



Bridgeport, CT

The Framework of (un)Successful Design

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CIE 412: Engineering Decisions

Ethics in Engineering: Start with our Goal

NSPE Code of Ethics for Engineers

Preamble

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct.

I. Fundamental Canons

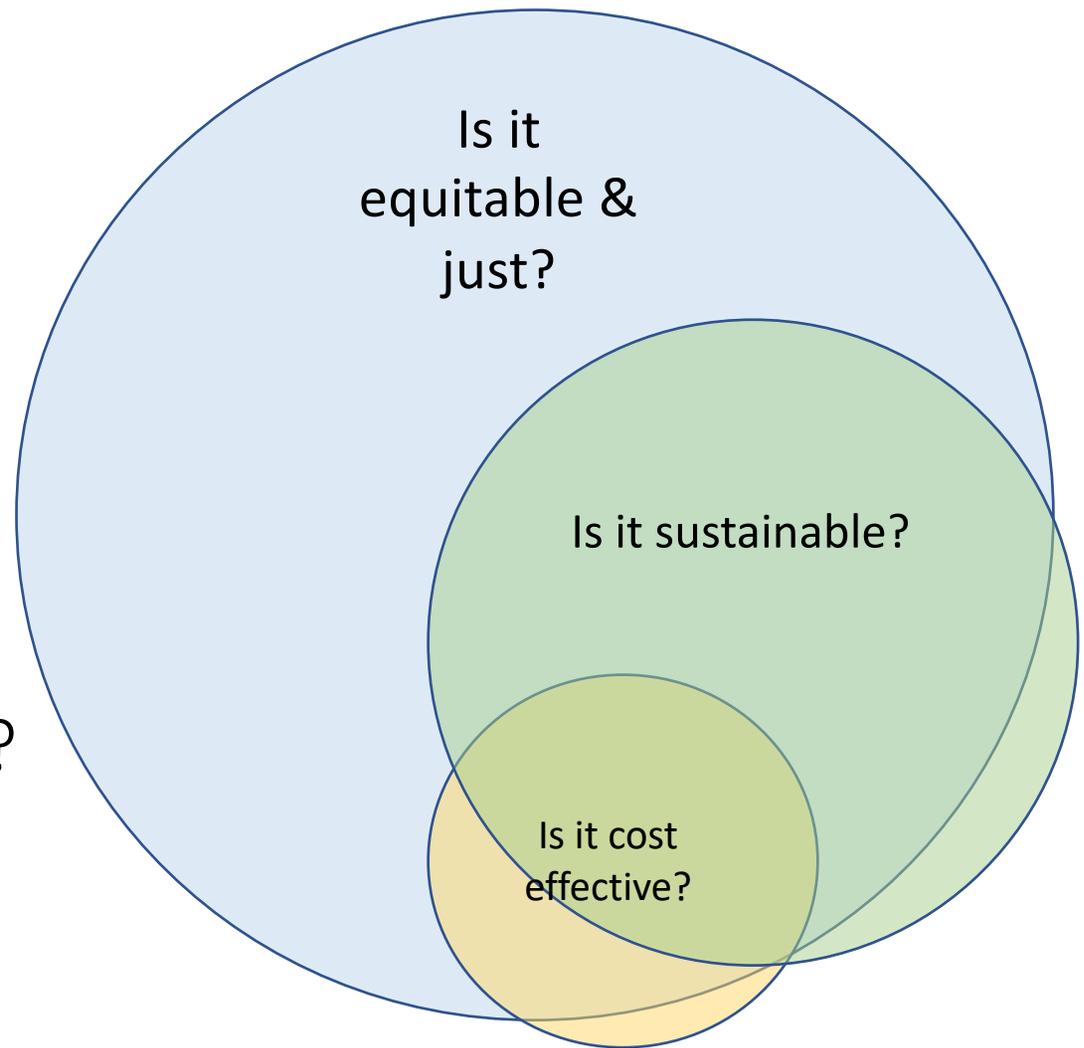
Engineers, in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health, and welfare of the public.

