

Delaware County Route 291/13 Industrial Heritage Parkway and Greenway Landscape and Signage Guidelines

September, 2005

Prepared for:

The Delaware County Planning Department



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Pennsylvania Coastal Zone Management Program

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DELAWARE COUNTY INDUSTRIAL HERITAGE PARKWAY AND GREENWAY CORRIDOR

Encompassing a 10-mile long segment of Delaware County in Pennsylvania, the Industrial Heritage Corridor begins at the Delaware – Pennsylvania State line at the south and ends at the Philadelphia County line at the north. The corridor parallels the Delaware River to the east and Interstate 1-95 to the west. Traveling north through the corridor, there are six municipalities:

- ☐ Marcus Hook
- ☐ Trainer
- ☐ Chester City
- ☐ Eddystone
- ☐ Ridley
- ☐ Tinicum (includes Essington and Lester areas)

There are diverse conditions as the trail and greenway progress through the County. This report attempts to isolate this individuality and make recommendations specific to those particular segments, while maintaining a coherent identity and overall theme.



Delaware County Industrial Heritage Corridor (source: NASA).

Features

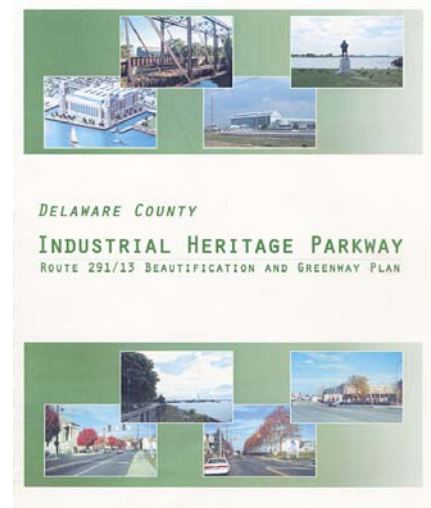
- Delaware County from the Delaware State line to the Philadelphia International Airport
- Incorporates six municipalities
- Parallels the Delaware River and Interstate I-95
- Follows 10 miles of Route 291 and Route 13
- Includes the Delaware County segment of the East Coast Greenway Trail
- Connects with East Coast Greenway segments to the south and north

BACKGROUND INFORMATION

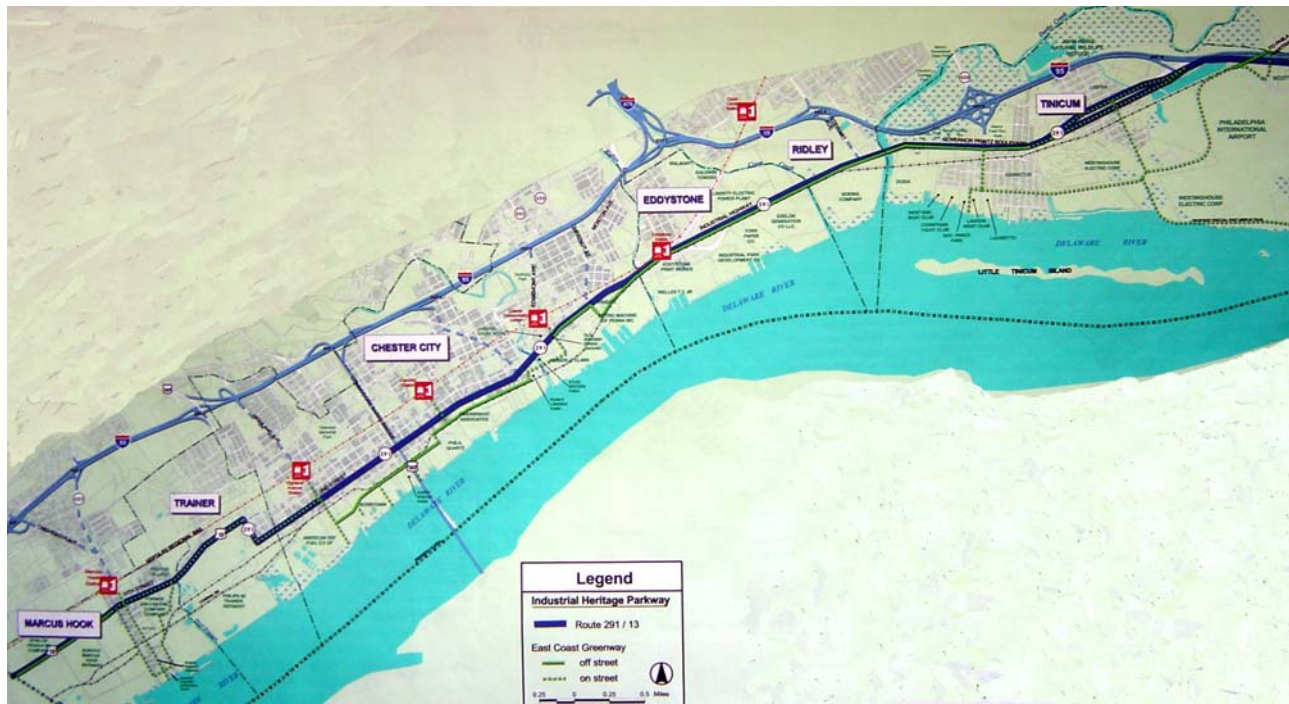
ROUTE 291/13 BEAUTIFICATION AND GREENWAY PLAN

The future for the Delaware County riverfront communities is beginning to become the present. Exciting new developments such as Rivertown, the widening of Route 291 in Chester, and improvements for the Barry Bridge Park are providing momentum to think of these waterfront areas in new ways. These new projects build upon the area's existing strengths of the major employers related to oil refineries, helicopter manufacturing and airport support services. Bordered by the dominant site elements of the Delaware River and the adjacent Interstate I-95, the County's important assets seem to many visitors to be hidden and unattractive.

To address this critical visual and access problem, the consultant team of Menke & Menke and Kise Straw and Kolodner produced a Beautification and Greenway Plan in 2002 for the corridor area from the State of Delaware/Delaware County line to the Philadelphia International Airport. The plan focused on visual improvements to one highway corridor that followed segments of Route 13 and Route 291, as well as providing plans for the Delaware County portion of East Coast Greenway Trail. To promote a unifying identity for the corridor and capitalize on its historic resources, the project's workshop participants chose a theme for Route 291/13 and the Greenway: Delaware County Industrial Heritage Parkway and Greenway.



Route 291/13 Beautification and Greenway Plan, 2002



Delaware County Industrial Heritage Corridor Map from the 2002 project poster.

ROUTE 291/13 LANDSCAPING AND SIGNAGE PROJECT

With an identity and general plan in place, a landscape and signage manual was the next step for the consultant team. Because a graphic identity was the most important component of unifying the disparate corridor segments and providing clear access to destination points, Mitchell associates joined the team as a graphic designer. As with the first project, a steering committee comprised of the Delaware County Planning Department staff, municipal representatives, and other members of the Coastal Zone Management Task Force guided the planning process.

The steering committee reviewed several graphic design concepts for appropriate emblems and colors. Seeking to reconnect visitors and residents with the Delaware River, the color blue and a ship symbol were selected. The ship symbol also reflected the County's significant shipbuilding past, while the gears surrounding the ship mirrored its historic industrial foundation.



Route 291/13 Graphic Emblem

Project Goals

- Create an industrial heritage graphic identity program for signage and banners
- Coordinate the industrial heritage theme for street improvements
- Reflect diverse site conditions
- Integrate individual community identities, assets, and considerations
- Supply design details to encourage implementation
- Provide a user-friendly manual incorporating the above

Similarly, street improvement concepts sought to unify the corridor using the industrial heritage theme. The theme and selected graphic design concepts were then utilized to select colors and prototypes to reinforce a coordinated design approach.

However, both landscaping and signage elements endeavored to respond to the unique conditions of each corridor or greenway segment. Each municipality should retain its individuality and highlight its unique assets through directional, identification, and interpretive signage. Special conditions that can affect the design plans, such as security concerns near the airport, must also be accommodated.

In order for the plans to be installed consistently, the landscaping and signage project outlined general guidelines for the highway and greenway. Details were then supplied for specific site elements appropriate for that segment. The resulting design manual was then formatted so that it could be easily accessed on a web site, distributed on a CD, or printed.



Delaware County Greenway Emblem

HOW TO USE THIS DESIGN MANUAL

This manual is intended to be used in two ways as an implementation tool:

- As a coordinated set of landscaping and signage site improvements for a particular segment of the Route 291/13 or East Coast Greenway (ECG) Industrial Heritage Parkway (IHP) Trail
- As a guideline for an individual site element such as a banner or a tree

In either case, it is important for the user to understand the overall goals and context of the IHP and Greenway. Even if an individual element is chosen for installation, it is always useful to be aware of how other existing conditions and future improvements will affect that site element.

The next step is to find the particular area of interest within the Delaware County Industrial Heritage Corridor. Five detail maps, labeled A – E, are color coded with a Landscape Type that reflects the environment that can be found within that particular segment. With the Landscape Type determined, find the Landscape Type in the Route 291/13 IHP Guideline section or the ECG Trail section.

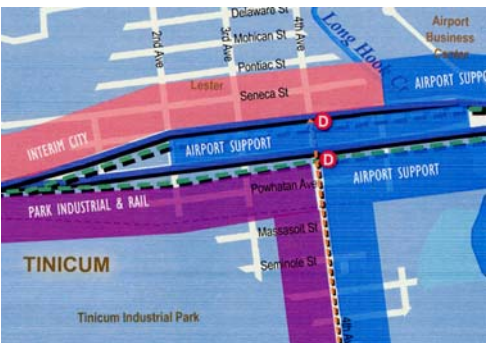
Within the Landscape Type part of the manual, read the summary information about its existing characteristics and the overall improvement approach. In the section, there will be a list of site elements that are appropriate for this segment of highway or trail. For details regarding any particular element such as a sign, banner, or tree, turn to the landscape, hardscape, or signage element for installation information.

Supplementary information is available in the appendix.

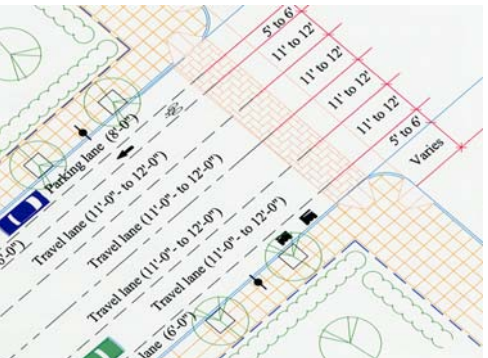
For the next step implementation, please consider the enclosed general guidelines only. Registered professionals should be consulted for site engineering, the preparation of construction and bid documents, and the acquisition of permits. These may include architects, landscape architects, civil and structural engineers, lighting designers and electrical engineers.

Recommended Steps

1. Read introduction to understand the Industrial Heritage design framework
2. Find location to determine the Landscape Type



- ### 3. Review the Landscape Type of the improvement area

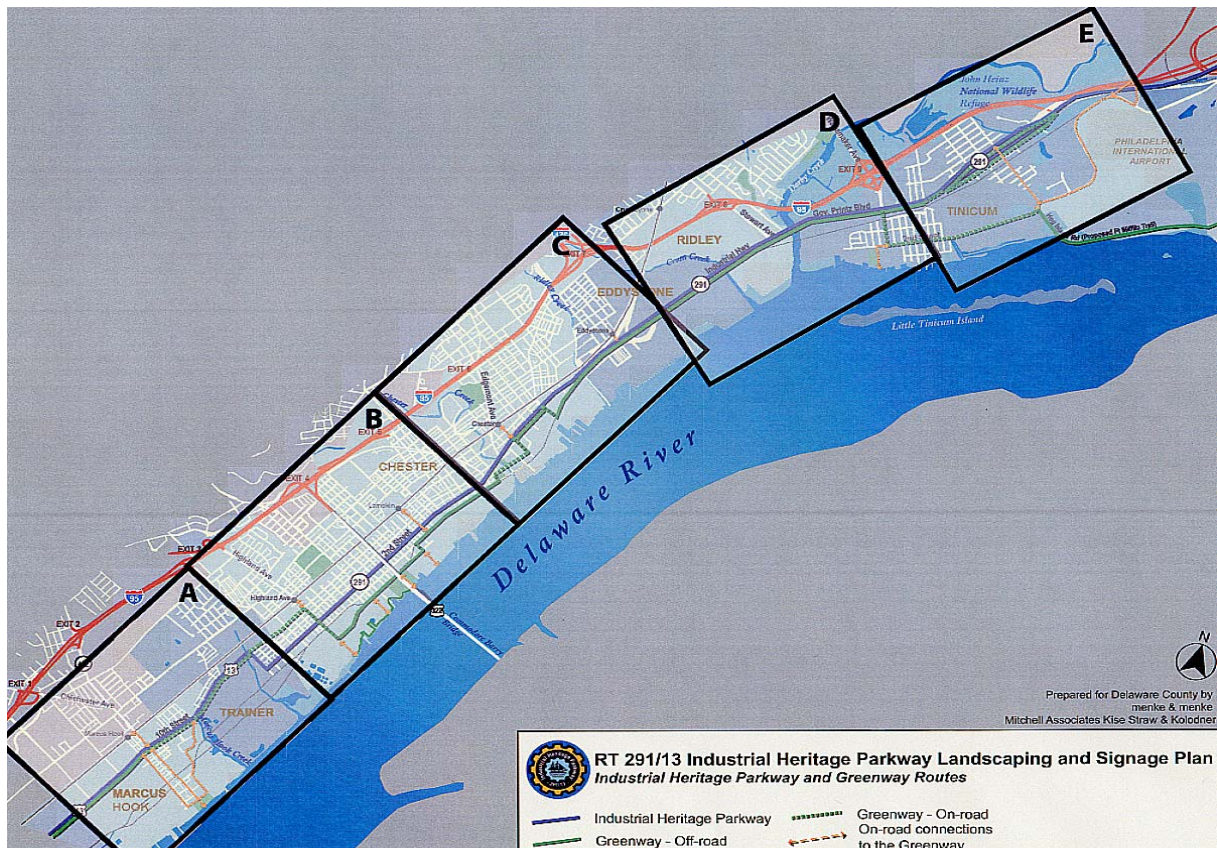


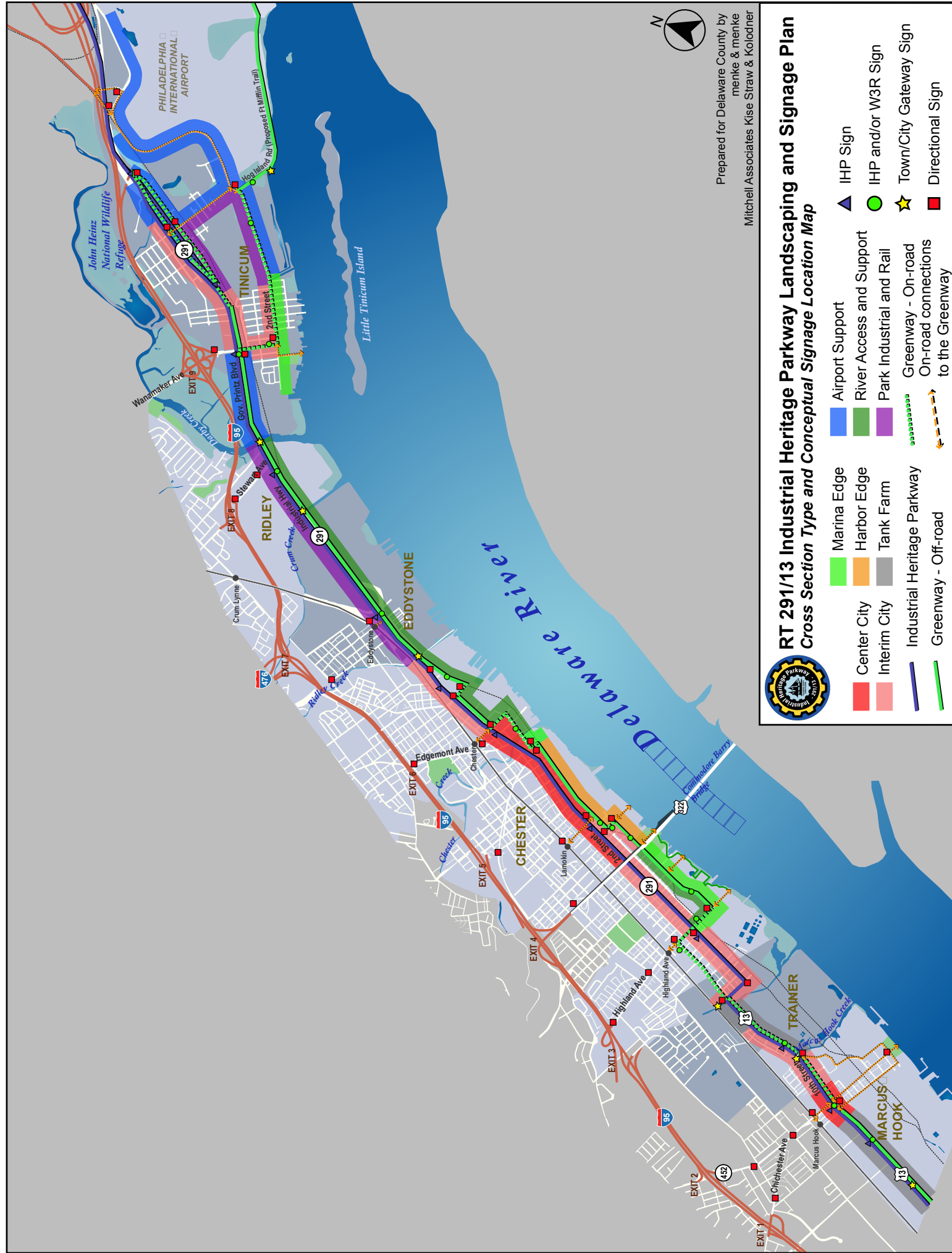
4. Select the individual landscape and signage elements for the type area
5. Apply supplementary considerations, applicable regulations, and appendix information

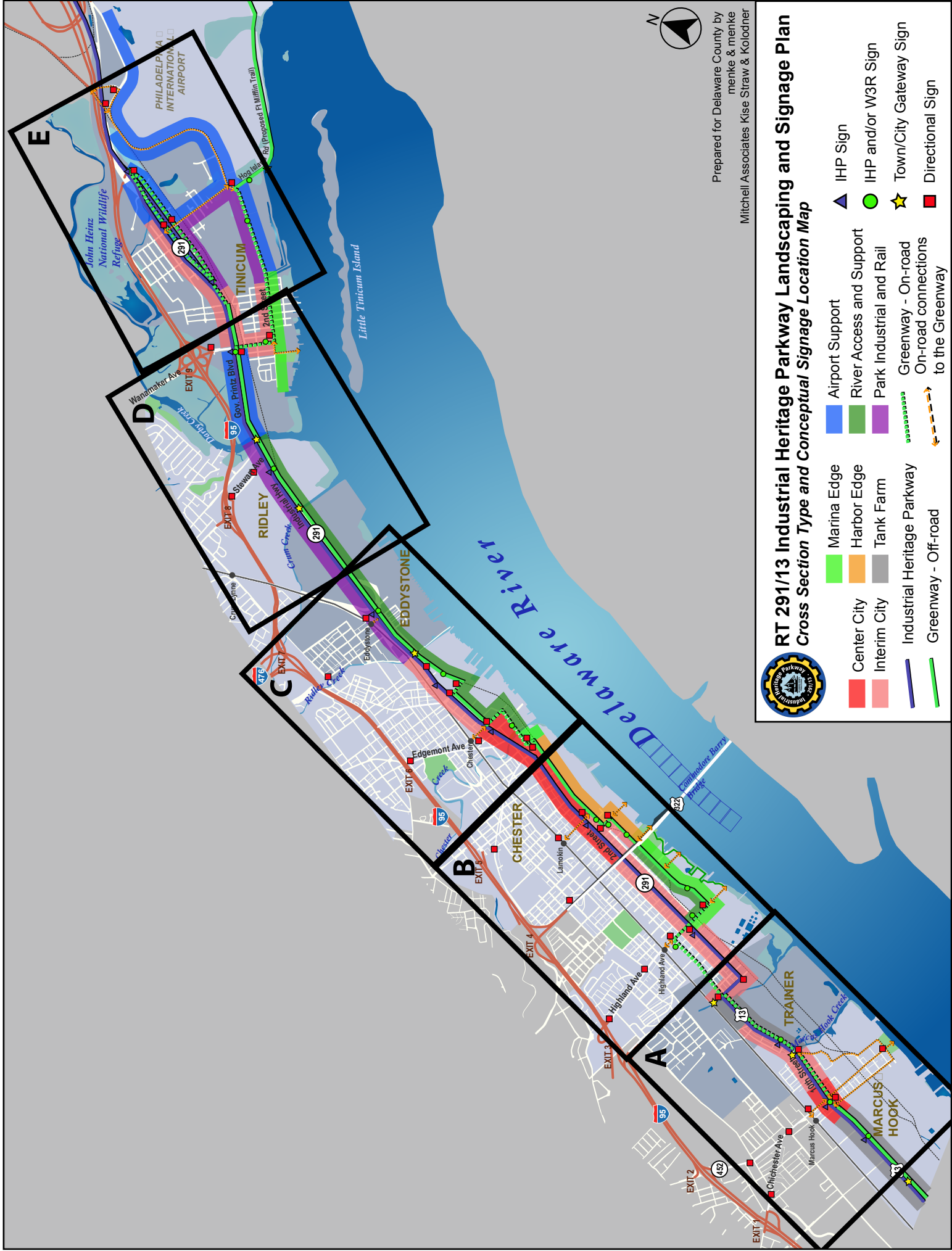
MAP COMPILATION

The base data for the maps in this report were collected while preparing the *Delaware County Industrial Heritage Parkway Route 291/13 Beautification and Greenway Plan*, which was completed in 2002. Using base information such as parcel files from Delaware County, river and wetlands information from the Pennsylvania Department of Environmental Protection, and street centerlines from the Pennsylvania Department of Transportation, these files were compiled into Geographic Information Systems. The maps were then graphically altered using Adobe Illustrator software. While every attempt was made to make them as accurate as possible by field checking, the magnitude of changes to the study area and the large area covered made it likely that some errors or omissions may have been shown. Please verify the existing conditions prior to proceeding with any more detailed implementation.

The plans are reproduced in the report in a wide range of scales. The overall project area is shown on some, with a key map indicating the areas shown at larger scale. While the files are drawn electronically in the computer at full scale, the images reproduced here vary from overall project area at a scale of about one inch to a mile to detailed plans at one inch equaling 20 feet. Additional sections and images attempt to make the area's complexity less overwhelming to the report user.







RT 291/13 Industrial Heritage Parkway Landscaping and Signage Plan Cross Section Type and Conceptual Signage Location Map

- | | | | |
|-----------------------------|--------------------|-------------------------------------|------------------------|
| Center City | Marina Edge | Airport Support | IHP Sign |
| Interim City | Harbor Edge | River Access and Support | IHP and/or W3R Sign |
| Industrial Heritage Parkway | Tank Farm | Park Industrial and Rail | Town/City Gateway Sign |
| Greenway - Off-road | Greenway - On-road | On-road connections to the Greenway | Directional Sign |

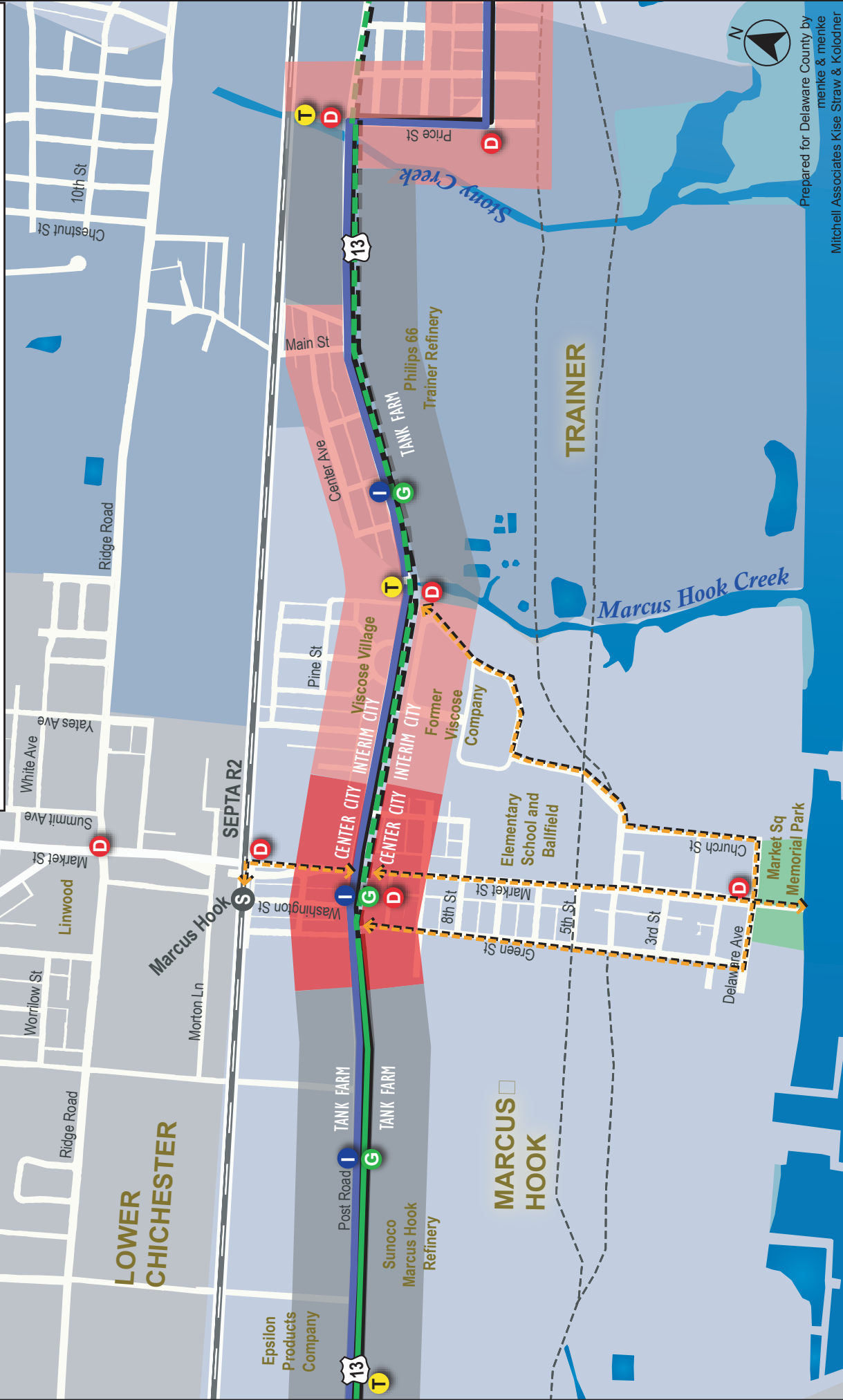
Prepared for Delaware County by
menke & menke
Mitchell Associates Kise Straw & Kolodner



RT 291/13 Industrial Heritage Parkway Landscaping and Signage Plan

Cross Section Type and Conceptual Signage Location Map

- | | | |
|-----------------------------|-------------------------------------|------------------------|
| Center City | Marina Edge | SEPTA R2 Station |
| Interim City | Harbor Edge | IHP Sign |
| Industrial Heritage Parkway | Tank Farm | IHP and/or W3R Sign |
| Greenway - Off-road | Airport Support | Town/City Gateway Sign |
| | River Access and Support | Directional Sign |
| | Industrial and Rail | |
| | Greenway - On-road | |
| | On-road connections to the Greenway | |



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RT 291/13 Industrial Heritage Parkway Landscaping and Signage Plan

Cross Section Type and Conceptual Signage Location Map

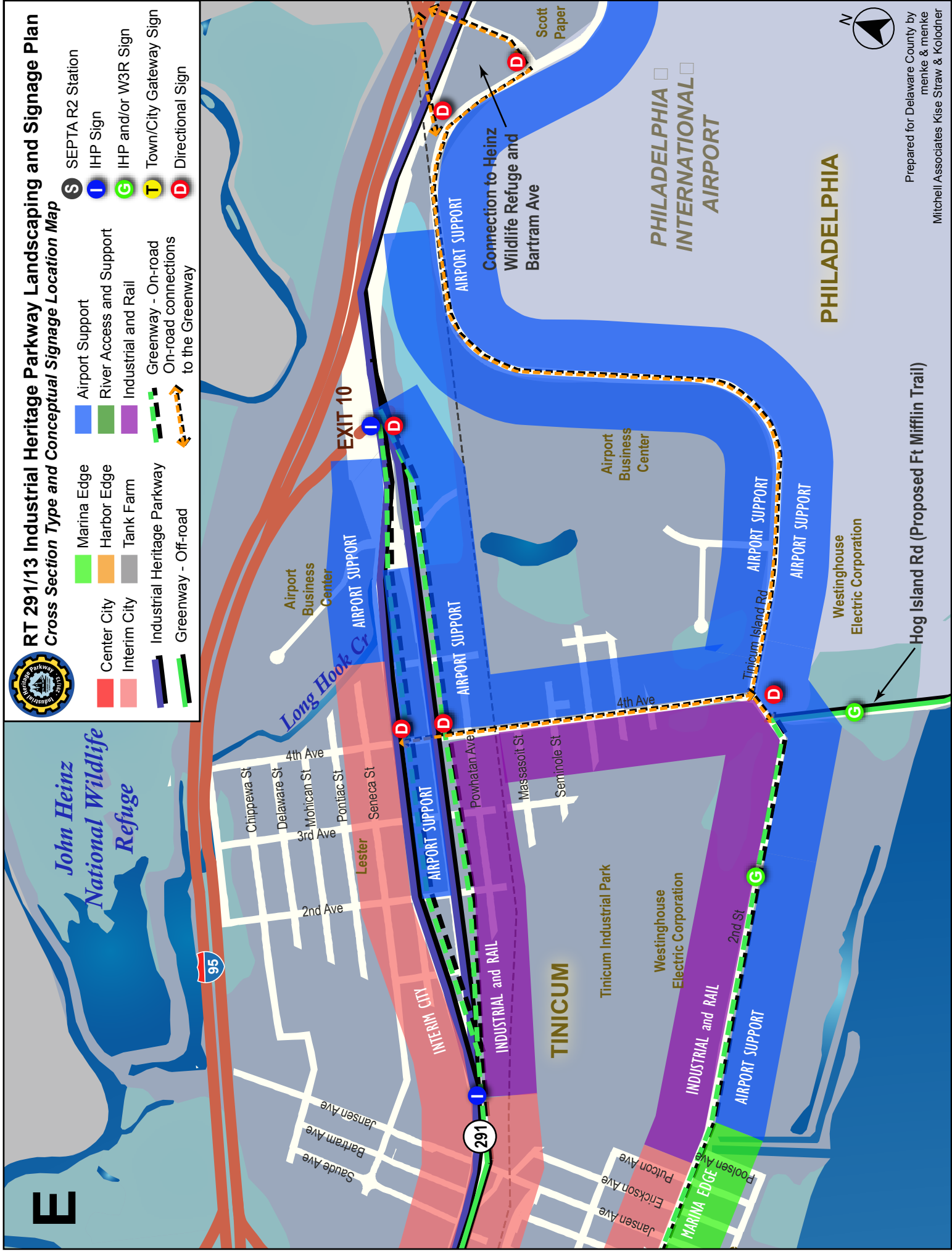
- | | | | |
|--|-----------------------------|--|-------------------------------------|
| | Marina Edge | | Airport Support |
| | Center City | | River Access and Support |
| | Interim City | | Industrial and Rail |
| | Industrial Heritage Parkway | | Greenway - On-road |
| | Greenway - Off-road | | On-road connections to the Greenway |
-
- | | |
|--|------------------------|
| | SEPTA R2 Station |
| | IHP Sign |
| | IHP and/or W3R Sign |
| | Town/City Gateway Sign |
| | Directional Sign |







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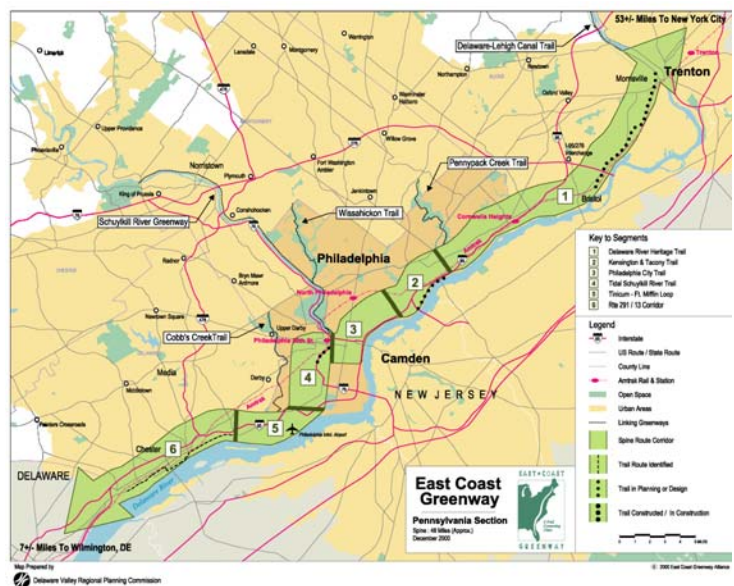


INTRODUCTION

The East Coast Greenway and Industrial Heritage Parkway, although similar, share some alignments but often diverge throughout Delaware County, reflecting their unique goals.

The aim of the **East Coast Greenway** (ECG) is to connect all the major cities of the East Coast along a continuous, off-road path. The concept for a traffic-free path currently spans 2,600 miles from Calais, Maine to Key West, Florida (see plans below from their website). The intent is to form a continuous, safe, green route easily identified by the public through signage, maps, user's guides, and common services. It will serve cyclists, hikers, skaters, equestrians, people in wheelchairs, and other non-motorized users.

Twenty percent of the trail is currently open for public use, linking East Coast cities from Maine to Florida. The ECG Pennsylvania Committee recognizes that in urbanized areas such as Delaware County, portions will need to run on existing road facilities until off-road counterparts are complete. Completion of off-road trails are here hindered by the presence of industry, zoning, lack of funding, and a dense commercial, residential, and industrial backdrop. However, it is the goal of the ECG Alliance to have 80% of its 2,600 miles of trails off-road within the next 10 years. Clean Air Council and the Pennsylvania ECG Committee are committed to developing off-road facilities wherever possible. Goals include increasing transportation options, improving air quality, reducing roadway congestion, encouraging ecotourism and adventure travel, local economic development, improving mental and physical health via recreation and exercise, helping to connect people and communities, and helping to create new public space.



The Industrial Heritage Parkway (IHP) is a concept developed by the Delaware County Planning Department, their consultants and a committee from local governmental bodies and agencies. Its goals were delineated in the February 2002 report "Delaware County Industrial Heritage Parkway Route 219/13 Beautification and Greenway Plan." The ten mile corridor between the Delaware state line and the Philadelphia International Airport links many long established waterfront communities. The goals included highlighting the corridor's industrial history, waterfront access and open space resources. The two trails coincide through much of the county, but they diverge where the two similar but distinct goals diverge. This report provides greater detailed analysis and recommendations, and the proposed ECG and IHP alignments are shown on both the overall plans and the detailed plans of this report.

PROPOSED DELAWARE COUNTY TRAIL ELEMENTS



in association with

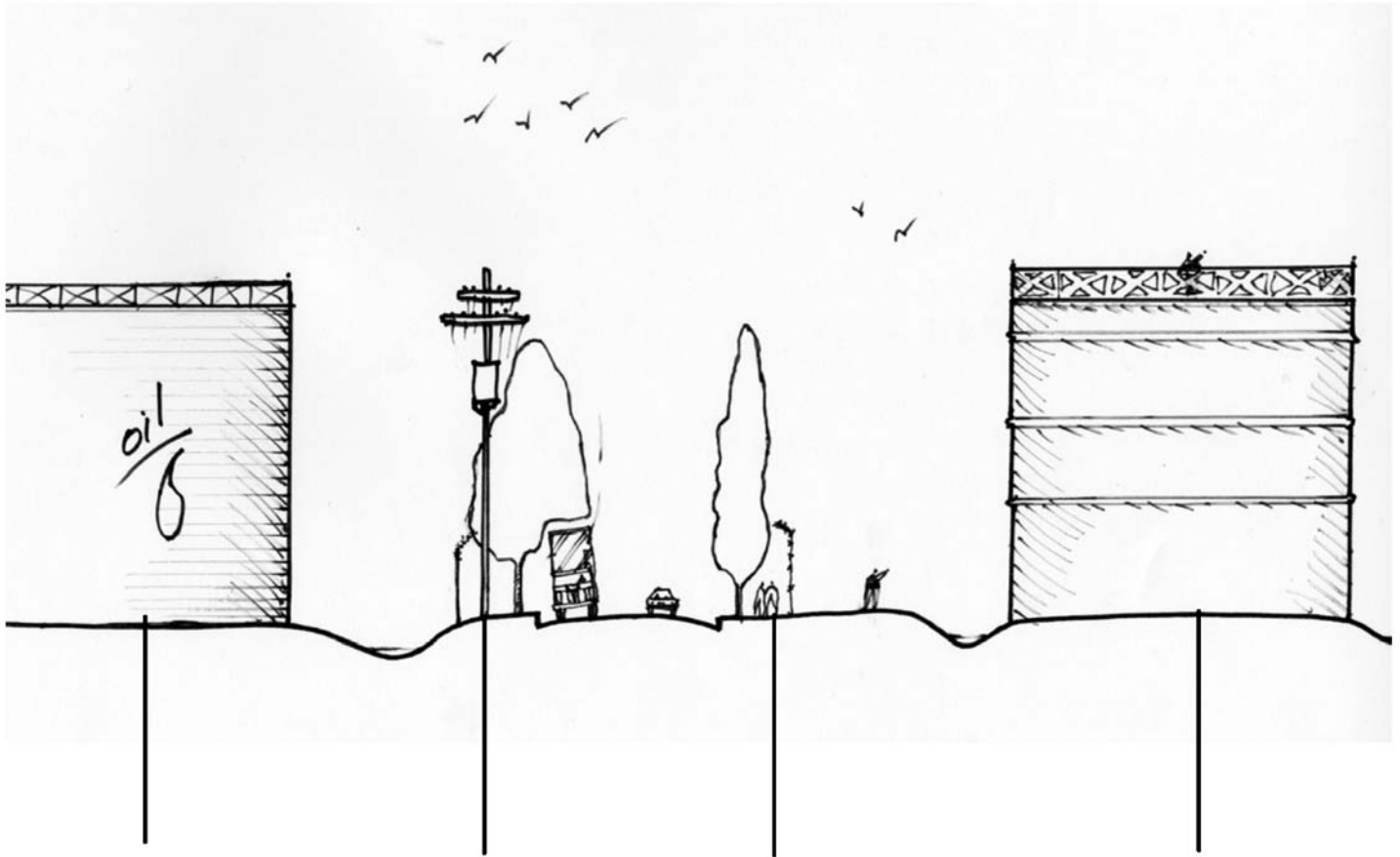


&

Kise Straw & Kolodner

Individual components of the proposed trail when grouped as in this nearby recently completed project, can work well together.

