Queen Lane Raw Water Pump Station Electrical Improvements
4530-40 Ridge Avenue
File #:291-93

Submission to City of Philadelphia Art Commission
Cover Letter
January 30, 2024

To whom it may concern,

Project Description

The Queen Lane Raw Water Pump Station Electrical Improvements is a project to add emergency standby power to the Queen Lane Raw Water Pump Station. The project includes installing two generators, one incoming service switchgear, and one paralleling switchgear above the 500-year floodplain elevation level. The new infrastructure will provide redundancy, power resiliency, and utility protection for the pump station to maintain potable water service to communities if there is flooding, power loss, or other hazardous conditions. The project has a limit of disturbance of 0.34 acres.

The project will also include a shift in the fence line in order to contain the new outdoor electrical equipment. Landscaping and new plantings are also captured within this scope.

Existing Conditions

The Queen Lane Raw Water Pump Station is located northwest of the intersection of Kelly Drive and Ridge Avenue. The proposed site for the generators is on the pump station property directly east of the pump station building. The site currently contains trees and vegetation, some of which require removal to complete the project.

Revisions

The Art Commissioners granted Concept Approval on December 13, 2023 (see attached). However, the Commissioners requested additional information to be included in the next presentation to grant final approval. This includes:

- Visibility of new infrastructure during winter, especially from Ridge Avenue
- Noise impact
- Construction access and impact
- Proposed lighting and visibility of lighting at night
- Design and maintenance of landscaping inside and outside of fence line.

Contact Information

Contact for questions and comments:

Jimena Larson
215-751-1400

jlarson@nspiregreen.com
1520 Locust St, Philadelphia PA 19102

Contact who should receive the commission's decision:

Judy Arnobit
215-847-6787
judy.arnobit@hdrinc.com
1515 Market St, Suite 2020 Philadelphia PA, 19102

Queen Lane Raw Water Pump Station Generator Project

Final Approval

February 14, 2024

01 Background

02 Art Commission Conceptual Approval Comments

03 Conceptual Approval Comment Responses

04 3D Image Renderings

Background

- Existing Raw Water Pump Station
  - One of City's Drinking Water Sources
- Hurricane Ida identified need for emergency backup power
- PWD is seeking FEMA BRIC funding for this project
  - Electrical equipment built to FEMA 500-Year Base Flood Elevation

Conceptual Approval Comments

QLRWPS Electrical Yard and Rain Basin Final Approval

Art Commission Conceptual Approval Comments

1. Sound Impacts
2. Construction Access
3. Landscaping Design and Maintenance
4. Visibility of Electrical Yard from the Sidewalk
5. Lighting impact

Conceptual Approval Comments Responses

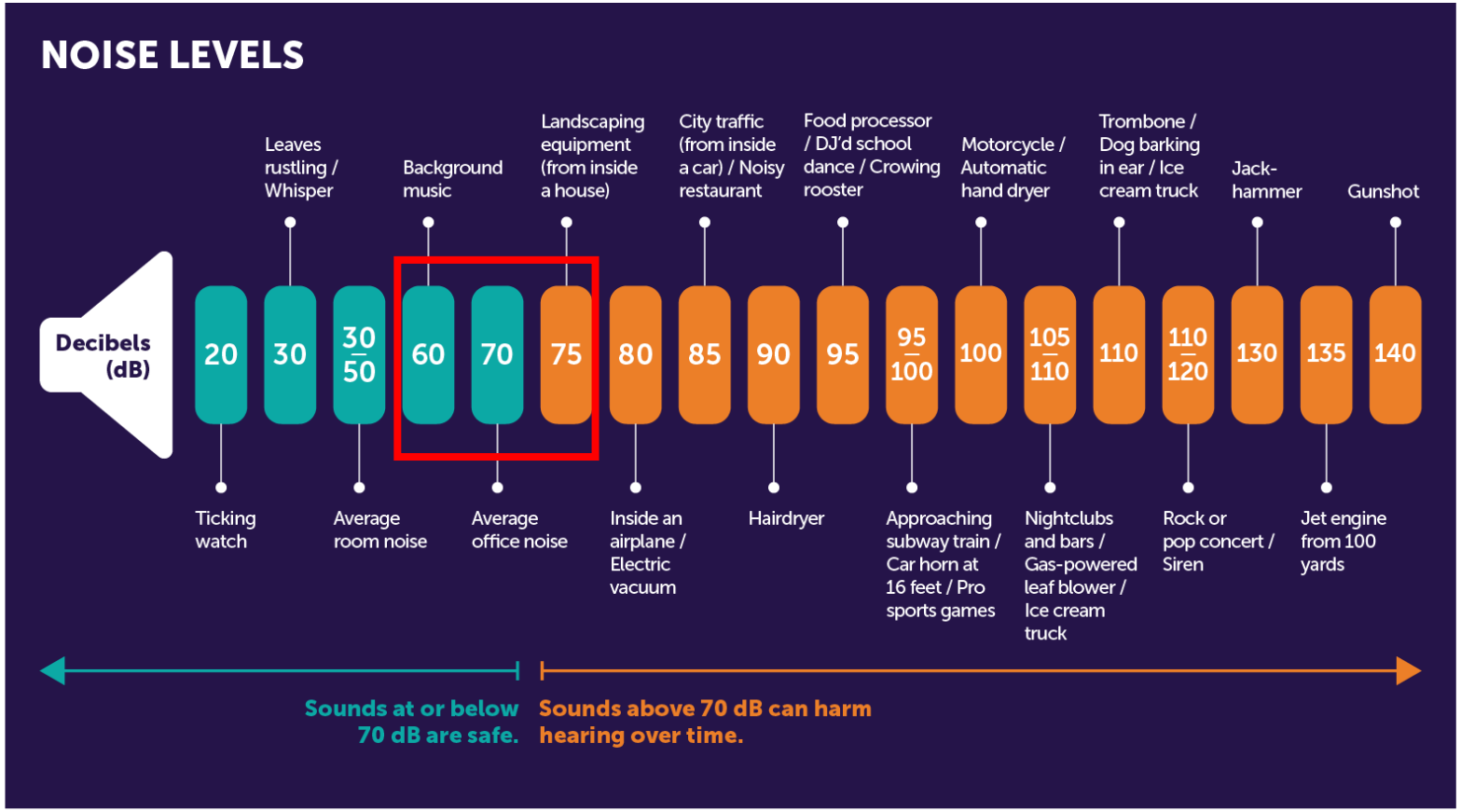
QLRWPS Electrical Yard and Rain Basin Final Approval

Generator Use – Noise Impact

- Emergency standby generators operated in routine O&M and power outages only.
- Generator O&M includes:
  - Minimum O&M run time: 12 hours in a year.
    - (monthly maintenance)
  - Maximum O&M run time: 52 hours in a year
    - (weekly maintenance)

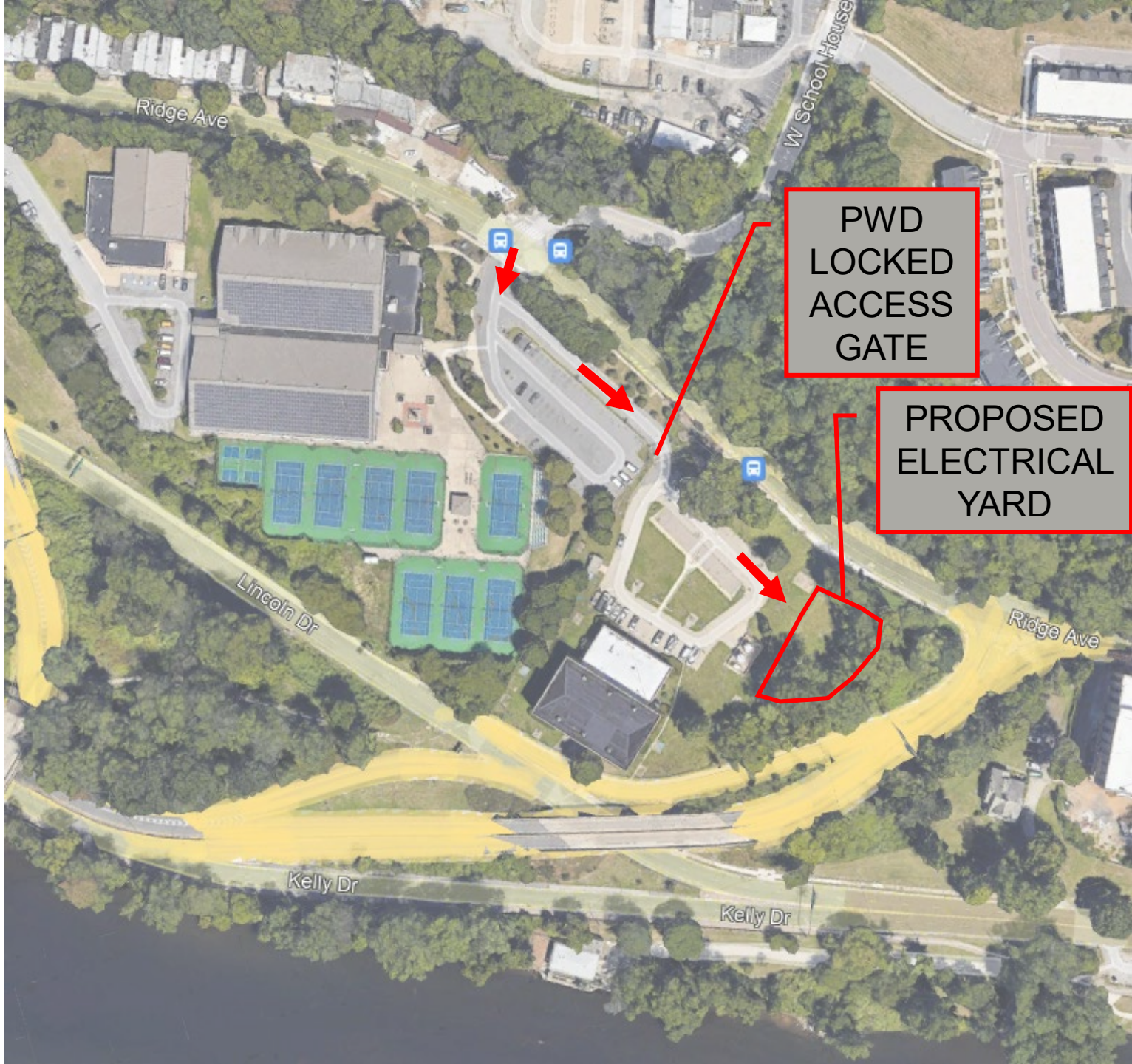
Noise Levels

- Contract requires Level II – Sound Attenuation
  - 72-75 dB range at a 25 foot range
    - Noise level equivalent to landscaping equipment (from inside a house)
  - 65-70 dB range at a 50 foot range
    - Noise level equivalent to an occupied open office space
- Generators are ~70 feet away from adjacent sidewalk