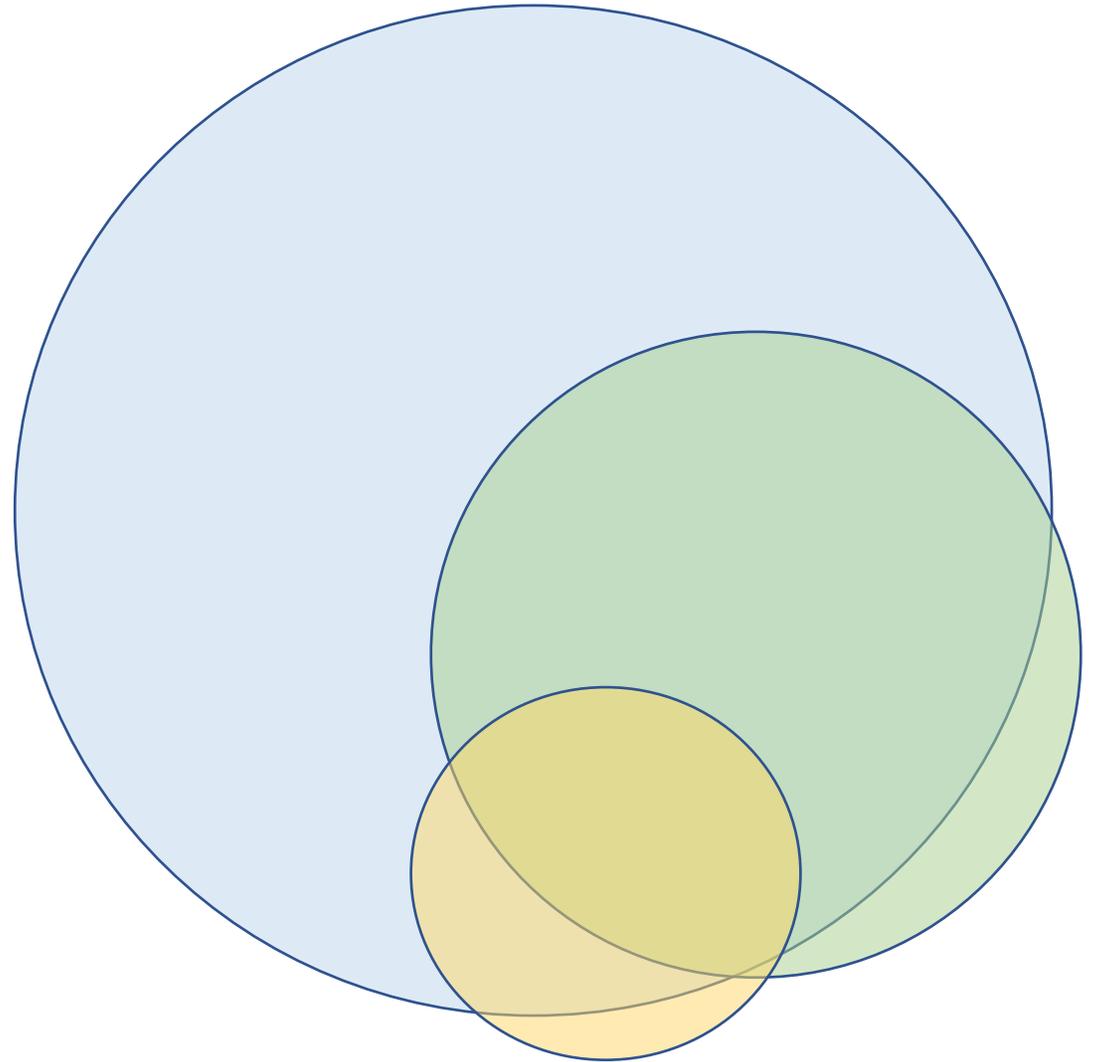
Are we thinking about who success is (currently STILL not but needs to be) for?

How are we currently evaluating success?

How was success defined?