IHP TYPE 1: TANK FARM



Tanks store oil brought by ship prior to its being moved by mostly underground pipes. In case of leakage, the grading around the individual tanks is depressed so that each tank can be partially contained in an emergency spill. The tank farm is separated from adjacent properties and roads by chain link fencing and security checkpoints. Landscaping is practically nonexistent, and where once provided, it is often in poor condition.

Overhead utility wires and the need for security requires planting that does not encourage vandalism or terrorism, and remains well away from encircling fencing. As trees that spread over the roadway are clipped by passing trucks, columnar species with upright branches that are not prone to damage are more appropriate.

We encourage attempts, however, to plant trees, shrubs and vines that can make the edge of these sites more amenable to travelers, whether they be on bicycle or vehicles.

The trail will follow the road alignment as it passes the tank farm. Dramatic in its own right, and emphasizing the dependence of industrialized America on oil and gas, screening of this area would seem counterindicated.

However, we encourage attempts to plant trees, shrubs and vines that can make the edge of these sites more amenable to travelers, whether they be on bicycles or vehicles. Columnar trees are best in narrow right of ways, or spreading trees planted well inside the properties.

Oil tanks can line one side or both of the roadways. In the case of the road passing through the tank farm, railroad tracks and overhead pipes can cross the proposed trail alignment.

The tank farm is separated from adjacent properties and roads by chain link fencing, gates, and security checkpoints.

Landscaping is practically nonexistent, and where once provided, it is often in poor condition.

INDUSTRIAL HERITAGE PARKWAY LANDSCAPE TYPES

TANK FARM: IMAGES



Upper Left: a good attempt to soften the edge of the tank farm at Sun in Marcus Hook with trees and shrubs. The sidewalk is currently narrow and no trail separation exists on the roadway. Railroad crossings interrupt the smooth paving.

Overhead utilities, wires, rail and truck traffic (upper right, bottom left) and the need for security (bottom right) requires planting that does not encourage vandalism or terrorism, and remains well away from the encircling fencing.

RECOMMENDATION:

Trees should be planted approximately 25 feet on center. Consider hardy flowering vines on the fences (triangular sections protruding into the right of way are useful for support). Hardy, drought and salt resistant shrubs are helpful also, planted in clusters of 10 to 25. Hardy perennials may also survive and provide seasonal variety. Where possible, trees should be planted off the right of way as in the above right example at Conoco Phillips in Trainer.

Lighting should be high-wattage halogen or fluorescent lamps with good color rendering characteristics ($Ra > 80$). Along the trail, additional lamps may be required to supplement the roadway lighting, approximately 12-14 feet in height and 30-40 feet on center. Banners will brighten the alignment as well.

Security issues suggest the following:

Street Trees minor trees 30'

on center at curblines or shade trees 60 feet on center outside of right of way.

Shrubs should be added at entrances and parking lots.

- Pedestrian lighting 60 feet on center on one side of the roadway.

Highway lighting 120 feet on center on the other side.

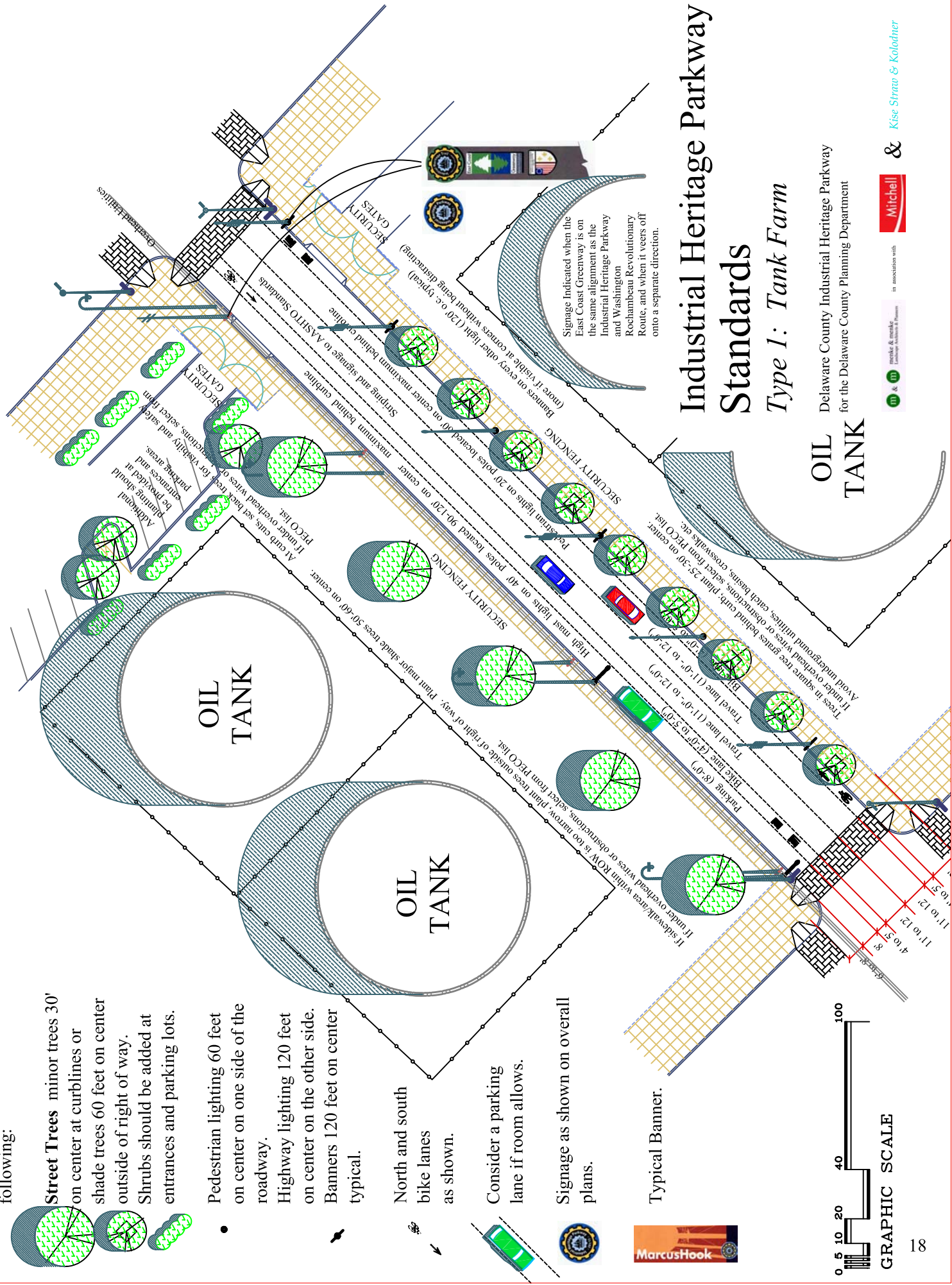
Banners 120 feet on center typical.

North and south bike lanes as shown.

Consider a parking lane if room allows.

Signage as shown on overall plans.

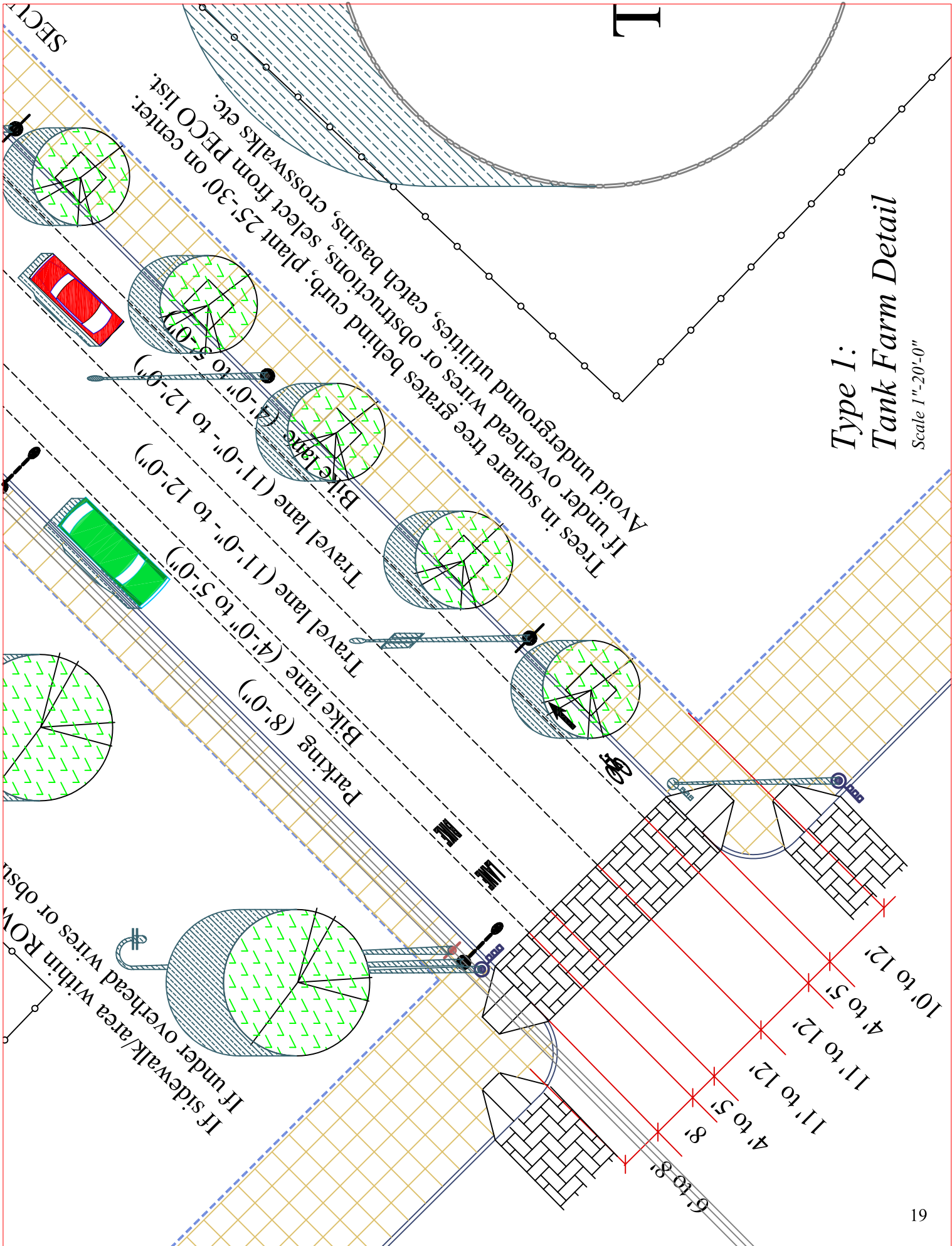
Typical Banner.



Industrial Heritage Parkway Standards

Type 1: Tank Farm

OIL TANK
Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

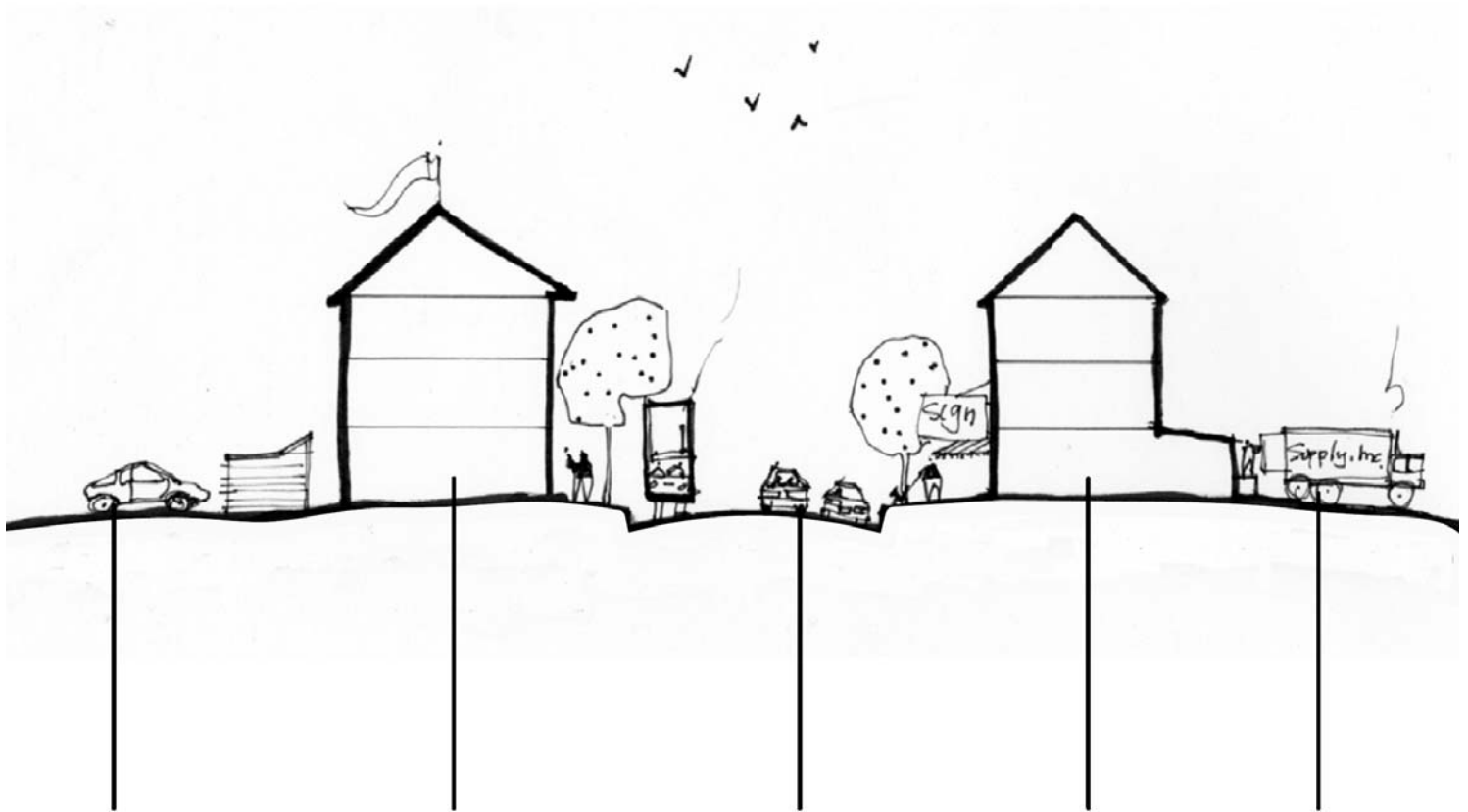


TANK FARM: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	At entrances	132
	Minor Street Trees	30 ft. on center	396
	Shade Trees	60 ft. on center (on private property)	66 (by property owners)
Lighting	Pedestrian Lighting	60 ft. on center	79
	High Mast Lighting	90 – 120 ft. on center	53
	Other Lighting	As needed	by property owners
Signs	Banners (in pairs)	60 ft. on center	53
	Directional Signs	At entrances and/or intersections	13
	Gateway/Border Signs	At town borders	0.5
	Greenway Signs	As shown on plans	4
	IHP Signs	As shown on plans	4
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	4
Site Furnishings	Benches	As needed	2
	Bike Racks	At trailheads, interpretive stops	2
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	0
	Kiosks	As needed	0
	Planters	As needed	0

INDUSTRIAL HERITAGE PARKWAY LANDSCAPE TYPES

IHP TYPE 2: CENTER CITY



Service roads and alleys provide parking and service to the rear of the main street residences, institutions, and businesses.

A mixture of residences, institutions, and businesses in a dense grouping typifies this section. Although there are occasionally conflicts (odors, schedules), many are attracted to the vitality of these groupings.

The roadway is often filled with traffic, edged with parked vehicles and shared uses. Trucks and cars travel the same space with pedestrians and the trail.

Overhanging signs and awnings protrude into the space. Street trees and site furnishings help to provide amenities here.

A mixture of residences, institutions, and businesses in a dense grouping typifies this section. Although there are occasionally conflicts (odors, schedules), many are attracted to the vitality of these groupings.

Service roads and alleys provide parking and service to the rear of the main street residences, institutions and businesses.

CENTER CITY: IMAGES



A mixture of residences, institutions, and businesses in a dense grouping typifies this section. Although there are occasionally conflicts (odors, schedules), many are attracted to the vitality of these groupings.



The roadway is often filled with traffic, edged with parked vehicles and shared uses. Trucks and cars travel the same space with pedestrians and the trail. Overhanging signs and awnings protrude into the space. Street trees and site furnishings help to provide amenities here. In other areas, industry and other uses (residential, below) coexist in close proximity, reflecting a time when workers lived and worked within walking distance.

RECOMMENDATION:

Work with local residents, businesses and institutions to implement the recommendations shown on the Center City plan.



Guidelines

Street Trees minor trees 30' on center at curblines or shade trees 60 feet on center outside of right of way.

Shrubs should be added at entrances and parking lots.

Pedestrian lighting 60 feet on center on one side of the roadway.

Highway lighting 120 feet on center on the other side.

Banners 120 feet on center typical.

North and south bike lanes as shown.

Consider a parking lane if room allows.

Signage as shown on overall plans.

At curb cuts, set back trees for visibility and safety. If under overhead wires or obstructions, select from PECO list.

Typical Banner.

Signage indicated when the East Coast Greenway is on the same alignment as the Industrial Heritage Parkway and Washington Rochambeau Trail, and when it veers off onto a separate direction.

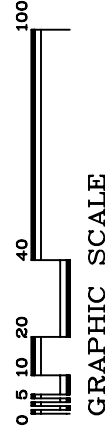
* The East Coast Greenway is located mostly off this alignment at present. The above is shown as a desirable possibility

Much of this edge has been recently reconstructed by PennDOT. Many of the adjacent properties are anticipated to be redeveloped

If sidewalk area within ROW is too narrow, plant trees outside of right of way. Plant major shade trees 50'-60' on center.

If under overhead wires or obstructions, select from PECO list.

At curb cuts, set back trees for visibility and safety. If under overhead wires or obstructions, select from PECO list.

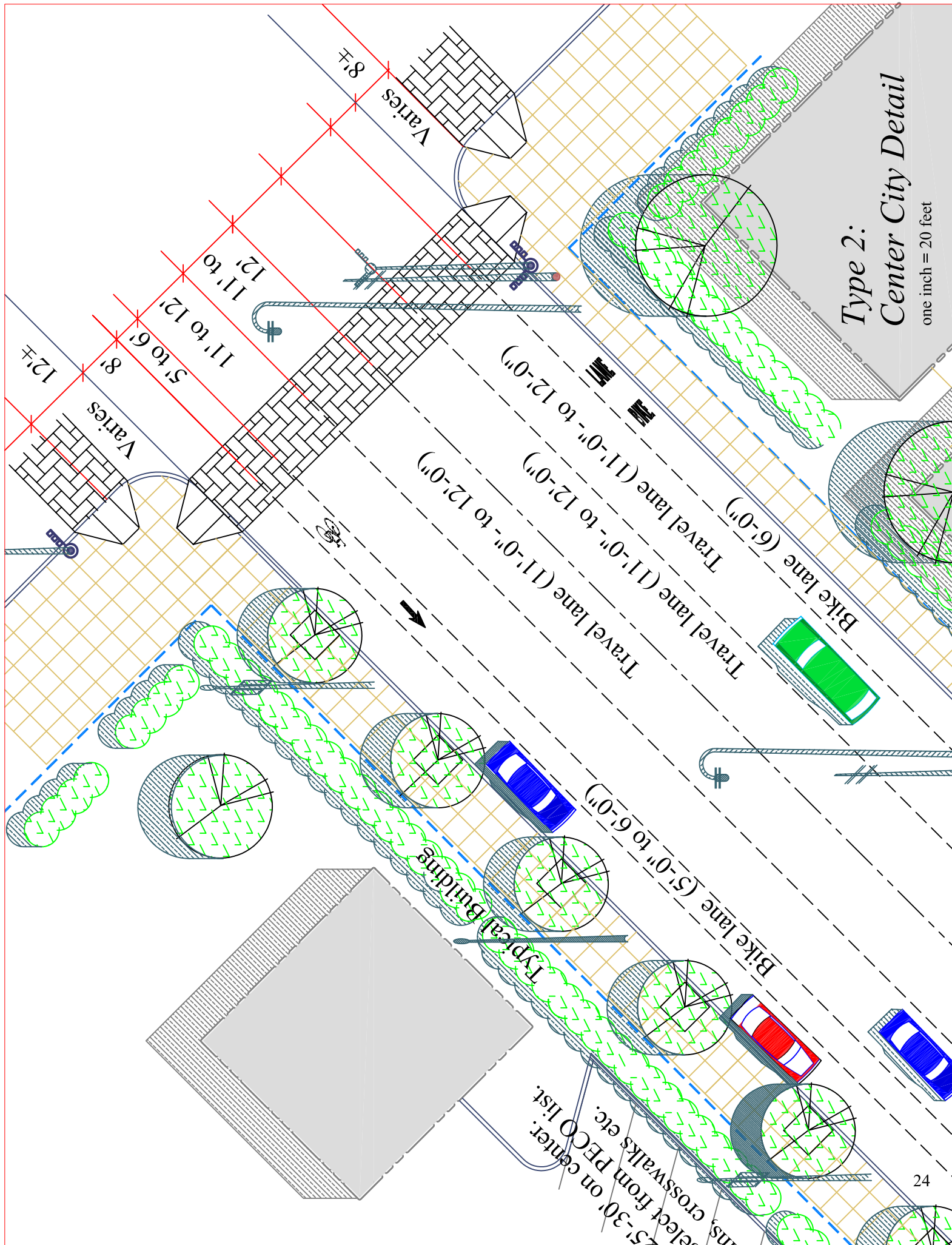


Industrial Heritage Parkway*

Standards

Type 2: Center City

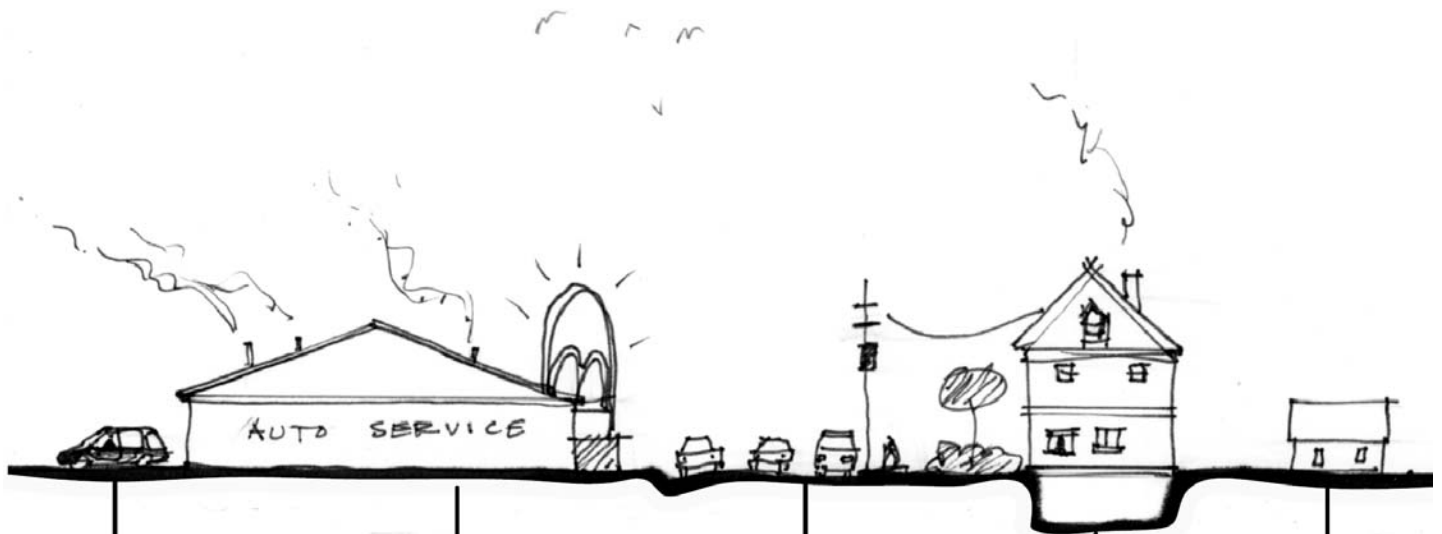
Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department



CENTER CITY: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	Along edges	1,760
	Minor Street Trees	30 ft. on center	158
	Shade Trees	60 ft. on center (on private property)	88 (by property owners)
Lighting	Pedestrian Lighting	60 ft. on center	88
	High Mast Lighting	90 – 120 ft. on center	70
	Other Lighting	As needed	by property owners
Signs	Banners (in pairs)	60 ft. on center	70
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0.5
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	0
	Kiosks	As needed	1
	Planters	As needed	528

IHP TYPE 3: INTERIM CITY



Service roads and alleys provide parking and service to the rear of the on-street residences, institutions, and businesses. Properties provide on-site parking, which often covers much of the site. Signage is geared to be seen and comprehended at highway speeds.

A mixture of residences, institutions, and businesses in a dense grouping typifies this section. Although there are occasionally conflicts (odors, schedules), many are attracted to the vitality of these groupings.

More of the businesses here are car-oriented, including drive-through banks and restaurants. To the north, there are more motels, hotels and airport service businesses and offices.

The roadway is often filled with traffic, edged with parked vehicles and shared uses. Trucks and cars travel the same space with pedestrians and the proposed trail, with potential conflicts that should be resolved.

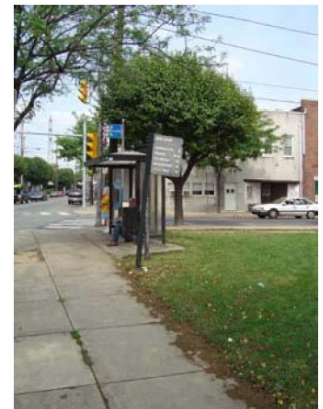
Overhanging signs and awnings protrude into the space. Little curb edge space and overhead wires suggest tree and shrub planting on adjacent properties, so that these plants can achieve their full growth potential.

A mixture of residences, institutions and businesses in a dense grouping typifies this section. Although there are occasionally conflicts (odors, schedules), many are attracted to the vitality of these groupings.

Service roads and alleys provide parking and service to the rear of the on street residences, institutions, and businesses. Outbuildings include garages, workshops, and sheds.

INDUSTRIAL HERITAGE PARKWAY LANDSCAPE TYPES

INTERIM CITY: IMAGES



Upper left: industrial and commercial uses predominate in this area, some residential included as well. Upper right: sidewalks fill the space between curb and the adjacent building line. Site furnishings there include street trees, trash receptacles, overhead and ground level signage, mailboxes, and parking meters. Signage is often internally lit. Utilities include overhead wires, street lighting, and intersection signalization. Parking and heavy traffic make a trail alignment here a tight squeeze and additional signage competitive with existing. Middle row: older vacant properties (such as Viscose in Marcus Hook) can expect to find new uses soon. Parking on both sides of the street occurs intermittently in this zone. Stream crossings, of interest to trail users, are almost invisible from the main roadway. At the edges of this zone, vehicular support uses include restaurants, motels, and service stations.



RECOMMENDATIONS:

Street markings and trail identification, and directional and interpretive signage should guide the trail users through these dense urbanized areas, as well as point out adjacent points of interest. Additional lighting, street trees, and site furnishings would provide amenities for trail users.

Existing poles of many types could be fitted with seasonal banners.

See Interim City plans for detailed recommendation.

Street Trees trees 30' on center at curblines in trees pits with grates.

Shrubs should be added at entrances and parking lots.

Pedestrian lighting 60 feet on center. High mast lighting by others.

Banners 60 feet on center typical.

North and south bike lanes as shown.

Consider a parking lane if room allows.



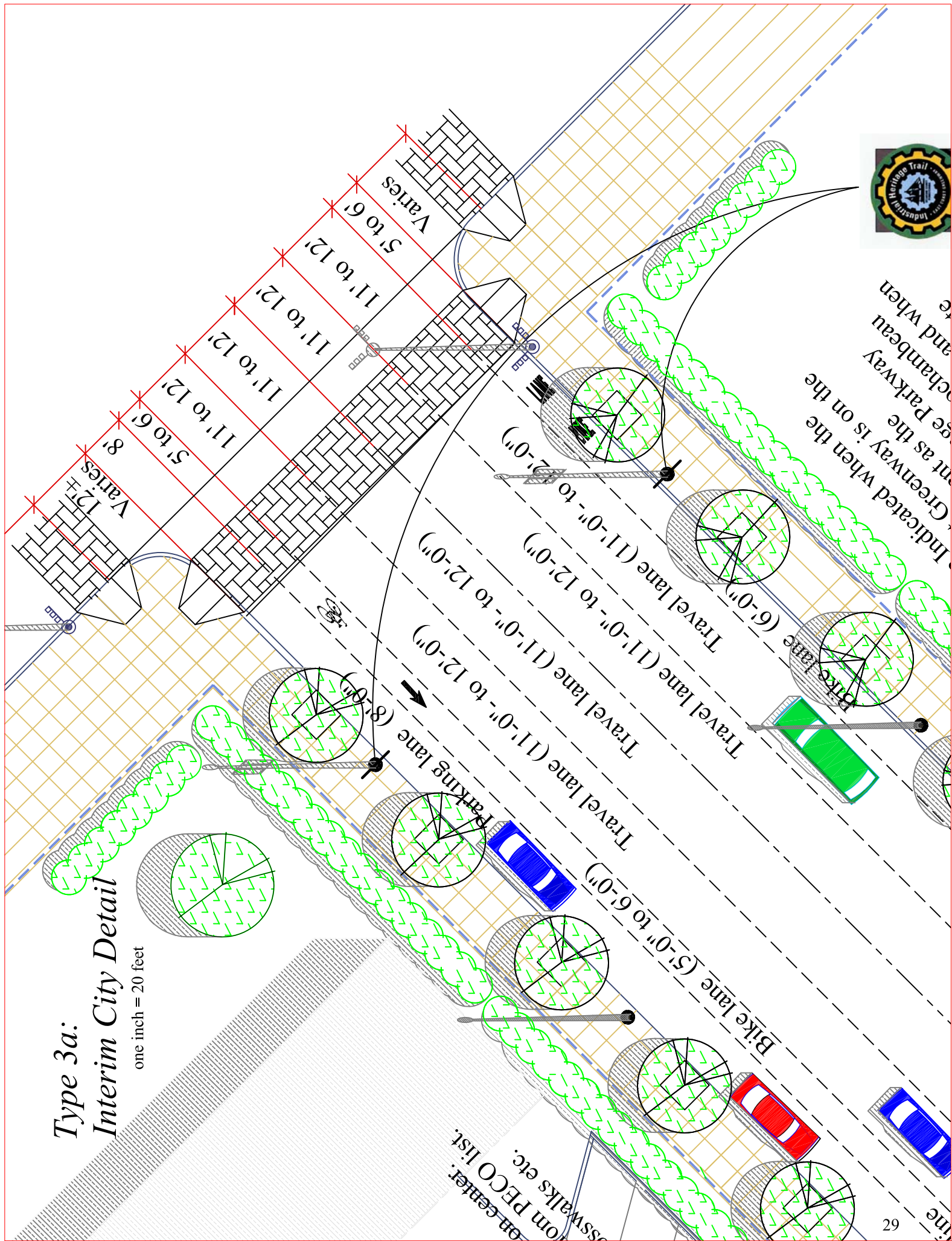
Industrial Heritage Parkway Standards

Type 3a: Interim City


Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

*Type 3a:
Interim City Detail*

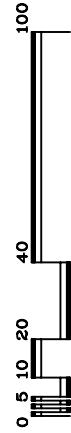
one inch = 20 feet



•



Signage Indicated when the East Coast Greenway is on the same alignment as the Industrial Heritage Parkway and Washington Rochambeau Revolutionary Route, and when it veers off onto a separate direction.



GRAPHIC SCALE

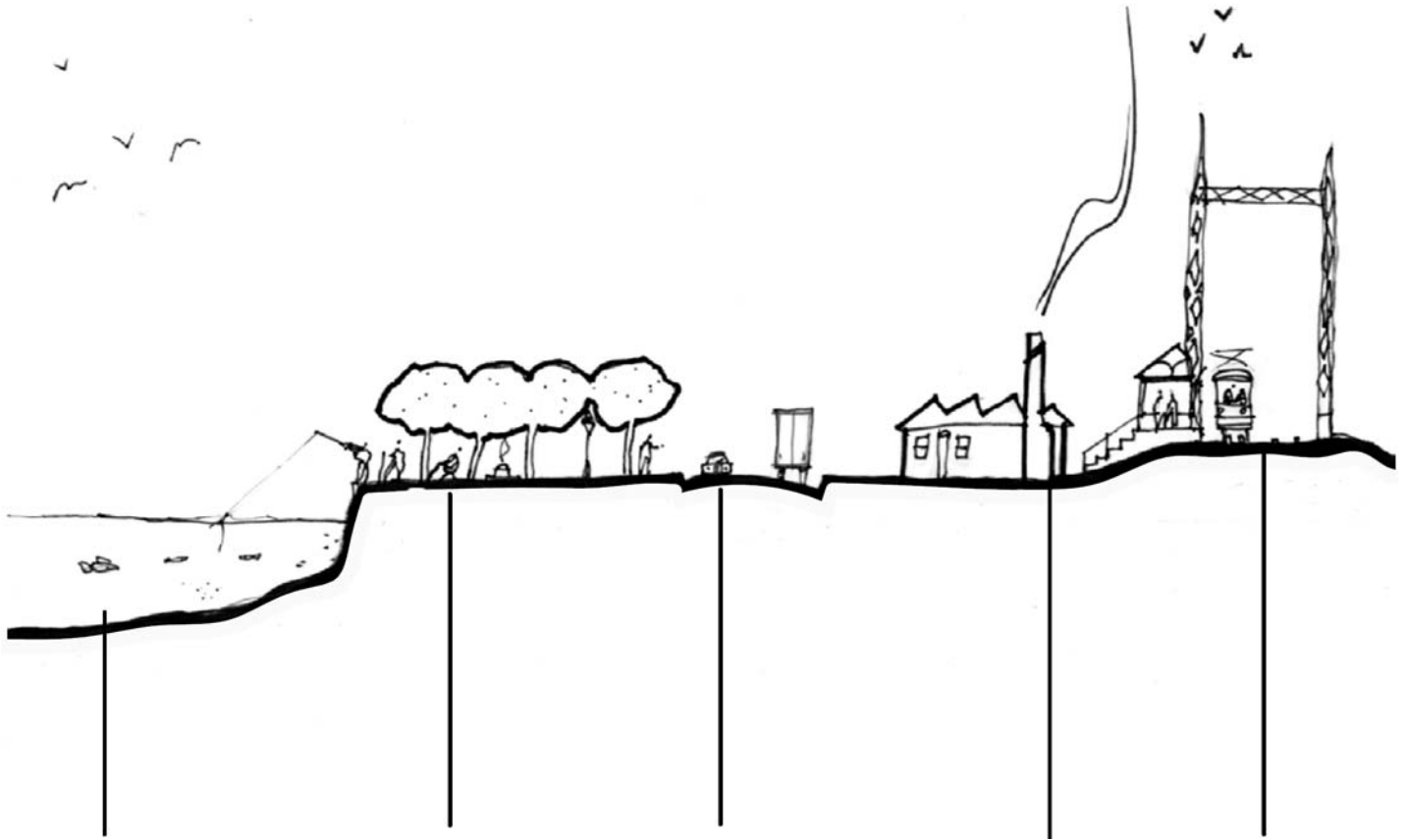
Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

30

INTERIM CITY: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	At edges, within row	1,760
	Minor Street Trees	30 ft. on center	317
	Shade Trees	60 ft. on center (on private property)	0
Lighting	Pedestrian Lighting	60 ft. on center	176
	High Mast Lighting	90 – 120 ft. on center	Installed by others
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	106
	Directional Signs	At entrances and/or intersections	5
	Gateway/Border Signs	At town borders	2
	Greenway Signs	As shown on plans	5
	IHP Signs	As shown on plans	5
	Interpretive Signs	As shown on plans	5
	W3R Signs	As shown on plans	5
Site Furnishings	Benches	As needed	4
	Bike Racks	At trailheads, interpretive stops	2
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	As needed
	Kiosks	As needed	1
	Planters	As needed	As needed

IHP TYPE 4: INDUSTRIAL AND RAIL



Navigable river, views to river traffic. Atmospheric changes are accentuated on the river.

Edge conditions vary, with some existing (and potential for more) open views and glimpses to the Delaware River.

With the river becoming cleaner over time, fish and mammals are returning, and with them, an increase in fisherman and other river users.

While the Industrial highway follows the river, there are few views or apparent connections to the river's edge. Signage and connectors will help.

Periodic lighting will be provided.

Volunteer and invasive vegetation grows on some properties, effectively blocking the views to the river.

A wide variety of industries, institutions, businesses, and stores follow the road here, with curb cuts varying from periodic to frequent.

The trail will follow the road here, except to diverge from that alignment for special features.