2024 Hearing Health Foundation Noise Levels

Construction Access



Landscaping Design – Arborist Study

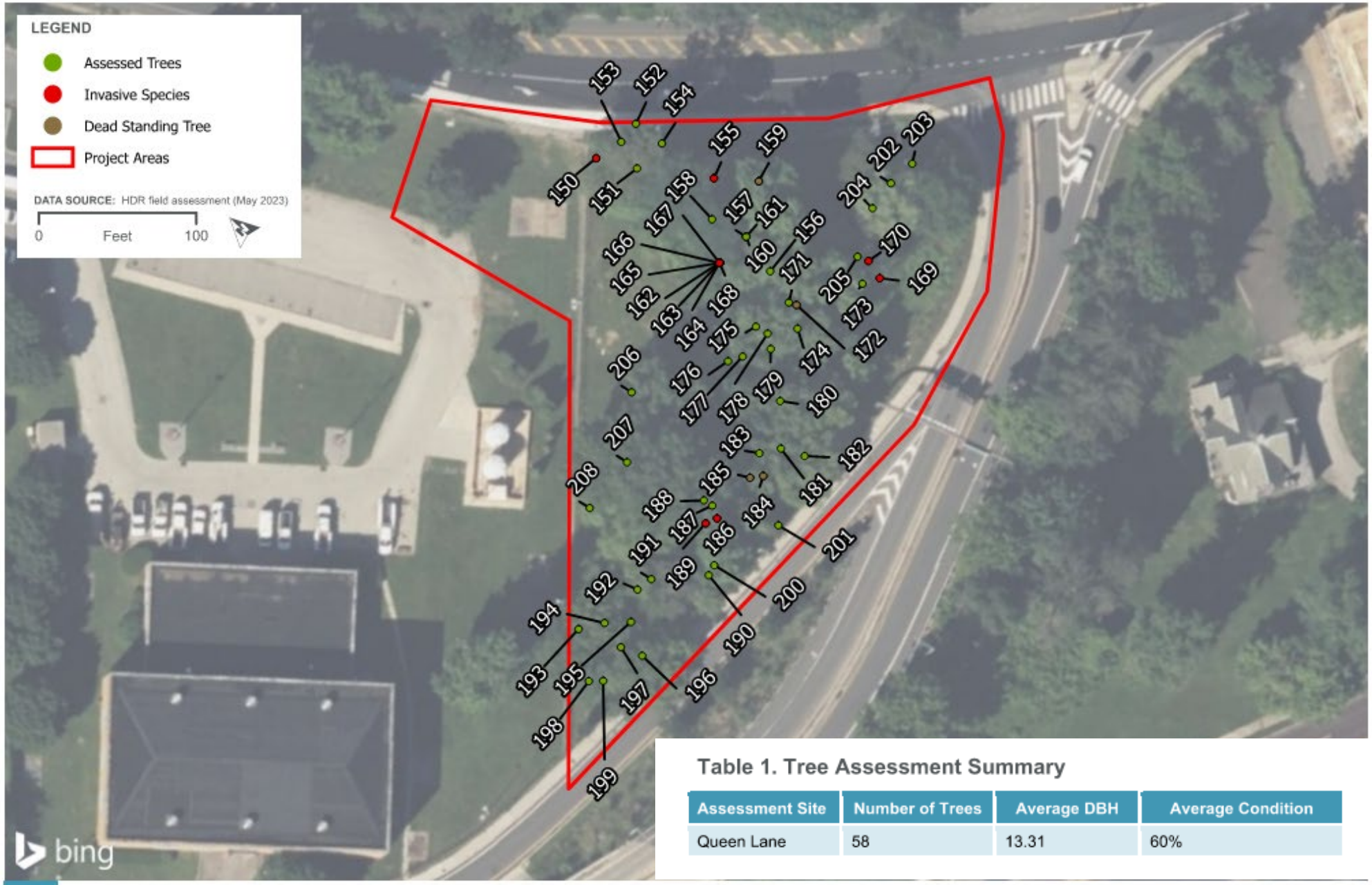


Table 1. Tree Assessment Summary

Assessment Site	Number of Trees	Average DBH	Average Condition
Queen Lane	58	13.31	60%

HDR PHILADELPHIA WATER DEPARTMENT

PHILADELPHIA WATER DEPARTMENT

QUEENS LANE - TREE ASSESSMENT

FIGURE 1

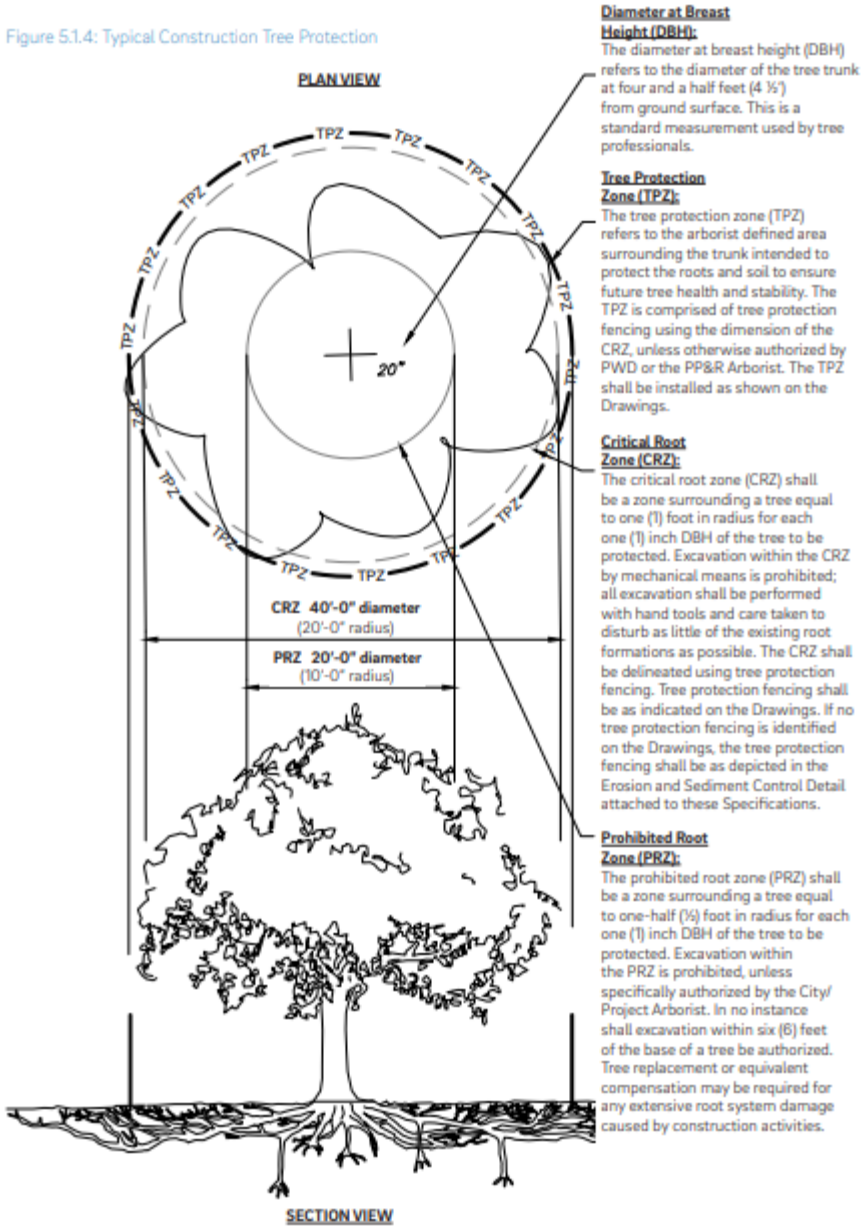
Landscaping Demo Plan

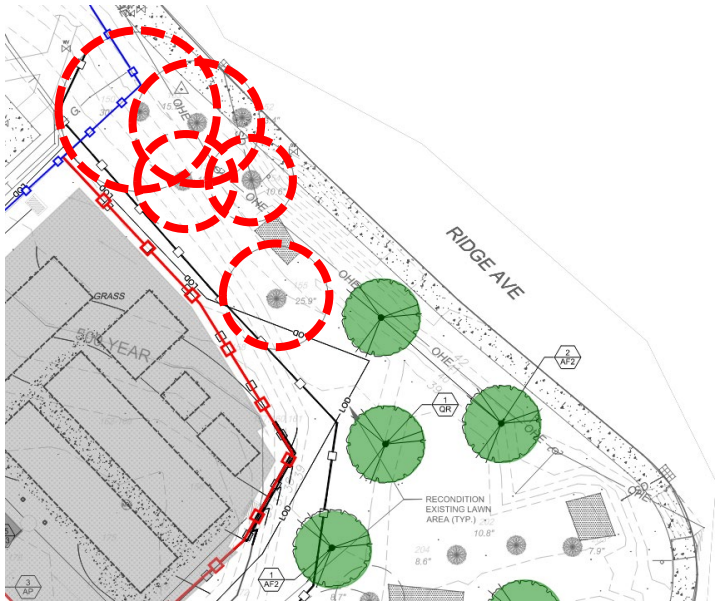
OVERALL TREE PROTECTION PLAN

SCALE: 1"= 20'

