait for work or transit.

# Area Chart

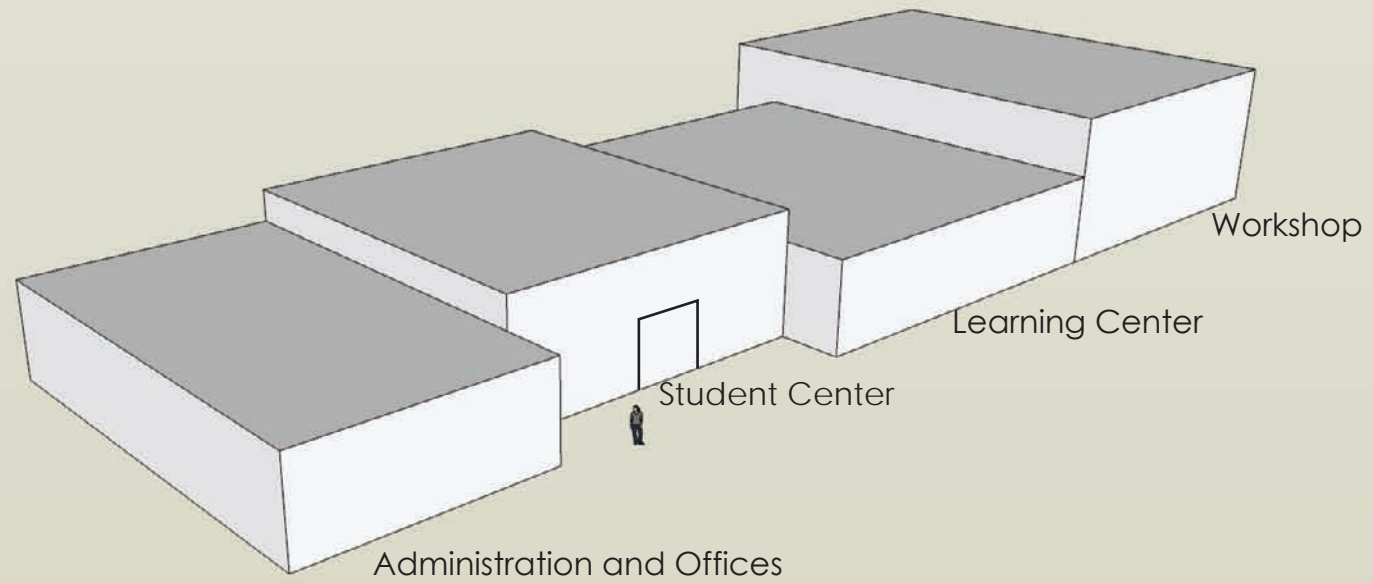
Swan Island Technical Center

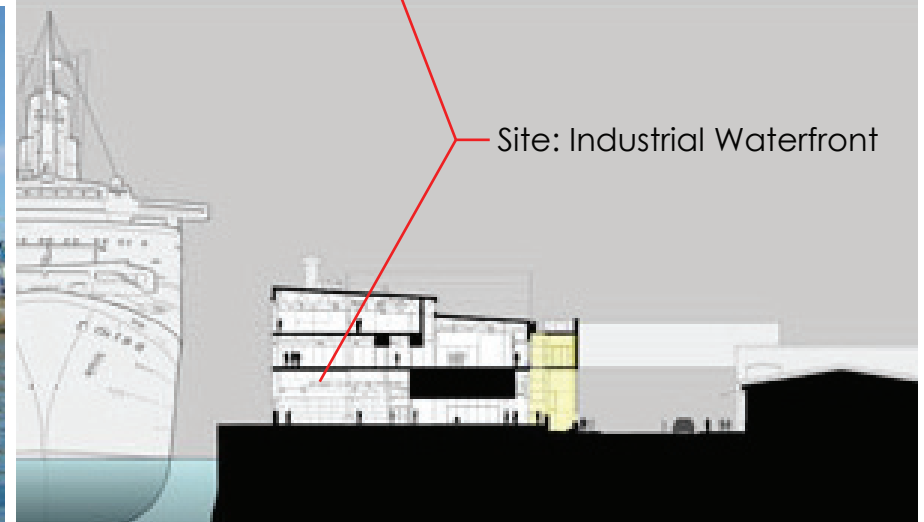
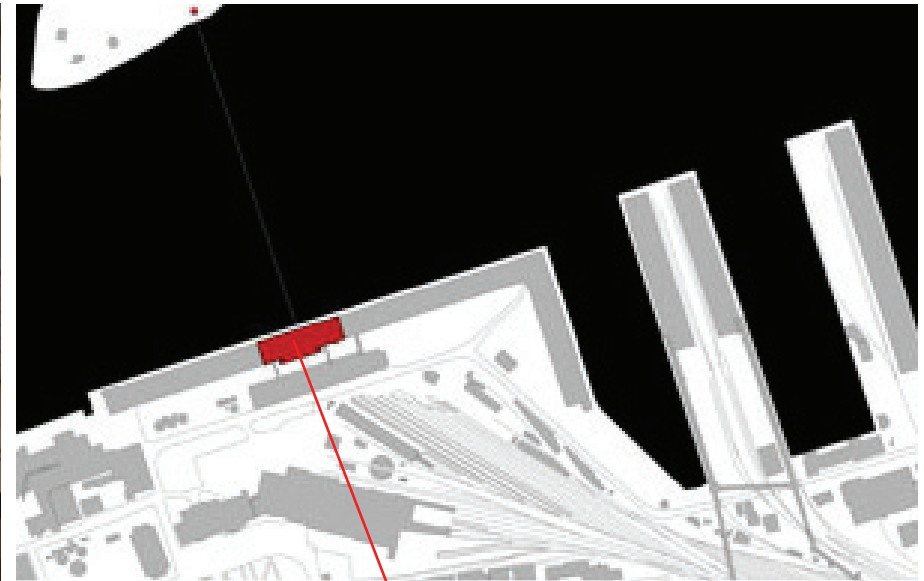
Name	Existing sq. ft.	no. of rooms	Length	Width	Area	
Students/Teaching center						
Workshop/Lab	3850.5	1	55	70	3850	
Storage	0	1	25	25	625	
Cover outdoor staging area	0	1	25	55	1375	5850
Main Classroom	960	0	0	0	0	
Conference rooms	0	2	30	30	1800	
Computer Lab/ Output room	0	1	55	20	1100	
Lockers/ Restroom	108	2	12	30	720	
<b>Faculty Areas</b>						
Offices	480	5	12	10	600	
Faculty break room/ kitchen	380	1	12	10	120	
Conference/meeting room	0	1	12	10	120	
<b>Support Areas</b>						
Utilities	0	1	25	20	500	
Student Center	0	1	40	40	1600	
Entry Gallery	0	1	20	40	800	
Administration	0	1	20	30	600	
<b>Total</b>	<b>5778.5</b>				<b>13810</b>	
<b>Outdoor Areas</b>						
Loading Area	0	1	60	22	1320	
Outdoor Rain/Sculptural Garden	0				800	



# Massing Model

Swan Island Technical Center





NSCAD University Port Campus  
Nova Scotia, Canada  
MacKay-Lyons Sweetapple Architects

- Industrial doesn't mean it has to be walls of corrugated metal.
- The following are examples of how being resourceful with materials and arrange and compose them can be very pleasant.