The SEPTA rail line follows the trail alignment, with stops at Marcus Hook, Highland Avenue, Lamokin Street, Chester, Eddystone, Crum Lynne (Eddystone – Ridley) and Eastwick.

INDUSTRIAL & RAIL: IMAGES



Edge conditions vary, with some existing open views to the river as seen in the above photo from Hog Island Road.

With the river becoming cleaner over time, fish are returning, and with them, an increase in fishermen and other river uses.



RECOMMENDATION:

See plan view recommendations for various width portions: bikeway layout, lighting, signage, planting, and site furnishings.



A wide variety of industries, institutions, businesses, and stores follow the road here, with curb cuts varying from periodic to frequent.

The trail will follow the road here, except to divert from that alignment for special features.



The SEPTA and other rail lines follow the trail alignment. SEPTA has stops at Marcus Hook, Highland Avenue, Lamokin Street, Chester, Eddystone, Crum Lynne (Eddystone-Ridley), and Eastwick.

[illegible][illegible][illegible][illegible][illegible]

Much of this edge has been recently reconstructed by PennDOT. Many of the adjacent properties are anticipated to be redeveloped

Plantings and site furnishings continue along bikeway to Park facilities.

Varies 5' to 6'

11' to 12'

8'

5' to 6'

11' to 12'

12'±

Varies

Typical Building

Bike lane (6'-0")

Travel lane (11'-0" to 12'-0")

Travel lane (11'-0" to 12'-0")

Travel lane (11'-0" to 12'-0")

Travel lane (11'-0" to 12'-0")

Parking lane (8'-0")

Bike lane (5'-0" to 6'-0")

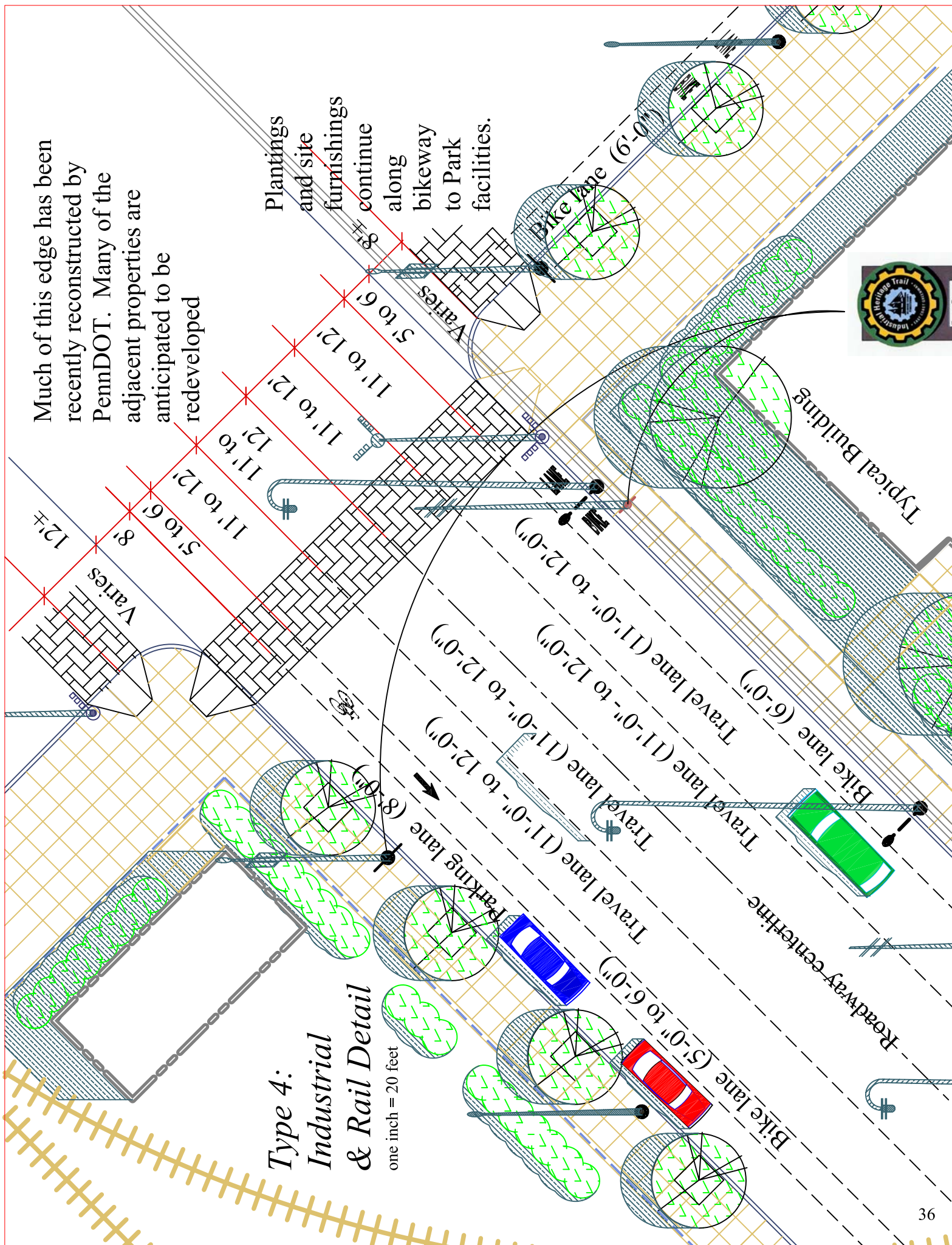
Roadway centerline

Type 4:
Industrial
& Rail Detail

one inch = 20 feet

Industrial Heritage Trail

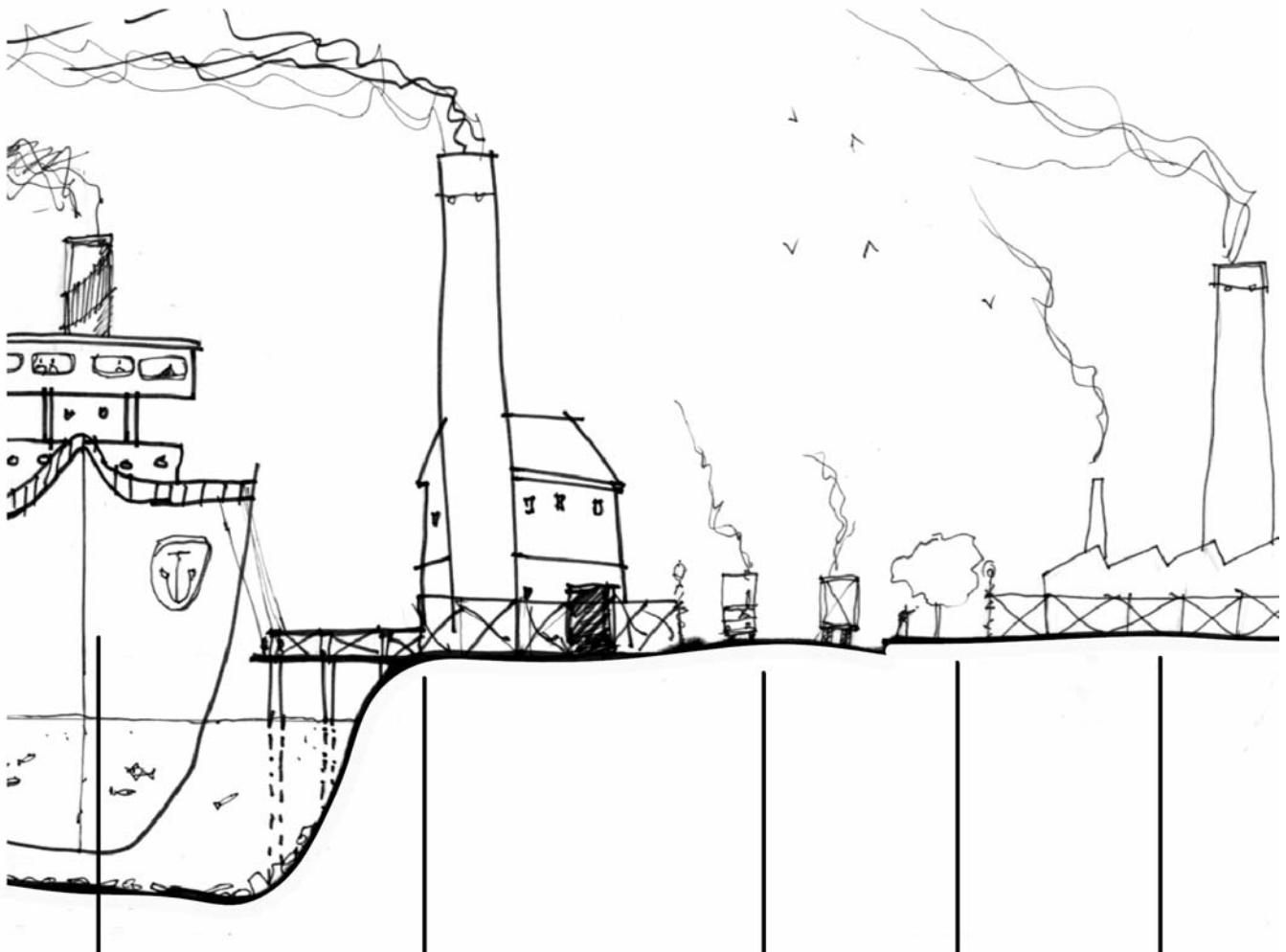
36



INDUSTRIAL AND RAIL: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	Along edges	924
	Minor Street Trees	30 ft. on center	106
	Shade Trees	60 ft. on center (on private property)	66
Lighting	Pedestrian Lighting	60 ft. on center	79
	High Mast Lighting	90 – 120 ft. on center	66
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	53
	Directional Signs	At entrances and/or intersections	2
	Gateway/Border Signs	At town borders	0.5
	Greenway Signs	As shown on plans	5
	IHP Signs	As shown on plans	5
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	5
Site Furnishings	Benches	As needed	4
	Bike Racks	At trailheads, interpretive stops	3
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	0
	Kiosks	As needed	0
	Planters	As needed	0

IHP LAND TYPE 5: HARBOR EDGE



Large ships dock at the edge of the Delaware River. The land edge contains heavy equipment and storage areas that support the shipping use, and transfer to trucking rail and pipelines.

The ships have their own power plants, and smoke from their stacks can sometimes be seen rising high into the sky. Leaking ships are a concern to the river's purity.

The docks and piers protrude into the river enough to meet the depths of the ships. The channel is dredged from time to time, and is kept clear of debris that sometimes floats down river, comes in with the tide, or drops off ships. The tidal range of six feet plus or minus regulates some of the schedules of the larger river traffic.

The sites and roadway are often filled with heavy trucks, some of which are tri-axle vehicles, as well as crisscrossing rail lines that move some of the heavier cargo loaded and unloaded from the ships.

Overhanging signs and awnings protrude into the space. Little curb edge space and overhead wires suggest tree and shrub planting on adjacent properties.

The space for a trail through these sections varies from minor on-road to wide swaths that could travel off road on former roads and right of ways. This is an area that is changing, with new industry and other uses (casinos, horse racing).

Street trees, planting, and new signage and site furnishings are recommended for this alignment.

Industry dominates much of this area on large parcels of land. Many have security issues with major fences and gates, security checkpoints, and the need for surveillance throughout the site.

HARBOR EDGE: IMAGES



The ships that dock at the edge of the Delaware River are typically hidden from the trail alignment. The land edge with its heavy equipment and storage areas that support the shipping use, and transfer to trucking, rail and pipelines is more visible, but not always aesthetically pleasing to trail users. Some softening along the trail edge, and the opportunity to see the water edge activity from a safe point should be provided.

RECOMMENDATION:

Planting of trees and shrubs along the edge of the trail, as well as periodic lighting and clustered site furnishings is recommended: see Interim City plan.

Pedestrian lighting 60 feet on center on one side of the roadway.
High mast lighting 120 feet on center on the other side.
Banners 60 feet on center typical.

Consider a parking lane
if room allows.



Age Group	Number of People
0-4	10
5-9	15
10-14	20
15-19	25
20-24	30
25-29	25
30-34	20
35-39	15
40-44	10
45-49	5
50-54	5
55-59	5
60-64	5
65-69	5
70-74	5
75-79	5
80-84	5
85-89	5
90-94	5
95-99	5

40

* East Coast Greenway is located mostly off this alignment at present.

Much of this edge has been recently reconstructed by PennDOT. Many of the adjacent properties are anticipated to be redeveloped

Signage Indicated when the East Coast Greenway is on the same alignment as the Industrial Heritage Parkway and Washington Rochambeau Revolutionary Route, and when it veers off onto a separate direction. Attach to existing poles if possible.

If plant major shade trees 50'-60' on center select from PECO list.

Plant area within ROW is too close to overhead wires or obstructions select from PECO list.

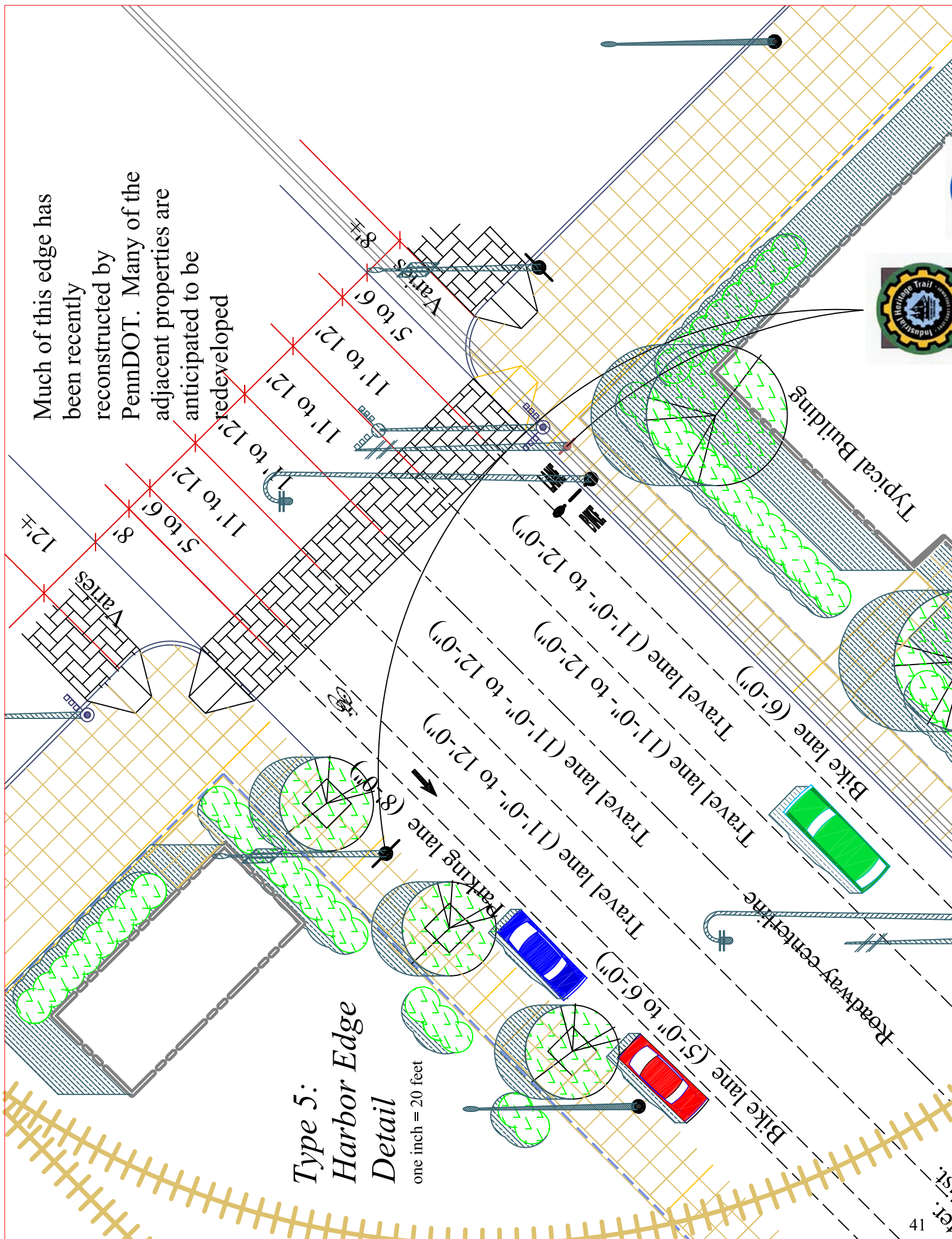
- At curb cuts
- set back trees for visibility
- If under overhead wires or obstructions, select from PECO list

Industrial Heritage Parkway* Standards

Type 5: Harbor Edge

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

Much of this edge has been recently reconstructed by PennDOT. Many of the adjacent properties are anticipated to be redeveloped



Type 5:
Harbor Edge
Detail

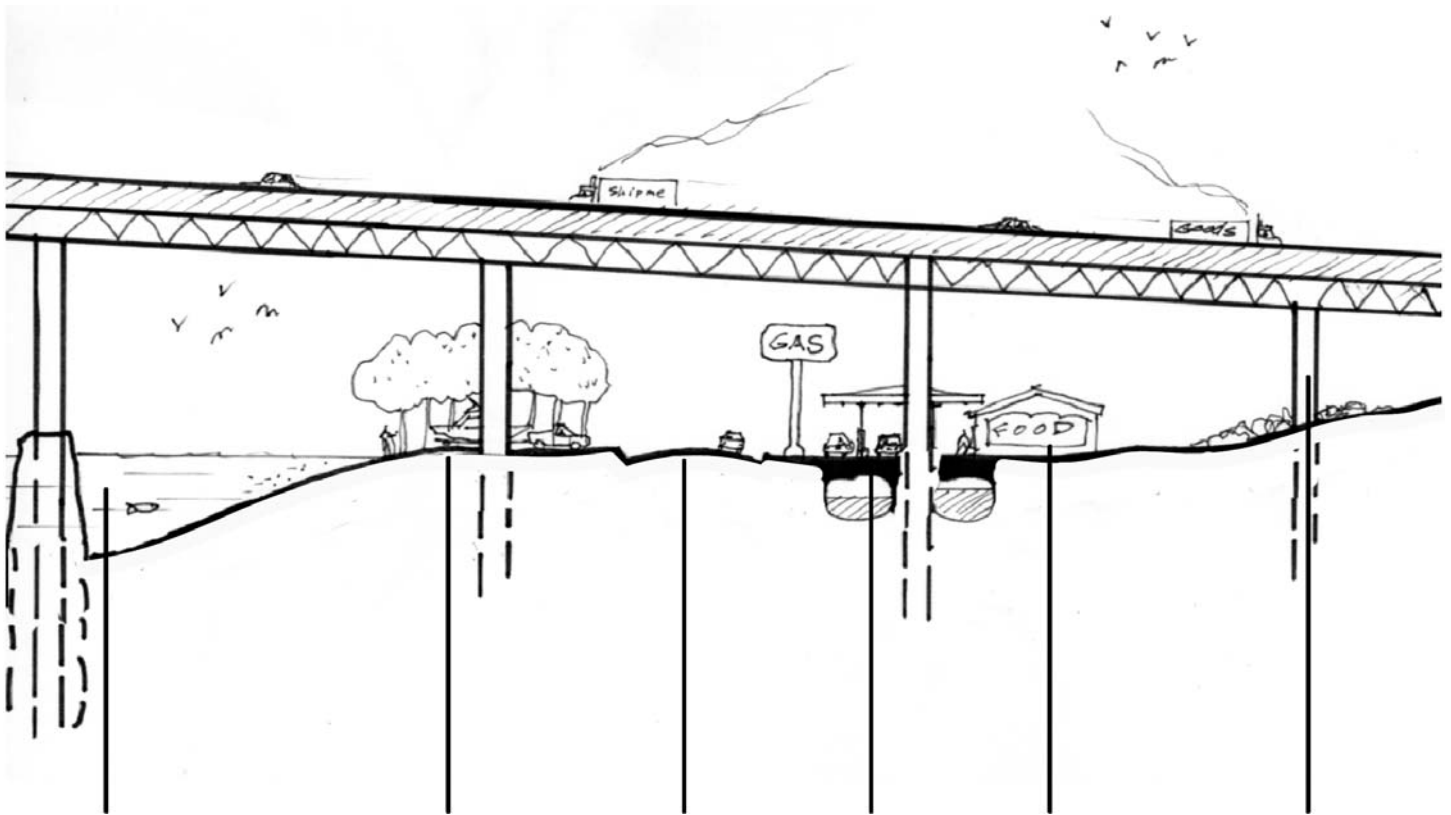
one inch = 20 feet



HARBOR EDGE: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	Along edges	980
	Minor Street Trees	30 ft. on center	106
	Shade Trees	60 ft. on center (on private property)	53
Lighting	Pedestrian Lighting	60 ft. on center	79
	High Mast Lighting	90 – 120 ft. on center	53
	Other Lighting	As needed	By property owners
Signs	Banners (in pairs)	60 ft. on center	53
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0.5
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	0
	Fences	As needed	0
	Kiosks	As needed	0
	Planters	As needed	0

IHP LAND TYPE 6: RIVER ACCESS & SUPPORT



Piers from the Commodore Barry Bridge are located at the edges of the river. The central span is wide and tall enough for ocean going ships to pass.

Barry Bridge Park was redesigned during this project. It provides river access with a boat ramp and parking for boat trailers and the vehicles that tow them. In addition, park space is provided with facilities. With the bridge overhead and new amenities; this is a great space for trail users to stop and enjoy a view of, and access to the Delaware River.

The trail can follow the park edge through the Rivertown site's new boulevard. New signage should guide the trail user off and back onto the main line of the trail, Greenway, and W3R trails.

Support facilities include gas stations, restaurants, and bars. There are a number of residential neighborhoods in the vicinity and the support services that they require.

The bridge comes to the ground level in Chester and links to local roads and Interstate I-95.

INDUSTRIAL HERITAGE PARKWAY LANDSCAPE TYPES

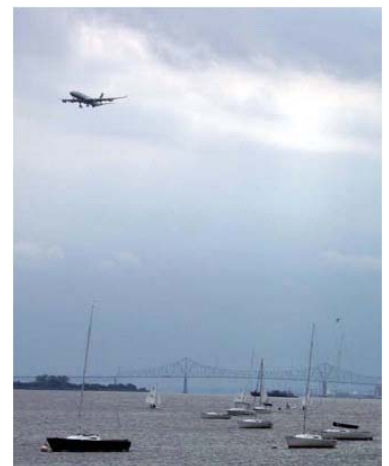
RIVER ACCESS & SUPPORT: IMAGES



Bridge piers from the Commodore Barry Bridge are located at the edges of the river. The central span is wide and tall enough for oceangoing shipping to pass. A new boulevard has been installed and connects previously isolated parcels. A trail along the river is planned and will link the park to the former PECO Generating Station, which has been converted for multi-use occupancy.

RECOMMENDATION:

Signage should guide trail users to Barry Bridge Park, which was redesigned during this project. The totally redesigned park provides river access with a boat ramp and parking for boat trailers and the vehicles that tow them. In addition, the park space is provided with amenities. With the bridge overhead and newly redesigned park, this is a great space for trail users to stop and enjoy Delaware County. The East Coast Greenway is the route of access here.



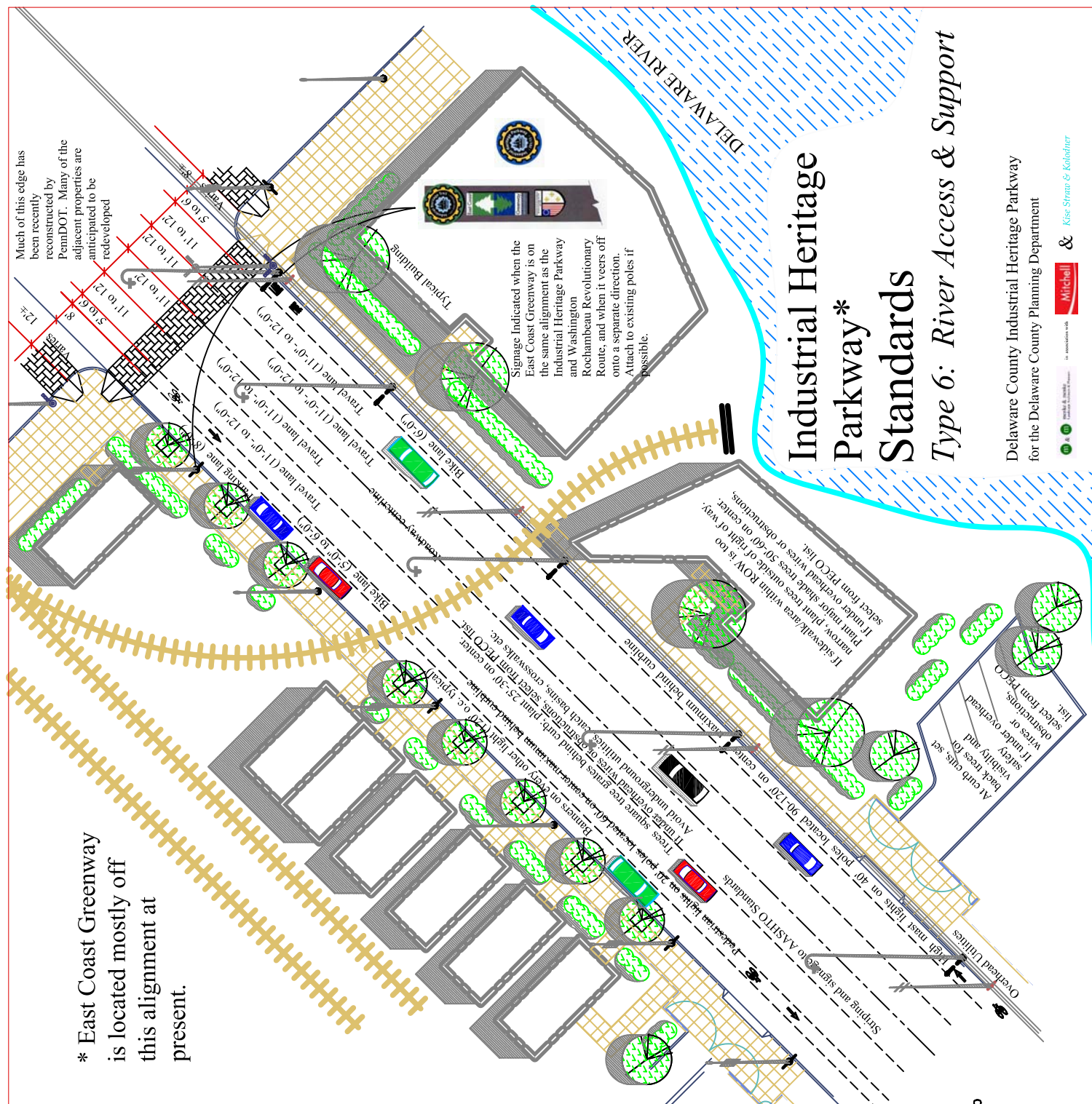
Pedestrian lighting 60 feet on center on one side of the roadway.
High mast lighting 120 feet on center on the other side.
Banners 60 feet on center typical.

Consider a parking lane
if room allows.



GRAPHIC SCALE

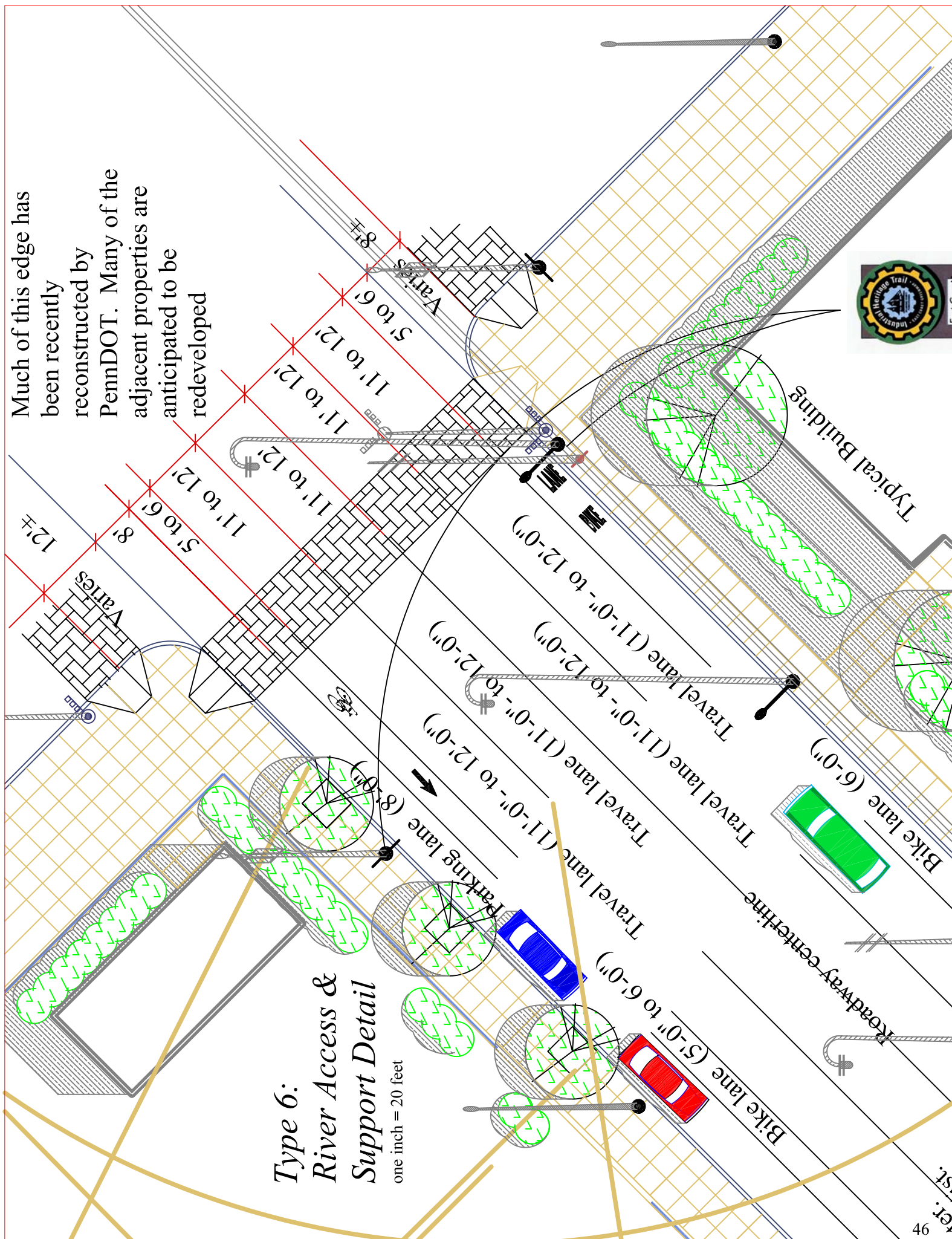
* East Coast Greenway is located mostly off this alignment at present.



Industrial Heritage Parkway* Standards

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

Much of this edge has been recently reconstructed by PennDOT. Many of the adjacent properties are anticipated to be redeveloped



*Type 6:
River Access &
Support Detail*

one inch = 20 feet



RIVER ACCESS & SUPPORT: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	Along edges	924
	Minor Street Trees	30 ft. on center	105
	Shade Trees	60 ft. on center (on private property)	53 (by property owners)
Lighting	Pedestrian Lighting	60 ft. on center	79
	High Mast Lighting	90 – 120 ft. on center	53
	Other Lighting	As needed	By property owners
Signs	Banners (in pairs)	60 ft. on center	53
	Directional Signs	At entrances and/or intersections	3
	Gateway/Border Signs	At town borders	0.5
	Greenway Signs	As shown on plans	5
	IHP Signs	As shown on plans	5
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	5
Site Furnishings	Benches	As needed	5
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	0
	Kiosks	As needed	1
	Planters	As needed	0

IHP LAND TYPE 7: AIRPORT SUPPORT



Airport support businesses such as motels, restaurants, and long-term parking are dominant in this area. Many of the larger chains have their own signage, landscaping, and other design standards that may be in coordination or conflict with the standards listed herein.

Roads in this sector vary widely, from wide rights of way, divided roadways separated by a narrow median, divided one-way roadways separated by residences and businesses, and narrower roadways. Separate standards apply to all, within a common design language.

Adjacent business includes a number of automobile related drive throughs, including fast food, banks, and service stations.

INDUSTRIAL HERITAGE PARKWAY LANDSCAPE TYPES

AIRPORT SUPPORT: IMAGES



The airport area landscape is filled with support businesses that require truck access and large buildings for moving cargo, as well as a large number of fast food restaurants, hotels and motels, and parking lots for long-term airport users.

The roadway right of way here is wider than elsewhere, and can support a median with a trail running down the centerline.



RECOMMENDATION:

See both Industrial Heritage Parkway and East Coast Greenway plans for detailed recommendations for this landscape type. The wide variety of roadway type, right-of-way width, and off road potential lead to a variety of on- and off-road possibilities.

The rail lines passing through this area present both constraints in terms of intersections that must be made safe, and opportunities to use abandoned rail lines for off-road East Coast Greenway alignments (see ECG Type 5).



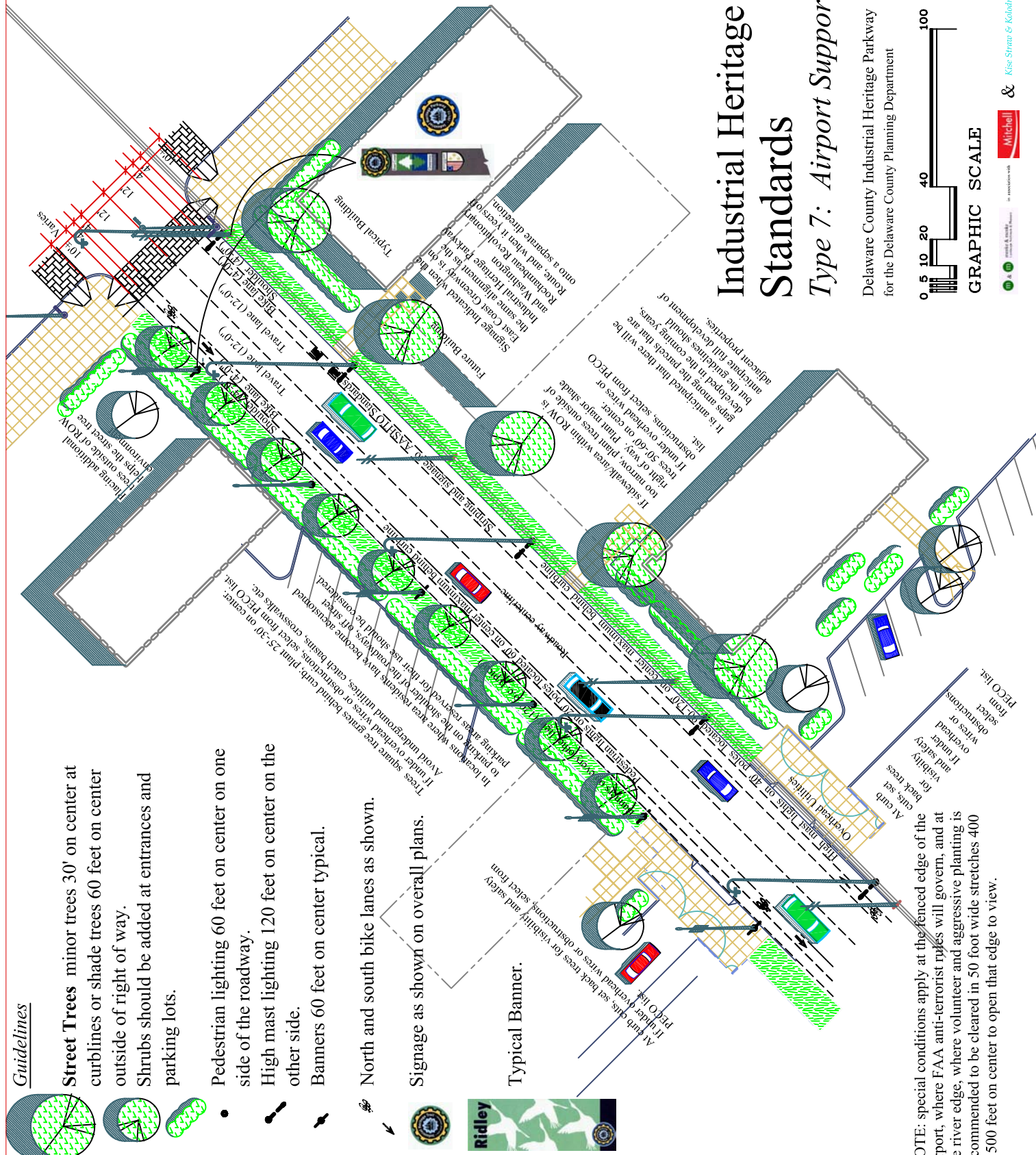
Guidelines

- Street Trees** minor trees 30' on center at curb/lines or shade trees 60 feet on center outside of right of way.
- Shrubs should be added at entrances and parking lots.
- Pedestrian lighting 60 feet on center on one side of the roadway.
- High mast lighting 120 feet on center on the other side.
- Banners 60 feet on center typical.

North and south bike lanes as shown.

Signage as shown on overall plans.

Typical Banner.

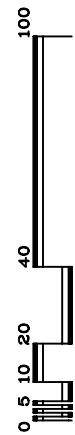


NOTE: special conditions apply at the fenced edge of the airport, where FAA anti-terrorist rules will govern, and at the river edge, where volunteer and aggressive planting is recommended to be cleared in 50 foot wide stretches 400 to 500 feet on center to open that edge to view.