ID	DBH	SPECIES	ISA COND QUAN	ISA COND QUAL	NOTES	
150	30.0	Sycamore	97%	Excellent	vines, pruning - Heritage Tree	X
151	12.3	Box elder	94%	Good	multi stem, vines 9.1, 17.1, 10.8	
152	13.4	Honeylocust	66%	Fair	multi stem, die back, stunted leaves, 12.9, 11.7, 15.9, 13.2	
153	15.7	Box elder	72%	Fair	multi stem, vines, co dom, broken stem, 17.8, 13.5	
154	10.6	Box elder	63%	Fair	vines, broken leader, wounds	
155	25.9	Norway maple	94%	Good	vines, co dom	
156	11.7	Box elder	56%	Poor	lean, pruned	
157	8.0	Box elder	91%	Good	vines, lean	
158	22.0	Honeylocust	56%	Poor	vines, co dom, stunted leaves	
159		Dead	0%	Dead		
160	9.1	Crataegus sp.	69%	Fair	6.2, 12.1, 9.0 leaning, exposed roots	
161	10.5	Parsley hawthorne	44%	Very Poor	vines, dead branches	
162	-	Dead	0%	Dead		
163	7.3	Box elder	25%	Very Poor	vines and missing leader	
164	-	Dead	0%	Dead		
165	12.1	Box elder	53%	Poor	vines, codom	
166	**35.2**	**Silver maple**	**63%**	Fair	covered in vines - Heritage Tree	X
167	-	Dead	0%	Dead		
168	3.6	Norway maple	50%	Poor	vines, gurdled	
169	12.5	Norway maple	81%	Good	covered in vines	
170	3.5	Norway maple	88%	Good	vines , gurdled trunk	
171	22.1	Box elder	25%	Very Poor	vines, broken leader	
172	-	Dead	0%	Dead		
173	14.7	Box elder	53%	Poor	vines, lean	
174	4.4	Black cherry	97%	Excellent		
175	14.9	Silver maple	44%	Very Poor	14.5, 15.3, removal, vines, missing leader, broken limbs	
176	13.9	Box elder	84%	Good	root wound	
177	15.0	Silver maple	25%	Very Poor	14.5, 15.4, removal, vines	
178	17.5	Box elder	25%	Very Poor	removal, vines	
179	22.1	Box elder	25%	Very Poor	removal, vines	
180	18.3	Silver maple	63%	Fair	32.0, 19.4, 22, 10, 8 vines	
181	15.4	Box elder	69%	Fair	22.7, 8, vines, codom	
182	2.7	White oak	63%	Fair		
183	24.1	Box elder	25%	Very Poor	removal, vines	
184	-	Dead	0%	Dead		
185	-	Dead	0%	Dead		
186	2.8	Norway maple	25%	Very Poor	vines, lean, broken limbs	
187	18.1	Box elder	53%	Poor	vines, lean	
188	9.5	Box elder	72%	Fair	vines, lean	
189	28.1	Norway maple	94%	Good	vines, codom	
190	32.1	Box elder	56%	Poor	vines, codom, broken leader	
191	9.1	Red mulberry	72%	Fair	vines, die back	
192	24.1	Red pine	44%	Very Poor	removal, vines	
193	26.1	Elm	84%	Good	removal, butt rot, over infrastructure - Heritage Tree	X
194	3.0	Red mulberry	91%	Good	Dead branches	
195	16.1	Box elder	63%	Fair	16.1, 20.1, lean, exposed roots, wound	
196	10.1	Red mulberry	66%	Fair	removal, vines	
197	3.7	Red mulberry	81%	Good	vines	
198	4.1	White oak	88%	Good	vines	
199	8.9	White oak	100%	Excellent		
200	4.4	White oak	91%	Good	vines	
201	4.1	White oak	97%	Excellent	vines	
202	10.8	Honeylocust	100%	Excellent	12.1, 9.4	
203	7.9	Chinese elm	97%	Excellent	7.1, 8.6	
204	8.6	Willow sp	94%	Good	9.7, 8.0, 8.1, Trunk wound	
205	8.7	Winged elm	100%	Excellent		
206	**34.1**	**Silver maple**	**78%**	Fair	vines, die back - Heritage Tree	X
207	**45.1**	**Pin oak**	**94%**	Good	vines, dead branches - Heritage Tree	X
208	24.1	Silver maple	66%	Fair	trunk wound, vines - Heritage Tree	X

Landscaping Design





Landscaping Design:

- Meets minimum PWD requirements:
  - Tree Protection Zone for existing trees preserved on site
  - Avoiding existing underground utilities (electric, telephone, water, storm drains to existing basins)
  - Plant schedule based on City and PWD planting list recommendations
- Design considers existing grading and planting selection considers options that would screen the electrical yard from view

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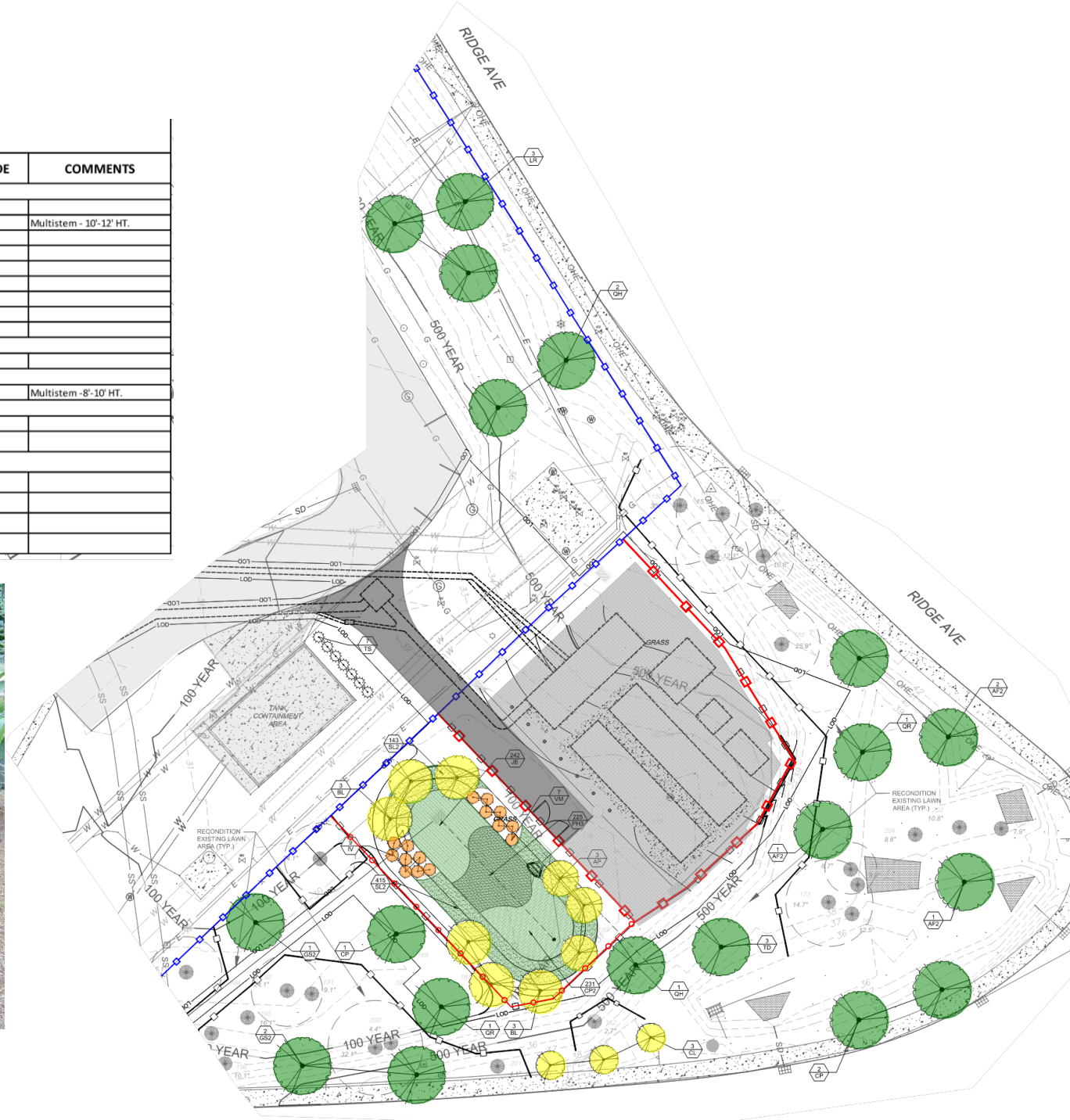
Landscaping Plan

PLANT SCHEDULE

HATCH PATTERN	KEY	COMMON NAME	BOTANICAL NAME	QUANTITY	SIZE	SPACING	OVERHEAD WIRES	SUN/SHADE	COMMENTS
	TREES								
	AF2	Yellow Buckeye	Aesculus flava	4	2.5" CAL	As Shown	Along Ridge Ave.	Varies	
	BL	Sweet Birch	Betula lenta	6	2.5" CAL	As Shown	N/A	Varies	Multistem - 10'-12' HT.
	CL	American Hornbeam	Carpinus caroliniana	3	2.5" CAL	As Shown	N/A	Sun	
	CP	Hackberry	Celtis occidentalis	3	2.5" CAL	As Shown	N/A	Sun	
	GS2	Honey Locust	Gleditsia triacanthos inermis	3	2.5" CAL	As Shown	N/A	Varies	
	LR	Sweet Gum	Liquidambar styraciflua	3	2.5" CAL	As Shown	Along Ridge Ave.	Sun	
	QH	Willow Oak	Quercus phellos	3	2.5" CAL	As Shown	Along Ridge Ave.	Sun	
	QR	Red Oak	Quercus rubra	2	2.5" CAL	As Shown	N/A	Varies	
	TD	Bald Cypress	Taxodium distichum	1	12` HT	As Shown	N/A	Sun	
	EVERGREEN TREES								
	TS	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	7	8' HT.	As Shown	N/A	Sun	
	FLOWERING TREES								
	AP	Apple Serviceberry	Amelanchier x grandiflora	3	2.5" CAL	As Shown	N/A	Varies	Multistem -8'-10' HT.
	SHRUBS								
	IV	Henry`s Garnet Sweetspire	Itea virginica `Henry`s Garnet`	9	#3 CONT.	As Shown	N/A	Sun	
	VM	Mapleleaf viburnum	Viburnum acerifolium	7	#5 CONT.	As Shown	N/A	Sun	
	GRASSES								
	CP2	Pennsylvania Sedge	Carex pensylvanica	231	#1 CONT.	18" O.C	N/A	Varies	
	JE	Common Rush	Juncus effusus	242	#1 CONT.	18" O.C	N/A	Sun	
	PH3	Hot Rod Switch Grass	Panicum virgatum `Hot Rod`	225	#1 CONT.	18" O.C	N/A	Sun	
	SL2	Little Bluestem	Schizachyrium scoparium	558	#1 CONT.	18" O.C	N/A	Varies	