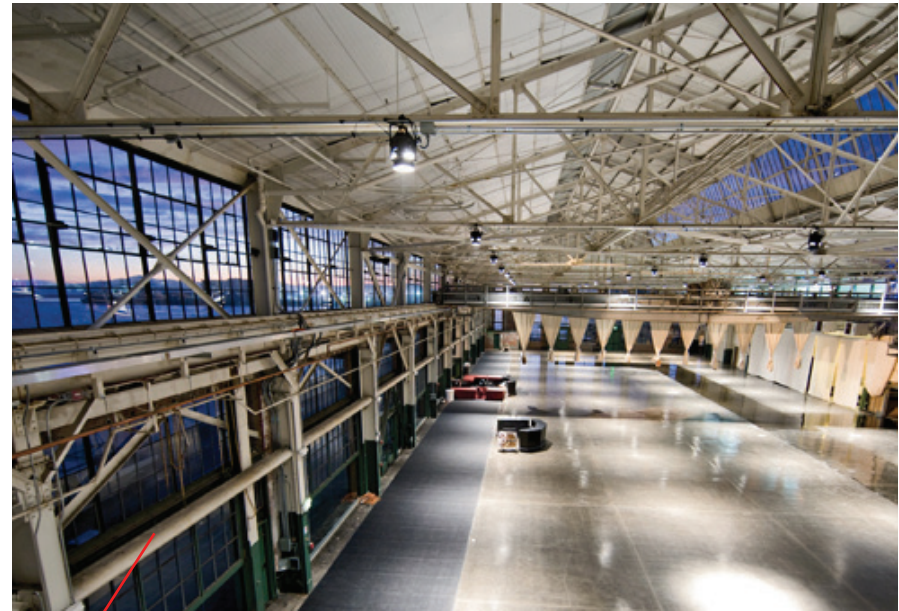


Site: edge of San Francisco Bay area

Open plan/ day lighting

The Ford Assembly Building  
Richmond, California  
Marcy Wong Donn Logan Architects

Indoor/ outdoor  
connectivity



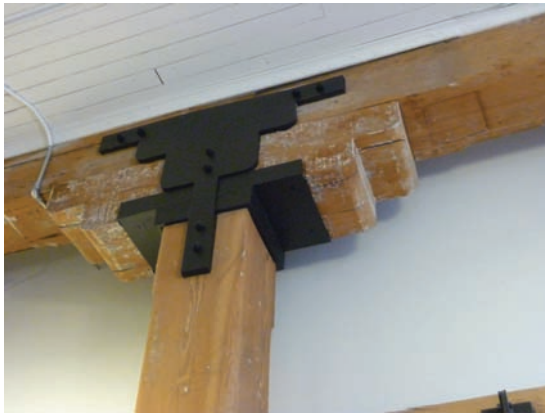


### Interiors Areas

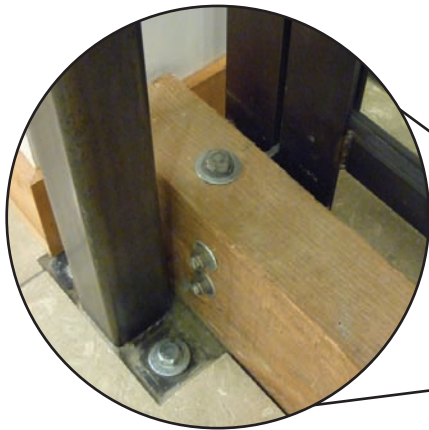
Needs:

- Inviting to public
- Clean

Opportunity to reclaim wood from Building 10



Heavy Timbers  
Steel connections  
Glass



### Workshop Areas/ Exteriors

Needs:

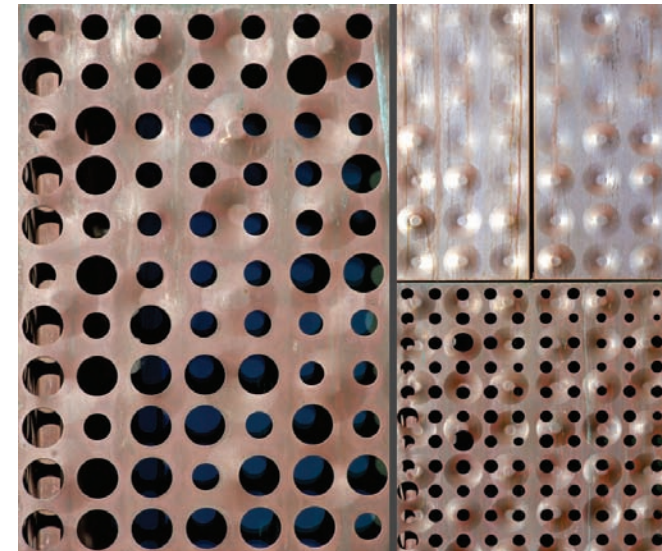
- Durable
- Flexible

Steel Frame and Shell

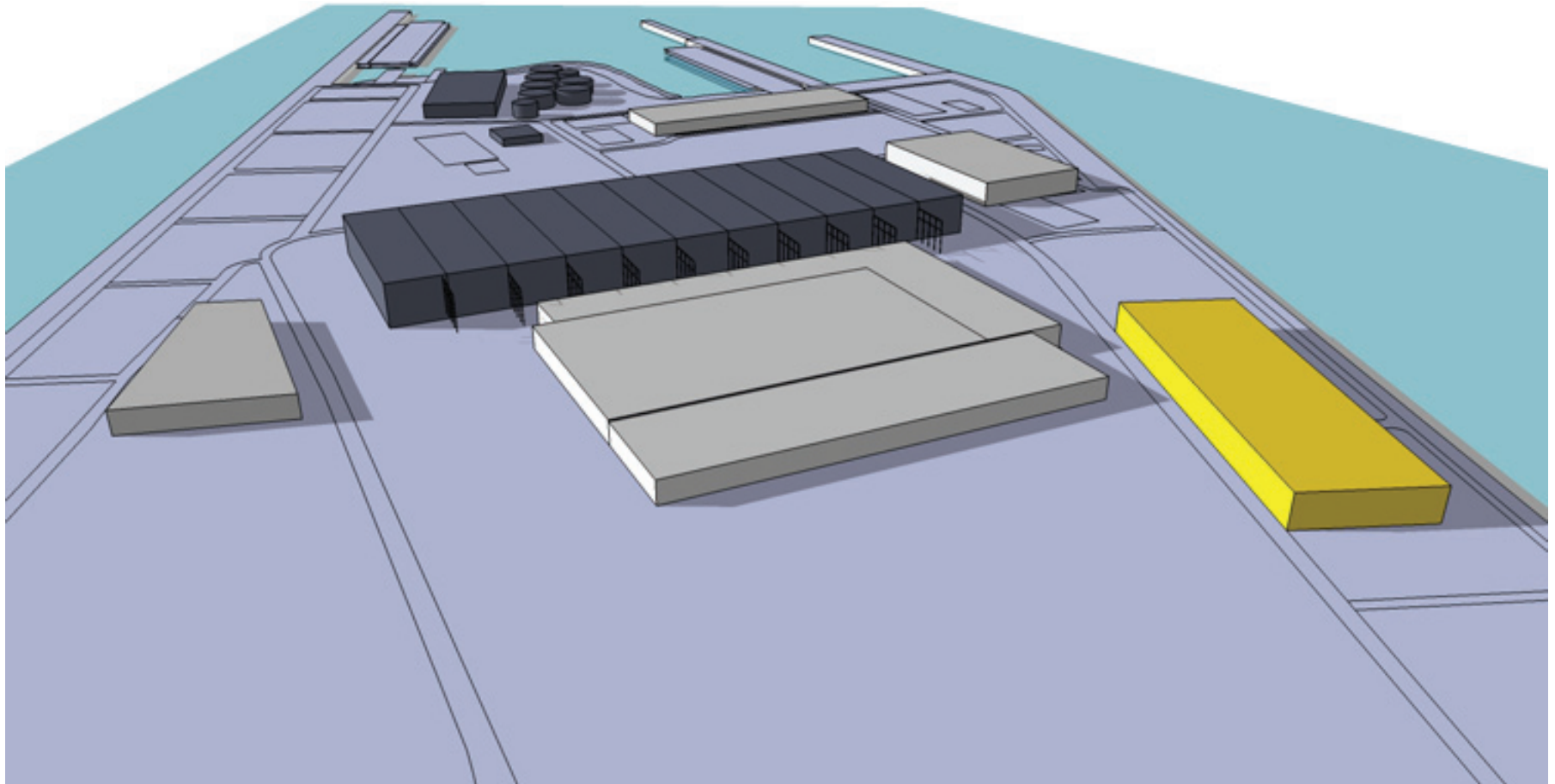
Cost effective  
Large spans  
Repeatable



<http://www.icomengineering.com/page.asp?id=346&title=acciaierie>



[http://figure-ground.com/de\\_young/0018/](http://figure-ground.com/de_young/0018/)



Question?