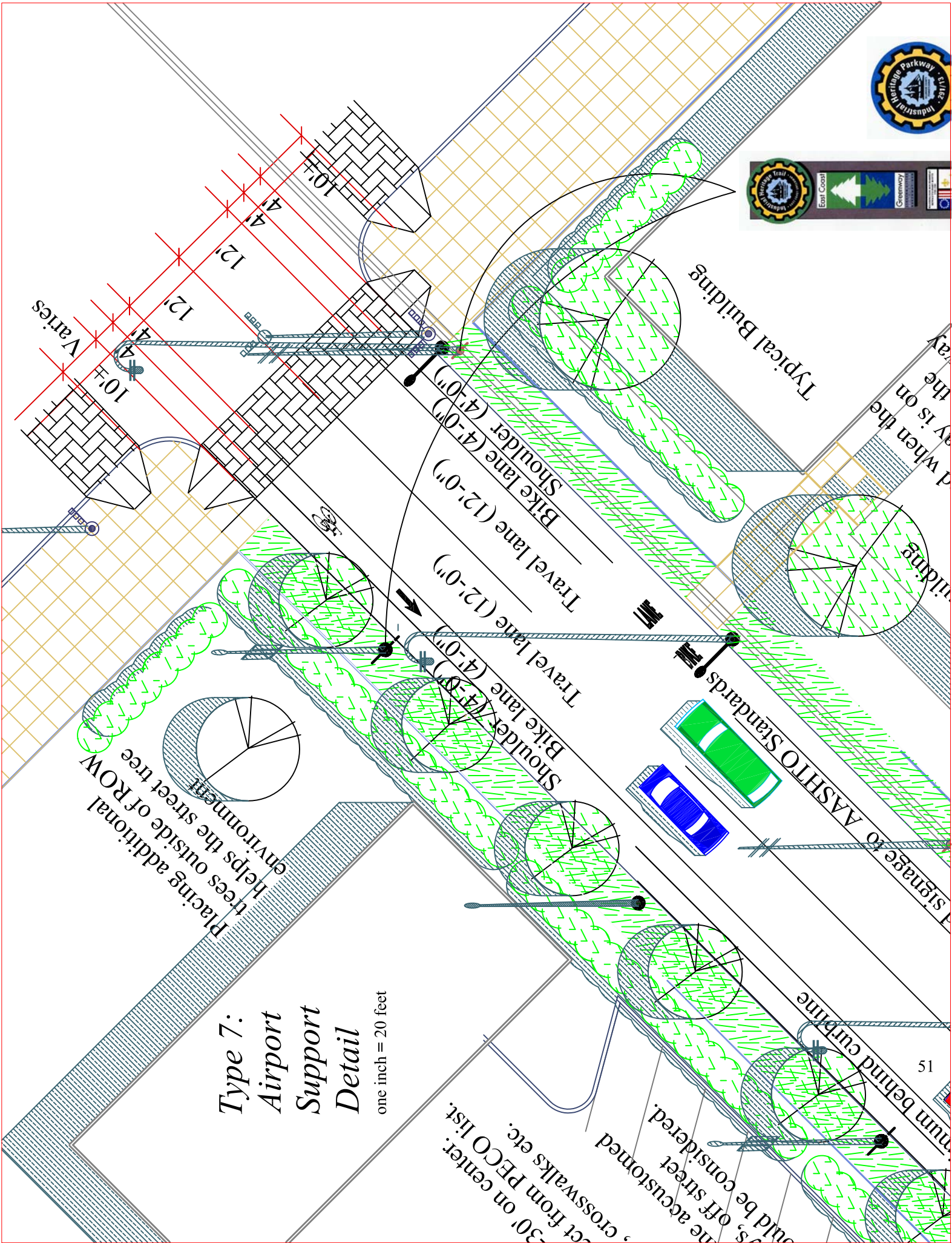
Industrial Heritage Parkway Standards

Type 7: Airport Support

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department



GRAPHIC SCALE



Type 7: Airport Support Detail

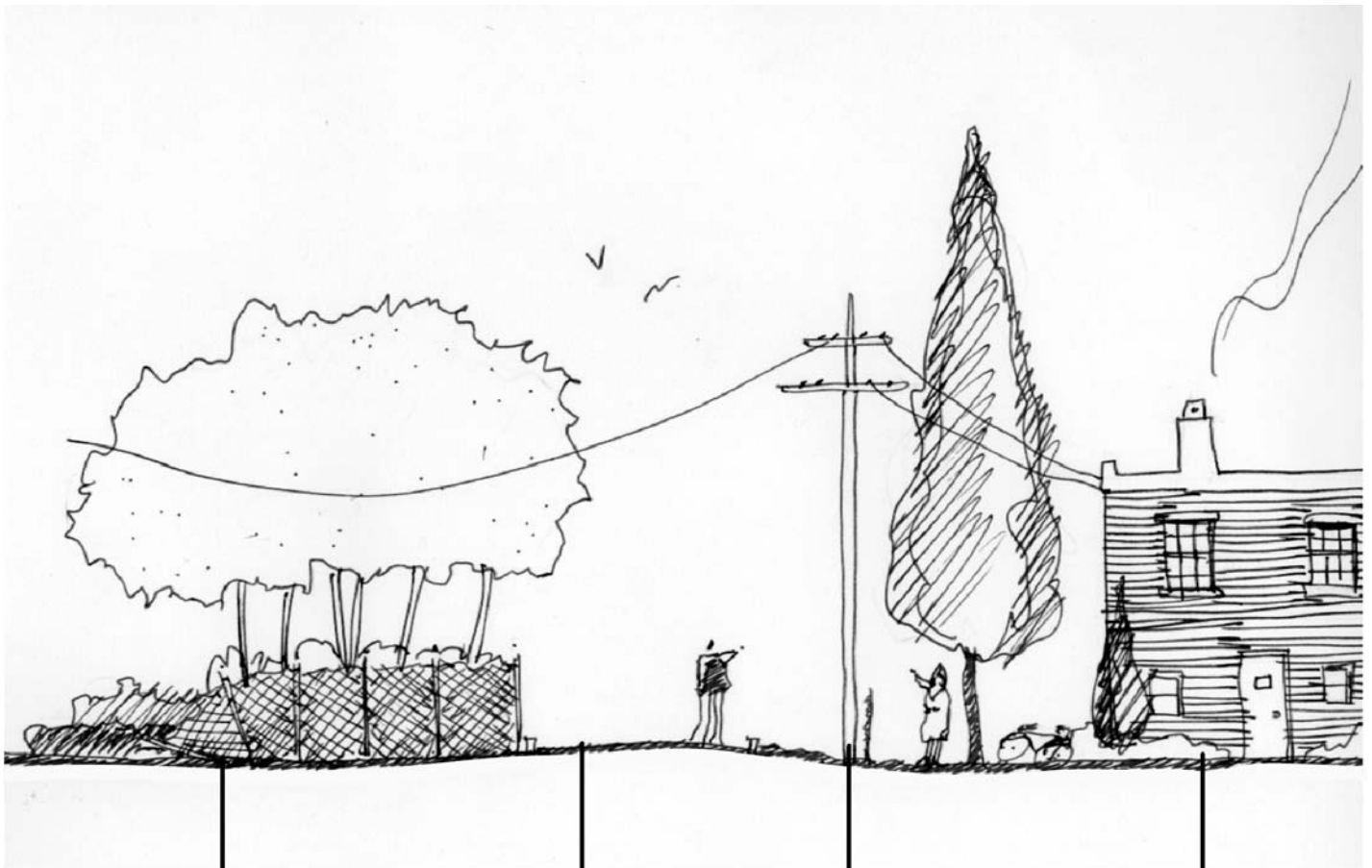
one inch = 20 feet



AIRPORT SUPPORT: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Shrubs	Along edges	930
	Minor Street Trees	30 ft. on center	119
	Shade Trees	60 ft. on center (on private property)	66 (by property owners)
Lighting	Pedestrian Lighting	60 ft. on center	79
	High Mast Lighting	90 – 120 ft. on center	66
	Other Lighting	As needed	By property owners
Signs	Banners (in pairs)	60 ft. on center	53
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0.5
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	As needed
	Kiosks	As needed	1
	Planters	As needed	0

ECG TYPE 1: OFF ROAD



Bridges over waterways, private access, and public roads are common and link the proposed trail alignment. Although mostly well built, some may require repairs.

A wide right-of-way can provide a (temporary) connection between other off-road segments.

Overhead and underground utilities are frequent in these areas, and should be verified and any easements reviewed prior to trail implementation.

Adjacent properties vary from corporate to private, with some security issues. A fence, as well as privacy plantings to separate the trail from these abutters should be considered.

OFF ROAD: IMAGES



Above is a sample of sites in the project area that would be suited to off-road trail alignments. Upper left: the railroad alignment from Central to Front Streets in Chester may provide space for a trail. Upper right: the space next to the rail line near Chester Machine may provide space for an off-road segment there.

Bottom left; the Barry Bridge Park renewal is planning a connection to the south, In this image, an extension to the north appears feasible as well. Bottom right: the intersection of Front and Jeffrey, although gated, shows the type of off-road opportunity that appears to be available. As this area develops in part in response to the revitalized Route 291 nearby, these properties can be expected to close these opportunities at through connections.

RECOMMENDATION:

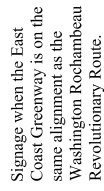
Efforts to place segments of the trail off-road should be pursued with vigor by all parties. A coordinated approach will be most effective, especially given the number of owners and abutters with plans that often do not anticipate public access through or near their properties. Many of these off-road possibilities, although currently filled with trash and debris and volunteer vegetation, pass by or near significant and attractive sites, and provide access to others.

Site furnishings and planted areas could be installed in some areas, especially trailheads. Attractive banners and signage can help users to know that they are on the trail. Fencing will be required to provide security, safety, and privacy of adjacent uses.

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

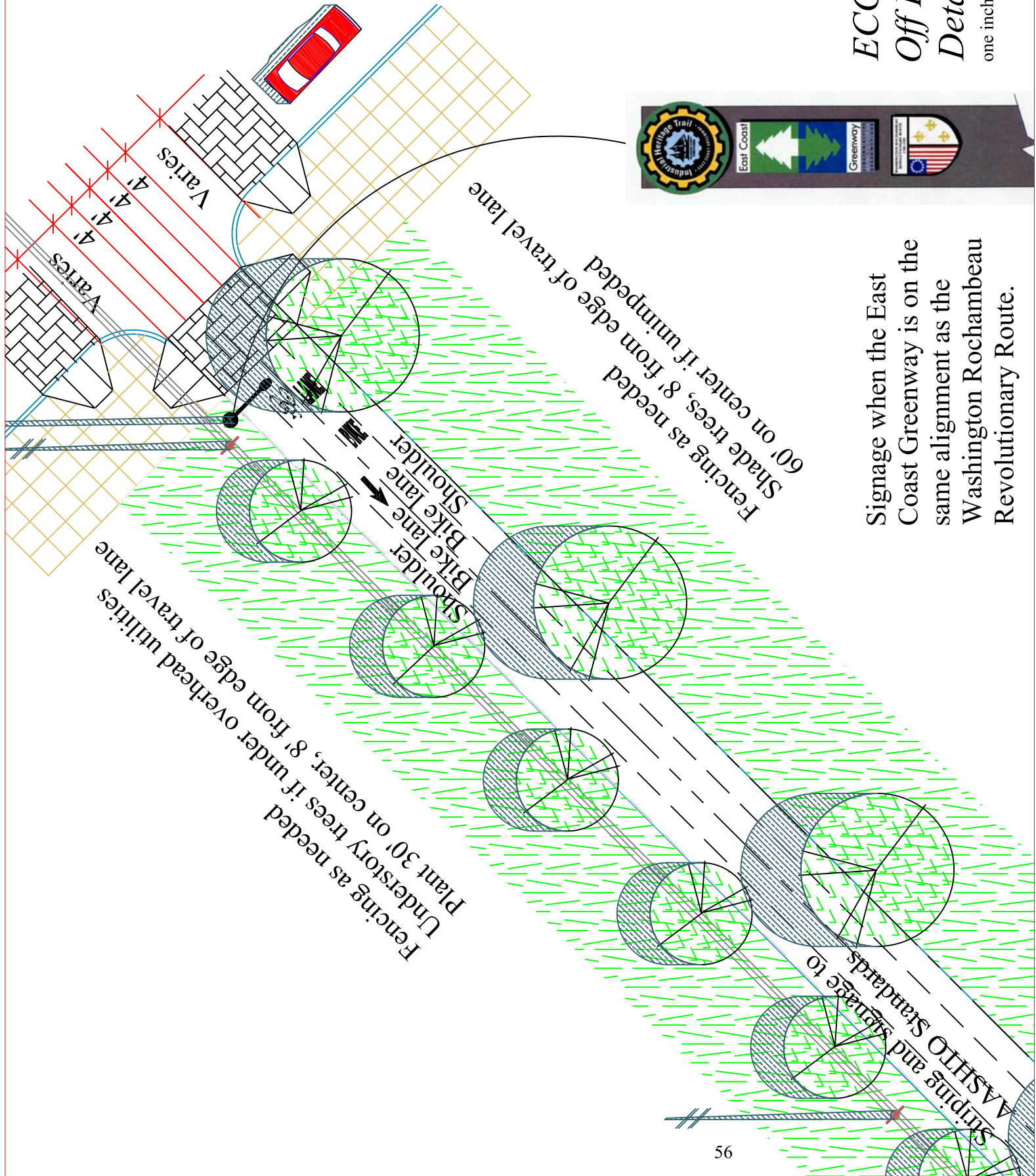
GRAPHIC SCALE

Mown turf.



ECG Type 1: Off Road Detail

one inch = 20 feet

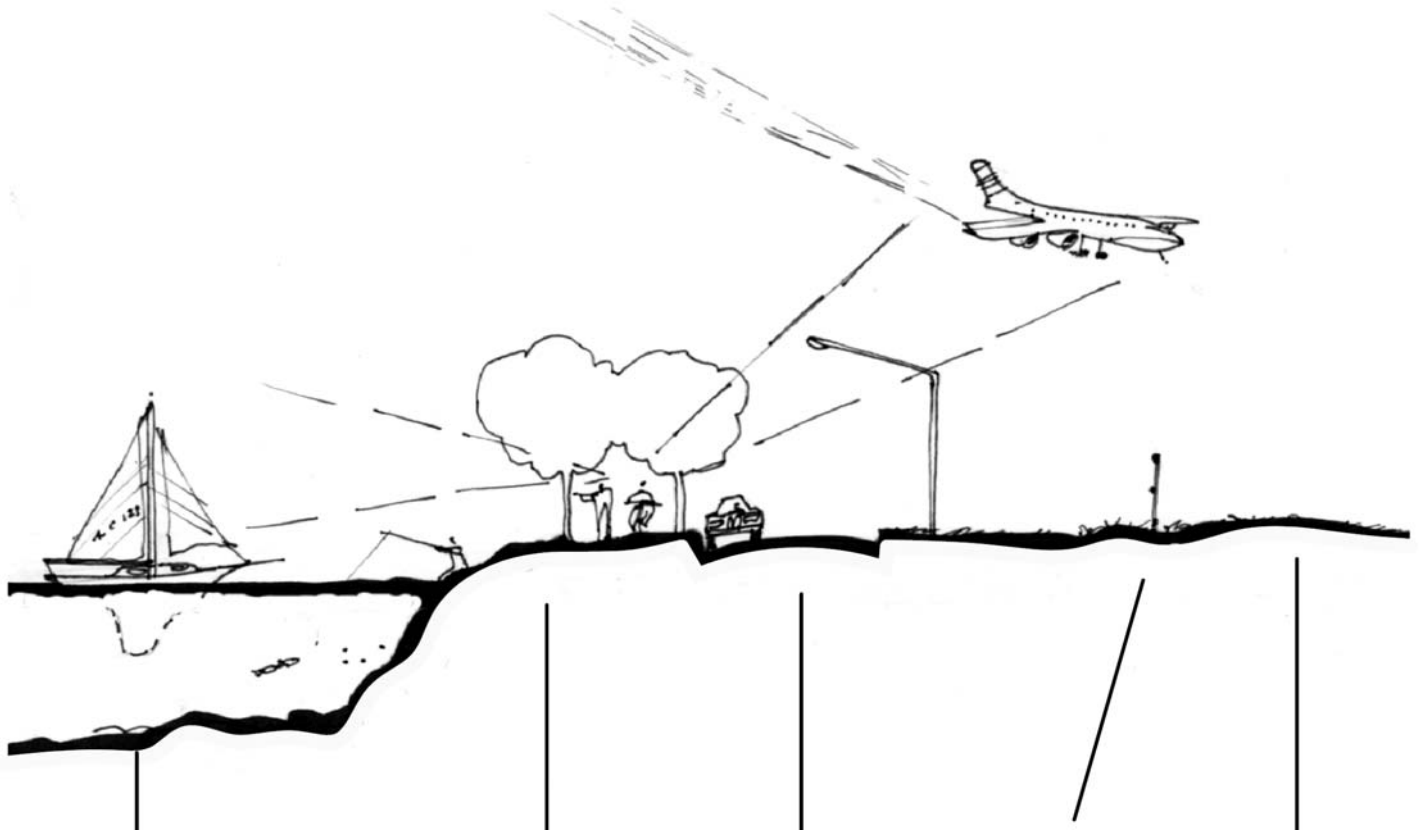


Signage when the East Coast Greenway is on the same alignment as the Washington Rochambeau Revolutionary Route.

OFF ROAD: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Clearing	Along edges	
	Minor Street Trees	30 ft. on center	171
	Shade Trees	60 ft. on center (on private property)	66
Lighting	Pedestrian Lighting	60 ft. on center	0
	High Mast Lighting	90 – 120 ft. on center	13
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	0
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	As needed
	Kiosks	As needed	1
	Planters	As needed	0

ECG TYPE 2: AIRPORT EDGE



Views to navigable River traffic. Atmospheric changes are accentuated on the river.

Provide open views at the edge of the trail, so that the river can be seen. The RR track ROW could provide space for the trail.

With the river becoming cleaner over time, fish are returning, and with them, an increase in fishermen. Public fishing or viewing piers would be an attractive amenity, as most of the existing points of river access are private.

Roads follow the river and edge of the airport in this area, with periodic lighting, little traffic, and few curb cuts.

A combination of native, volunteer, and invasive vegetation grows at the river's edge, effectively blocking the views to the river.

Chain link fencing surrounds the border, but planes can be seen landing and taking off.

The planting of native wildflowers between the road and the fence, which could be managed by biannual mowing, is a possibility.

The airport landscape is open, but security concerns mean fencing, patrols, and access issues.

AIRPORT EDGE: IMAGES



The airport area landscape is open, but (understandably) security concerns imply fencing, patrols, and access issues.

The roadways here follow the river, with periodic lighting, little traffic, and few curb cuts. A combination of native, volunteer, and invasive vegetation grows at the river's edge, effectively blocking the views to the river.



The Delaware River here is navigable by major ships, with views to river traffic. Atmospheric changes are accentuated on the river.

RECOMMENDATION:

Most of the changes here involve removing portions of existing vegetation between the river and the adjacent road. Access points crossing the rail line, outlooks, and landing at the river edge are recommended.

The edges adjacent to the airport fencing are recommended to be managed as wildflower meadows. Current planting shows evidence of aggressive, exotic and otherwise unwanted species becoming established. Mowing once or twice a year is advised.





Guidelines:

Security issues suggest the following:

Highway lighting as existing and as complies with FAA guidelines. Banners to be attached to existing high mast lights.

North and south bike lanes as shown.

Signage as shown on overall plans.

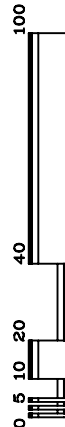
Open views to river by removing existing vegetation, and regular clearing to keep the views open.

Consider planting native grasses and wildflowers outside the airport fencing. Maintain by once or twice yearly mowing and reseeding as may be required.

East Coast Greenway Standards

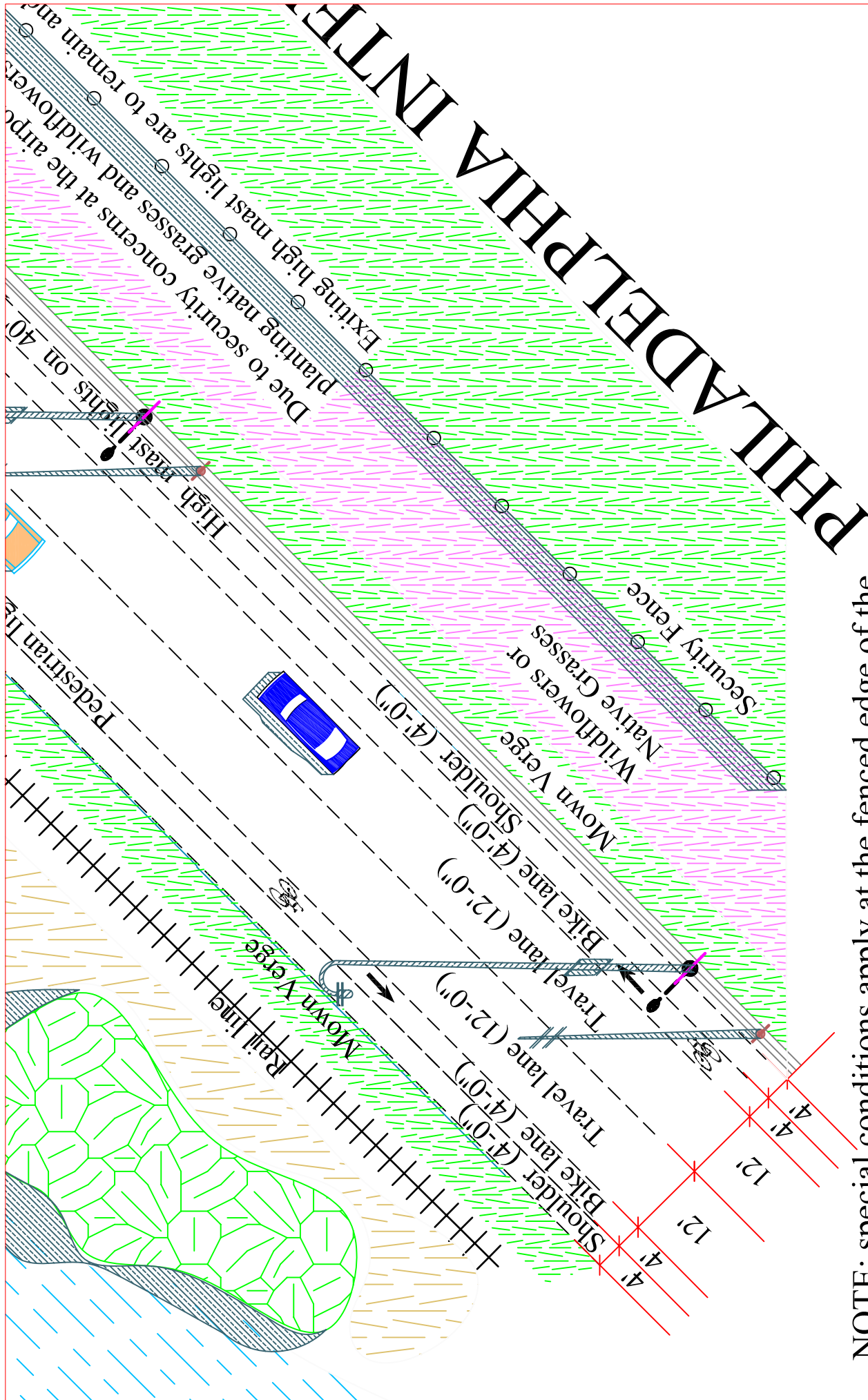
ECG Type 2: Airport Edge

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department



GRAPHIC SCALE

NOTE: special conditions apply at the fenced edge of the airport, where FAA anti-terrorist rules will govern, and at the river edge, where volunteer and aggressive planting is recommended to be cleared in 50 foot wide stretches 400 to 500 feet on center to open that edge to view.



NOTE: special conditions apply at the fenced edge of the airport, where FAA anti-terrorist rules will govern, and at the river edge, where volunteer and aggressive planting is recommended to be cleared in 50 foot wide stretches 400 to 500 feet on center to open that edge to view.

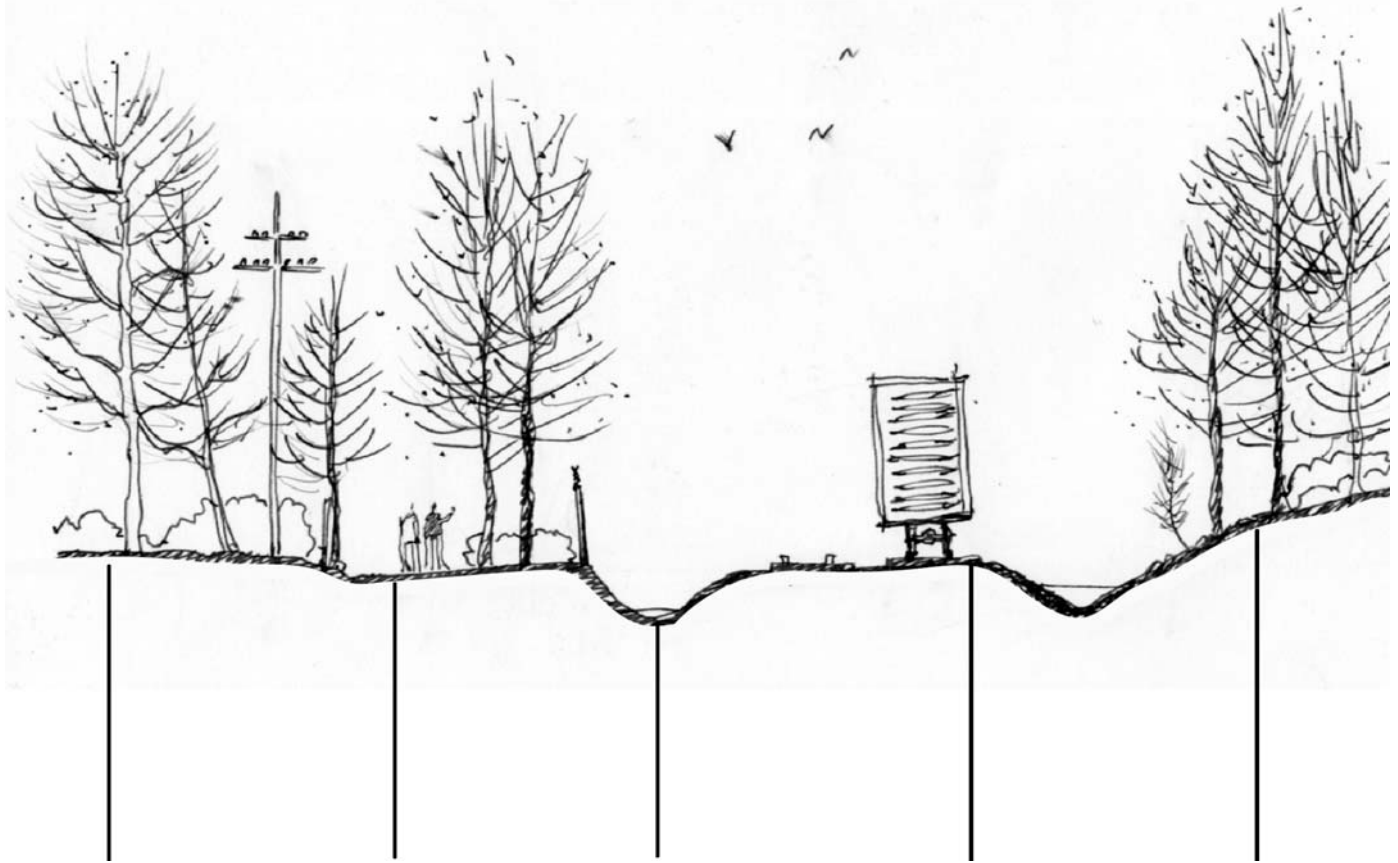
ECG Type 2: Airport Edge Detail

one inch = 20 feet

AIRPORT EDGE: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Clearing	Along edges	1,320 linear feet
	Minor Street Trees	30 ft. on center	0
	Shade Trees	60 ft. on center (on private property)	0
Lighting	Pedestrian Lighting	60 ft. on center	0
	High Mast Lighting	90 – 120 ft. on center	53
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	0
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	As needed
	Kiosks	As needed	1
	Planters	As needed	0

ECG TYPE 3: OFF ROAD SHARED & DIVERGING



Existing woodlands can be selectively thinned to create an immediate sense of mature landscape.

Spotted open views at the edge of the trail, with views of both the commercial and industrial land and water portions of Delaware County.

The grading along rights-of-way often creates microclimates that support a surprising variety of vegetation and wildlife.

Periodic lighting should be provided.

Volunteer and invasive vegetation that grows on some properties blocking the views to the river should be removed.

Active industries, institutions, businesses, and stores are interspersed among the more isolated and wild portions of the landscape.

The ECG alignment will diverge from the IHP alignment for special features.

More upland portions of the landscape through these areas support a wide variety of trees, shrubs, groundcovers, as well as a wide range of wildlife.

OFF ROAD SHARED & DIVERGING: IMAGES



The East Coast Greenway will diverge from the IHP to reach parks with open views at the edge of the trail, where the river can be seen. These include the Governor Printz Park in Essington (above): Market Square Memorial Park in Marcus Hook, Ethel Waters Park and Barry Bridge Park in Chester (below).



The SEPTA and other rail lines follow the trail alignment. SEPTA has stops at Marcus Hook, Highland Avenue, Lamokin Street, Chester, Eddystone, Crum Lynne (Eddystone – Ridley), and Eastwick.



An example of a shared and diverging area is adjacent to Rivertown, whose boulevard paralleling 291/13 is seen above. The East Coast Greenway will diverge from the Industrial Heritage Parkway, reach the boulevard here, or continue to the trails being developed along the river's edge. Past Barry Bridge Park to the north, the ECG will rejoin the IHP.

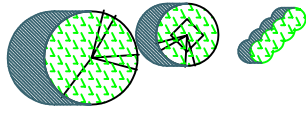
Without these connections, the dramatic views of the river (below) are all but invisible to those traveling along the ECG and IHP.



RECOMMENDATION:

See plan view recommendations for various width portions: bikeway layout, lighting, signage, plating and site furnishings.

Guidelines:



Street Trees minor trees 30' on center at curblines or shade trees 60 feet on center outside of right of way. Shrubs should be added at entrances and parking lots.

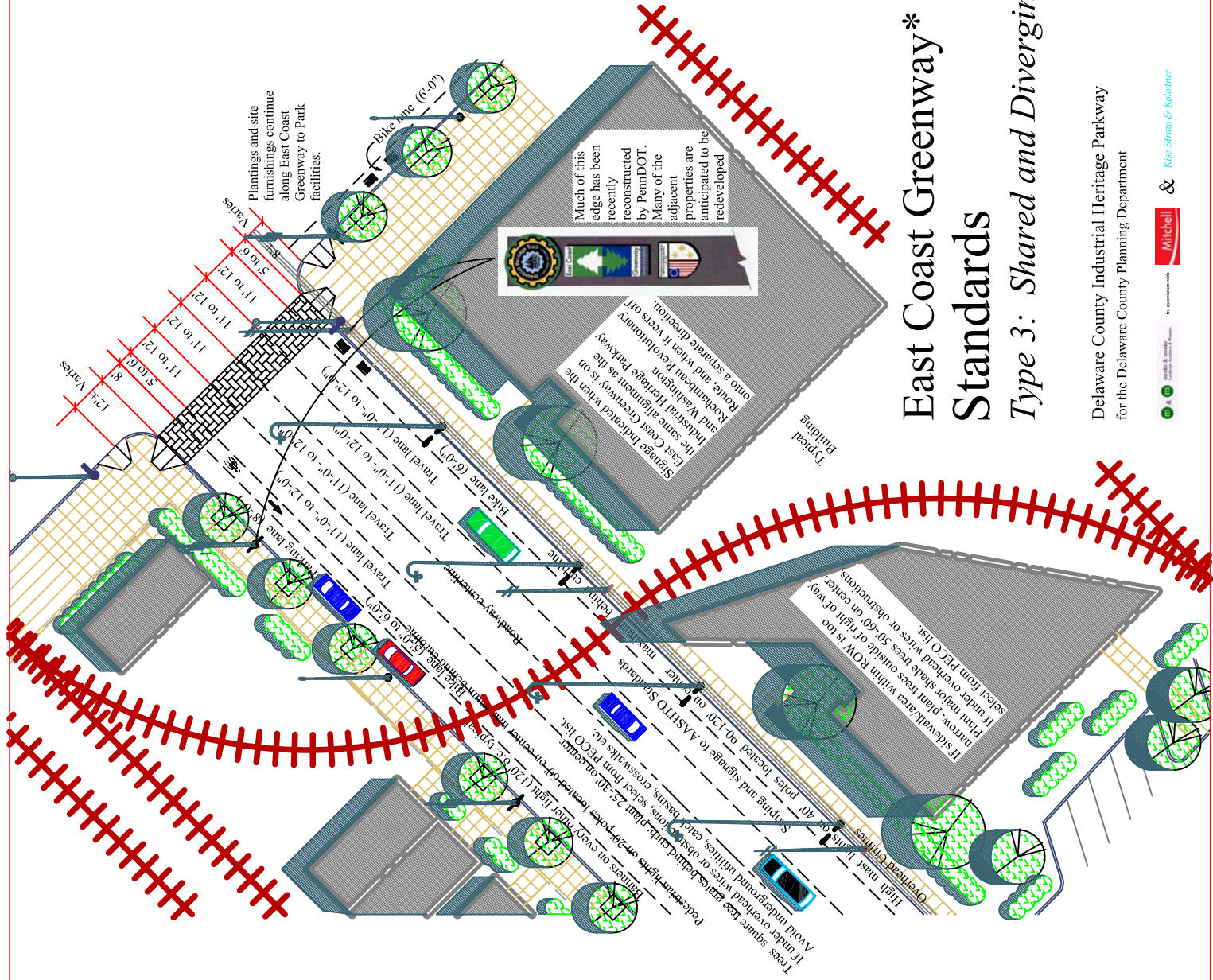
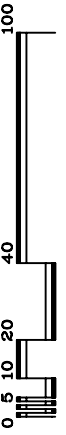
Pedestrian lighting 60 feet on center on one side of the roadway. Highway lighting 120 feet on center on the other side. Banners 120 feet on center typical.

North and south bike lanes as shown.

Consider a parking lane if room allows

Signage as shown on overall plans

* East Coast Greenway is located mostly off this alignment at present. The above is shown as a desirable possibility

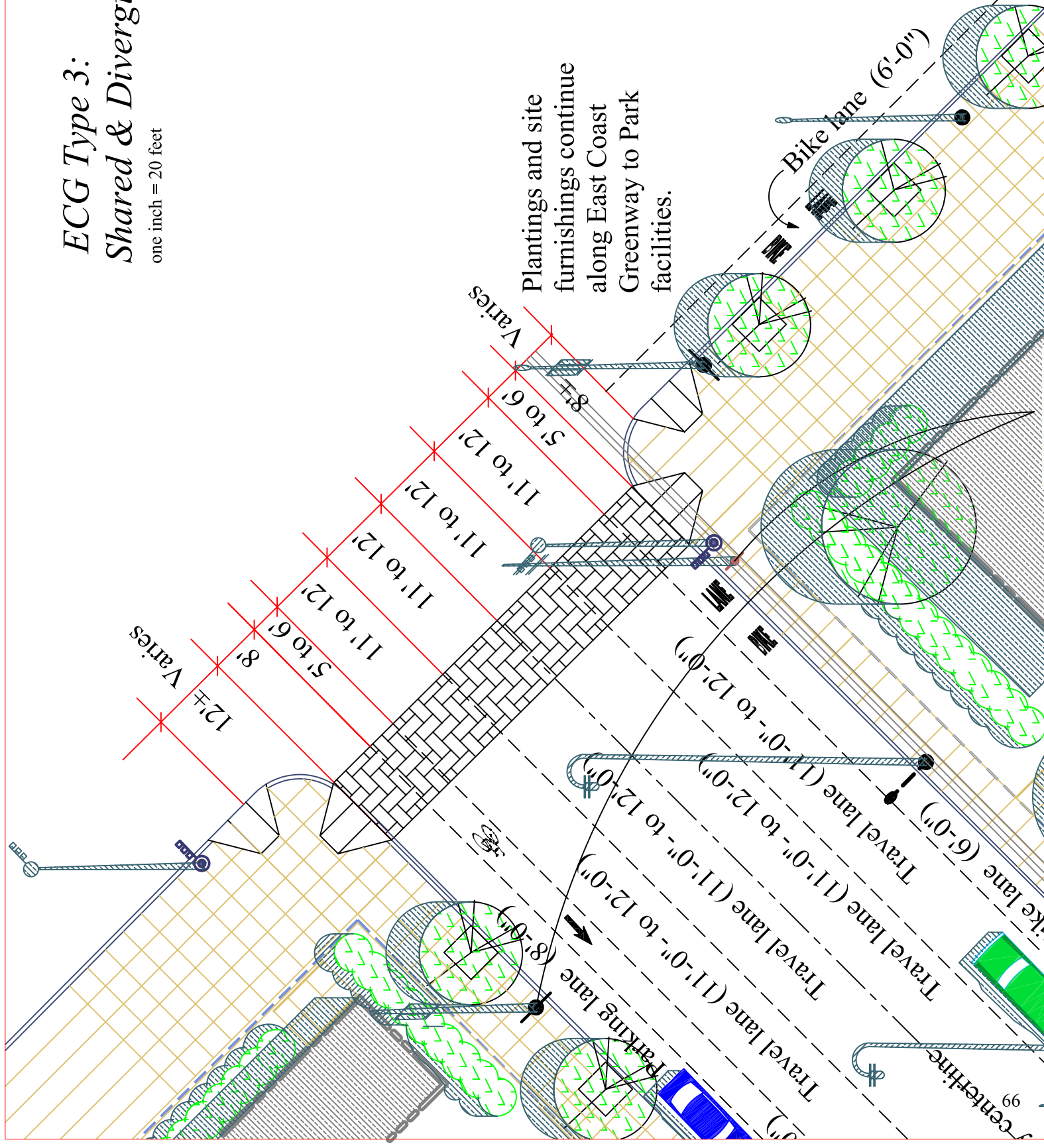


East Coast Greenway* Standards Type 3: Shared and Diverging

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department

ECG Type 3: Shared & Diverging Detail

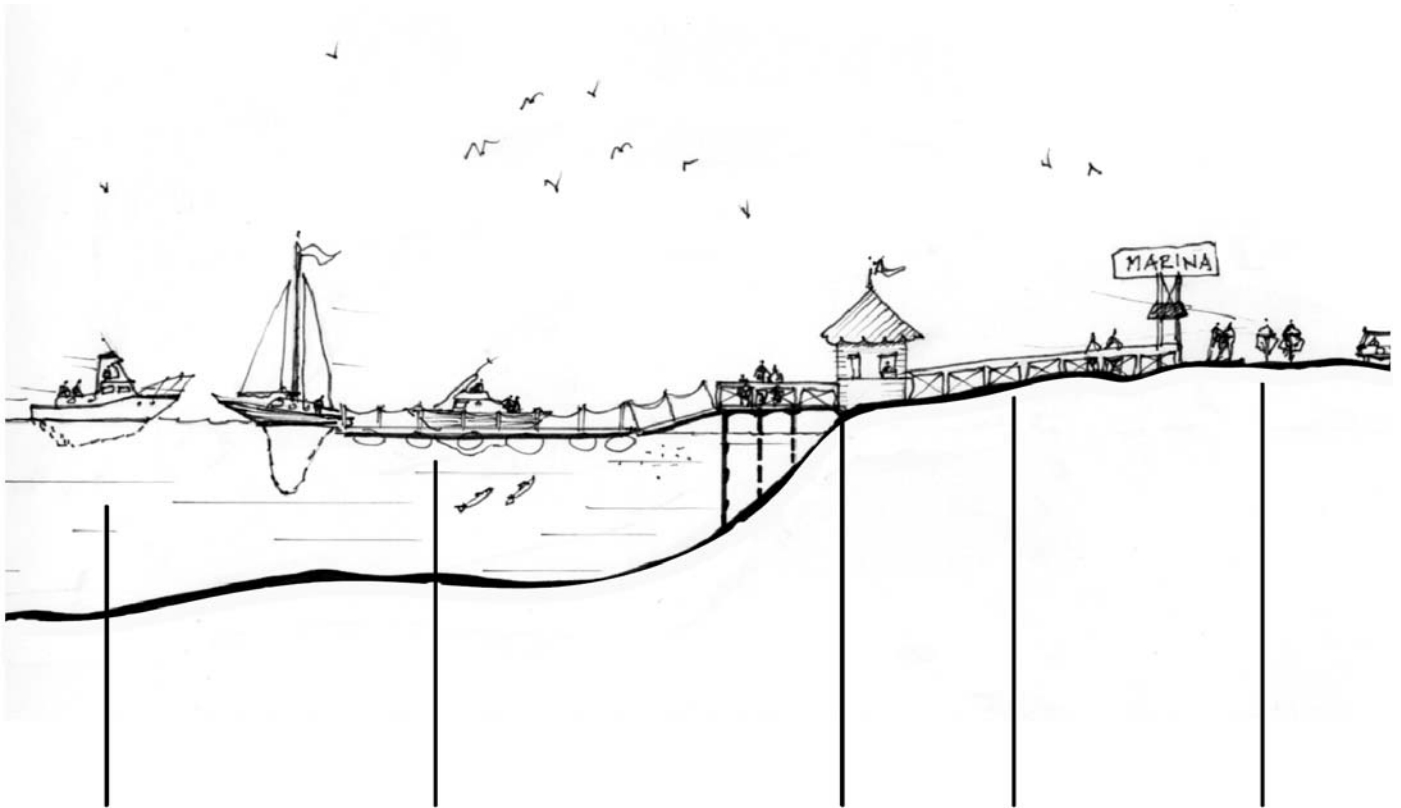
one inch = 20 feet



OFF ROAD SHARED & DIVERGING: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Clearing	Along edges	0
	Minor Street Trees	30 ft. on center	110
	Shade Trees	60 ft. on center (on private property)	0
Lighting	Pedestrian Lighting	60 ft. on center	62
	High Mast Lighting	90 – 120 ft. on center	13
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	0
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	2
	Drinking Fountains	At trailheads	1
	Fences	As needed	As needed
	Kiosks	As needed	1
	Planters	As needed	0

ECG TYPE 4: MARINA EDGE



Mostly pleasure boats ply the Delaware River north and south from numerous marinas along the Delaware County river edge. There are a number of new marinas in the past decade, and more are planned in the near future.