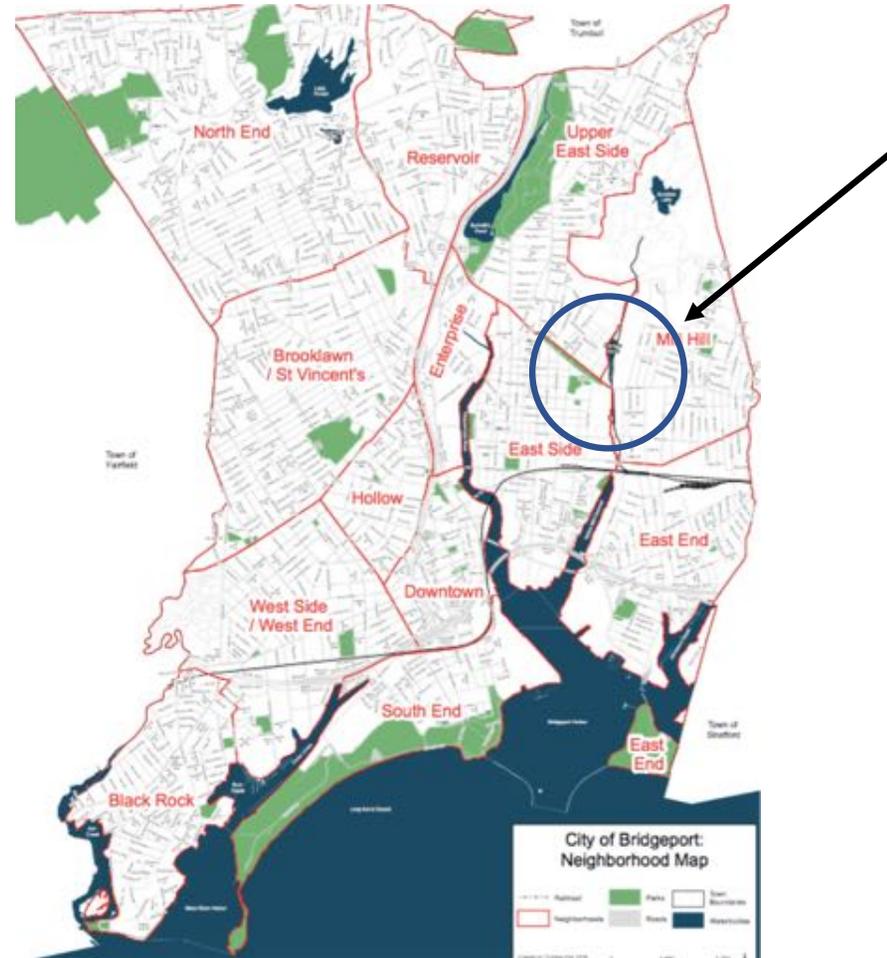
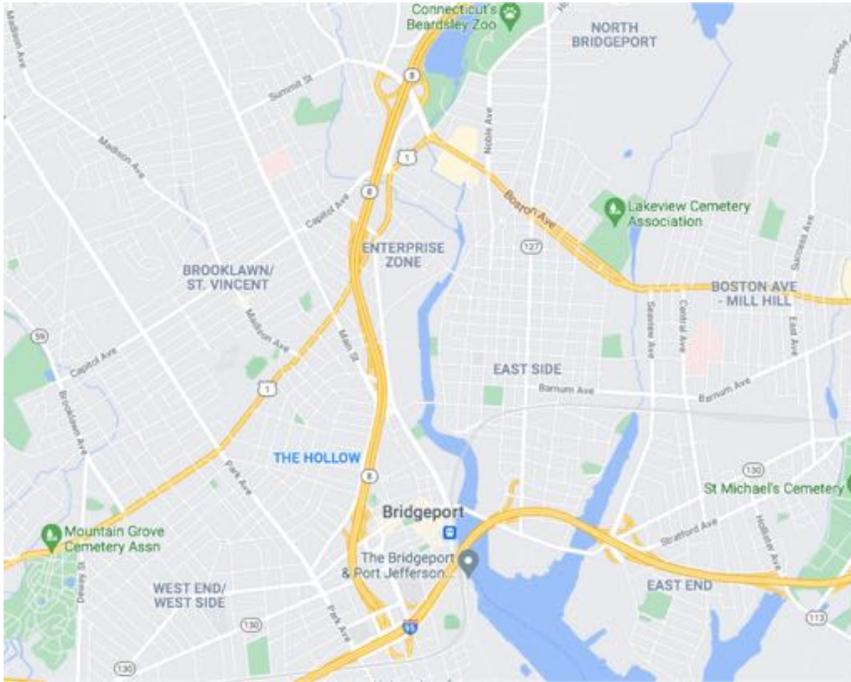
This is about expanding our understanding of our decision criteria – what does the result of this expansion look like in our choices?



Bridgeport, CT



Neighborhood Map





The old East Siders would say, the Czar built that factory.....