Apple Service Berry

Emerald Green Arborvitae



Tree Selection

Yellow Buckeye

Sweet Birch

Willow Oak

American Horn Beam

Hackberry

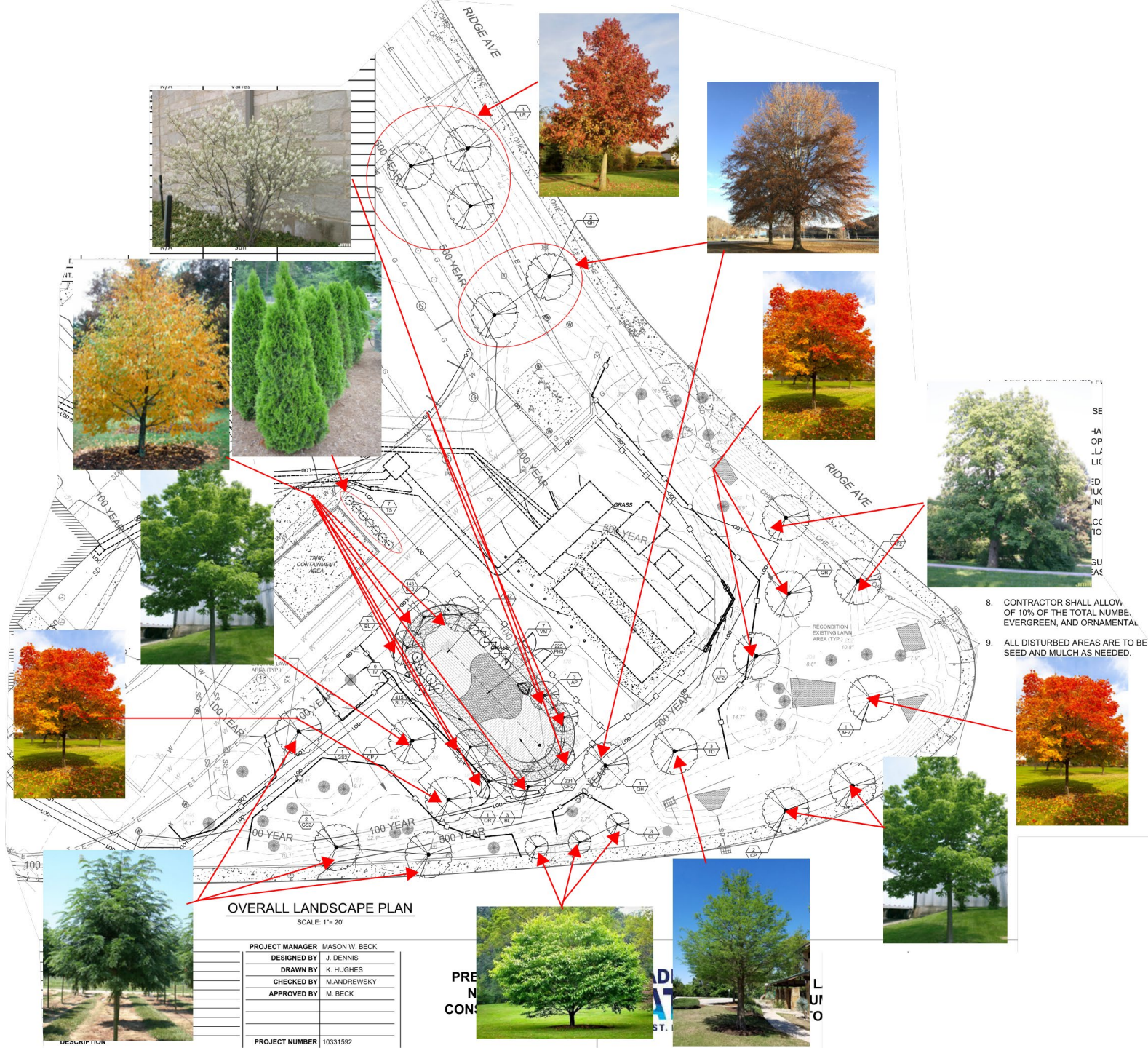
Honey Locust

Sweet gum

Red Oak

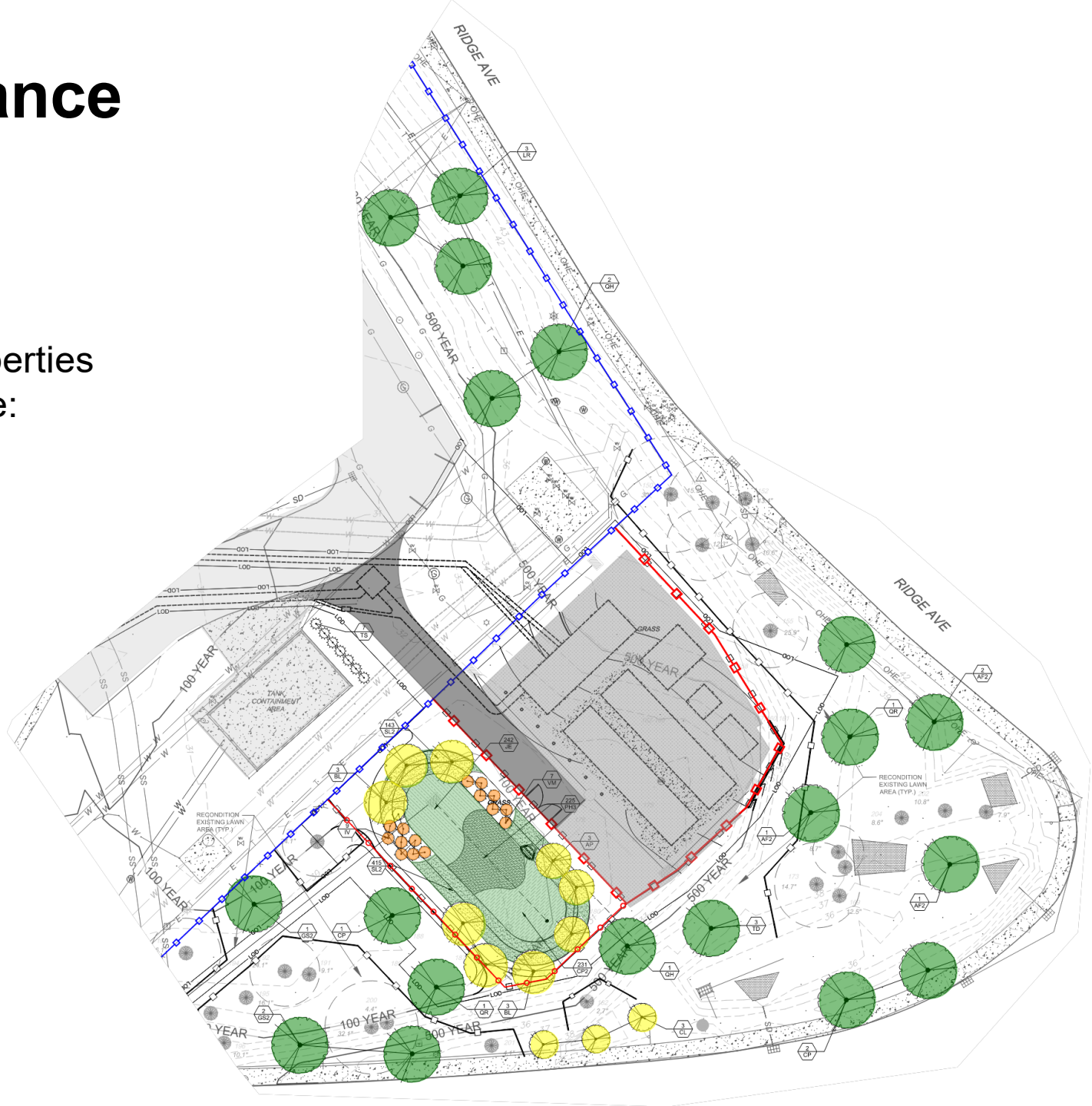
Bald Cyprus

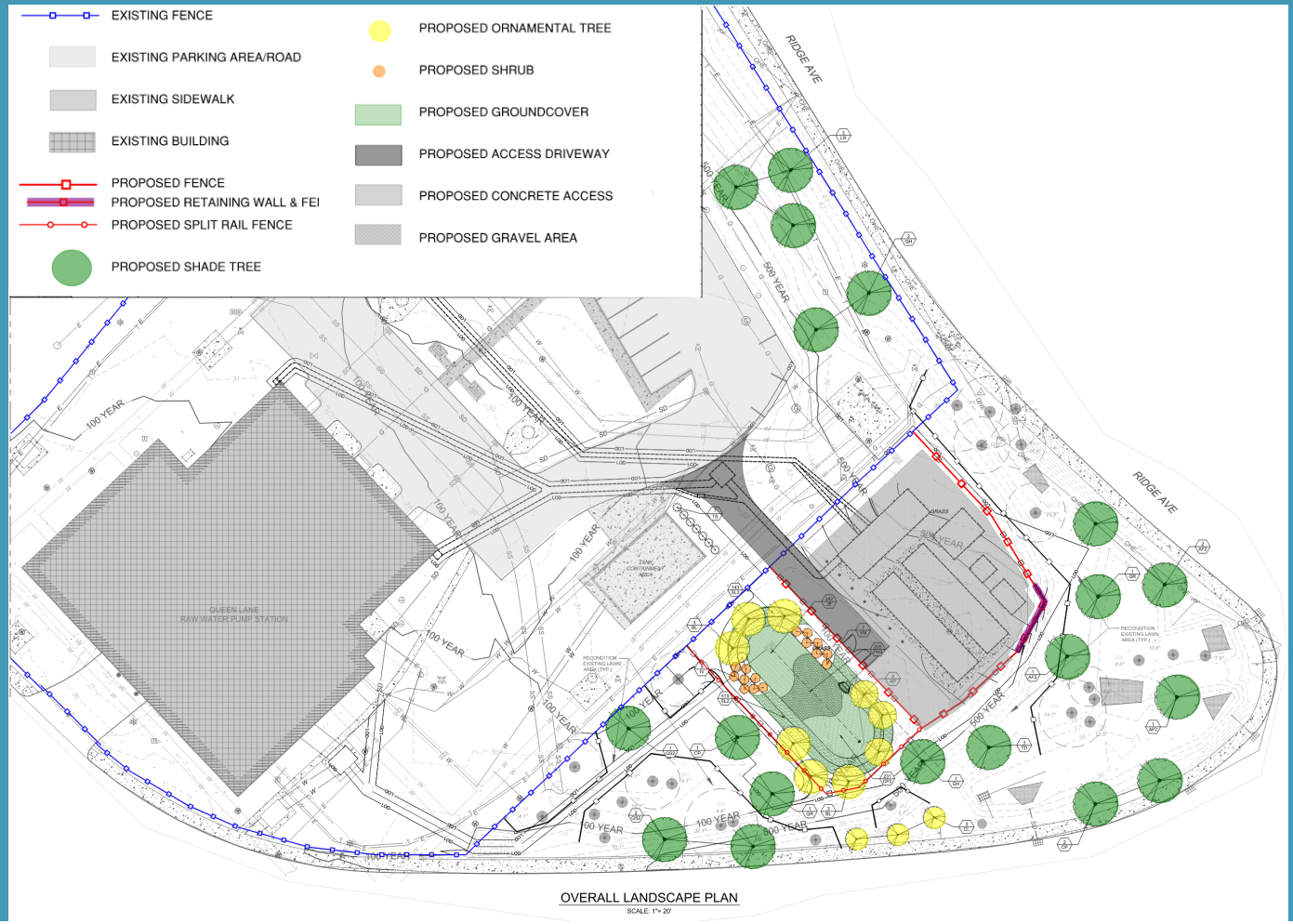
Landscaping Plan



Landscaping Maintenance

- Rain Basin (Green Infrastructure)
  - PWD GSI Department
- Landscaping inside the Fence Line
  - PWD & Department of Public Properties
- Landscaping Outside of the Fence Line:
  Department of Public Properties
  Contact: Monique Brinson
  215-686-4525





3D Image Renderings (Winter)

QLRWPS Electrical Yard and Rain Basin Final Approval

RIDGE AVENUE VIEW 1
EXISTING CONDITIONS (WINTER)

RIDGE AVENUE VIEW 1