The docks and piers protrude into the river enough to meet the depths of the boats. There is a tidal range of six feet plus, so the docks float along with the boats. Houseboats are allowed at some marinas. Most are motorboats, but there are a number of sailboats. They must comply with the rules of the river and yield to the larger river traffic in the main channels.

Although most of the marinas are private some may become accessible to the public.

Docks and piers are a great place to view and understand the vitality of the Delaware County riverfront. Some tour boats ply the river, and may do so in this area in the near future, providing a distinct view of the riverfront.

Support areas include marine support, restaurants and parking lots. Residential units are also located in close proximity to a number of marinas.

The trail should pass by these areas, as they are not only aesthetic, but are a good place to see the open river and its traffic. Overhead planes arriving and departing from the nearby airport and wildlife are also in evidence.

MARINA EDGE: IMAGES



RECOMMENDATION:

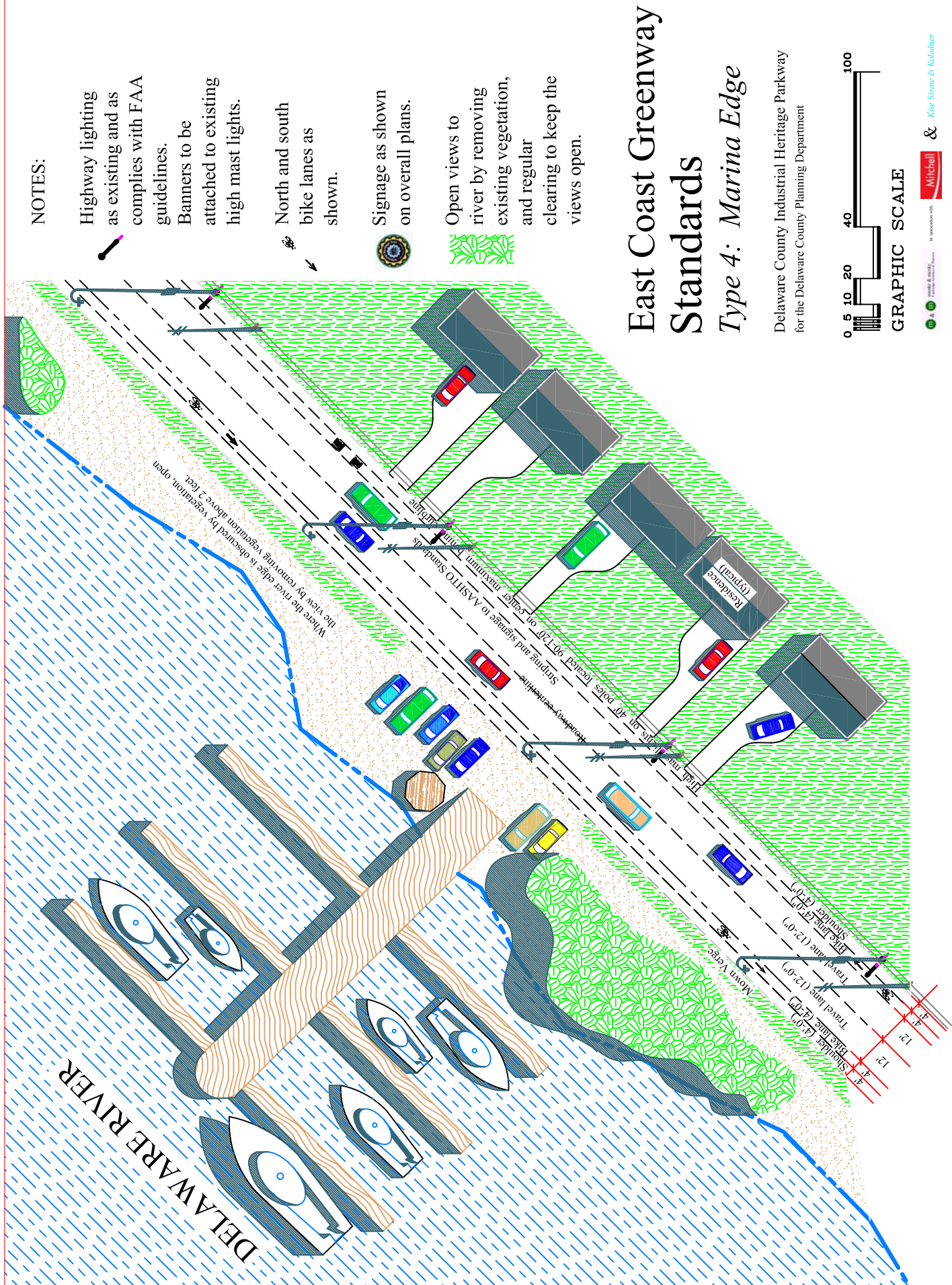
The trail should pass by these areas, as they are not only aesthetic, but good places to see the open river and its traffic. Overhead planes arriving and departing from the nearby airport and wildlife can also be seen frequently.

Little needs to be done here other than point trail users to these features with signage. Site furnishings and planted areas could be installed in some areas adjacent to these facilities. See Marina Edge plan for more detailed recommendations.

Although most of the marinas are private, some may become accessible to the public. Marinas include the following in Tinicum: Corinthian Yacht Club, Fox Grove, Harbour Lights, Riverfront, Riverside, and West End Boat Club. Ridley has a marina with public access. A marina is proposed for the Rivertown development in Chester.

Docks and piers are a great place to view and understand the vitality of the Delaware County riverfront. Some tour boats ply the river, and may do so in this area in the near future, providing a distinct view of the riverfront. Docks are planned for Bartram's Garden, Chestnut Street and the Fairmount Water Works on the nearby Schuylkill, River.





NOTES:

Highway lighting as existing and as complies with FAA guidelines.
Banners to be attached to existing high mast lights.

North and south bike lanes as shown.

Signage as shown on overall plans.

Open views to river by removing existing vegetation, and regular clearing to keep the views open.

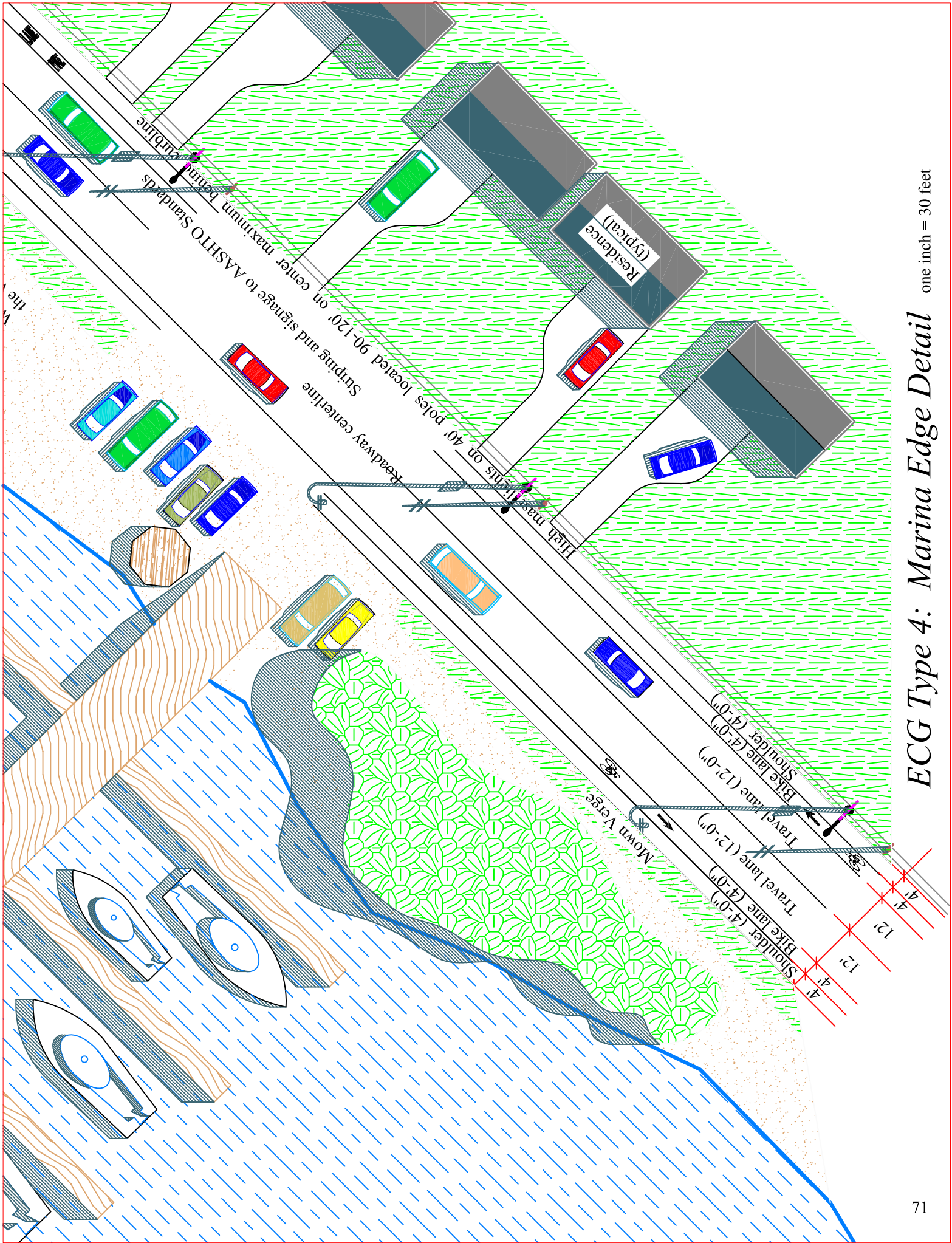
East Coast Greenway Standards Type 4: Marina Edge

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department



GRAPHIC SCALE

Mitchell & Kase Strain & Kaldner



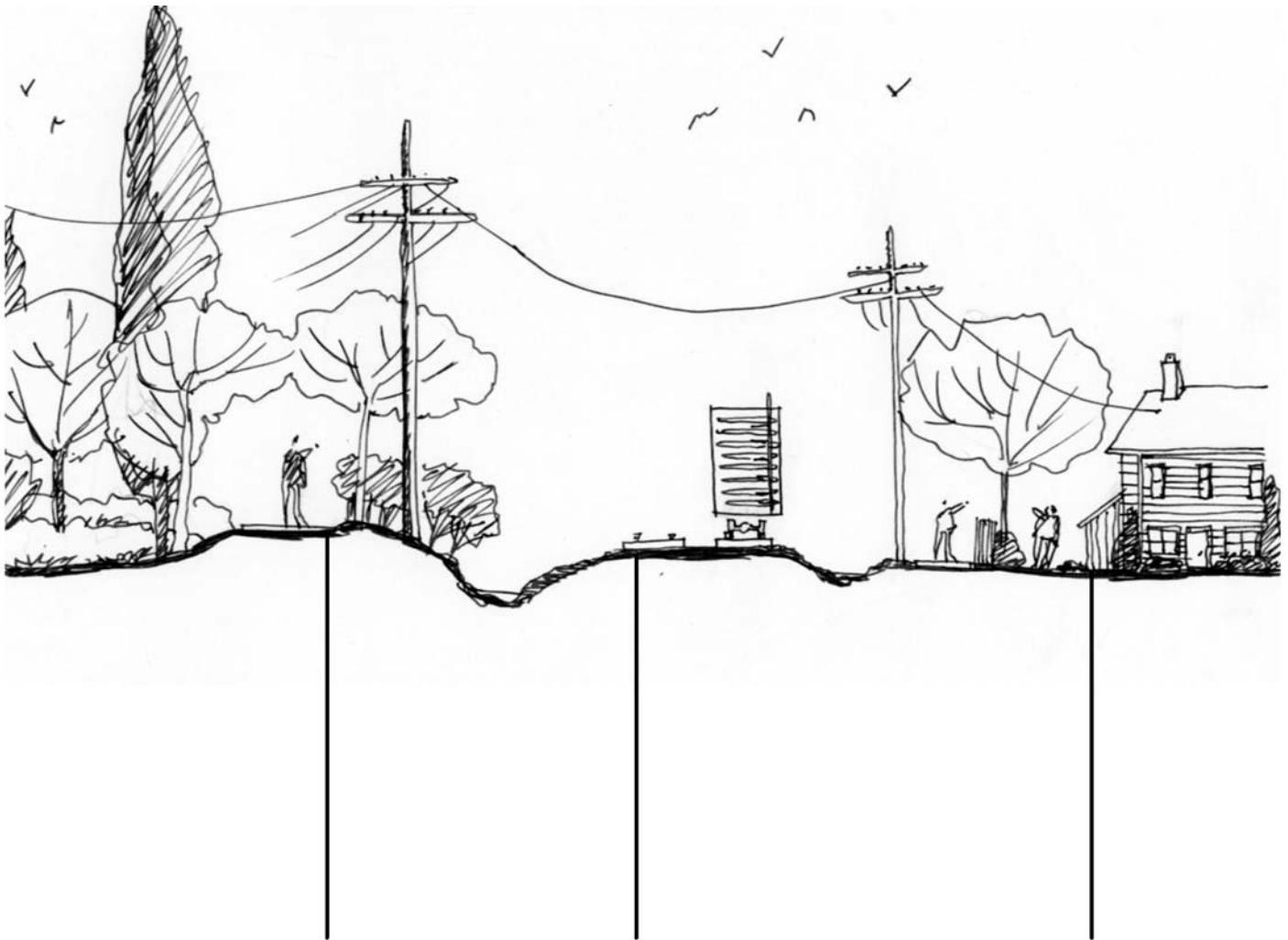
ECG Type 4: Marina Edge Detail

one inch = 30 feet

MARINA EDGE: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Clearing	Along edges	0
	Minor Street Trees	30 ft. on center	0
	Shade Trees	60 ft. on center (on private property)	0
Lighting	Pedestrian Lighting	60 ft. on center	0
	High Mast Lighting	90 – 120 ft. on center	0
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	0
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	0
	Drinking Fountains	At trailheads	1
	Fences	As needed	As needed
	Kiosks	As needed	1
	Planters	As needed	0

ECG TYPE 5: OFF ROAD AT RAIL LINES



Vegetation through this area includes a wide range of native and exotic (with some invasive and aggressive species), which with judicious pruning, could enhance the off-road trail experience. Views to the river and local landmarks should be explored.

The once busy rail lines that pass through the project area include a number that have either been abandoned or are experiencing light use. They should be explored as potential trail alignments for purchase, or possible shared uses with their continued use.

Adjacent properties accommodate a variety of types, including residential. The need for privacy fencing and separation by vegetation and other means is important.

OFF ROAD AT RAIL LINES: IMAGES



The above proposed treatment from the first phase of this report shows a typical off-road section. Here, an access alley and wide right-of-way is shown adapted for an off-road segment of the East Coast Greenway. A post and rail fence separates an active rail line from the edge of the trail. Banners and signage attached to existing utility posts and light fixture announces that this is part of the ECG.



The lightly used and abandoned rail lines passing through this area present both constraints in terms of intersections that must be made safe, and opportunities to use abandoned rail lines for off-road East Coast Greenway alignments.



RECOMMENDATION:

See the East Coast Greenway Plans that follow for detailed recommendations for this landscape type. The wide variety of roadway type, right-of-way width, and off road potential lead to a variety of on and off road possibilities.

Guidelines:

Street Trees: NO
minor trees or shade
trees.

Lighting: none
recommended except at
entrances.

North and south bike
lanes as shown.

Signage as shown on
overall plans.

Mown turf.

Railroad lines.

Fencing: low level, but
preferably semi
opaque.

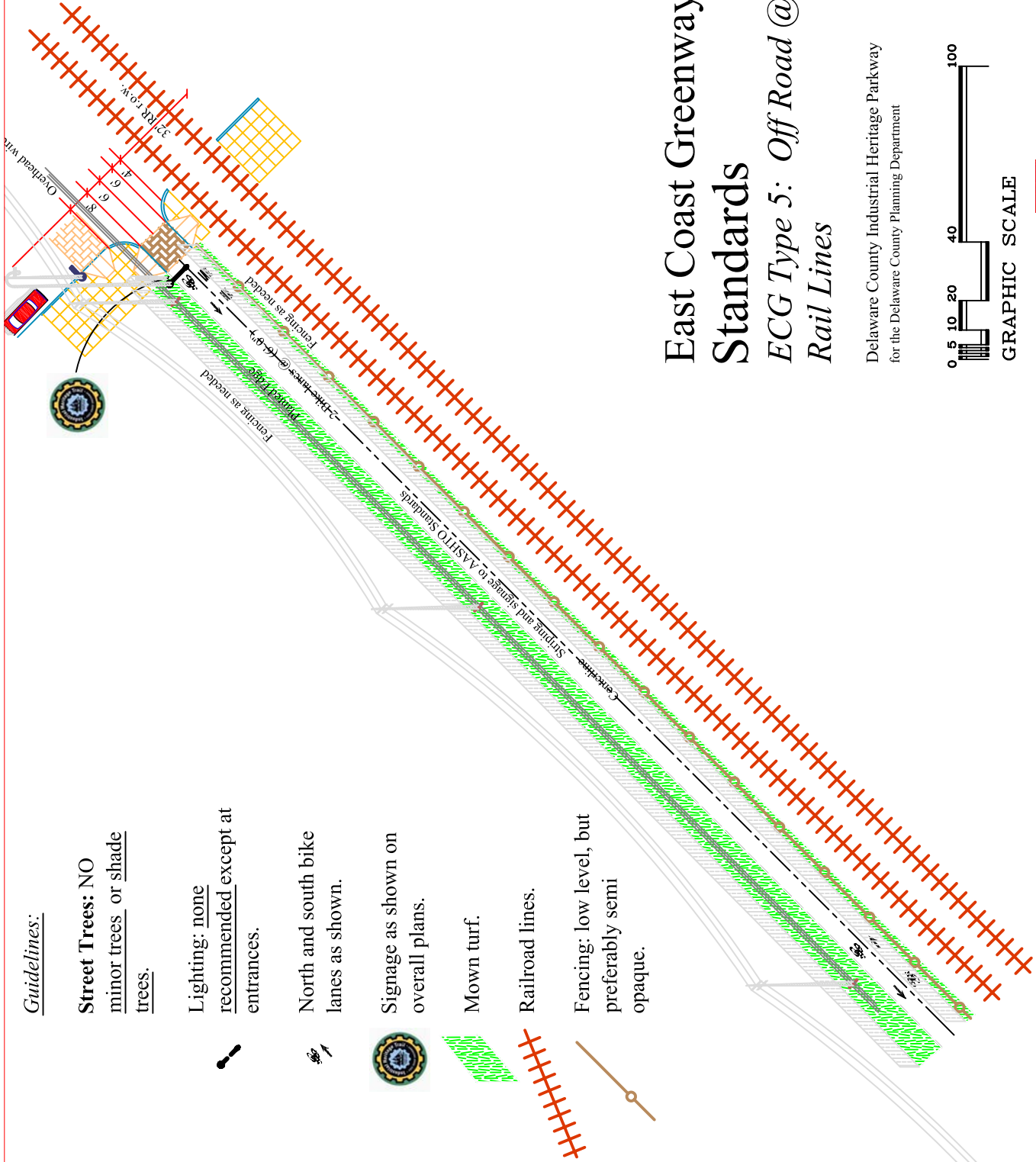
East Coast Greenway Standards ECG Type 5: Off Road @ Rail Lines

Delaware County Industrial Heritage Parkway
for the Delaware County Planning Department



GRAPHIC SCALE

Mitchell & Kiser Straub & Kolodner



One inch = 20 feet



OFF ROAD AT RAIL LINES: QUANTITIES MATRIX

<u>Category</u>	<u>Type</u>	<u>Typical Spacing</u>	<u>Quantity per Mile</u>
Planting	Clearing	Along edges	0
	Minor Street Trees	30 ft. on center	0
	Shade Trees	60 ft. on center (on private property)	0
Lighting	Pedestrian Lighting	60 ft. on center	0
	High Mast Lighting	90 – 120 ft. on center	0
	Other Lighting	As needed	As needed
Signs	Banners (in pairs)	60 ft. on center	0
	Directional Signs	At entrances and/or intersections	1
	Gateway/Border Signs	At town borders	0
	Greenway Signs	As shown on plans	2
	IHP Signs	As shown on plans	2
	Interpretive Signs	As shown on plans	2
	W3R Signs	As shown on plans	2
Site Furnishings	Benches	As needed	6
	Bike Racks	At trailheads, interpretive stops	4
	Bollards	As needed	As needed
	Transit Shelters	Coordinate with transit operators	0
	Drinking Fountains	At trailheads	1
	Fences	As needed	5,000 linear feet
	Kiosks	As needed	1
	Planters	As needed	0

INTRODUCTION

The following three sections contain specific guidelines for various elements of the proposed trails.

- **HARDSCAPE** contains specific elements related to bicycles and site furnishings.
- **GREENSCAPE** describes the living elements of the space; trees, shrubs, and groundcovers. These are further broken down by type, and further described in matrices as to their best uses.
- **GRAPHICS AND SIGNAGE** contains specific details about the specially designed graphics for the Industrial Heritage Parkway, where they should be located, and other signs that will guide the trail users.
- More specific information, such as manufacturers names and product specifications, can be found in the Appendix.



BENCHES



A Trex™ recycled plastic bench is low maintenance and comfortable year round.



The DuMor Model 101, with Trex™ seating is recommended.

- Wooden seats with metal ends are most comfortable for year round use.
- Color may be added with metal or recycled plastic models.
- Integrate bench and other site furnishing colors with the signage program.
- Purchasing benches jointly throughout the Industrial Heritage Corridor project area may provide some saving and create a coordinated identity.
- Recommended benches are detailed in APPENDIX B:
Manufacturers:



A contoured bench can be wooden or manufactured with Trex™ (recycled plastic).



Metal benches are durable and can be colorful as well.

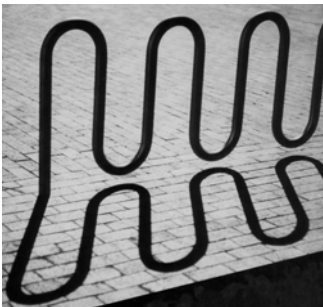
BICYCLE PARKING



The inverted U type bike rack is a popular and adaptable product (in Princeton, 2005).

The Delaware County Planning Department recommends inverted U bicycle racks (above), as most suitable to area users because they provide users with two points of contact instead of only one. Bicyclists often park their bikes parallel to ribbon racks decreasing their effective capacity to two, despite their increased expense over inverted U racks that hold two bicycles.

- A number of manufacturers provide fixtures that safely hold bicycles.
- Bicyclists are sometimes very particular about where they park their bikes. It is recommended that they be involved in the decision making process.
- Recommended bicycle parking spacing is detailed on the next page.
- Location is important. Bike racks should be integrated with major points of interest and coordinated with kiosks, benches, drinking fountains, trash receptacles, and lighting.

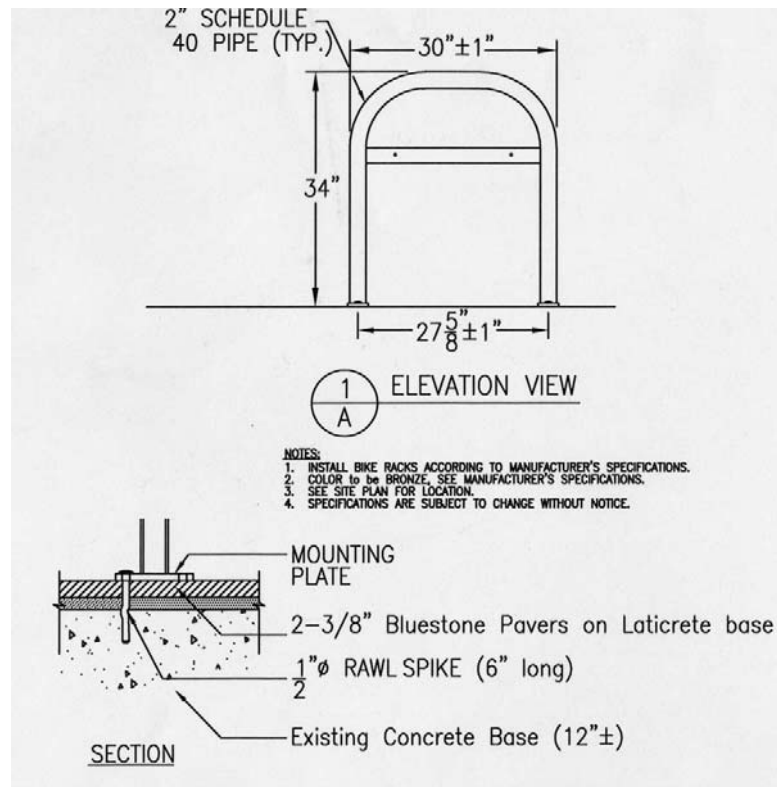


Ribbon rack on brick paving.

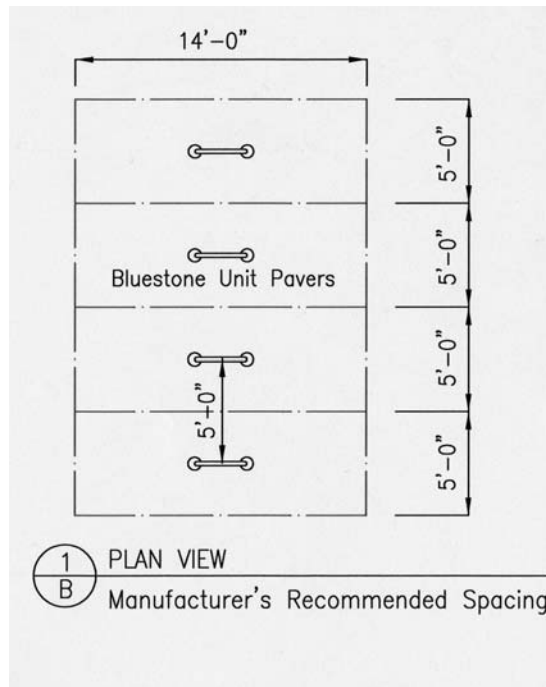


Ribbon racks in use (in Seattle, February 2005).

BICYCLE PARKING SPECIFICS



Above, Elevation and paving section showing installation of U type rack (can be installed on any paving). Below, plan view showing manufacturer's suggested spacing.



BIKEWAY PAVING



Above, an off-road segment possible adjacent to Route 291.



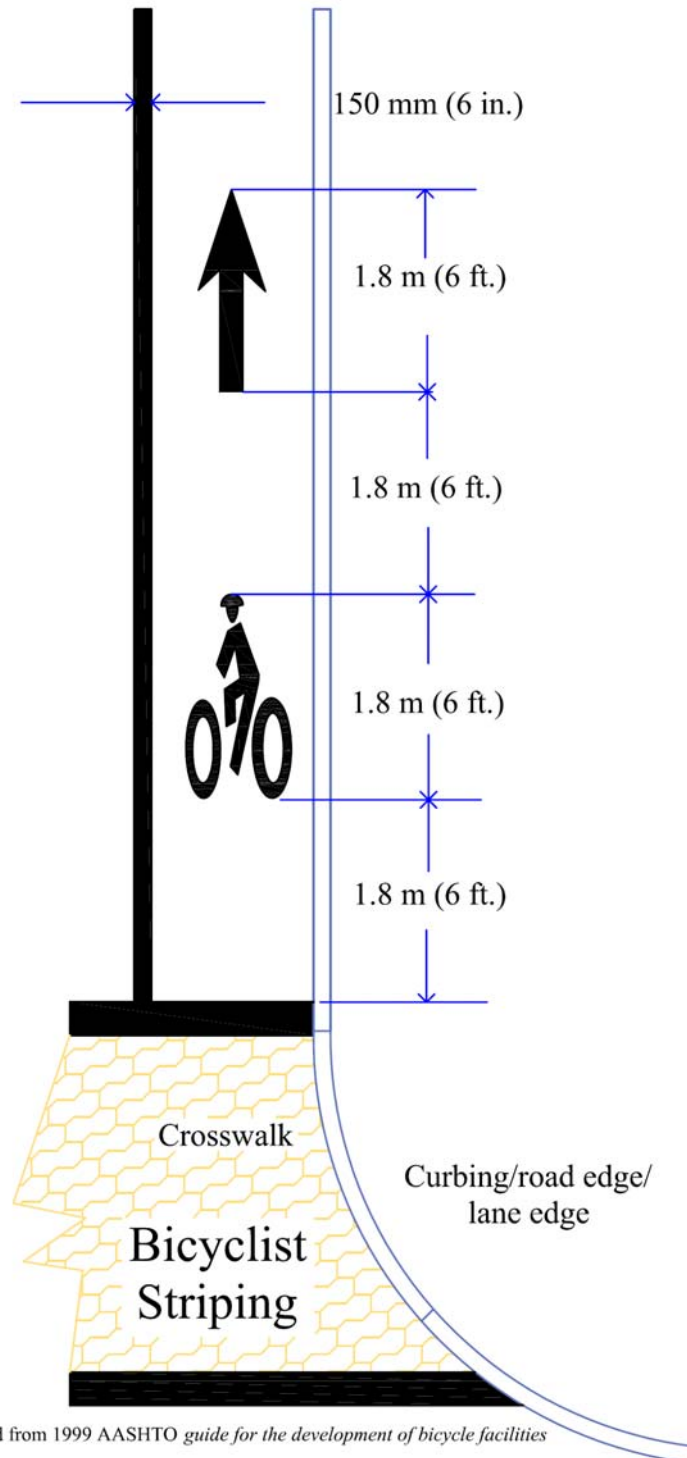
Above, a bikeway could be installed near the intersection of 291 and 420.

- Bikeway paving should be smooth and as joint-free as possible. This usually implies bituminous concrete (asphalt).
- Edging is not required, but can help to define the edge of the bikeway (a border can disappear rapidly under attack from adventurous plants: grass, weeds and shrubs).
- Bikeway aprons (meeting another pavement, i.e., an intersecting roadway) should be a unique material and texture to help orient users.
- The bikeway alignment should be separate from the roadway wherever possible.
- The example to the left shows use of central space on a wide roadway. Off-road scenic routes are most desirable.

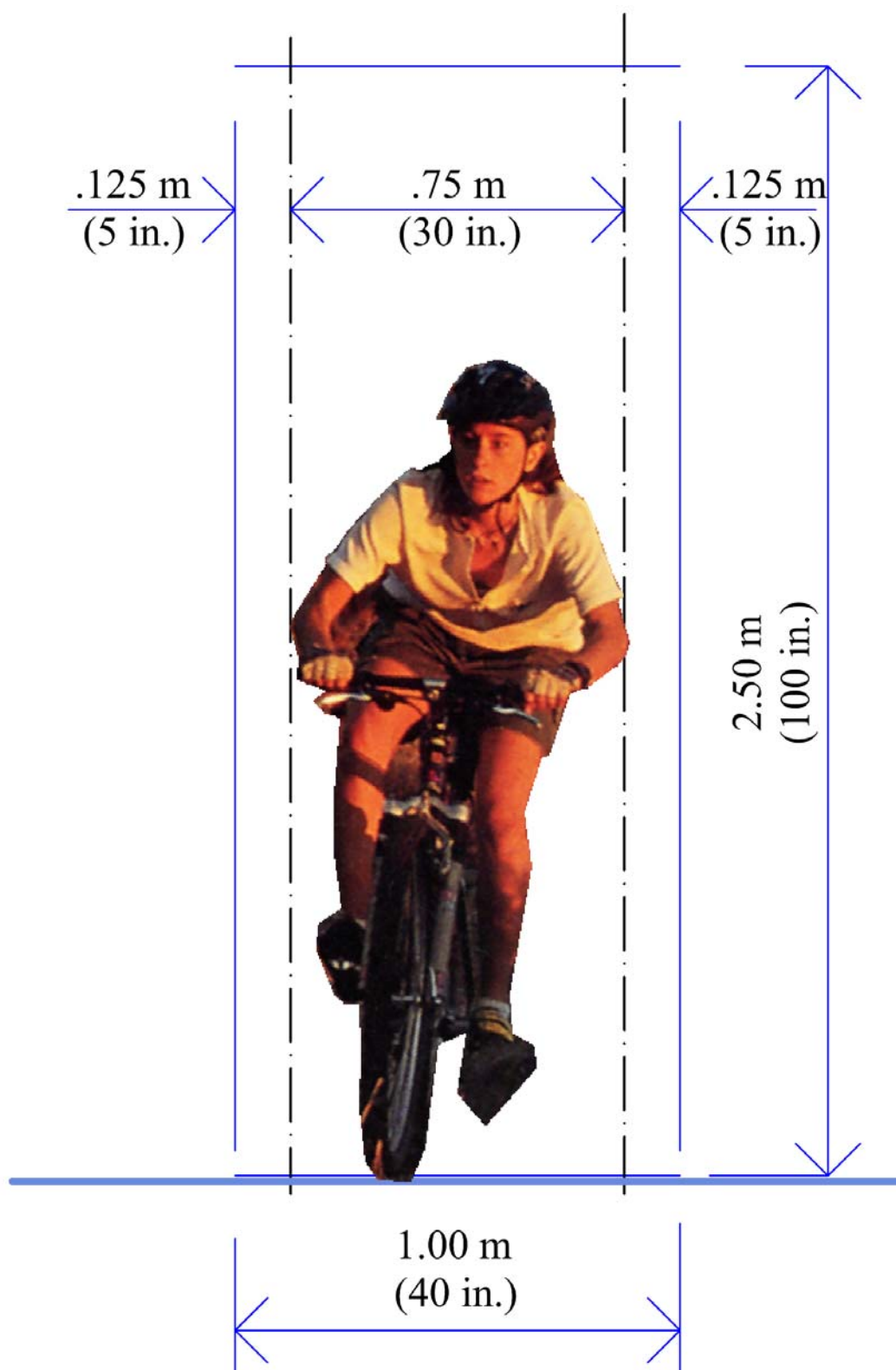
The above illustrations were from the first phase report for this project.

- For a copy, see the Delaware County Planning Department.
- Menke & Menke and Kise Straw Kolodner prepared the report.