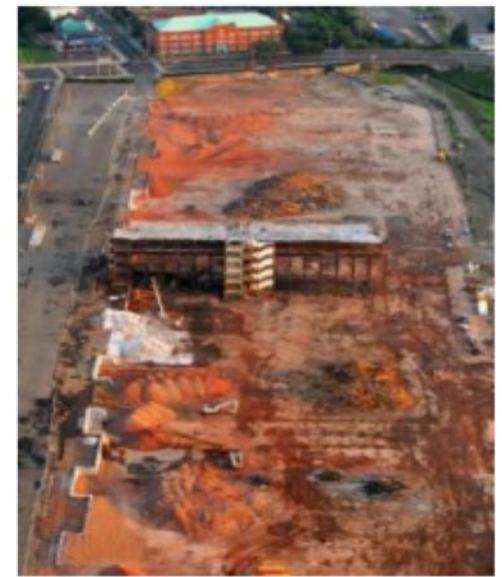
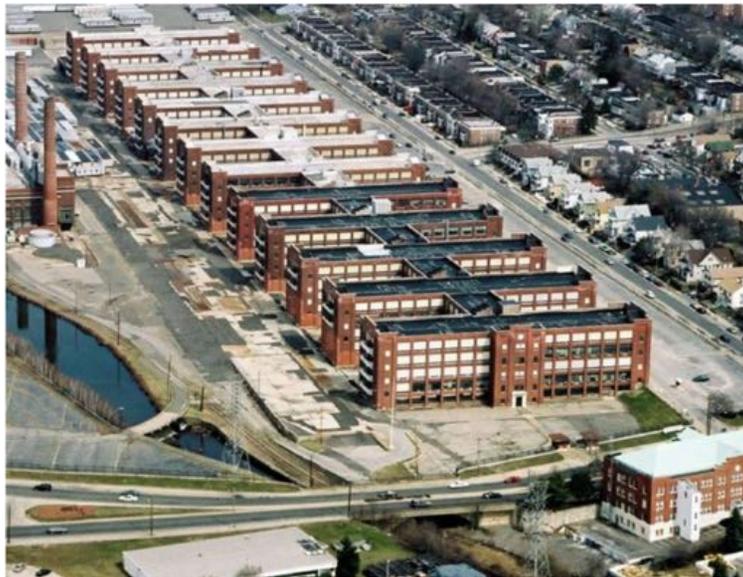


WORKS OF THE UNION METALLIC CARTRIDGE COMPANY, BRIDGEPORT



East Side Bridgeport

A Cityscape Made by the Great War



History of the Site

- Initial site construction in 1915 – Remington Arms – WWI munitions
- General Electric (GE) purchased the site in 1920
- Work force during WWI – 20,000; during WWII – 12,000
- 1.5 M ft² building; 5 stories; structured to withstand bomb attack
- GE manufacturing at the facility from 1920 – 2008
- Site is ~ 77 acres and included a factory; paved lots; a power station; and a watercourse that included a 7 acre lake (Stillman Pond), a concrete-lined channel and a low-head dam at the site boundary.

History of the Site (continued)

- GE facility closed in 2008
- Site assessment conducted 2007 – 2012
 - PCBs, SVOCs, VOCs, PAHs and metals
 - Ecological and human health risks
 - Evaluation of remedial alternatives
- Demolition of the facility 2011 – 2013
- Remediation and Site Redevelopment 2013 - 2018



Remediation | Redevelopment

- Conducted and completed following CT Site Characterization Guidance
- Full assessment of potential re-use of site materials (ex: crushed brick or concrete masonry as clean fill; ground asphalt for sub-grade use)
- Full assessment of surface water and groundwater transport and exposure pathways for hydrocarbons, VOCs and SVOCs
- Soil evaluation w.r.t. **residential** direct exposure criteria (RDEC) requiring *inaccessibility*; inaccessible defined as located below a building; 2 feet of clean fill + an asphalt cap; or 4 feet of clean fill.