PROPOSED CONDITIONS (WINTER)

RIDGE AVENUE VIEW 2
EXISTING CONDITIONS (WINTER)

RIDGE AVENUE VIEW 2
PROPOSED CONDITIONS (WINTER)

RIDGE AVENUE VIEW 3
EXISTING CONDITIONS (WINTER)

RIDGE AVENUE VIEW 3
PROPOSED CONDITIONS (WINTER)

KELLY DRIVE ONRAMP VIEW 1
EXISTING CONDITIONS (WINTER)

KELLY DRIVE ONRAMP VIEW 1
PROPOSED CONDITIONS (WINTER)

KELLY DRIVE ONRAMP VIEW 2
EXISTING CONDITIONS (WINTER)

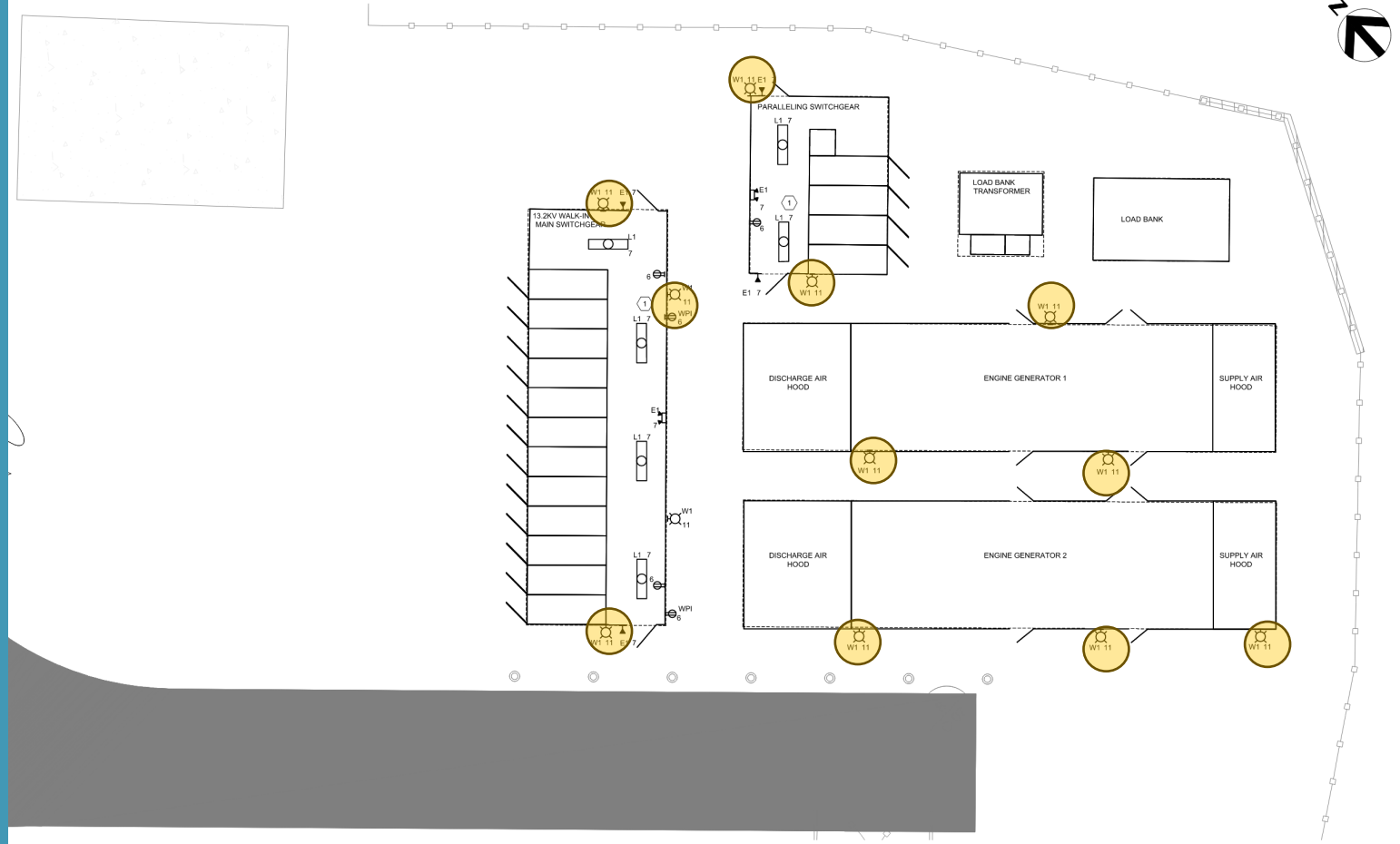
KELLY DRIVE ONRAMP VIEW 2
PROPOSED CONDITIONS (WINTER)

KELLY DRIVE ONRAMP VIEW 3
EXISTING CONDITIONS (WINTER)

KELLY DRIVE ONRAMP VIEW 3
PROPOSED CONDITIONS (WINTER)

PWD PARKING LOT VIEW 1
EXISTING CONDITIONS (WINTER)

PWD PARKING LOT VIEW 1
PROPOSED CONDITIONS (WINTER)

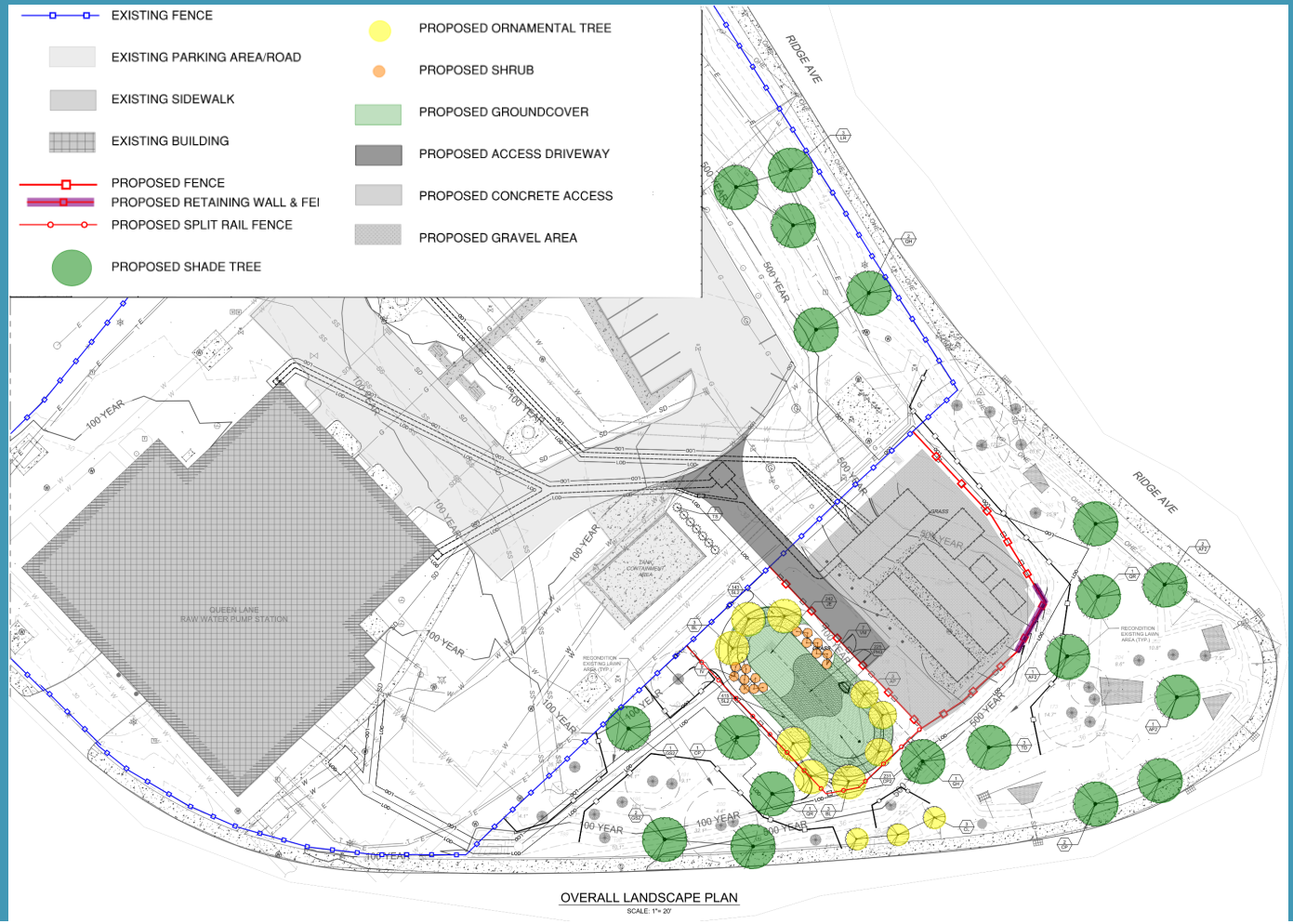


SITE LIGHTING PLAN

3/16" = 1'-0"