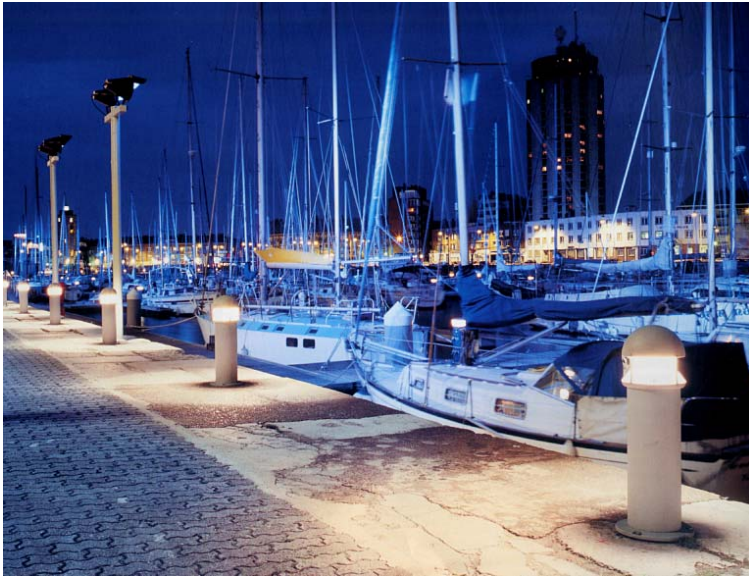
BICYCLIST STRIPING



BICYCLIST OPERATING SPACE



BOLLARDS AND LIGHTED BOLLARDS



Lighted bollards by Louis Poulsen.



Ironsmith bollard in paving.

- Bollards help separate incompatible functions and can be decorative elements as well.
- Consider their use to protect areas where vehicles can enter or cause damage to fragile site elements.
- Consider painting bollards in standard colors to coordinate with the Industrial Heritage Parkway signage colors.
- Consider lighted bollards with hi-wattage metal halogen and fluorescent lamps with good color rendering characteristics.
- A bollard's footing is a vital part of its success. Like an iceberg, the below grade portion is sometimes deeper than the height above grade of the upper portion.
- Bollards usually are as deep below grade as they are tall, so locate them with care with regard to underground utilities and other sensitive below grade conditions.

BUS SHELTERS



The existing bus shelter (above) in Marcus Hook should be supplied with IHP graphics, similar to those on the Philadelphia shelter below.



- Consider supplying graphics in coordination with the Industrial Heritage Parkway elements. Coordination with local agencies and schools can help provide information that could be graphically placed in the locations for graphics on bus shelters.
- Work with SEPTA to determine requirements, specifications.

CROSSWALKS



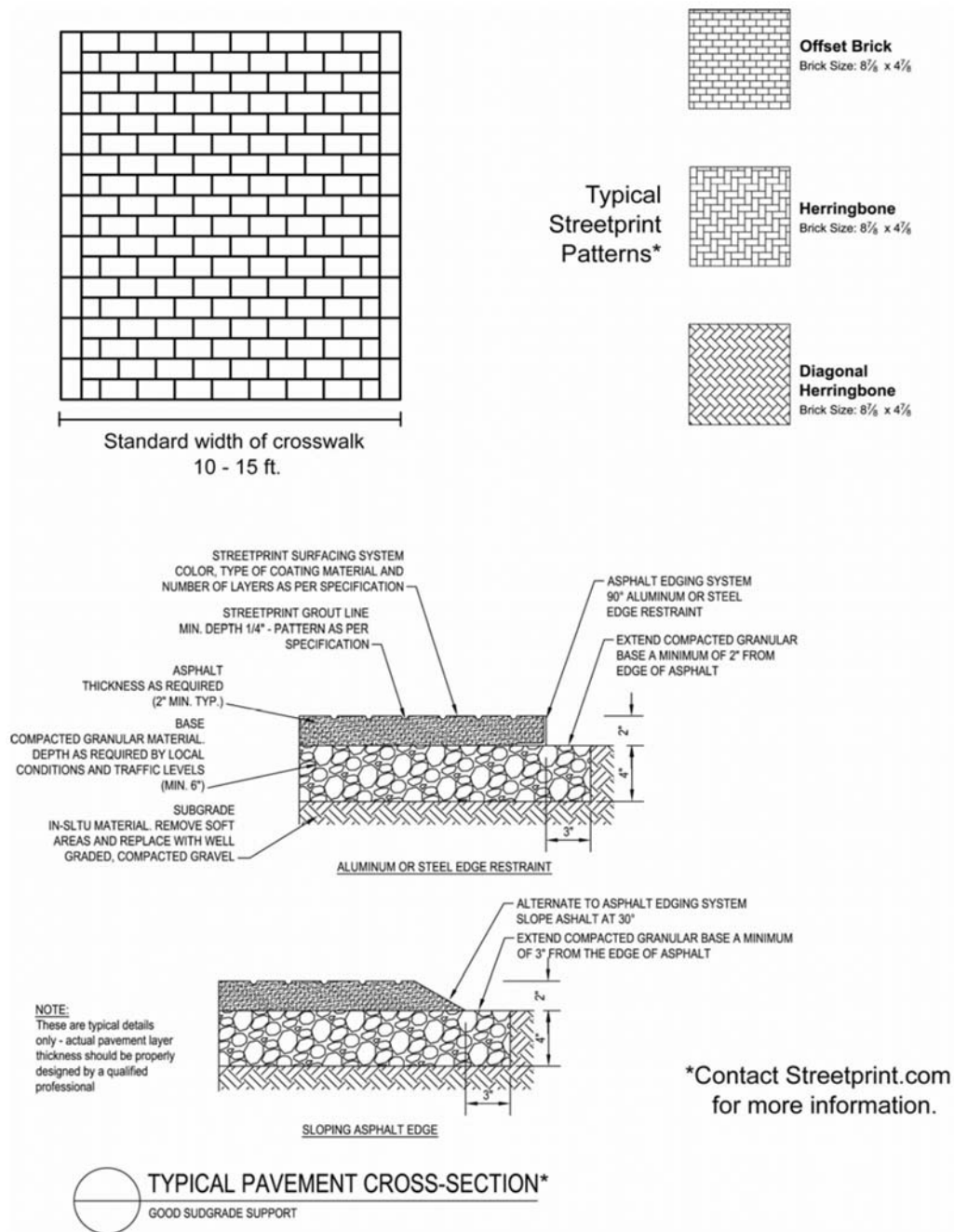
Proposed crosswalk rendering of an existing Marcus Hook street.



A 2004 example of a StreetPrint™ installation in the Philadelphia

- Crosswalks can include unit pavers (as shown in the first phase report illustration to the left), or striping.
- Elastomeric or plastomeric striping material lasts longer than painting.
- A lower cost option worth considering is StreetPrint™ that adds color and texture to either existing or new asphalt.
- Coordinate any crosswalk planning with PennDOT and local highway departments.
- Safety considerations include pedestrian signalization.

GENERAL SCHEMATIC FOR CROSSWALK



DRINKING FOUNTAINS



Most Dependable Fountain's (MDF) handicapped accessible model.



One of Murdock's more decorative fixtures.

- Drinking fountains are maintenance intensive, and yet they are one of the most appreciated site furnishings on a trail.
- Available products range from the utilitarian to highly decorative.
- Custom designs are also an option.
- A water line is required, possibly separately metered.
- A drain nearby is recommended
- A frost proof valve is required in the Delaware County climate.
- Regular maintenance is recommended

FENCING



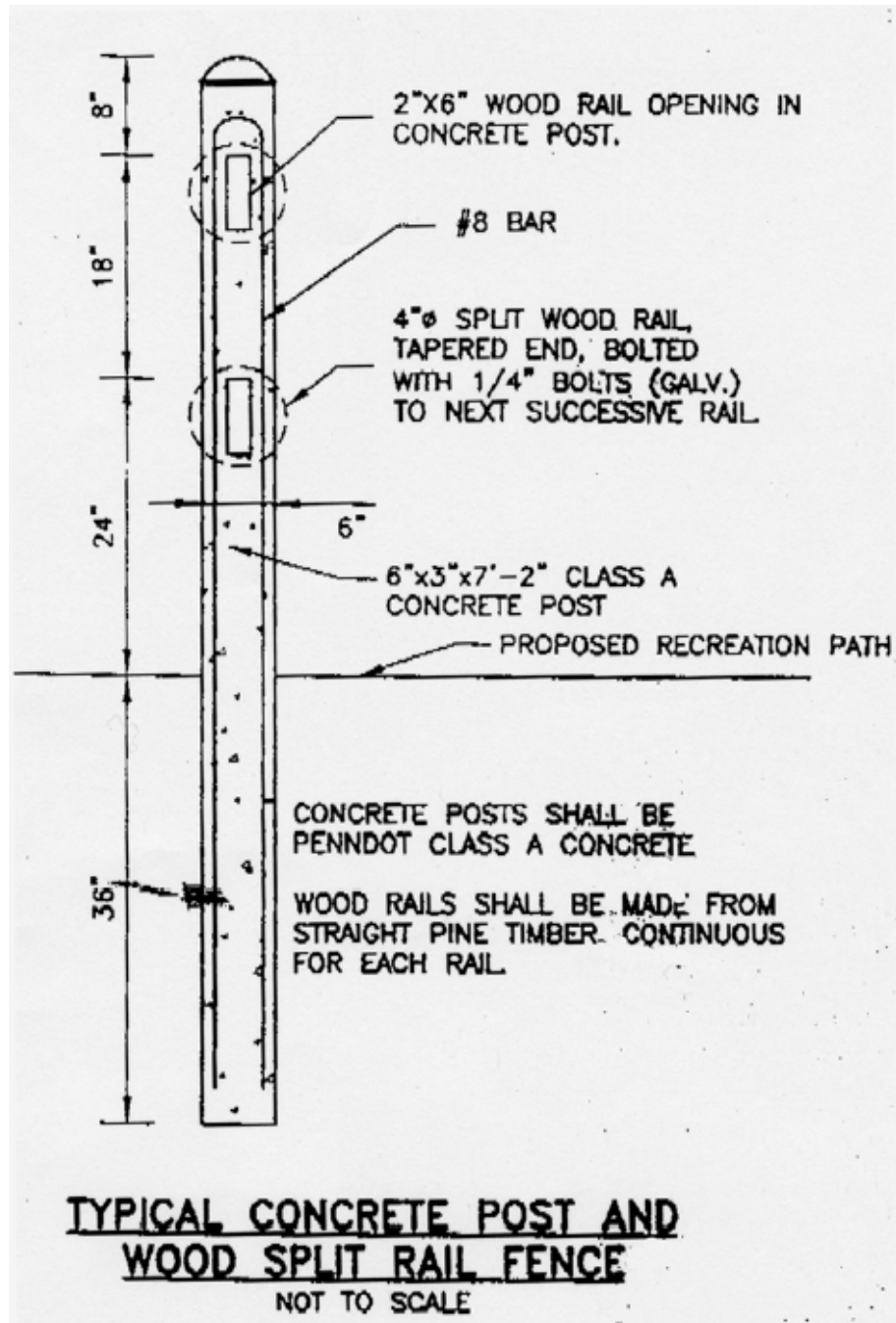
An example of fencing from the first phase report, separating an active rail line from the proposed bikeway.



Above is another illustration from the previous report showing the separation between active rail line and proposed bikeway.

- Fencing is recommended in areas where separation is required between incompatible functions, but there is little space.
- Fencing can be transparent, semi-transparent, or opaque, depending upon the needs and desires of the adjacent land uses.
- Fencing should be coordinated with effective grading and planting to enhance the functions of the fencing.
- The next pages show examples of recommended fencing.
 - Post and rail wooden or plastic fencing.
 - Chain link fencing with decorative (plant-like) infill.

FENCING (continued)



FENCING (continued)



The chain link fence to the left has been partially filled with a plastic material that mimics a finely trimmed yew hedge. Although a relatively expensive solution, this is most appropriate where aesthetically pleasing screening is desired and space is limited.

Above, the same fence's effectiveness is increased by a lawn in the foreground and a background of Eastern White Pines (*Pinus strobus*).

KIOSKS



Kiosks include ones that would display information to larger ones that could be manned.

An informational pillar can be simple, but needs to be managed so that the information can be kept current and inappropriate messages removed in a timely manner.



The Delaware County trailhead structure at the right (under Route I-476) illustrates the need for both overhead protection (pigeons roosting overhead) and for a ground level surface suited to the use (a paved surface might have been a better solution).

- Located at trailheads or turning points on the trail, kiosks could be either small or larger, as shown in the accompanying illustration.
- Graphics should be coordinated with the overall colors and themes.
- Locate kiosks so that they are visible to trail users, but do not block the intersection views.
- Options include utility connections (i.e., wiring for lighting, power for a digital display).
- With local support, a kiosk can provide a center of information for the surrounding community as well as trail users.



LIGHTING



Holophane ("Atlanta") fixture; Highway height lighting can also be decorative.



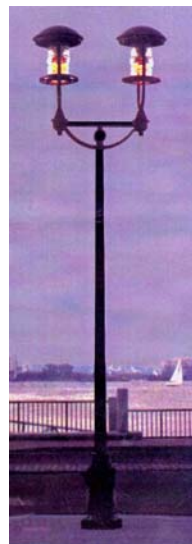
Holophane's "Hallbrook" fixture is recommended for the Industrial Heritage Parkway



Antique Street Lamps' "La Grange." fixture is recommended for the on- road portions of the Industrial Heritage Parkway.



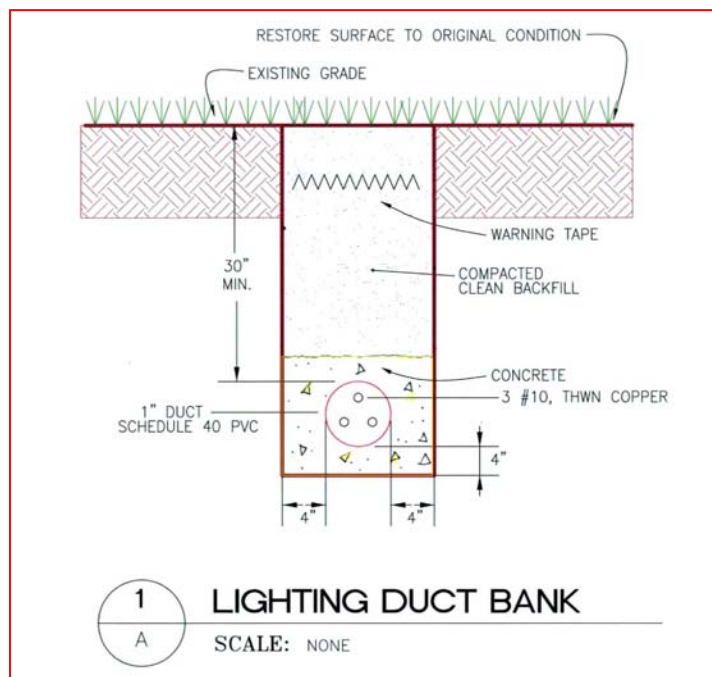
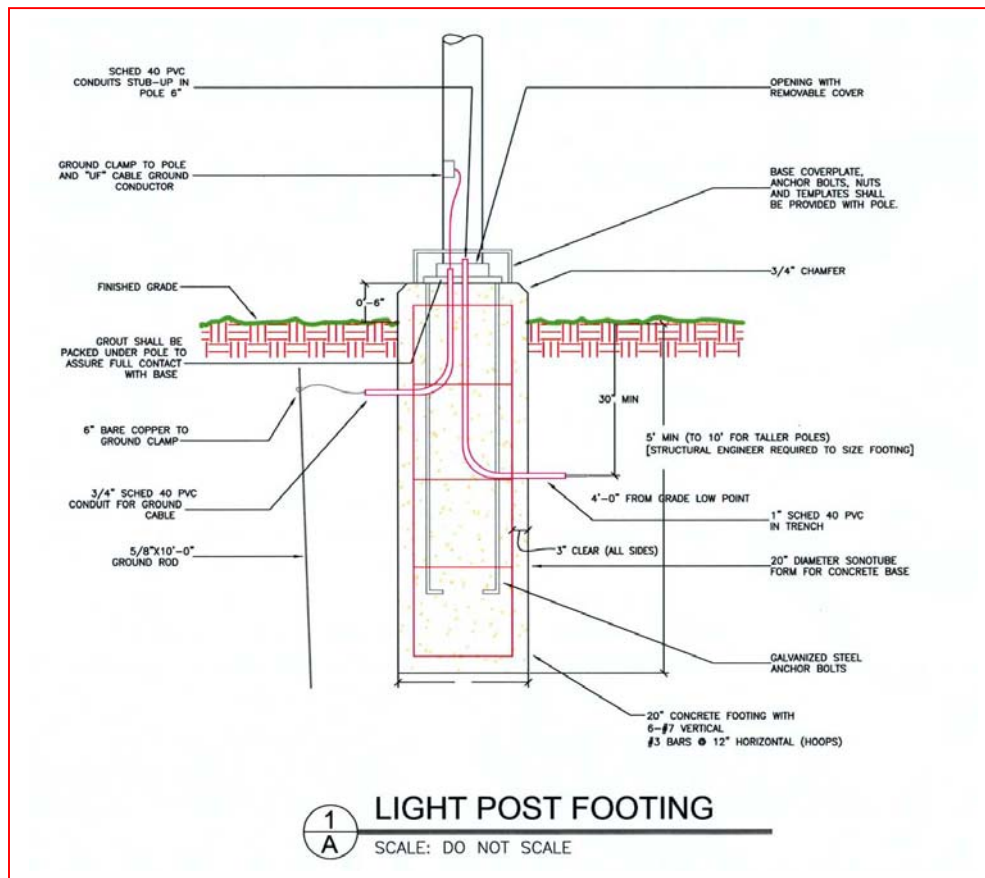
The Pennsylvania Globe Gaslight Company's "Seaport Series Harbor Walk" is recommended for the river edge portions of the Industrial Heritage Parkway



- Street light type should be industrial strength: high (40'), industrial-looking or bold (rather than historical or delicate)
- Trail edge lighting should be more decorative and pedestrian scale (10-14').
- Spotlights should be located at special nodes.
- See also bollard section for bollard lighting.
- Lights should have good color rendering and high-wattage metal halogen or fluorescent lamps.
- Anti-terrorist/security concerns may require special lighting at sensitive sites.
- Detailed information about recommended lighting is in the APPENDIX B.
- Controlled cutoff luminaries are a must due to the dark sky requirements and proximity of the Philadelphia airport.
- These guidelines are changing quickly, so check with the lighting representatives to verify the most recent applicable standards.
- For detailed lighting information, see APPENDIX B: Lighting, and the details that follow.

HARDSCAPE GUIDELINES

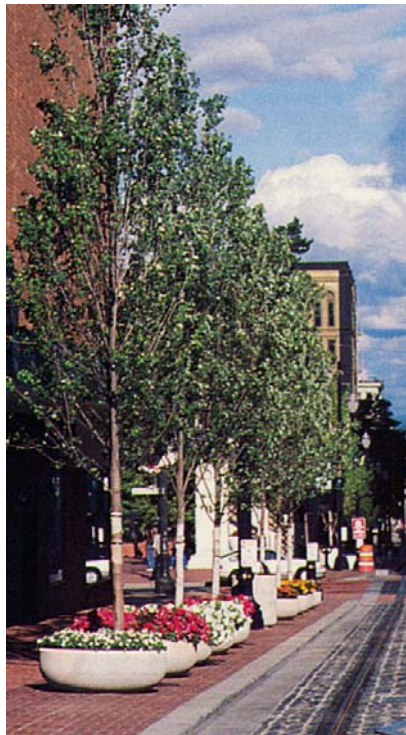
LIGHTING (continued)



PLANTERS



A planter with seasonal plantings can be both decorative and functional.



Planters can be placed as individual elements in the landscape, but they are much more effective if they are integrated into the streetscape design.

- Planters, in addition to providing a separation between incompatible functions (i.e. pedestrian and vehicular lanes, or separating a bikeway from vehicular traffic), can announce the changing seasons with colorful plantings and arrangements.
- Consider whether the plantings will be seasonally adjusted, or planted with a more year round, permanent planting.
- The amount of soil and maintenance available will help determine the type and effectiveness of the planting.
- Planters have a great deal of weight, especially when moist. Avoid placing them over areas (such as basements under the sidewalk) which cannot support them.

TRASH RECEPTACLES



Aesthetically pleasing trash receptacles such as Victor Stanley's Ironsites® S-42 (left) and A-36 (right) are handsome units best suited to urban and other highly used pedestrian spaces.



- Necessary items, these site furnishings should be located so that they can be easily serviced, and also be easily accessible to those who deposit items there. They should be far enough removed from picnic areas to keep insects, rodents, or offensive odors from becoming an issue.
- Work with local municipalities to determine requirements, specifications.
- See APPENDIX B for specific information about recommended units.



Howard's less expensive units, attractive in the color and name options, are also an option.

SHRUBS & GROUNDCOVERS



*Glossy abelia is a low-maintenance semi-evergreen flowering species.
See Shrubs: "Dry Tolerant" and "Wet loving."*



Yellow twigged dogwood is especially attractive in the winter.



Viburnum species have attractive berries.

- Shrubs should provide four season interest.
- Low maintenance hardy and disease resistant species are preferred.
- Plants that attract bees and other insects, drop fruits, or give off seasonally unpleasant odors should be avoided wherever possible.
- In addition to form and texture, desirable shrub attributes include winter twig color, long lasting berries, and native plant association characteristics.
- APPENDIX A: *Exterior Plants* has more detailed recommendations.
- Plant shrubs in groupings located within mulched beds for ease of maintenance and desirable growing conditions.
- Avoid closeness to roadside spray, which can be salt laden and toxic to most plants.
- A listing of recommended shrubs follows.

SHRUBS: RECOMMENDED DRY TOLERANT



ABELIA X GRANDIFLORA Glossy Abelia



CORNUS SERICEA 'FLAVIRAMEA' Yellowtwig Dogwood



CORNUS SERICEA 'SIBIRICA' Tatarian Dogwood



FORSYTHIA X INTERMEDIA 'SPECTABILIS'
Showy Border Forsythia



ITEA VIRGINICA 'HENRY'S GARNET' Henry's Garnet
Virginia Sweetspire



RHUS TYPHINA 'LACINIATA' Staghorn Sumac



TAXUS BACCATA 'REPANDENS' Spreading Yew



VIBURNUM TRILOBUM 'COMPACTUM'
American Cranberrybush Viburnum

SHRUBS: RECOMMENDED WET TOLERANT



CEPHALANTHUS OCCIDENTALIS Buttonbush



CLETHRA ALNIFOLIA Sweet Pepperbush



ILEX VERTICILLATA Winterberry



RHODODENDRON MAXIMUM Great Laurel



ROSA PALUSTRIS Swamp Rose



SALIX DISCOLOR Pussy Willow

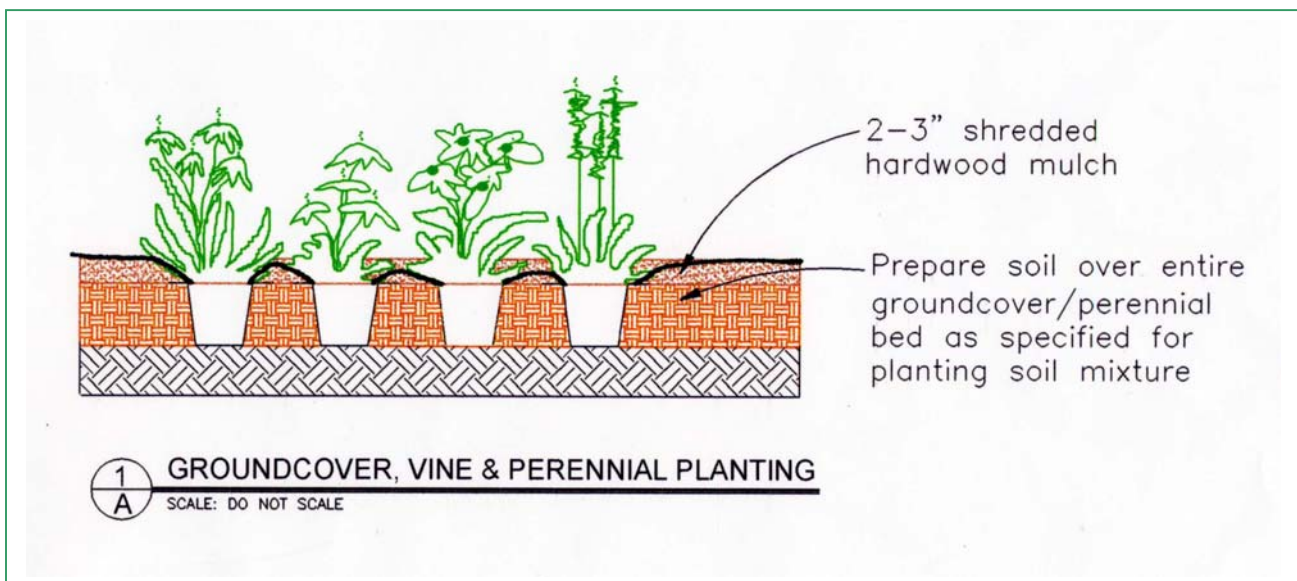
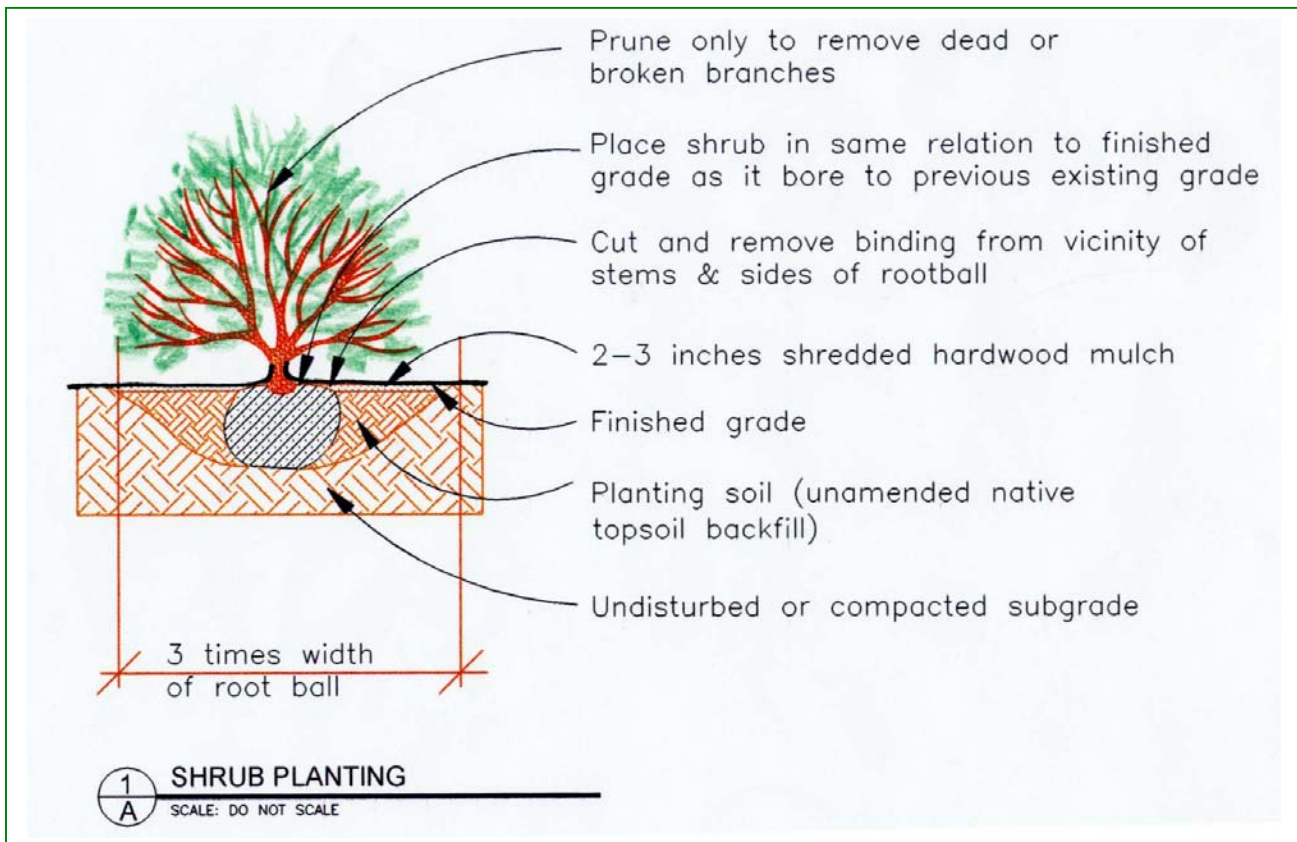


SAMBUCUS CANADENSIS Marsh Elder



VACCINIUM CORYMBOSUM Highbush Blueberry

SHRUBS AND GROUNDCOVERS DETAILS



For detailed recommendations, see Appendix A: Exterior Plants.

PARKWAY STANDARDS: SHRUB MATRIX

BOTANICAL & COMMON NAMES	DECI- DUOUS	EVER- GREEN	FLOWERING	OVER 6'	UNDER 6'	RECOM- MENDED PLANTING	NOTABLE FEATURES
<i>Abelia x grandiflora</i> GLOSSY ABELIA	semi- evergreen	semi	Pink in July	X	If pruned	Groupings	Early July flowers, form
<i>Cephalanthus occidentalis</i> BUTTONBUSH	X		White buttonlike flowers	X	If pruned	Wet areas	Native wetland plant
<i>Clethra alnifolia</i> SUMMERSWEET, SWEET PEPPERBUSH	X		White flowers	X		Wet areas	August blooming
<i>Cornus sericea 'flaviramea'</i> YELLOWTWIG DOGWOOD	X		In-significant	X	If pruned	Masses	Color of branches
<i>Cornus sericea 'flaviramea'</i> TATARIAN DOGWOOD	X		In-significant	X	if pruned	Masses	Color of branches
<i>Forsythia x intermedia 'Spectabilis'</i> SHOWY BORDER FORSYTHIA	X		Yellow in early April	X	If pruned	Groupings	Early flowers, screening
<i>Ilex verticillata</i> WINTERBERRY	X		White flowers	X	If pruned; dwarf varieties	Groupings	Red fruit is long lasting
<i>Itea virginica 'Henry's Garnet'</i> VIRGINIA SWEETSPIRE	X		White	X	If pruned	Groupings	Fragrant showy flowers, Fall color

PARKWAY STANDARDS: SHRUB MATRIX

BOTANICAL & COMMON NAMES	DECI- DUOUS	EVER- GREEN	FLOWERING	OVER 6'	UNDER 6'	RECOM- MENDED PLANTING	NOTABLE FEATURES
<i>Rhododendron maximum</i> GREAT LAUREL		X	White	X		Groupings	Fragrant showy flowers, evergreen, ok in moisture
<i>Rosa palustris</i> SWAMP ROSE		X	Pink flowers		X	Groupings	Fragrant showy flowers, likes moist areas
<i>Rhus typhina</i> 'Lacianata' STAGHORN SUMAC	X		Some	X	If pruned	Masses	Fall foliage, fruit, form
<i>Sambucus canadensis</i> MARSH ELDER	X		Summer blooming white large flowers	X		Groupings	Fragrant showy flowers, good for moist areas
<i>Taxus baccata</i> 'repandens' SPREADING YEW		X			X	Base of signs	Form, hardy evergreen
<i>Vaccinium corymbosum</i> HIGHBUSH BLUEBERRY	X		White in May		X	Groupings	Fragrant showy fruit, Fall color, ok for moist areas
<i>Viburnum trilobum</i> 'Compactum' AMERICAN CRANBERRYBUSH VIBURNUM	X		White flowers in mid-May	X		Groupings	Fruit, Fall color

TREES



*A white oak in winter reveals its broadly horizontal branching nature.
Plant where space allows: see "Shade Trees."*



*A flowering tree lilac is an example of a street tree that can thrive in urban sites.
See "Small Trees." These are suited to sites with limited space and/or under overhead utilities.*



Evergreens are excellent for screening: see "Evergreen Trees."

- Trees should be chosen to fit the intended site at maturity.
- A broad spreading tree needs room to grow, and a planted area at the below grade level that can feed and sustain its above ground structure.
- Where overhead wires and constrained edges occur, select trees that fit those conditions better.
- Flowering, fall color, summer foliage, and winter branching structure should all be considered when selecting trees.
- Evergreen trees provide year round screening, as well being attractive.
- The lists and images on the following pages contain trees that have multiple desirable characteristics and few undesirable ones.

Although the tree that has no faults cannot always be found, these are recommended.

EVERGREEN TREES (Screening)



CRYPTOMERIA JAPONICA YOSHINO
Hybrid Cryptomeria



X CUPRESSOCYPARIS LEYLANDII
Leyland Cypress



ILEX OPACA American Holly



JUNIPERUS VIRGINIANA
'CORCOCOR' Hybrid Redcedar



PINUS THUNBERGII Japanese
Black Pine



PINUS STROBUS Eastern White Pine



THUJA OCCIDENTALIS Eastern
Arborvitae



THUJA PLICATA 'ATROVIRENS'
Western Arborvitae

SHADE TREES (Where Space Allows)



ACER RUBRUM Red Maple



BETULA NIGRA 'HERITAGE' Heritage River Birch



FRAXINUS PENNSYLVANICA 'SUMMIT' Summit Green Ash



LIRIODENDRON TULIPIFERA Tuliptree



NYSSA SYLVATICA Black Gum



PLATANUS X ACERIFOLIA 'BLOODGOOD' Hybrid London Plane



QUERCUS RUBRA Red Oak



ZELKOVA SERRATA 'VILLAGE GREEN' OR GREEN VASE'
Green Vase or Village Green Zelkova

SMALL TREES (Under Overhead Utilities)



ACER CAMPESTRE Hedge Maple



AMELANCHIER CANADENSIS Shadblow, Serviceberry



CORNUS MAS Corneliancherry Dogwood



CRATAEGUS CRUS-GALLI 'INERMIS' Thornless Cockspur Hawthorn



MALUS SPP. Crabapple species; Indian Magic, Japanese Flowering, Red Jade, Snowdrift



OSTRYA VIRGINIANA Hophornbeam



PRUNUS CERASIFERA 'THUNDERCLOUD' Hybrid Purple-leaved Plum



SYRINGA RETICULATA 'IVORY SILK' Ivory Silk Hybrid Tree Lilac

COLUMNAR TREES



Two recommended columnar species include Sargent Cherry (*Prunus sargentii* 'Columnaris') and Hybrid Arborvitae (*Thuja occidentalis* 'Elegantissima').



Hybrid Junipers (*Juniperus virginiana* "Corcorcor") and Amanogawa Cherries (*Prunus serrulata* 'Amanogawa.') are acceptable substitutes for the Arborvitae and Sargent Cherry.

- Some sites in the project area are constrained by horizontal space, for which columnar species are recommended.
- As plants of this type are more limited, the list is shorter and more likely to be hard to find in the sizes required.
- Advance planning in the design, purchase and installation of these plants is therefore recommended.
- Examples of suitable substitutions, should the recommended species not be obtainable, include these examples.
- Columnar species fill special needs.
- Flowering deciduous and screen evergreen types are listed.
- Watch for overhead utilities.
- For detailed recommendations, see APPENDIX A: *Exterior Plants*.