Connecticut Post – June 21, 2013

NEWS // LOCAL

Toxins aside, former GE site slated for new high school

Bridgeport: Concerns persist about building school on contaminated land



Mr. Onte Johnson, Bridgeport resident and community organizing rep for Sierra Club

Quotes

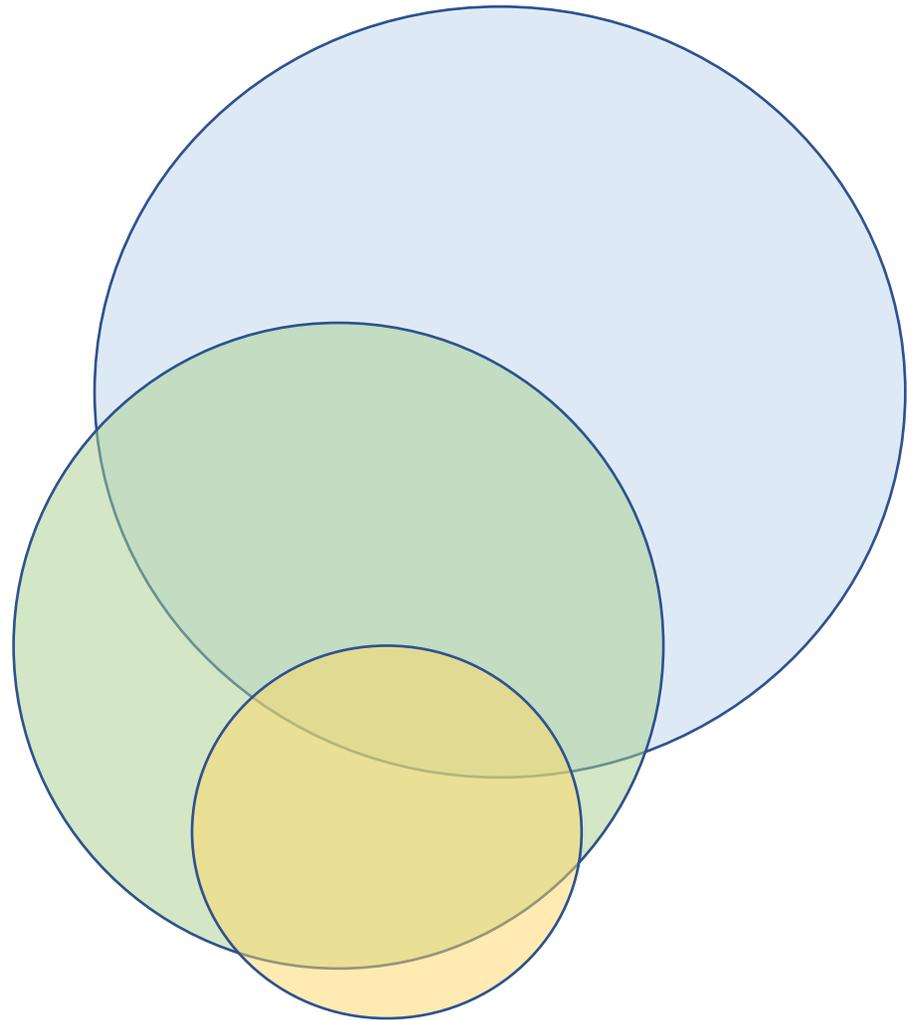
- *"At first blush, you may say `Why not build away from an industrial area?' "But we do encourage reuse of property, even if pollution is on it -- as long as the cleanup is done well."* [CT DEEP]
- *The GE parcel represents the best opportunity to build a quality school campus that will include a football field, track and athletic fields.*
[Director of The Bridgeport Office of Planning and Economic Development]
- *The 800 students who go to school in the future Harding High will be safe as long as remediation is done properly.* [CT DEEP and US EPA]
- *There are many once-contaminated sites across the country that have been cleaned up and put back to use. It is done all the time* [co-director of the Brownfields Center and Environmental Law Institute in Washington, D.C.]

Harding High School – Opened in 2018



How do we think about the context for this definition of *success*?

- Is it cost effective?
- Is it sustainable?
- Is it equitable and just?