Lighting Impact

Electrical Yard Site Lighting Plan



3D Image Renderings (Night)

QLRWPS Electrical Yard and Rain Basin Final Approval

RIDGE AVENUE VIEW 1
EXISTING CONDITIONS (NIGHT)

RIDGE AVENUE VIEW 1
PROPOSED CONDITIONS (NIGHT)

RIDGE AVENUE VIEW 2
EXISTING CONDITIONS (NIGHT)

RIDGE AVENUE VIEW 2
PROPOSED CONDITIONS (NIGHT)

RIDGE AVENUE VIEW 3
EXISTING CONDITIONS (NIGHT)

RIDGE AVENUE VIEW 3
PROPOSED CONDITIONS (NIGHT)

KELLY DRIVE ONRAMP VIEW 1
EXISTING CONDITIONS (NIGHT)

KELLY DRIVE ONRAMP VIEW 1
PROPOSED CONDITIONS (NIGHT)

KELLY DRIVE ONRAMP VIEW 2
EXISTING CONDITIONS (NIGHT)

KELLY DRIVE ONRAMP VIEW 2
PROPOSED CONDITIONS (NIGHT)

KELLY DRIVE ONRAMP VIEW 3
EXISTING CONDITIONS (NIGHT)

KELLY DRIVE ONRAMP VIEW 3
PROPOSED CONDITIONS (NIGHT)

PWD PARKING LOT VIEW 1
EXISTING CONDITIONS (NIGHT)

PWD PARKING LOT VIEW 1
PROPOSED CONDITIONS (NIGHT)

Thank you!

OACCE Percent of Art Determination

From: Marguerite Anglin <Marguerite.Anglin@phila.gov>
Date: Wednesday, January 24, 2024 at 6:31 PM
To: Jimena Larson <JLarson@nspiregreen.com>, Beck, Mason W. <mason.beck@hdrinc.com>, Kyle Wire <kyle.wire@chplanning.com>, Nancy Templeton <nancy.templeton@chplanning.com>, Arnobit, Judy <Judy.Arnobit@hdrinc.com>, Belcher, Troy <Troy.Belcher@hdrinc.com>
Cc: Noni Clemens <Noni.Clemens@phila.gov>
Subject: RE: REQUEST: Determination for Percent of Art Obligation for PWD Projects (Queen Lane and George's Hill)

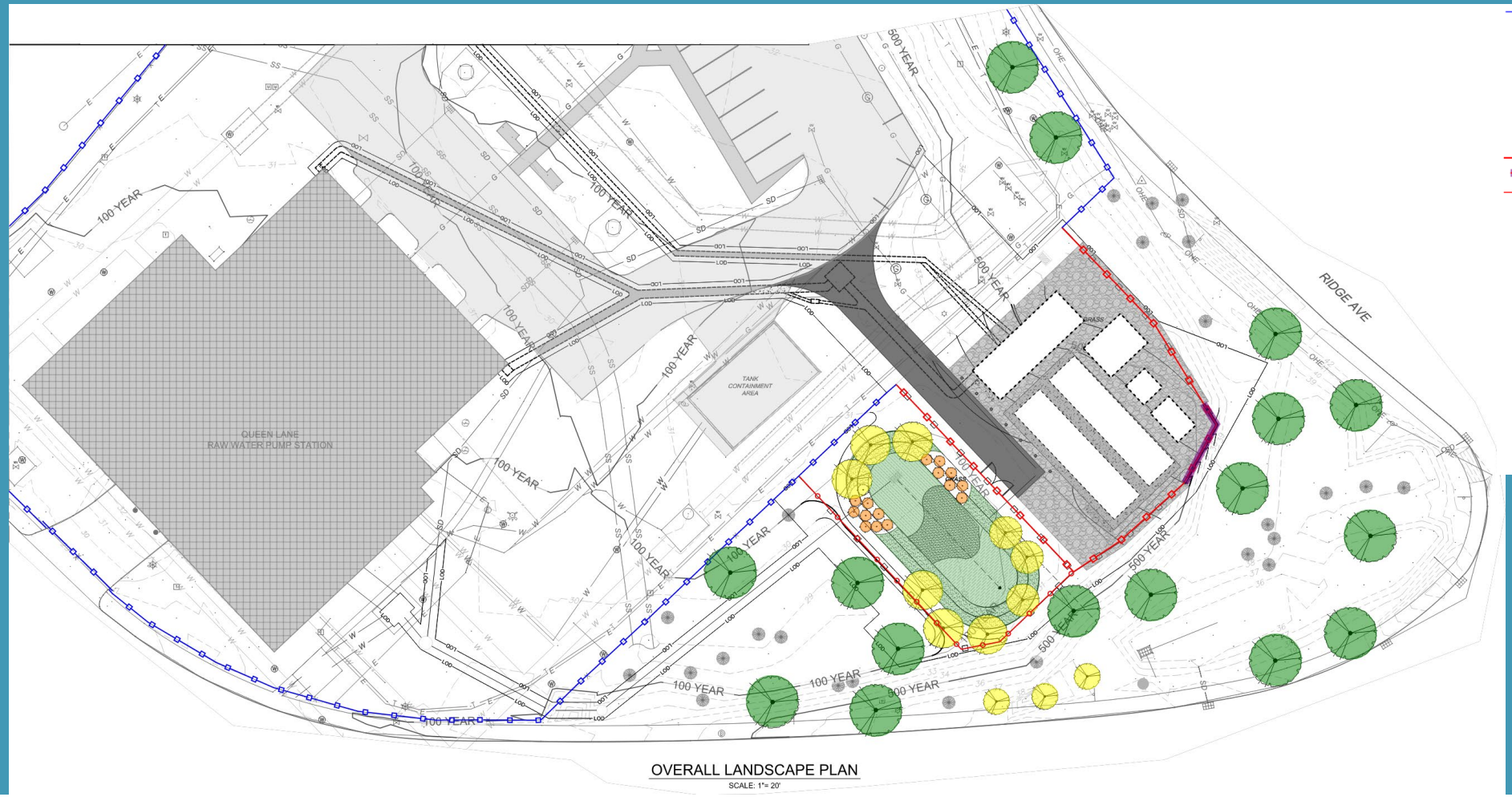
Hi Jimena,

Thank for letting us know about these PWD projects and providing more information. Based on the scope you described, these projects would not trigger Percent for Art requirements, since the majority of the projects are infrastructure driven, such as replacing or providing generators, pumps and electrical systems.

Thank you again for this information, and we wish you successful completion of these projects.

Best regards,
Marguerite

Marguerite Anglin, RA, NOMA | Public Art Director
Office of Arts, Culture and the Creative Economy (OACCE)
City of Philadelphia
C: 267-303-0507
marguerite.anglin@phila.gov