COLUMNAR TREES (Deciduous)



ACER RUBRUM 'ARMSTRONG'
Armstrong Maple



CARPINUS BETULUS 'FASTIGIATA'
Columnar Hornbeam



GINKGO BILOBA 'PRINCETON SENTRY' Columnar Ginkgo



PRUNUS SARGENTII COLUMNARIS'
Upright Sargent Cherry



PRUNUS SERRULATA 'AMANOGAWA' Amanogawa Cherry



QUERCUS ROBUR 'FASTIGIATA'
Columnar English Oak

COLUMNAR TREE (Evergreen)



ILEX AQUIPERNYI 'DRAGON LADY'
Dragon Lady Hybrid Holly

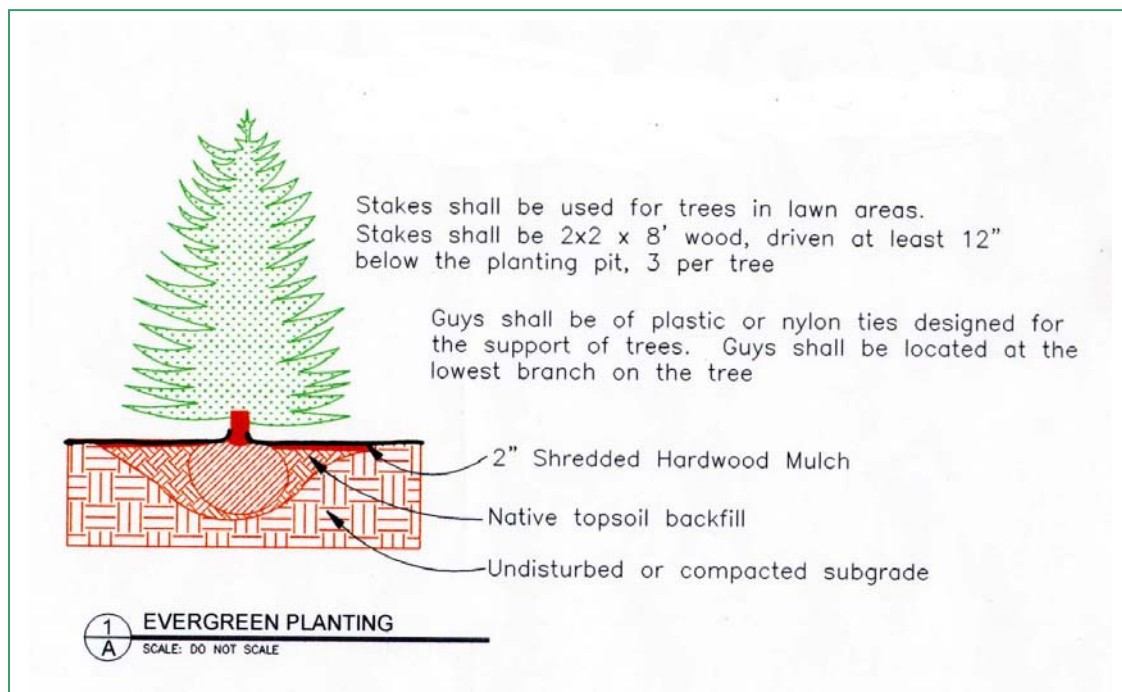
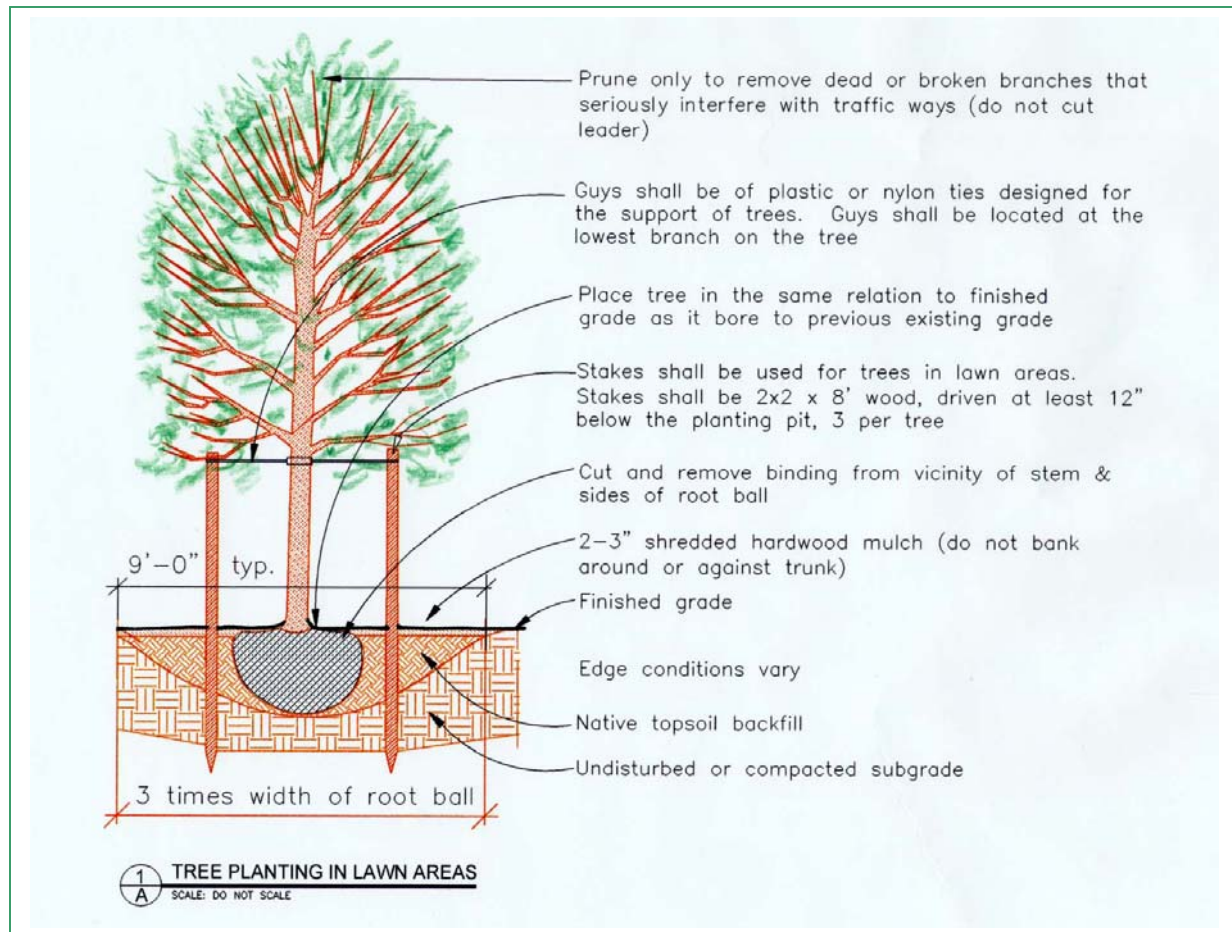


PINUS STROBUS 'FASTIGIATA'
Columnar White Pine



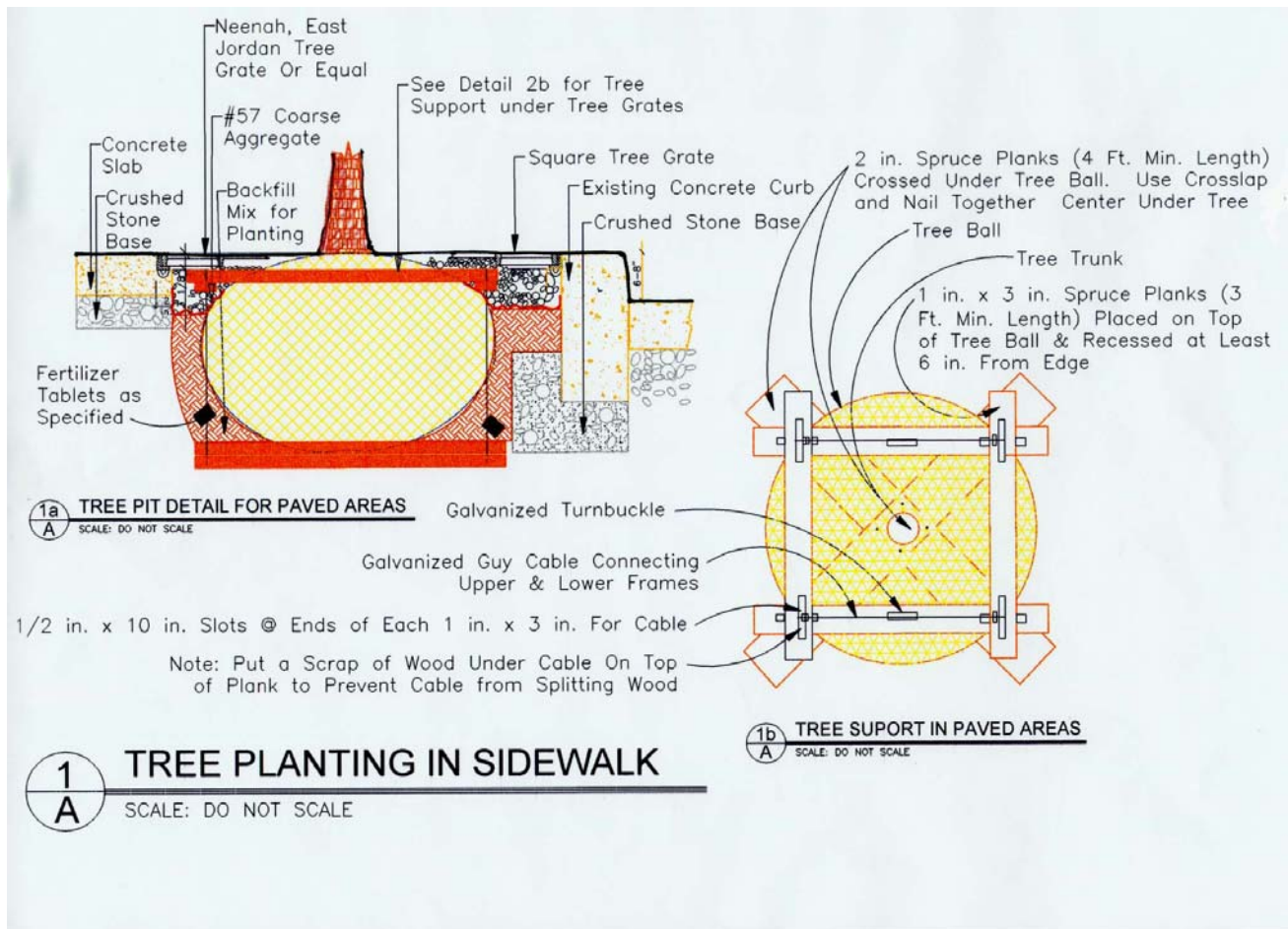
x CUPRESSOCYAPRIS LEYLANDII Leyland Cypress

TREE PLANTING DETAILS (Lawn Area)



TREE PLANTING DETAILS (Sidewalk)

If the tree is in a lawn area, the details on the previous page apply. If the tree is in a sidewalk area, the detail below is more relevant.



The above detail is for trees in sidewalk areas. As tree supports are hazardous in this area, the tree support is to be installed below grade, under the tree grate. Open pits with mulch have become hazardous as weeds and subsidence have occurred, so a tree grate at sidewalk level is recommended.

For other detailed recommendations, see APPENDIX A: Exterior Plants.

PARKWAY STANDARDS: Tree Matrix

BOTANICAL & COMMON NAMES	DECI- DUOUS	EVER- GREEN	SCREEN- ING	SHADE TREE	UNDER WIRES	NARROW SPACES	NOTABLE FEATURES
<i>Acer campestre</i> HEDGE MAPLE	X				X		Form, Fall color
<i>Acer rubrum 'Armstrong'</i> ARMSTRONG MAPLE	X					X	Form, Fall color
<i>Acer rubrum 'October Glory'</i> OCTOBER GLORY RED MAPLE	X			X		Groupings	Form, Fall color
<i>Amelanchier canadensis</i> SHADBLOW, SERVICEBERRY	X				X		Flowers, Fall color
<i>Betula nigra 'Heritage'</i> HERITAGE RIVER BIRCH	X			X			Color of trunk, branches
<i>Carpinus betulus 'Fastigiata'</i> COLUMNAR HORNBEAM	X				X	X	Form, Fall color
<i>Cornus mas</i> CORNELIANCHERRY DOGWOOD	X				X		Flowers, Fall color
<i>Crataegus crus-galli inermis</i> THORNLESS COCKSPUR THORN	X				X		Flowers, Fall color
<i>Cryptomeria japonica 'Yoshino'</i> HYBRID YOSHINO CRYPTOMERIA		X	X			Perhaps, can be pruned	Form, dense upright evergreen
<i>x Cupressocyparis leylandii</i> LEYLAND CYPRESS		X	X			X	Form, dense upright evergreen

PARKWAY STANDARDS: Tree Matrix

BOTANICAL & COMMON NAMES	DECI-DUOUS	EVER-GREEN	SCREEN-ING	SHADE TREE	UNDER WIRES	NARROW SPACES	NOTABLE FEATURES
<i>Fraxinus pennsylvanica</i> 'Summit'							
SUMMIT GREEN ASH	X			X			Form
<i>Ginkgo biloba</i> 'Princeton Sentry'							
COLUMNAR MALE GINKGO	X			X		X	Form
<i>Ilex aquipernyi</i> 'Dragon Lady'							Form, Evergreen, Berries
DRAGON LADY HOLLY		X			X	X	
<i>Ilex opaca</i>							Form, dense upright evergreen
AMERICAN HOLLY		X	X			Can be pruned	
<i>Juniperus virginiana</i> 'Corcorcor'							Form, dense upright evergreen
HYBRID REDCEDAR		X	X			Can be pruned	
<i>Liriodendron tulipifera</i>							Tuliplike flowers, tall form
TULIPTREE	X			X			
<i>Malus species</i>							Flowers, Fall color
CRABAPPLE SPECIES AS SPECIFIED	X				X		
<i>Nyssa sylvatica</i>							Forms, Fall color
BLACK GUM	X			X			
<i>Ostrya virginiana</i>							Form, Fall fruit
HOPHORNBEAM	X				X		
<i>Pinus thunbergii</i>							Form, salt tolerant
JAPANESE BLACK PINE		X	X				
<i>Pinus strobus</i>						P.s. 'Fastigiata'	Form, dense upright evergreen
EASTERN WHITE PINE		X	X			Columnar variety	

PARKWAY STANDARDS: Tree Matrix

BOTANICAL & COMMON NAMES	DECI-DUOUS	EVER-GREEN	SCREEN-ING	SHADE TREE	UNDER WIRES	NARROW SPACES	NOTABLE FEATURES
<i>Platanus x acerifolia</i> HYBRID LONDON PLANE	X			X			Form, trunk bark
<i>Prunus cerasifera</i> 'Thundercloud' HYBRID PURPLELEAVED PLUM	X				X		Purple foliage color, Fall fruit
<i>Prunus sargentii</i> 'Columnaris' UPRIGHT SARGENT CHERRY	X				X	X	Pink flowers in early April, Fall color
<i>Prunus serrulata</i> 'Amanogawa' AMANOGAWA CHERRY	X				X	X	White flowers, narrow form
<i>Quercus robur</i> 'Fastigiata' COLUMNAR ENGLISH OAK	X					X	Form, leaves late
<i>Quercus rubra</i> RED OAK	X		n/a	X			Form, Fall color
<i>Syringa reticulata</i> 'Ivory Silk' IVORY SILK HYBRID TREE LILAC	X		White flowers		X		Flowers, form
<i>Thuja occidentalis</i> EASTERN ARBORVITAE		X	X			Can be pruned	Form, dense upright evergreen
<i>Thuja plicata</i> 'Atrovirens' WESTERN ARBORVITAE		X	X			Can be pruned	Form, dense upright evergreen
<i>Zelkova serrata</i> 'Village Green' or 'Green Vase' VILLAGE GREEN ZELKOVA	X		n/a	X			Form, Fall color

INDUSTRIAL HERITAGE CORRIDOR IDENTIFICATION

Two emblems have been developed to identify the Industrial Heritage Corridor. The graphic emblems should be used whenever possible on all signage, banners, interpretive displays and printed communications related to the Industrial Heritage Parkway and Trail. The two emblems are similar in appearance and are differentiated only in their wording and background color. Following are visual samples and descriptions of the two emblems and their applications:

EMBLEM GRAPHICS



Industrial Heritage Parkway Emblem

- Copy:** "Industrial Heritage Parkway – 291/13" "Delaware County Pennsylvania"
- Colors:** Inside Gear - PMS 278C, Light Blue
Outside Gear – PMS 129C, Yellow
Outer Circle (Background) – PMS 293C, Blue. Text and Graphic – Black and White
- Applications:** Signage, banners and interpretive displays along vehicular roadways on Routes 291 and 13. The minimum outer circle diameter for these applications should be 6 inches.
- Reproduction:** Digital art is available through the Delaware County Planning Department in JPG and EPS file formats.

SIGNAGE AND GRAPHICS GUIDELINES



Industrial Heritage Trail Emblem

Copy: “Industrial Heritage Trail – East Coast Greenway” “Delaware County Pennsylvania”

Colors: Inside Gear - PMS 278C, Light Blue
Outside Gear – PMS 129C, Yellow
Outer Circle (Background) – PMS 347C, Green. Text and Graphic – Black and White

Applications: Trailblazers and interpretive displays along pedestrian and bicycle pathways on the East Coast Greenway. The minimum outer circle diameter for these applications should be 4 inches.

Reproduction: Digital art is available through the Delaware County Planning Department in JPG and EPS file formats.

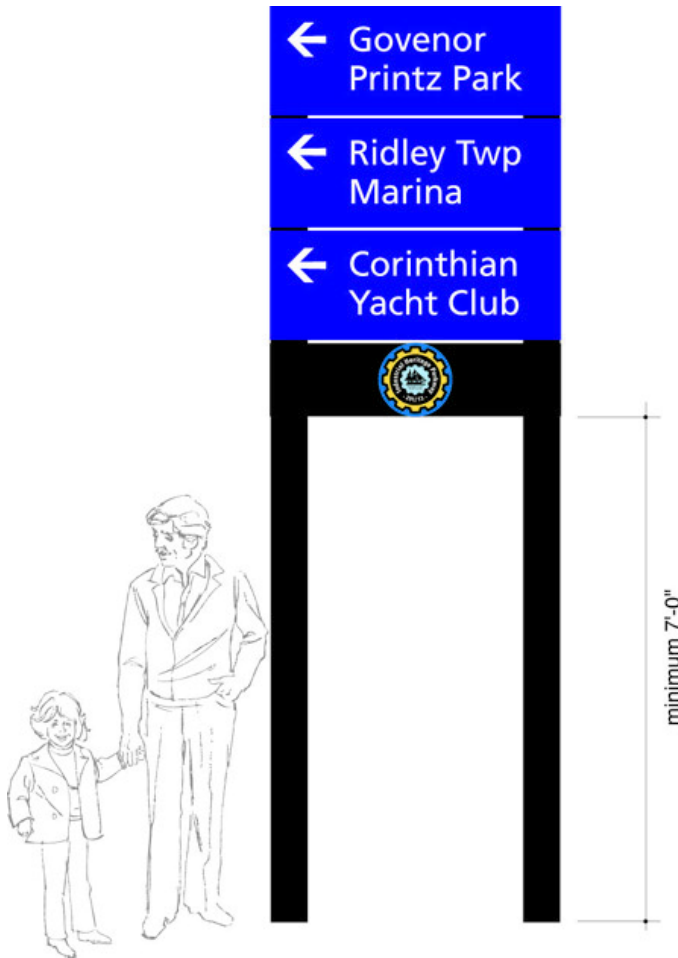
TRAILBLAZERS



Trailblazer signs are located at pedestrian and bicycle pathways to guide users along the Industrial Heritage Trail. The sign consists of a 4-inch diameter aluminum Industrial Heritage Trail emblem mounted to a nominal 4 x 4 inch pressure treated 48 inch high wood post. In areas where the Industrial Heritage Trail shares the same pathway with other routes, such as the East Coast Greenway and Washington-Rochambeau Revolutionary Route, these emblems will mount together on a single trailblazer post. (Note: in areas where trail routes cross vehicular roadways, emblems may be mounted to parkway directional signposts where available.)

- * Located along pedestrian and bicycle pathways
- * Mount on shared wood posts with other route emblems

DIRECTIONAL WAYFINDING SIGNS



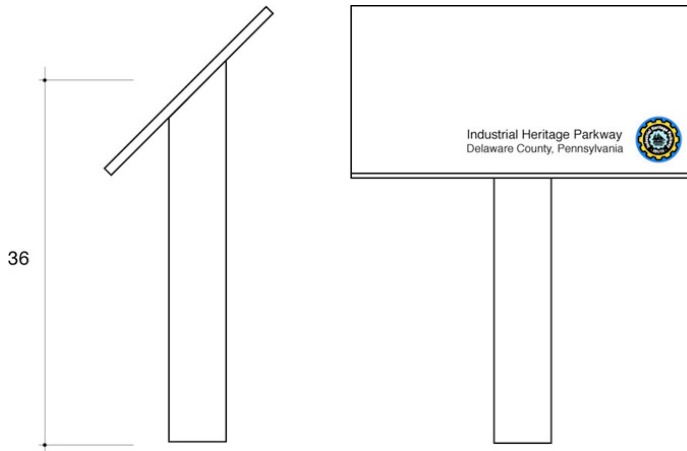
Vehicular directional wayfinding signs are intended for use along Routes 291 and 13 to guide travelers to business, services and attractions of reasonable interest within the Industrial Heritage Parkway signing region. The signs should be considered “Tourist Oriented Directional Signs” (TODS), as defined by the Pennsylvania Department of Transportation (PennDOT) and the Manual on Uniform Traffic Control Devices (MUTCD).

Each sign panel should have a one or two line legend, limited to the name of one single attraction, and an arrow indicating direction of traffic preceding an intersection. A maximum of three (3) attraction sign panels may be grouped at one location. Additional signs or sign groupings must be located at least 200 feet apart.

Sign panels are 16 x 48 inch with reflective white legend and blue reflective background. A 12 x 48 inch “logo” panel with black background and 12 inch diameter Industrial Heritage Parkway emblem shall be located below each sign panel grouping. Mounting posts shall be nominal 6 x 6 inch square aluminum tube, painted black. Installation should be in accordance with PennDOT standards and shall include approved breakaway details.

- * Locate along Routes 291 and 13
- * Comply with PennDOT and MUTCD standards
- * Reflective panels – 16 x 48 inches
- * 6 x 6 square aluminum posts
- * Maintain 200 foot minimum spacing between signs

INTERPRETIVE DISPLAY PANELS



Interpretive panels are used to tell a story about a significant attraction or historical events related to the Industrial Heritage Corridor. They generally display photographs and illustrations along with brief, descriptive text passages on a single graphic panel. The displays are designed for pedestrian and bicycle traffic only. They are not intended to be viewed from moving or stationary motor vehicles, and should not be located on or near vehicular roadways.

Interpretive panels should be reproduced from digital art files onto durable outdoor graphic panel materials such as embedded fiberglass, phenolic resin, or porcelain enamel. The panels may be mounted vertically on an existing wall structure or freestanding on a 6 x 6 square aluminum post, painted black, at 36 inches above grade. Freestanding panels should be angled 45 degrees for accessibility. (See diagram)

Interpretive panels should include either the Industrial Heritage Parkway emblem or Industrial Heritage Trail emblem graphic somewhere on the panel layout.

- * For use on pedestrian and bicycle routes only

(Do not use along vehicular roadways)

- * Mount to existing vertical surface or mount freestanding

- * Use recommended panel materials for outdoor durability

MUNICIPAL SIGNAGE



- Signs should be coordinated among the municipalities within the Industrial Heritage Parkway trail alignment. The graphic content is described in the Signage and Graphics Guidelines. Two municipalities should share one sign at the border.
- The base of the sign can be elevated by earth or structure, and low planting of evergreen combined with annual plants can provide both seasonal color and year-round interest.
- Other possible site furnishings could be added, such as the flagpole pictured at the left, seating, and lighting.
- Maintenance is crucial, including watering during drought periods, replacement of out of season plantings, and trash removal. Consider low maintenance materials for the sign and supports.
- Work with local municipalities and design professionals to determine requirements, specifications, and sight lines.



Above, a successful design in Delaware County. A planting of evergreens or semi-evergreens (Azaleas or Spreading Yews) at the base can provide year round interest, while a seasonal planting provides color (seasonal plantings of pansies, petunias, begonias, chrysanthemums, and decorative cabbage can carry the theme through the year. At the base, stone and lirioppe provides an edge to the sign base.

Left, the signposts have become an architectural element, possibly providing a link to local architecture or other features. Here too a combination of evergreen and seasonal color provides an attractive base.

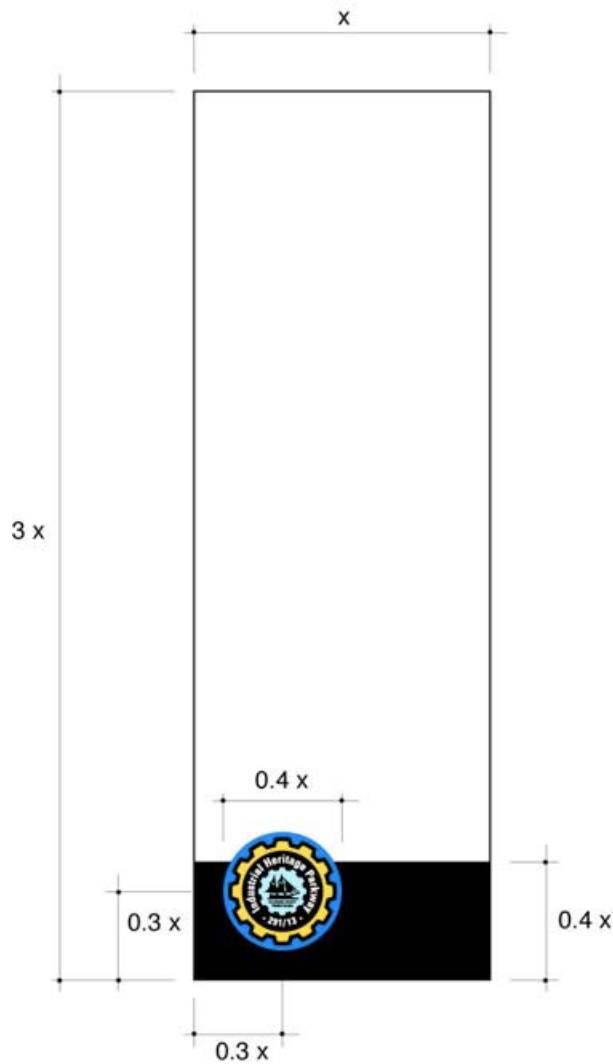
MUNICIPAL ENTRANCE IDENTIFICATION SIGNS



Town and city monumental entrance identification signs should reflect the unique character of each municipality. For those signs located along Routes 291 and 13, the Industrial Heritage Parkway emblem (minimum 6 inch diameter) should be displayed on or adjacent to the monumental identification sign to promote and connect the heritage corridor for travelers along this route. The following example shows typical placement of the emblem.

* Include Industrial Heritage Parkway emblem on existing and new custom designed town and city entrance monument signs

BANNERS



Custom designed banners may be used along roadways to highlight the unique identification of each municipality along the corridor and to reinforce identification of the Industrial Heritage Parkway through standard and consistent placement of graphic emblems on each banner layout.

A banner program is a temporary form of identification signage and should therefore be considered an on-going maintenance expense. Banner life is generally six to twelve months, depending on environmental conditions, before replacement is required.

Banners may be installed on existing utility/light poles with prior approval from utility pole owners and use of appropriate mounting hardware for each pole type. Maintain consistent mounting heights at town center streets and connecting roadways. The minimum height from grade to banner bottom should be 7 feet. Banners should be mounted with top and bottom brackets and rods. Banner fabric should be minimum 14 oz. vinyl coated polyester mesh.

Banner designs should include the town or city name in minimum 4-inch high letters and a graphic background using not more than 4 colors. Simple, bold designs are most effective. The banner program may include seasonal, school or community based designs.

Following are sample banner designs for consideration along with a banner template for sizing and consistent placement of the Industrial Heritage Parkway emblem.

- * Temporary – Lifespan 6 to 12 months
- * Maintain consistent mounting heights
- * Minimum height from grade to bottom of banner – 7 feet
- * Banner fabric – minimum 14 oz. vinyl coated polyester mesh
- * Banner brackets at top and bottom
- * Minimum 4-inch high text
- * Simple, bold designs
- * Not more than 4 colors

BANNERS (continued)



Possible banners as prepared by the project team.

- Evolve a regular program of changing banners, coordinated throughout the Industrial Heritage Parkway, Industrial Heritage Trail.
- Consider adapting the design of the banners on transit shelters along the Industrial Heritage Parkway, Industrial Heritage Trail.
- Recommended banner fabricators are noted in the Appendix.

The banners shown here are examples of possible approaches.

- The Industrial Heritage Trail sign/logo is on each.
- A stylistic consistency is recommended within which individual colors and themes are possible.
- Consider placement not only on poles, but in bus shelters, kiosks, from buildings, etc.



An example of a banner program installed in Wilmington, DE.

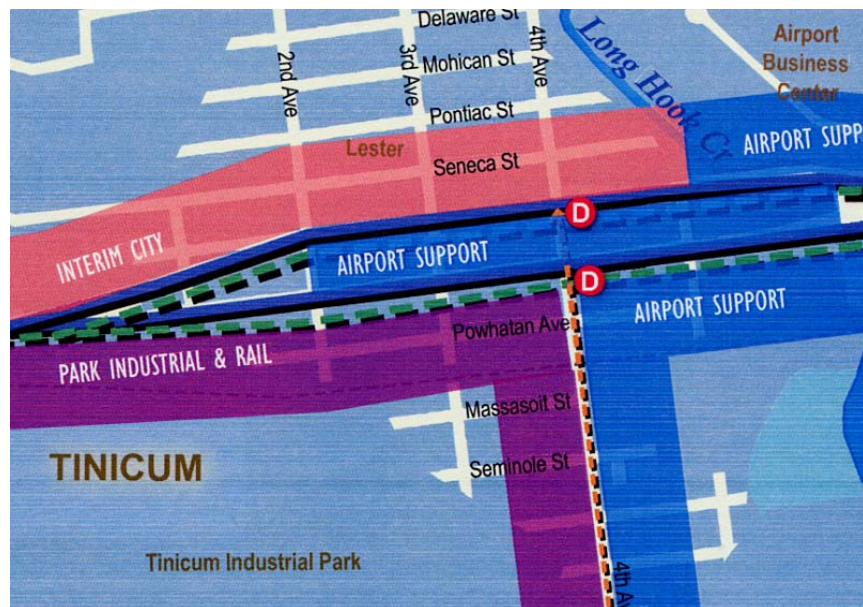


BANNERS (continued)



DELAWARE COUNTY INDUSTRIAL HERITAGE PARKWAY MAP CHECKLIST

As noted in the Maps of Study Area section of the Introduction, the entire Route 291/13 Corridor was characterized by Industrial Heritage Parkway (IHP) type (e.g., Tank Farm, Airport Support, etc.) or East Coast Greenway (ECG) type (e.g., Off Road, Airport Edge, etc.) Refer to pages 14 to 77. Tables contained within the Landscape Types section of the report provide generalized standards for numbers and specifications for the various improvements, including signage recommended for each IHP or ECG “type.” The following section contains municipality-specific recommendations for gateway, directional, and interpretive signage to be installed in the corridor.



MUNICIPAL SIGNAGE RECOMMENDATIONS

DELAWARE COUNTY INDUSTRIAL HERITAGE PARKWAY MAP CHECKLIST

<u>MAP</u>	<u>TYPE</u>	<u>LOCATION</u>	<u>NOTES</u>
1. Marcus Hook	Identification	<ul style="list-style-type: none"> Gateway at Delaware Border Banners on light fixtures on Rt. 13 	<ul style="list-style-type: none"> Combine with landscaping Marcus Hook
		<ul style="list-style-type: none"> I-95 at Exit 2 to Marcus Hook/River Rt. 13 to Penn Market Sq./Mem. Park Rt. 13 to ECG At Marcus Hook Station to ECG Market Square Mem. Park to Rt. 13/ECG Market Square Mem. Park to ECG 	<ul style="list-style-type: none"> Coordinate w/PennDOT 2 signs (north/south)
	Directional		
	Interpretive	<ul style="list-style-type: none"> Sunoco Refinery Viscose Village 	<ul style="list-style-type: none"> Place along ECG trail In park
2. Trainer	Identification	<ul style="list-style-type: none"> Gateway at Marcus Hook Creek Banners on light fixtures on Rt. 13 Marcus Hook and Stony Creeks 	<ul style="list-style-type: none"> Combine with landscaping Trainer
	Directional	<ul style="list-style-type: none"> Corridor at Rt.13 & 291 Rt. 13 to continue ECG 	
3. Chester City West	Identification	<ul style="list-style-type: none"> Gateway at Trainer Banners on light fixtures on Rt. 291 Banners on ECG Front Street fixtures 	<ul style="list-style-type: none"> Combine with landscaping Potential retrofit of new fixtures

MUNICIPAL SIGNAGE RECOMMENDATIONS

<u>MAP</u>	<u>TYPE</u>	<u>LOCATION</u>	<u>NOTES</u>
	Directional	<ul style="list-style-type: none"> • I-95 at Exit 3 & 4 to waterfront • Highland Ave Station to continue ECG • Rt. 291 to Barry Bridge Park • Rt. 291 to Veterans Memorial Park • Lamokin Station to ECG • In Barry Bridge park ECG orientation • Seaport Drive to Front St. ECG 	
	Interpretive	<ul style="list-style-type: none"> • As needed 	
4. Chester City East	Identification	<ul style="list-style-type: none"> • Chester Creek • Banners on light fixtures on Rt. 291 • Banners on ECG Delaware Ave fixtures • Gateway at Eddystone 	<ul style="list-style-type: none"> • Potential retrofit of new fixtures • Combine with landscaping
	Directional	<ul style="list-style-type: none"> • I-95 at Exit 5 & 6 to waterfront • Highland Ave Station to continue ECG • Rt. 291 to Ethel Waters Park • Rt. 291 to Penns Landing Park • Chester Transportation Center to ECG • In Barry Bridge park ECG orientation • Chester Court House 	
	Interpretive	<ul style="list-style-type: none"> • Old Swedish Burial Ground 	

MUNICIPAL SIGNAGE RECOMMENDATIONS

<u>MAP</u>	<u>TYPE</u>	<u>LOCATION</u>	<u>NOTES</u>
5. Eddystone	Identification	• Ridley & Crum Creeks	•
		• Banners on light fixtures on Rt. 291	• Eddystone
		• ECG on Rt. 291	
		• Gateway at Eddystone	• Combine with landscaping
	Directional	• I-95 at Exit 8 to IHP	
		• ECG from Rt. 291 to Conrail tracks	
		• Eddystone Station to continue ECG	
		• Depending upon alignment chosen	
	Interpretive		
6. Ridley	Identification	• Crum Creek & Darby Creek	
		• Banners on light fixtures on Rt. 291	• Ridley
		• Banners on ECG Delaware Ave fixtures	
		• Gateway at Ridley not located	• Combine with landscaping
	Directional	• I-95 at Exit 8 to IHP	
	Interpretive		

MUNICIPAL SIGNAGE RECOMMENDATIONS

<u>MAP</u>	<u>TYPE</u>	<u>LOCATION</u>	<u>NOTES</u>
7. Tinicum	Identification	• Banners on light fixtures on Rt. 291	• Tinicum
		• Gateway at Tinicum	• Combine with landscaping
	Directional	• ECG along 2 nd Street	
		• I-95 at Exit 9 to waterfront	
8. Airport	Directional	• Rt. 291 to Gov. Printz Park	
		• ECG connection to Fort Mifflin Trail	
	Interpretive		
	Identification	• Banners on light fixtures on Rt. 291	• Tinicum
	Directional	• ECG from John Heinz NWF	

APPENDIX A - Exterior Plants



APPENDIX A: EXTERIOR PLANTS

EXTERIOR PLANTS

PART 1 - GENERAL (this is a general specification that needs to be adjusted by a design professional).

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Soil preparation.
 - 2. Trees.
 - 3. Shrubs.
 - 4. Mulch and planting accessories.

1.2 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: Wood mulch.
- C. Product certificates.
- D. Planting Schedule: Indicating anticipated planting dates for exterior plants.
- E. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer who maintains an experienced full-time supervisor on Project site when exterior planting is in progress.

APPENDIX A: EXTERIOR PLANTS

- B. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory.
- C. Plant names indicated, comply with “Standardized Plant Names” as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature and complying with applicable requirements in ANSI Z60.1, “American Standard for Nursery Stock.” Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.
- D. Comply with sizing and grading standards of the latest edition of “American Standard for Nursery Stock.” A plant shall be dimensioned as it stands in its natural position.
- E. All exterior plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.
- F. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants indicated by two measurements so that only a maximum of 25% are of the minimum size indicated and 75% are of the maximum size indicated.
- G. Provide “specimen” plants with a special height, shape, or character of growth as indicated on the plant schedule. Tag or obtain specimen trees or shrubs at the source of supply. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.
- H. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.
 - 1. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work.
- I. Preinstallation Conference: Conduct conference at project site.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Take all precautions customary in good trade practice in preparing plants for moving, delivery and planting. Workmanship that fails to meet the highest standards will be rejected.
- B. Spray deciduous plants in foliage with an approved “anti-desiccant” immediately after digging to prevent dehydration. Do not prune trees and shrubs before delivery. Dig, pack, transport, and handle plants with care to ensure protection against injury. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape.
- C. Cover plants transported on open vehicles with a protective covering to prevent wind burn. Do not drop exterior plants during delivery. Installation of plants may be delayed if severe winter conditions prevail.

APPENDIX A: EXTERIOR PLANTS

- D. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Landscape Architect.
- E. Deliver exterior plants after preparations for planting have been completed and install immediately. If plants cannot be planted immediately upon delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist. If delays are longer than one (1) day properly protect them with soil, wet peat moss, or in a manner acceptable to the Landscape Architect. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

1.6 PROJECT CONDITIONS

- A. Work notification: Notify Landscape Architect at least 7 working days prior to installation of planting operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.
- C. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the plant schedule. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting schedules shall govern.

1.7 WARRANTY

- A. Warrant plant material (except annuals) to remain alive and be in healthy, vigorous condition for a period of 1 year after completion and acceptance of entire project.
 - 1. Inspection of plants will be made by the Landscape Architect at completion of planting.
 - 2. 30 days before the end of the warranty period, a final inspection is to be made in the company of the Landscape Architect and/or Owner's Representative.
- B. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Owner's Representative, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at Contractor's expense. Warrant all replacement plants for 1 year after installation.
- C. Warranty shall not include damage or loss of trees and shrubs caused by fires, floods, excessive freezing rains, lightning, or winds over 75 miles per hour, winter kill caused by extreme and extended cold and severe winter conditions not typical of planting area; acts of vandalism or negligence on the part of the Owner.
- D. Remove and immediately replace all plants, as determined by the Landscape Architect, to be unsatisfactory during the initial planting installation.

APPENDIX A: EXTERIOR PLANTS

1.8 MAINTENANCE

- A. Trees and Shrubs: Maintain during warranty period by pruning, cultivating, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease.
- B. Water tree and shrubs within the first 24 hours of initial planting, and not less than twice per week during the first 60 days of the maintenance period if rains are not sufficient. For the rest of the warranty period, watering shall be provided on an as-need basis depending on the season and rainfall levels.
- C. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.

PART 2 - PRODUCTS

2.1 EXTERIOR PLANTS

- A. Tree and Shrub Material: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement. All plants shall have a fully developed form without voids and open spaces. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges. Plants held in storage will be rejected if they show signs of growth during storage.
 - 1. Provide balled and burlapped trees and container-grown and shrubs as specified on the plant schedule. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect.
 - 2. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated in the plant list. The caliper of the trees, measured 12" from the root ball for trees 4" Caliper and up, and 6" from the base for those up to 4" Caliper, shall not be less than the minimum size designated in the plant list.
 - 3. Provide tree species that mature at heights over 25 feet with a single main trunk. Trees that have the main trunk forming a "Y" shape are not acceptable. Do not cut the leader of evergreen tree species.
 - 4. Plants planted in rows or as a group shall be matched in form as noted on the plant schedule.
- B. Shrubs shall meet the requirements for spread and height indicated in the plant list.
 - 1. The measurements for height shall be taken from the ground level to the height of the top of the plant and not the longest branch.
 - 2. Single stemmed or thin plants will not be accepted.

APPENDIX A: EXTERIOR PLANTS

3. Side branches shall be generous, well-twigged, and the plant as a whole well-bushed to the ground.
 4. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.
- C. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the “American Standard for Nursery Stock.” Cracked or mushroomed balls are not acceptable.
1. If the use of larger plants than those specified is acceptable, increase the spread of roots or root ball in proportion to the size of the plant.
- D. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.
1. No plants shall be loose in the container.
 2. Container stock shall not be pot bound.