**SCOPE OF WORK FOR
COMPLIANCE WITH DIRECT EXPOSURE CRITERIA**

**CORRECTIVE ACTION
STEWARDSHIP PERMIT**

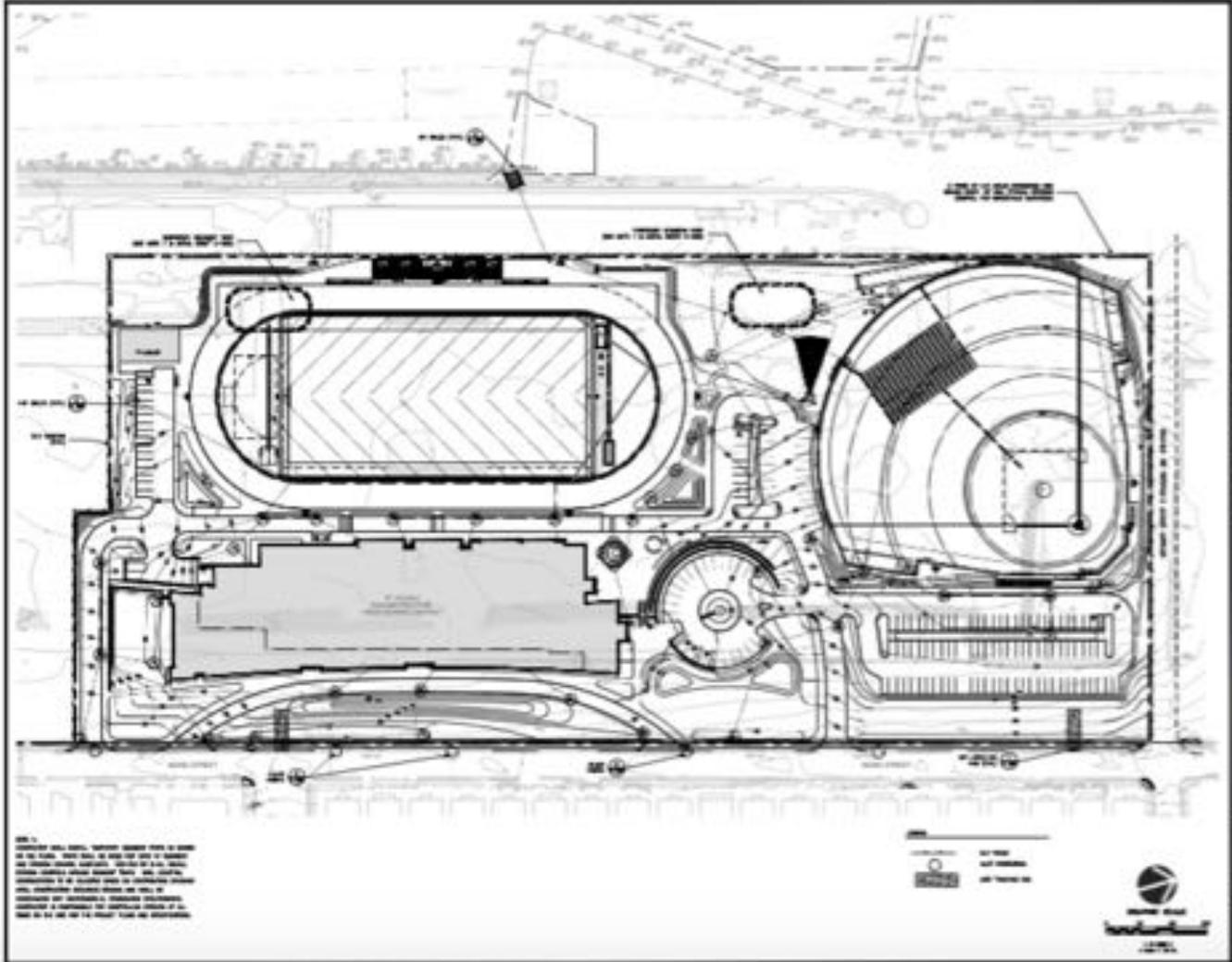
**NEW HIGH SCHOOL PARCEL
379 Bond Street
Bridgeport, CT**

Stewardship Permit DEEP/HWM/CS-015-029

June 30, 2015

Remediation and Redevelopment Specifics (all compliant)

- Concentrations of one or more contaminants in soil were in excess of the RDEC across the majority of the site and ID'd for excavation.
- Soils that exceeded the RDEC were excavated/graded where needed such that, after placement of clean cover material, soils that previously exceeded the RDEC were inaccessible.
- Full erosion- and dust-control were implemented during demolition and construction; full HASP and RDEC documentation and compliance
- Site plans included a carefully delineated mixture of areas paved with concrete; landscaped areas; recreational fields; and buildings.



WARREN HARDING HIGH SCHOOL
 CITY OF WARRENTON
 1000 10TH AVENUE
 WARRENTON, OREGON 97146

C-106

How does Bridgeport see itself?