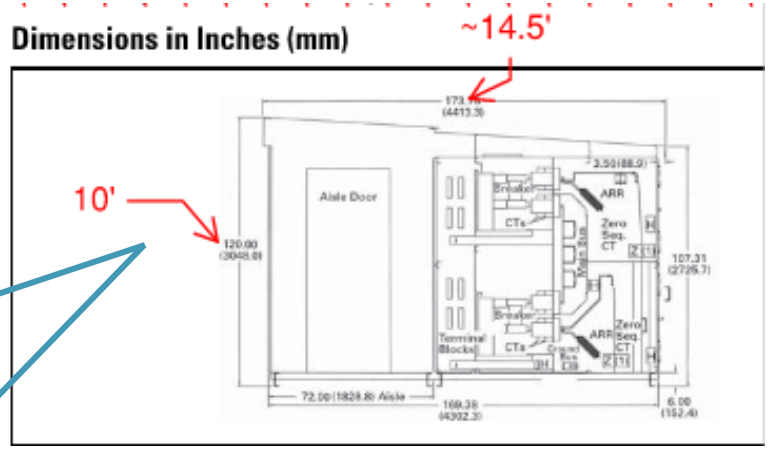


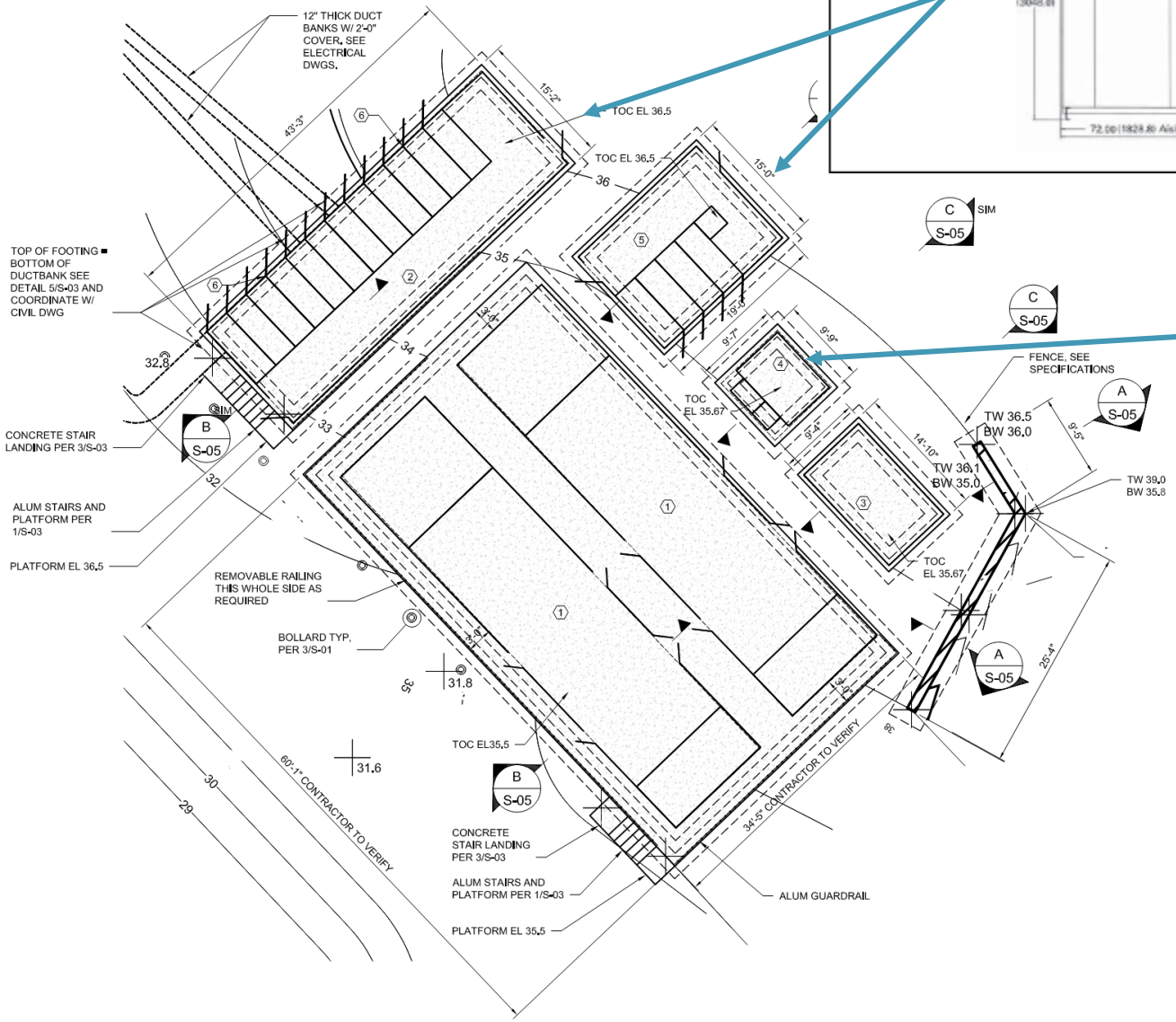
Proposed Work & Examples

QLRWPS Electrical Yard and Rain Basin

EXAMPLE ELECTRICAL YARD

PROPOSED ELECTRICAL YARD





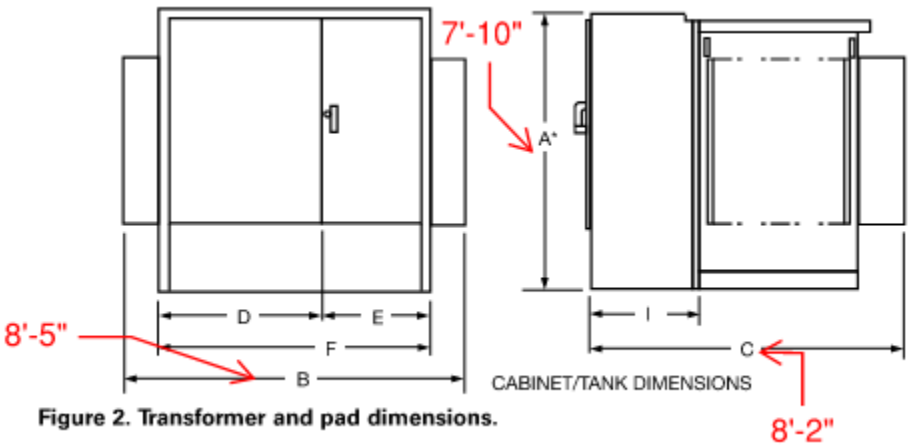
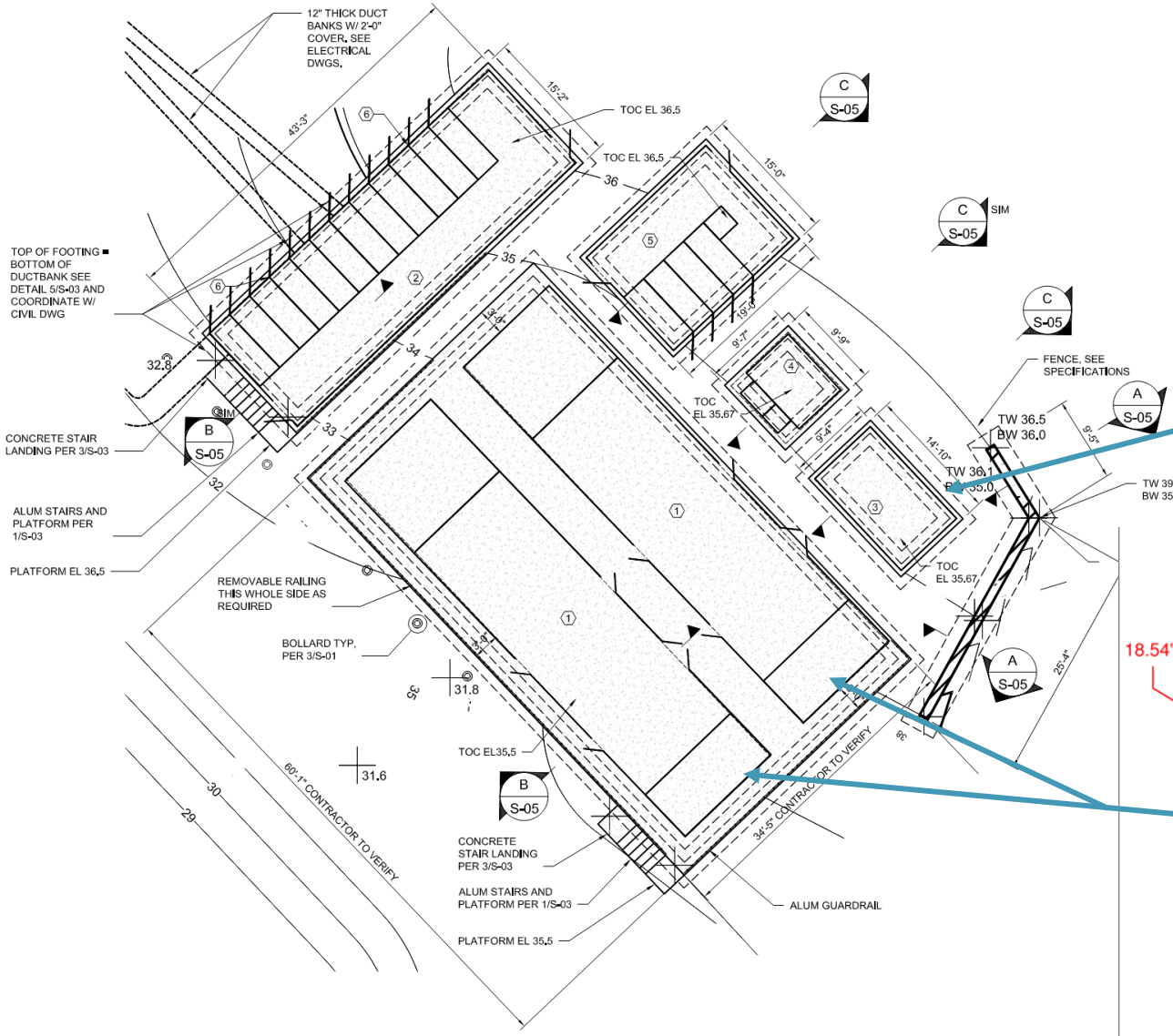
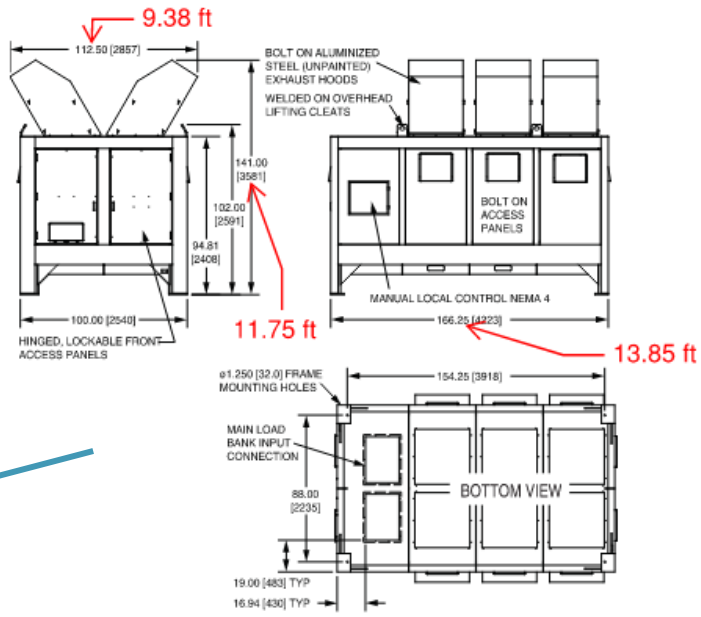


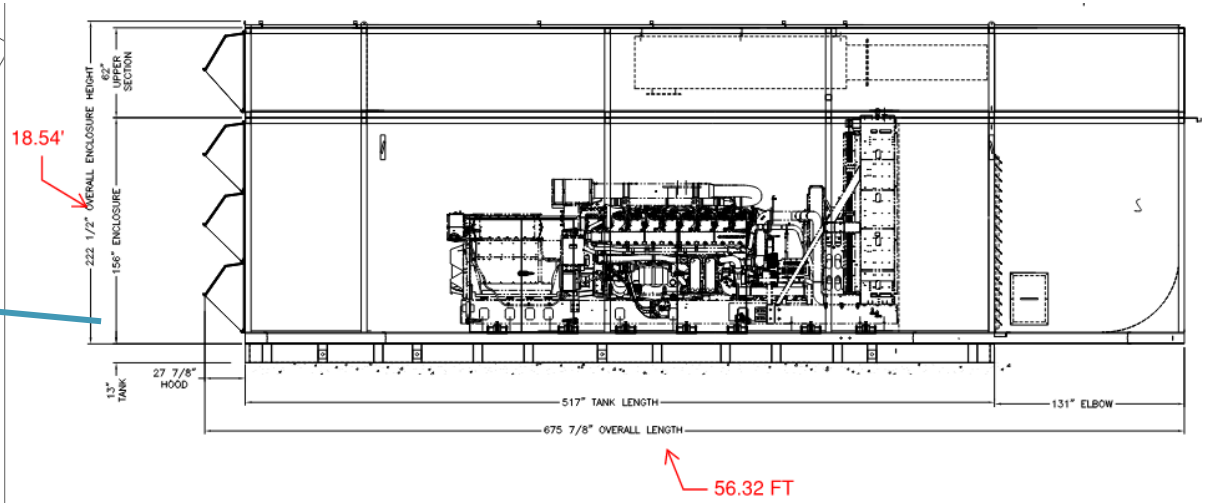
Figure 2. Transformer and pad dimensions.