2.2 PLANTING MATERIALS

- A. Topsoil: Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sands, stones 1 inch or larger in any dimension, plants, roots, sticks, and other foreign materials, with acidity range of between pH 6.0 and 6.5. Provide topsoil free of substances harmful to the plants that will be grown in the soil.
1. Topsoil Source: Reuse surface soil stockpiled on-site if available and supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Verify suitability of stockpiled surface soil to produce topsoil.
 2. If necessary, the Contractor may adjust pH by adding aluminum sulfate or agricultural ground limestone. After the addition of the additive, a sample of the mixture shall again be analyzed to determine that its incorporation has corrected the pH to meet the specification. The contractor shall furnish a one cubic foot sample of the corrected topsoil to the Landscape Architect at least two weeks prior to the anticipated use of the topsoil.
- B. Fertilizer:
1. Plant Fertilizer Type “A”: Commercial type, containing 5% nitrogen, 10% phosphoric acid, and 5% potash by weight, 1/4 of nitrogen in the form of nitrates, 1/4 in form of ammonia salt, and 1/2 in form of organic nitrogen.
 2. Plant Fertilizer Type “B”: Approved acid-base fertilizer. Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.

APPENDIX A: EXTERIOR PLANTS

- a. Starter fertilizer containing 20% nitrogen, 26% phosphoric acid, and 6% potash by weight, or similar approved composition.
- C. Anti-Desiccant: Protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration, such as “Wilt-Pruf” manufactured by Nursery Products Specialties, Co., Croton Falls, New York. Mixed and applied in accordance with manufacturer's instructions.
- D. Water: Free of substances harmful to plant and seed growth. Hoses or other methods of transportation furnished by Contractor unless agreed to by Owner.
- E. Wood Mulch: 6 month old well rotted double shredded native hardwood bark mulch not larger than 4" in length and 1/2" in width, free of woodchips and sawdust.
- F. Weed-Control Barriers: Nonwoven Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum.
- G. Stakes and Guying:
 - 1. Stakes for Staking tree: Hardwood, 2" x 2" x 8'-0" long.
 - 2. Staking and Guying Hose: webbed flexible type, i.e. as available from CAMB GUARDS®, part #92-113, from Keslick & Son, M/A Products (610) 696-5353, or ARBORTAPE® from NEPTCO (John Caprio) (800) 354-5445 Ext. 298.

2.3 PLANTING SOIL MIX

- A. Planting Soil Mix for shrub beds shall be sandy loam with added material to create a light and airy well-drained growing medium. Acceptable additives include Canadian peat moss, sphagnum moss, vermiculite, perlite, coarse sand, porous aggregates such as expanded slate, topsoil or decomposed bark humus, and composted leaf mold. Planting mixture is to be mixed off-site, analyzed and approved prior to delivery. Recommended composition:
 - 1. 10% fine sand.
 - 2. 10% coarse sand (.05 millimeter to .1 millimeter builder's sand).
 - 3. 30% topsoil.
 - 4. 25% clay
 - 5. 25% organic matter (peat moss, bark humus, and/or leaf mold).
- B. The pH shall be between 5.5 and 6.8. If necessary, the Contractor may adjust pH by adding aluminum sulfate or agricultural ground limestone.

APPENDIX A: EXTERIOR PLANTS

PART 3 - EXECUTION

3.1 EXTERIOR PLANTING

- A. Inspection: Examine finish surfaces, grades, topsoil quality, and depth. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.
- B. Preparation:
 - 1. Time of Planting:
 - a. Evergreen shrubs: Plant evergreen materials between September 1 and November 1 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations.
 - b. Deciduous tree: Plant deciduous tree in a dormant condition. If deciduous trees are planted in-leaf, they shall be sprayed with an anti-desiccant prior to planting operation.
 - 2. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.
 - 3. Locate plants as indicated or as approved in the field after staking by the Contractor. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.
 - 4. Excavate plant pits as noted on the details, except for plants specifically indicated to be planted in planters. Provide shrub pits at least 12" greater than the diameter of the root system and 24" greater for the tree. Depth of pit shall accommodate the root system. Provide undisturbed subgrade to hold root ball at nursery grade as shown on the drawings. If excavated materials are suitable for reuse on site, place at a location as directed by the Owner's Representative. If unsuitable or not able to be used, remove excavated materials from the site.
 - 5. Provide pre-mixed planting mixture for use around the balls and roots of the plants consisting of planting topsoil and 1/2 lb. plant fertilizer Type "A" for each cu. yd. of mixture.
- C. Trees and Shrubs:
 - 1. Revise size and cross section of tree and shrub pits and trenches if required. Revise descriptions if required and supplement with drawing details.
 - 2. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 1"-2" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture. Do not use frozen or muddy mixtures for backfilling.
 - 3. After balled and burlapped plants are set, muddle planting soil mixture around bases of balls and fill all voids. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Do not use planting stock if root ball is cracked or broken before or during planting operation.

APPENDIX A: EXTERIOR PLANTS

4. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
 5. Wood Mulching: Mulch tree and shrub beds with required mulching material 2" deep immediately after planting, extending 12 inches beyond edge of planting pit. Do not place mulch within 3 inches of trunks or stems. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.
 6. Staking/Guying: When high winds or other conditions that may effect tree survival or appearance occur, the Owner's Representative may require immediate staking or guying. Stake and guy the deciduous trees which are over 3" caliper.
- D. Tree and Shrub Pruning: Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune evergreens only to remove broken or damaged branches. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.
- E. Shrub Bed Mulching:
1. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches.
 2. Mulch backfilled surfaces of planting beds and other areas indicated. Apply 2-inch average thickness of mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.
- F. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting and repair damage resulting from planting operations.
- G. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

3.2 ACCEPTANCE

- A. Inspection to determine acceptance of planted areas will be made by the Architect or Landscape Architect, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
1. Plants and seeded areas will be accepted provided all requirements, including maintenance, are in compliance.
 2. Plant materials shall be alive and in a healthy, vigorous condition.
 3. Upon acceptance, the Owner will assume plant and lawn maintenance.
- B. Inspection to determine acceptance of planted areas at the end of the warranty period will be made by the Architect or Landscape Architect and/or Owner's Representative.

Note: the above is intended for general information. A registered professional should prepare project specifications.

APPENDIX B – Manufacturers and Suppliers



APPENDIX B – MANUFACTURERS AND SUPPLIERS

RECOMMENDED BENCH MANUFACTURERS

- A. DuMor Site Furnishings available through General Recreation, Inc., P.O. Box 440, Newtown Square, PA 19073 (1-800-726-4793):
1. Bench model: 139PL. (image
 2. Length: 6-feet, with 3 supports
 3. Supports: 2" schedule 40 (2 3/8" O.D.) steel pipe and 3/8" x 4 1/2" HR steel bar.
 4. Seat: Recycled polyethylene, 2" x 4"nom. With color molded in.
 5. Seat color: "Cedar"
 6. Support color: black
- B. Victor Stanley, Inc. available through Recreation Resource, Inc., P.O. Box 371, Kennett Square, PA 19348 (1-800-220-4402):
1. Bench model: Homestead Series Model 4
 2. Length: 6-feet, with 2 supports
 3. Supports: tubular steel, high-tensile strength with 3/8" inch thick A-36 steel bars
 4. Seat: Recycled polyethylene, 2" x 4"nom. With color molded in.
 5. Seat color: "Walnut"
 6. Support color: black
- C. Bedford Technology, LLC, 2424 Armour Road, P.O. Box 609, Worthington, MN 56187 (1-800-721-9037):
1. Bench model: Backless Park Scapes
 2. Length: 6-feet, with 3 supports
 3. Support frame: rolled steel
 4. Seat: Recycled polyethylene, 3" x 4"nom. With color molded in.
 5. Seat color: "Cedar"
 6. Support color: black

INSTALLATION

- A. Coordinate the installation of the benches with adjacent grading, asphalt paving and other site work. Installation Method: embedment for in-ground (Set posts in concrete according to the manufacturers instructions).

Right: DuMor Bench 139PL.



APPENDIX B - MANUFACTURERS AND SUPPLIERS

MANUFACTURERS

Compass Sign

Levittown, PA

215-781-0430

Emblems, Directional Sign Fabrication and Installation, Interpretive Panel Installation, Banner Installation

City Sign Service

Horsham, PA

215-442-1323

Emblems, Directional Sign Fabrication and Installation, Interpretive Panel Installation, Banner Installation

East Coast Sign

Bristol, PA

215-781-8500

Emblems, Directional Sign Fabrication and Installation, Interpretive Panel Installation, Banner Installation

Britten Banners

Traverse City, MI

800-426-9496

www.BrittenBanners.com

Banner Manufacturer

Swirling Silks

Skippack, PA

800-439-0989

www.swirlingsilks.com

Banner Manufacturer

Color Reflections

Philadelphia, PA

800-972-0009

www.color-reflections.com

Banner Manufacturer

Fossil Industries

Deer Park, NY

800-244-9809

www.fossilinc.com

Phenolic Resin Panel Manufacturers

APPENDIX B - MANUFACTURERS AND SUPPLIERS

Pannier Corporation
Gibsonia, PA
800-544-8428
www.panniergraphics.com
Embedded Fiberglass Panel Manufacturer

Windsor Fireform, LLC
Tumwater, WA
800-824-7506
www.windsorfireform.com
Porcelain Enamel Panel Manufacturers

APPENDIX B - MANUFACTURERS AND SUPPLIERS

RECOMMENDED LIGHTING MANUFACTURERS

- A. Antique Street Lamps, 2011-B W. Rundberg Lane, Austin, TX 78758 (512) 977-8444; fax (512) 977-9622; www.antiquestreetlamps.com. Local representative, Dick Schmidt, Illuminations Inc., 5062 West Chester Pike, Newtown Square, PA 19073-2802 (610) 325-2802; fax (610) 325-2225.
1. Model: Antique PH20
 2. Height: 104" (8.66').
 3. Support frame: Antique ARD Series, aluminum one-piece construction, bent tube arm, and an end piece for luminaire mounting. Another option is the LaGrange series post SBF A-5, Crossarm TLP52/1, CR-13.
 4. Luminaire: PH20-LR-7 with ballast housing, hood and circular flat lens. The hood has an internal reflector with a horizontal lamp.
 5. Light: 250 watt metal halide.
 6. Color, ANDB antique bronze.
 7. Options: HS (house side shield); PEB1 (Photoelectric Cell button 120v).
- B. Holophane: Unique Solutions, 515 McKinley Avenue, Newark, Ohio 43055 (614) 349-4160. Local Representative: Ben Mazza, Architectural Outdoor Lighting Specialist, 627 Chapel Road, Cinnaminson, NJ 08077, (740) 345-6553; (856) 786-9144; fax (856) 786-9388, email bmazza@holophane.com; www.holophane.com.
1. Model: Tear drop series. Atlanta style (with uplight).
 2. Height: 25 feet or higher.
 3. Support frame: decorative cast iron
 4. Light: metal halide 250 watts.
 5. Color: antique bronze.
- C. Penn Globe: The Pennsylvania Globe Gaslight Co, 300 Shaw Road, North Branford, CT 06471. Voice; (203) 484-7749; fax (203) 484-7758. Local representative Dick Schmidt, Illuminations, Inc., 5062 West Chester Pike, Newtown Square. PA 19073-2802 (610) 325-2802; fax (610) 325-2225.
1. Model: Seaport Series, Harbor Walk.
 2. Height, 25 feet tall.
 3. Support frame: steel shaft: 60WP3160-25.
 4. Bracket: Twin bracket 57HW0020.
 5. Light: metal halide 250 watts.
 6. Color: antique bronze.

INSTALLATION

- A. Coordinate the installation with adjacent grading, asphalt paving and other site work. Installation method: embedment for in-ground (Set posts in concrete according to the manufacturers instructions; see detail in report). A lighting designer and mechanical engineer should be consulted to fill out specific information such as the schedule on the next page. A structural engineer will be needed to specify the foundation.

APPENDIX B - MANUFACTURERS AND SUPPLIERS

LIGHTING FIXTURE SCHEDULE						
FIXTURE TYPE	DESCRIPTION (DEPENDS ON SPECIFIC NEEDS)	LAMP				MANUFACTURER
		QUANTITY	TYPE	WATTS	VOLTAGE	
M1 (KEYED TO SITE PLAN)	TWIN CUT-OFF TYPE LUMINARIES MOUNTED 90° APART, EACH IS NOMINAL 22 INCH LONG X 16 INCH WIDE X 8 INCH DEEP CAST ALUMINUM ROUNDED HOUSING WITH HEAT SINK FINS, GASKETED CLEAR BOROSILICATE FLAT GLASS LENS, GASKETED DOOR, HOUSE SIDE SHIELD, I.E.S. TYPE IV FORWARD LIGHT THROW DISTRIBUTION, PHOTOCELL RECEPTACLE, UL WET LOCATION LABEL, MOUNT ON 25 FOOT ROUND TAPERED ALUMINUM POLE ABLE TO WITHSTAND 80 MPH WINDS WITH 1.3 GUST FACTOR. DARK BROWN FINISH ON LUMINARIES AND POLE.	2 (COORDINATED WITH PLANS)	MH (METAL HALIDE; A WHITE WITH NATURAL COLOR RENDITION)	175 (DEPENDS ON THE SPACING & SITE NEEDS)	240 (DEPENDS ON AVAILABILITY & NEEDS OF LINKED UNITS)	KIM (MANUFACTURERS HAVE WEBSITES THAT LIST LOCAL REPRESENTATIVES)
						2L/AR4/175MH/240V/A-25/HS/LTRA25-6156/DB-P

A typical schedule to define the scope of the lighting fixtures.

APPENDIX B - MANUFACTURERS AND SUPPLIERS

RECOMMENDED PLANTING SOURCES

- A. **Shemin Nurseries**, Folk and Concord Roads, Aston, PA (610) 358-0220; fax (610) 358-2821.
1. A reseller, that stocks plants from many nurseries. Although wholesale to the trade, a good place to go with a landscape professional to see the plants in person. They also can find and procure hard to locate material.
- B. **Moon Nurseries**, P.O. Box 672, Moon Road, Chesapeake City, MD 21915 and 1955 Quarry Road, Yardley, PA 19067 (215) 968-6141 fax (215) 579-0147; www.moonnurseries.com
1. Stocks plants its extensive nurseries. Mostly wholesale to the trade, but Yardley has a retail yard.
- C. **Princeton Nurseries**, P.O. Box 185, Allentown, NJ 08501. 1 (800) 916-1776; fax (609) 259-0432.
1. Stocks plants from its extensive fields. An excellent source for matched street trees. Mostly wholesale to the trade, but the Allentown location has a retail yard.

INSTALLATION

- A. See specification sections in APPENDIX for planting, tree grates.



Typical trees from nurseries.

For pruning, we recommend a current manual on pruning as a guide: such as Brickell, Christopher, ed., PRUNING, Roses, Deciduous Shrubs, Evergreens, Hedges, Wall Shrubs, Fruit Bushes and Trees, Deciduous Trees. Simon & Schuster Step-By-Step Encyclopedia of Practical Gardening, current edition.

APPENDIX B - MANUFACTURERS AND SUPPLIERS

RECOMMENDED TRASH RECEPTACLE MANUFACTURERS

- A. Victor Stanley, Inc., P.O. Drawer 330, Dunkirk, MD 20754. 800-368-2573; fax 410-257-7579; www.victorstanley.com; email sales@victorstanley.com. Available through Recreation Resource, Inc., P.O. Box 371, Kennett Square, PA 19348 (1-800-220-4402):
1. Trash receptacle model: S-42 (U.S. Patent D304,253).
 2. Available in 24, 36 and 45 gallon sizes.
 3. Supports: can be supplied with post support option.
 4. Other options: side opening, coordinated lid.
 5. Support color: black or blue.
- B. Howard Products, a division of United Marketing, Inc. 14th & Laurel Streets. P.O. 870, Pottsville, PA, 17901-0870 (1-800-233-0314).
1. Trash receptacle model: H55E Economy model.
 2. Heavy gauge perforated steel.
 3. Size: holds 55 gallon drum; drum rests on cross bar base and is held into place by three spacers.
 4. Other options: Dome top with self-closing door.
 5. Color: Blue.
 6. Does *not* come with the 55 gallon drum insert.

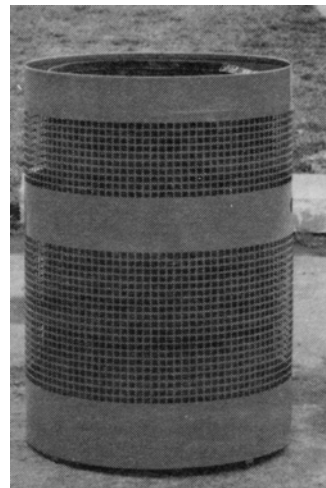
Other designs and sizes are available. The H-3 unit (34 gallon) is more suited to highly trafficked pedestrian spaces.

INSTALLATION

- A. Coordinate the installation of the trash receptacles with adjacent grading, asphalt paving and other site work. Installation method: embedment for in-ground (Set posts in concrete according to the manufacturers instructions).

Left: Ironsites unit.

Right: Howard unit.



APPENDIX B - MANUFACTURERS AND SUPPLIERS

SECTION 02870 B - SITE FURNISHINGS: TREE GRATES

1.1 SUMMARY

- A. Furnishing and installation of tree grate frames into existing adjacent concrete paving and curbing and the furnishing and installation of tree grates in coordination with tree planting and gravel mulching.

1.2 MATERIALS

- A. Metals
 - 1. Cast iron grates
 - 2. Steel frames
- B. Cast iron finish: none (allow to weather naturally).
- C. Steel Finish: uncoated coat system

1.3 MANUFACTURERS

- 1. Neenah R-8708 180 degree 48" square cast iron tree grate and 8500-4848 angle frame, from Neenah Foundry Company, Box 729, 2121 Brooks Avenue, Neenah Wisconsin 54956 (414) 725-7000; local representative John O'Connor (610) 237-0300 in Norwood, PA.
- 2. Alternates: As equal to the above specifications.
 - a. "Starburst" Series M4814-2 (10mm openings), from Ironsmith, 1-800 338-4766 (email: Iron@local.net). Local representative is Carl Kundra, Weston Associates, 24331 E. Oakland Road, by Village, Ohio, 44140 (440) 835-0222.
 - b. East Jordan Iron Works, Inc. 1 (800) 626-4653. 8674 ADA 48" square, with #48954011 Steel frame one piece. Local Representative Mike McGuane 1 (800) 325-3549, cell (484) 459-0733, email mmcguane@ejw.com.

1.4 INSTALLATION

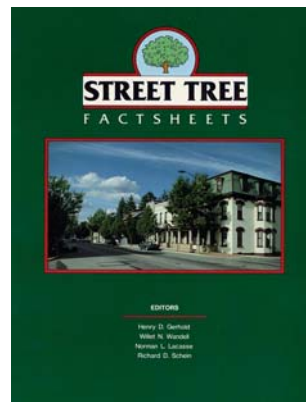
- A. Coordinate the installation of the tree grates with adjacent grading, paving, planting and other site work.
- B. Assembly and installation of tree grates and frames shall be as recommended by the manufacturer and as shown on the drawings.

APPENDIX B - MANUFACTURERS AND SUPPLIERS

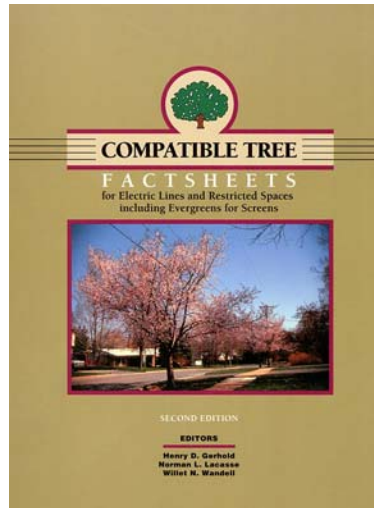
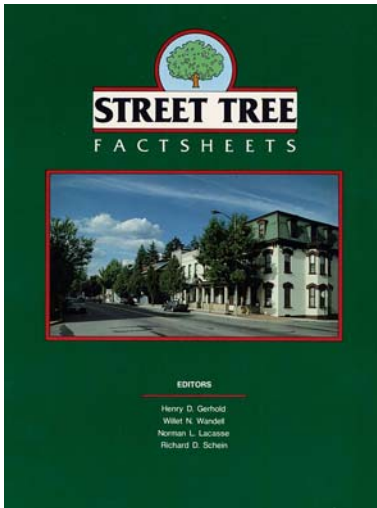
- C. Frame the installation of the angle frame prior to the installation of patches to the adjacent concrete paving and curbing. Note that care must be taken to prevent concrete from adhering to the surface of the grate during the pour.
- D. Iron frame sections are to be bolted together, finger tight, and cast into the concrete surround. Frames should butt together snugly, leaving as little gap as possible.
- E. Place a #10 (mm.) bent rebar through the holes in the anchor lugs of the frame to provide additional anchorage in the concrete.
- F. Frames must be level and the seat (for the grate) must be in a true, flat frame to prevent the rocking of the grate.
- G. Excavate tree pit to full width and depth sufficient to settle new tree base, including the constructed wood support, onto solid ground.
- H. Remove wooden formwork prior to installing tree.
- I. Plant tree and backfill with topsoil to level indicated.
- J. Instead of above ground tree support of stakes and guywires, construct a wooden support frame held together with guy wires around the root ball prior to the planting of trees as shown on the landscape details.
- K. Install weed control barrier mat; backfill with No. 57 washed gravel to level indicated on detail.
- L. The seat for the grate shall be cleaned prior to setting the grate. Install tree grate. Tree grates shall be set in flush with the top of the frame. Grate halves shall be bolted together on the under side with manufacturer supplied security bolts.

Note: the above is intended for general information. A registered professional should prepare project specifications.

APPENDIX C - Reference Publications

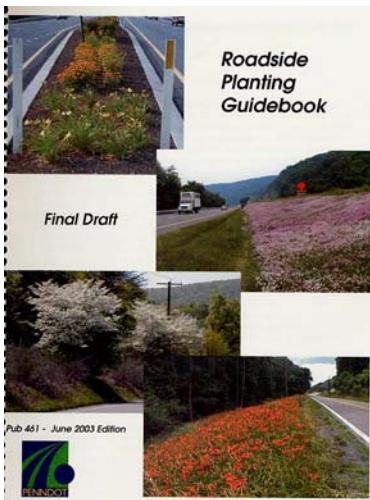


REFERENCE PUBLICATIONS



- Publications that contain lists of recommended plants can be useful in selecting appropriate plant materials
- Some of these lists have biases that are not evident to the user, such as a preference for native plants, plants that are readily available from area nurseries, and non-aggressive plants.
- Please review these sources with an open mind, as the plants most suited to your application may not be on their listings.
- Some of these sources are also available (at the lower right example) on the internet.

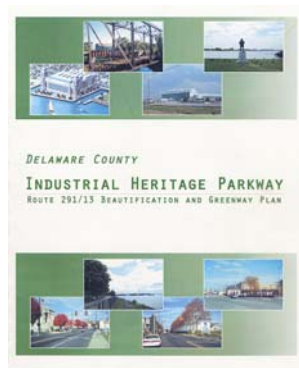
Source for above:
Municipal Tree Restoration Program, 109 Ferguson Building
The Pennsylvania State University
University Park, PA 16802



Source for above: can be downloaded as pdf from www.dot.state.pa.us Philadelphia Street Tree Planting list can be downloaded from www.phila.gov/fairpark/trees/builders/plantlist.html

APPENDIX D: Funding Source

This Appendix reproduces pages 84-90 from the *Industrial Heritage Parkway: Route 291/13 Beautification and Greenway Plan* (see cover below).



APPENDIX B: FUNDING SOURCES

GOVERNMENT FUNDING

The state and federal government can contribute significant portions of corridor beautification and greenway project costs. State funding sources can also contribute to historic and community development elements in the project. The improvements to the transportation-based elements of the project, such as the greenway, transit and pedestrian facilities, streetscaping, etc., will probably be funded through TEA - 21 monies, the Transportation Equity Act for the 21st Century. A successor to ISTEA (the Intermodal Surface Transportation Efficiency Act), TEA-21 provides federal funding for a wide range of transportation improvement projects. The Industrial Heritage Parkway would be eligible for certain TEA - 21 funds based on the project goals to provide aesthetic enhancements for a transportation corridor and create facilities for alternative modes of transportation. Although federal and state funding sources' application processes tend to take time, TEA - 21 can grant large sums of money for the project. Of the seven governmental funding sources described below, four include TEA - 21 funding programs.

Pennsylvania Department of Conservation and Natural Resources: Community Conservation Partnership Grants

The Community Conservation Partnership Grant Program (CCPG) funds recreation and conservation projects using monies from Community Recreation, Land Trust, Rails to Trails, Rivers Conservation, TEA - 21, and Recreational Trails sources. These funding sources previously contributed to separate grant programs such as the Keystone Fund, Growing Greener, and PA Recreational Trails. Any municipality, municipal agency, non-profit (tax exempt under the Section 501 (c)(3) of the Internal Revenue Code), or pre-qualified land trust may submit a grant application. Grants are awarded based on the financial need of the area; the assessed benefits to the community, region, and state; the strength of partnerships and cooperation between local stakeholders; the level of planning completed; and the compatibility of the site and environment. Of the Industrial Heritage Parkway project elements, the greenway portion of the project would primarily be eligible for CCPG funds. (More information is available at <http://www.dcnr.state.pa.us/grants.htm>.)

Project elements potentially eligible for funding include:

- greenway right of way acquisition,
- greenway planning, design and engineering studies,
- greenway construction,
- adjacent park acquisition and rehabilitation,
- comfort station facilities,
- landscaping, and
- interpretive signage.

Pennsylvania Department of Transportation: Transportation Enhancement Program

The Transportation Enhancement Program is administered by the Pennsylvania Department of Transportation and the Delaware Valley Regional Planning Commission, but is funded by the Federal Highway Administration with TEA - 21 (Transportation Equity Act for the 21st Century) monies. All applications must relate to a surface transportation need, use, and/or benefit. It is important to note that the Transportation Enhancement Program is not technically a grant program since it reimburses money after the work has been completed. (More information is available at <http://www.dvrpc.org/transportation/te.htm>.)

Examples of similar projects that received funding:

- Island Avenue Gateway Landscaping (Gateway treatment and landscaping in the median along Island Ave.): \$300,000 awarded / \$375,000 total project cost
- Girard Avenue Streetscape Improvements (Installation of signage, art at selected stations, landscaping and lighting along this 8.4 mile trolley line.): \$384,000 awarded / \$480,000 total project cost
- Fairmount Water Works Dock (Re-creation of the ferry dock to restore marine transportation to the lower Schuylkill River.): \$400,000 awarded / \$500,000 total project cost
- Kensington & Tacony Branch Rail with Trail (Design of a one mile part of the East Coast Greenway along an active rail right of way.): \$500,000 awarded / \$625,000 total project cost

Project elements potentially eligible for funding include:

- historic transportation site improvements such as the boating areas and train stations,
- landscaping and gateway beautification of the Rt. 291 corridor,
- right of way acquisition for the greenway,
- planning, design, and engineering studies, and
- preservation of abandoned railway corridors including bridges.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) is a federal funding program established through TEA-21. Grants are awarded through the Delaware Valley Regional Planning Commission (DVRPC) to projects that will improve air quality by reducing emissions from roadway sources. The application process includes equations for calculating the amount of emissions reduced by the proposed project. In addition to emissions reductions, the application process evaluates the commitment of the sponsor, amount of matching funds, consistency with local and regional plans, degree of project innovation, and level of local support and coordination. The Industrial Heritage Parkway project would be eligible for CMAQ funding to implement the greenway plan and its connections to improved rail stations and bus stop areas. (More information is available at www.dvrpc.org/transportation/cmaq-announce.htm.)

Examples of similar projects that received funding:

- Schuylkill River Trail: 19.2 miles of paved multi-use trail (\$1,450,400 awarded)
- Pleasant Spring Path: Connection along Pleasant Spring Creek to two existing paths (\$140,800 awarded)
- Schuylkill River Trail along South Bank of French Creek: Multi-use path linking SEPTA bus service, the downtown business district, existing trail, and proposed development (\$376,000 awarded)

Project elements potentially eligible for funding include:

- greenway right of way acquisition,
- greenway planning, design and engineering studies,
- greenway construction,
- comfort station facilities,
- transit station improvements, and
- interpretive signage.

Transportation and Community and System Preservation Pilot Program

The Transportation and Community and System Preservation Pilot Program (TCSP) is a federal funding program established through TEA-21. States, local governments, and metropolitan planning organizations are eligible for discretionary grants to develop, implement, and evaluate transportation strategies supporting transportation and community and system preservation practices which incorporate beneficial short- and long-term environmental, economic, and social equity effects to help build livable communities. A total of \$120 million is authorized for this program for FY's 1999-2003. The Industrial Heritage Parkway would be eligible for TCSP funding to implement all portions of the project plan. The TCSP evaluation process favors innovative projects. (More information is available at www.fhwa.dot.gov/tcsp.)

Examples of similar projects that received funding:

- City of Bedminster, NJ received \$468,717 for a shared use path
- Johnstown, PA received \$374,973 for pedestrian and streetscape improvements
- Washington, DC received \$380,000 for implementing greenway system design and intermodal circulation systems around activity centers.
- Rockville, MD received \$234,358 for a Town Center Accessibility Improvement Plan.

Project elements potentially eligible for funding include:

- greenway right of way acquisition,
- Rt.291/greenway planning, design and engineering studies,
- Rt. 291/greenway construction,
- comfort station facilities,
- transit station improvements,
- streetscape improvements, and
- interpretive/wayfinding signage.

Pennsylvania Coastal Zone Management Program: The Delaware Estuary

The Pennsylvania Coastal Zone Management Program (CZM) is a state funded program designed to protect and enhance water resources. The Industrial Heritage Parkway project falls within the CZM Delaware Estuary area. CZM receives funding from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, for the purpose of implementing program policies of sound coastal management. A portion of the federal funds provides sub-grants to county and local governments, nonprofit organizations, and other state agencies to undertake projects advancing CZM goals. Within the coastal zones, the CZM focuses on locations deserving special management attention by nominating them as geographic areas of particular concern (GAPC). Four types are designated: areas of significant natural value; development opportunity areas; areas of significant recreational, historic, or cultural value; and overlap areas that combine elements of any of the other three. The plan for the Industrial Heritage Parkway was funded by the CZM program, and could potentially receive implementation funds by emphasizing the potential for this project to influence redevelopment and improvements to riverfront areas.

Pennsylvania Historical and Museum Commission: Certified Local Government Grant Program

The Certified Local Government Grant Program (CLG) one year implementation time and funds are not to be used for acquisition, rehabilitation of historic properties. Historic Marker program uses funds for creating and making historic markers, with typical grants of \$650.

Project elements potentially eligible for funding include:

- cultural resource surveys,
- historic register nominations,
- signage, design guidelines,
- engineering feasibility studies,
- plans for adaptive reuse,
- programs that advance heritage park planning and implementation.

Pennsylvania Department of Community and Economic Development: Communities of Opportunity Program and the Community Revitalization Program

These two programs provide state-funded grants community revitalization and economic development activities that occur on a local level. The Communities of Opportunity Program (COP) aims specifically at assisting communities in becoming competitive for business retention, expansion and attraction. It also funds projects that assist with community revitalization for housing and low-income housing. COP grants are usually within \$150,000 and \$200,000. The Community Revitalization Program (CRP) funds projects that include construction or rehabilitation of infrastructure, building rehabilitation, acquisition and demolition of structures, revitalization or construction of community facilities, purchase or upgrade of machinery and equipment, planning of community assets, public safety, crime prevention, recreation, training, and acquisition of land, buildings and right of ways. CRP grants are usually within \$5,000 - \$25,000. (More information about these grants may be found on the www.inventpa.com website.)

Brownfields Tax Incentives: Federal Taxpayer's Relief Act

This tax incentive builds on other Pennsylvania Land Recycling Program incentives that are already a model for the rest of the nation. The Brownfield Tax Incentive encourages brownfields redevelopment by allowing taxpayers with property held for business to immediately reduce their taxable income through the deduction of eligible cleanup cost in the year those costs are incurred. Eligible cost must be incurred or paid between August 5, 1997 and December 31, 2003.

To be eligible the property must meet two requirements concerning land use and contamination. Note that sites on the EPA's National Priorities List ("Superfund List") are excluded.

- Land Use: The property must be held by the taxpayer incurring the eligible expenses for use in a trade or business, or for the production of income, or the property must be properly included in the taxpayer's inventory.
- Contamination: A release or threat of release or disposal of any hazardous substance at or on the property.

The incentive applies to necessary cost of remediation for hazardous substance as defined by the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"). The Department of Environmental Protection must certify that a release or threat of release of hazardous substance on the property exists. Eligible cleanup activities may include site assessment and investigation, monitoring, remediation, remediation system operation and maintenance, state voluntary cleanup program oversight fees, and demolition debris removal.

A good reference for a business considering the Brownfield Tax Incentive is IRS publication 954 (Rev. June 2001) "Tax Incentives for Empowerment Zones and other Distresses Communities" found at the following web link <http://ftp.fedworld.gov/pub/irs-pdf/p954.pdf>. For more information about the Statement of Eligibility for the federal Brownfield Tax Incentive, as well as questions on Pennsylvania's brownfield program, contact Mr. J. Thomas Leaver, P.G., Outreach Specialist, with the Land Recycling Program email jleaver@state.pa.us or telephone 717-783-7816.

PRIVATE FUNDING

Municipalities should form partnerships with businesses along the corridor to complete project recommendations. Businesses can contribute right of way, construction costs, and/or in kind services to the project. For example, Marcus Hook received partial funding from Sun Oil Company for the "Marcus Hook Streetscape Improvement Project" to implement beautification and greenway strategies. Businesses can also contribute by improving their existing landscaping and structures using the Industrial Heritage Parkway plan as a guide for industrial art, landscaping, and painting large structures. The following list are examples of businesses fronting Route 291 that should be asked for assistance:

- Boeing Corporation
- Liberty Electric Power Plant
- Phillips 66 Refinery
- Kimberly Clark
- Sunoco
- York Paper Company
- Airport Business Center
- Philadelphia International Airport
- Ramada Inn

FOUNDATION FUNDING

The following foundation profiles should be considered a sample of promising foundations for the Industrial Heritage Parkway, especially as it relates to parks and greenway elements:

William Penn Foundation

Two Logan Square - 11th Floor
Philadelphia, PA 19103-2757

Telephone: 215-988-1830

Contact: Geraldine Wang, Program Director for Environmental and Community Grants

Application information: The foundation conducts information sessions to assist applicant organizations. It is recommended that applicants attend. More information is available online at www.wpennfdn.org. Deadline: rolling

Financial data: \$61 million

Sample grants: East Coast Greenway Organization, \$44,000, for implementing the East Coast Greenway in Southeastern Pennsylvania.

Beneficia Foundation

Pitcairn Trust Company
One Pitcairn Place; Suite 3000
Jenkintown, PA 19046-3593

Telephone: 215-887-6700

Contact: Feodor U. Pitcairn, Director

Application information: annual report, project summary and proposal objectives & timetables, budget, personnel qualifications, 501C3 status. Deadline: January 31

Financial data: 34 grants totaling \$783,000

Sample grants: Newtown Greenway Coalition, \$20,000

McLean Contributionship

P.O. Box 1340

Bryn Mawr, PA 19010

Telephone: 610-527-6330

Contact: John H. Bushmer, President

Publications: Statement of history, philosophy, purposes, and procedures. Common Grant Application & Report Form of the Delaware Valley Grantmakers Association

Application information: Common Application or a letter which describes and justifies the project. Budget, timetable, strategy for securing funding, financial statement for the latest year, evidence of tax-exempt status, and list of officers and directors. Will answer telephone inquiries from organizations wanting to know if they qualify for consideration. Deadline: none

Financial data: 73 grants totaling \$1,256,000

Sample grants: Awbury Arboretum, \$26,000; Mill Creek Coalition of Clarion County, \$10,000

Oxford Foundation

2 South Decatur Street

Strasburg, PA 17579

Telephone: 717-687-9335

Contact: Marion S. Ware, President

[Application information: Send letter of proposal outlining project and its goals. Include record of 501C3 status. Deadline: none

Financial data: 125 grants totaling \$1,540,000

Sample grants: The Nature Conservancy, \$25,000; Susquehanna Valley Community Development, \$5,000

Eastman Kodak American Greenways Awards

The Conservation Fund

1800 North Kent Street, Suite 1120

Arlington, Virginia 22209

Telephone: (703) 525-6300

Contact: Leigh Anne McDonald

www.conservationfund.org

Type of grantmaker: A partnership project of Kodak, The Conservation Fund, and the National Geographic Society.

Limitations: Funds for greenways only.

Application: Electronically filed and available on their website: <http://www.conservationfund.org/conservation/amgreen/kodakawards/guidelines.html>. Deadline: March 1 to June 1 every year, grants are awarded in the fall.

Financial data: 38 grants in 30 different states were awarded in 2000. The grant amount can be up to \$2500.

Sample grants: The Appleton Project in Appleton, Minnesota received funds to plan and design a nine-mile section of the Minnesota River Valley Trail.

The Pew Charitable Trusts

One Commerce Square, Suite 1700
2005 Market Street
Philadelphia, PA 19103

Telephone: 215-575-9050

Contact: Rebecca W. Rimel, Director

Publications: all materials, including application forms are online at www.pewtrusts.com

Application information: online

Financial data: 506 grants totaling \$142,000,000

Sample grants: Pennsylvania Horticultural Society (for Philadelphia Green) \$500,000; Pa. Environmental Council (enhance/develop Philadelphia-area open spaces and foster energy efficiency), \$300,000

 Menke & Menke, Landscape Architects & Planners

in association with



Environmental Graphic Design

and

Kise Straw & Kolodner

Architects Planners Historians Archaeologists