“Bridgeport is rebounding from a loss of jobs and population, and is transitioning into a role as both a bedroom community for NYC, and as oasis of relatively low-cost housing in the otherwise prohibitively expensive Fairfield County. Located just 63 miles from NYC and accessible via a variety of transportation, it is ideally suited to families seeking a refuge from the high cost of living in lower Fairfield county.”

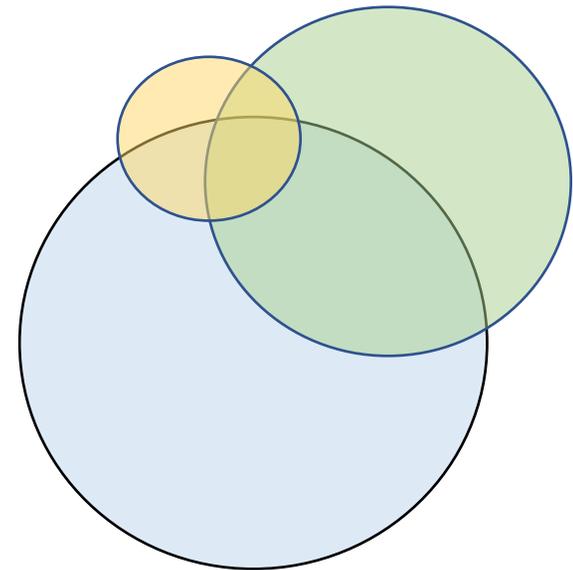
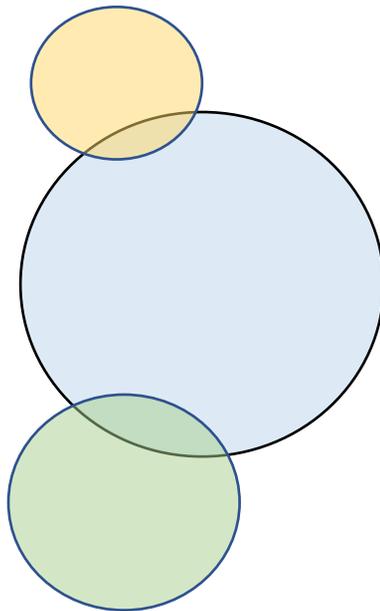
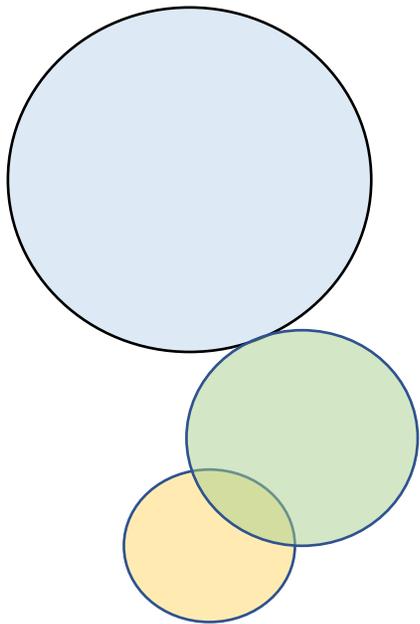
Is the outcome of this project equitable and just?

• Population	City: 150K	County: 1M	State: 3.6M
• Community			
• White:	City: 40%	County: 79%	State: 66%
• Black:	City: 35%	County: 11%	State: 10%
• Other Race:	City: 16%	County: 7%	State: 17%
• Asian:	City: 3%	County: 5%	State: 5%*
• Hispanic:	City: 33%	County: 14%	State: 17%
• Families LBPL	City: 16%	County: 6%	State: 10%
• Median \$\$:	City: \$24K	County: \$41K	State: \$38K
• Unemployment Rate	City: 10%	County: 7%	State: 8%

East Side | Mill Hill – Harding High School

- **94% non-White enrollment**
- **76% of students from households with incomes below median income level**

Can we actually get to equitable & just from cost effective?
How about from sustainable?
Don't we instead have to start from equitable & just?



Question the City

- How does infrastructure placement impact community health?
- How does U.S. history of redlining and restrictive covenants create disparity in where and how rebuilding occurs?
- How does land use history impact options for future construction?
- How does history create disparities in neighborhood susceptibility to chemical exposures in soil, water or air?
- How does history create disparities in % IS and heat islands?
- How does history appear to constrain the framework for ethical decision-making? How can we do this differently?