* Add 9" for Bay-O-Net fusing.

PROPOSED ELECTRICAL YARD CONTINUED



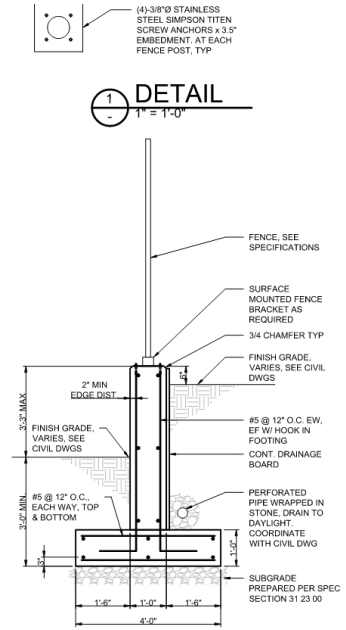




ELEVATION VIEW

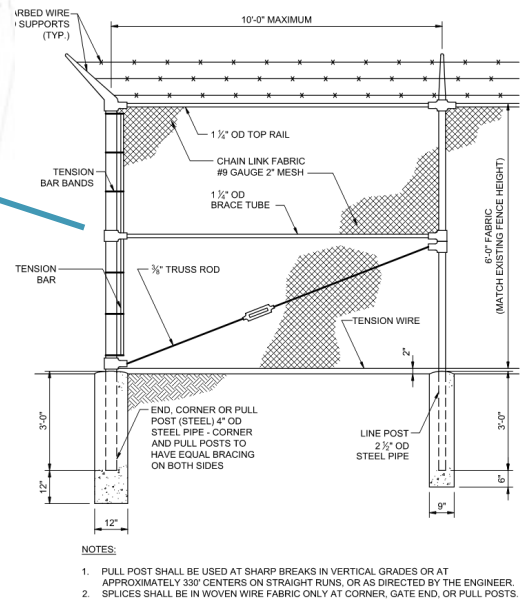
CHAIN LINK FENCE, SWING GATE, AND RETAINING WALL DETAIL

OVERALL LANDSCAPE PLAN
SCALE: 1"= 20'



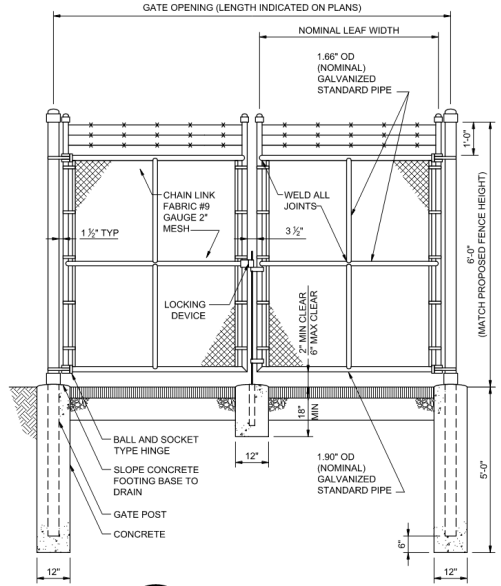
1 - DETAIL
1" = 1'-0"

A - SECTION
3/4" = 1'-0"



NOTES:
1. PULL POST SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADES OR AT APPROXIMATELY 330' CENTERS ON STRAIGHT RUNS, OR AS DIRECTED BY THE ENGINEER.
2. SPLICES SHALL BE IN WOVEN WIRE FABRIC ONLY AT CORNER, GATE END, OR PULL POSTS.

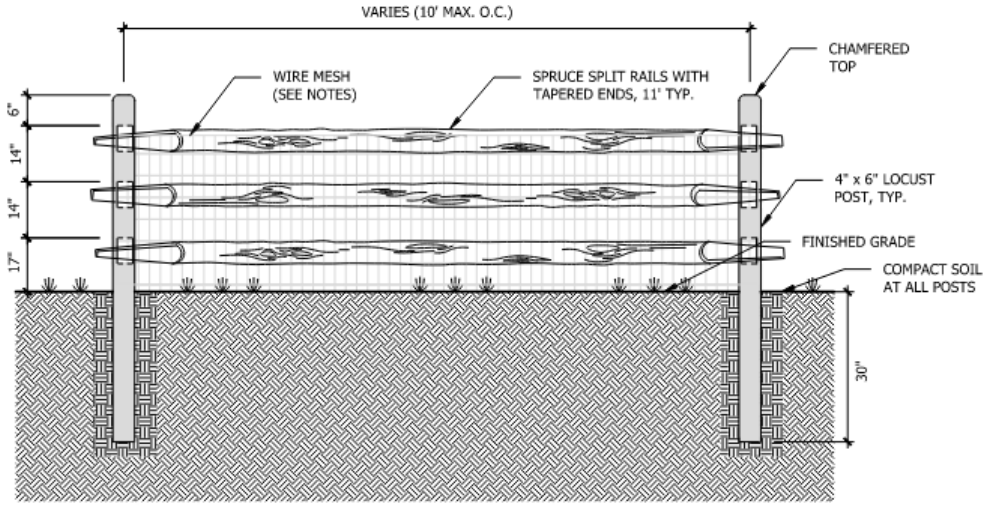
7 - FENCE DETAIL
NOT TO SCALE



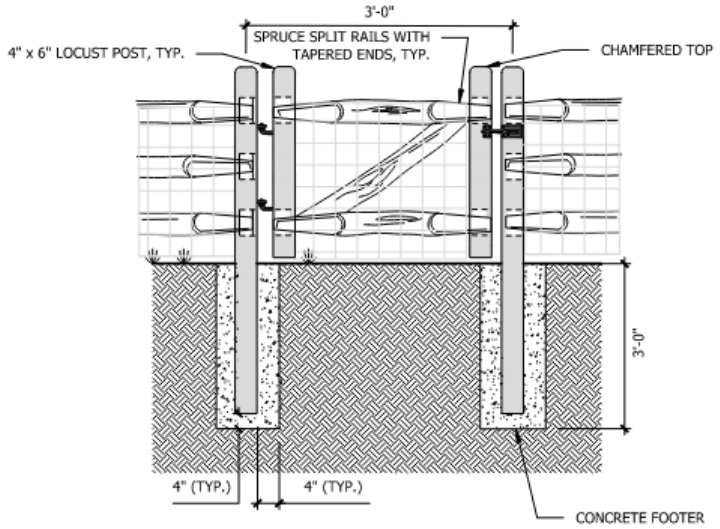
8 - SWING GATE DETAIL
NOT TO SCALE

EXAMPLE CAST IN PLACE CONCRETE RETAINING WALL WITH CHAIN LINK FENCE

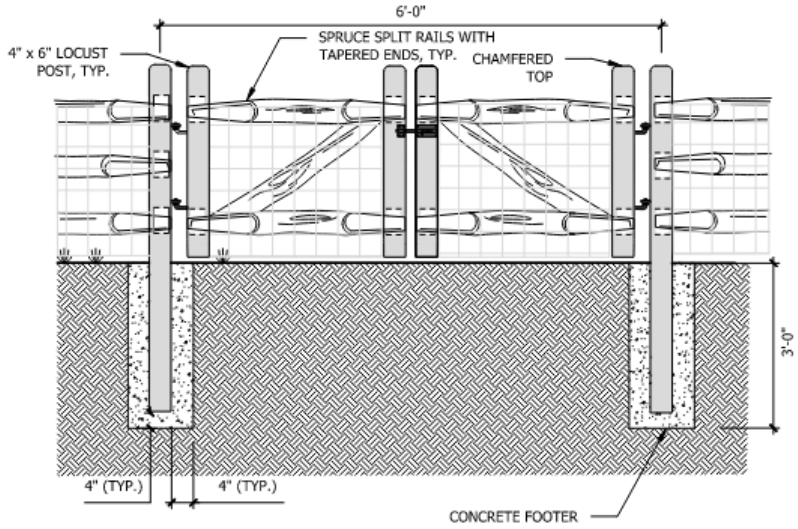
PWD SPLIT RAIL FENCE DETAIL



TYPICAL FENCE



SINGLE GATE



DOUBLE GATE

NOTES:
1. WIRE MESH SHALL BE GALVANIZED IRON, VINYL COATED IRON, STAINLESS STEEL OR APPROVED EQUIVALENT. WIRE MESH SHALL BE WELDED WITH 2"X4" MESH OPENING.
2. WIRE MESH SHALL BE SECURED TO FENCE POSTS AND/OR RAILS USING STEEL U-NAILS, OR APPROVED EQUIVALENT.
3. WIRE MESH MAY NOT BE NEEDED IN ALL APPLICATIONS.
4. WIRE MESH TO BE USED WHEN 3 RAIL OPTION IS SELECTED.
5. DECK SCREWS SHALL BE USED TO FASTEN RAILS TOGETHER AT POINT OF INTERSECTION AT POSTS. EACH RAIL MUST OVERLAP EACH OTHER BY 3" MIN. TO ENSURE STABILITY.
6. GATE TO BE INCLUDED WHERE NOTED ON THE DRAWINGS.
7. ALL POSTS MUST BE SQUARE AND LEVEL.
8. CORNER POSTS MUST HAVE 36" DEEP CONCRETE FOOTERS.
9. REFER TO DESIGN PLANS TO ENSURE SUBSURFACE INFRASTRUCTURE IS NOT IN CONFLICT DURING INSTALLATION.
10. WHEN POSSIBLE, ALIGN POSTS SUCH THAT FENCE ORIENTATION IS STRAIGHT OR PERPENDICULAR FOR STABILITY.

NOTES TO DESIGNER:
1. WIRE MESH MAY NOT BE NEEDED IN ALL APPLICATIONS.. TO BE USED TO KEEP PEOPLE, ANIMALS, AND OBJECTS OUT OF GSI SYSTEM IN BUSY AREAS.
2. SPECIFY 2 OR 3 RAIL FENCE ON PLANS.
3. SPECIFY SINGLE OR DOUBLE GATE ON PLANS

PHILADELPHIA WATER DEPARTMENT
1101 MARKET ST.
4TH FLOOR
PHILADELPHIA, PA
19107

SPLIT RAIL FENCE 3 RAILS

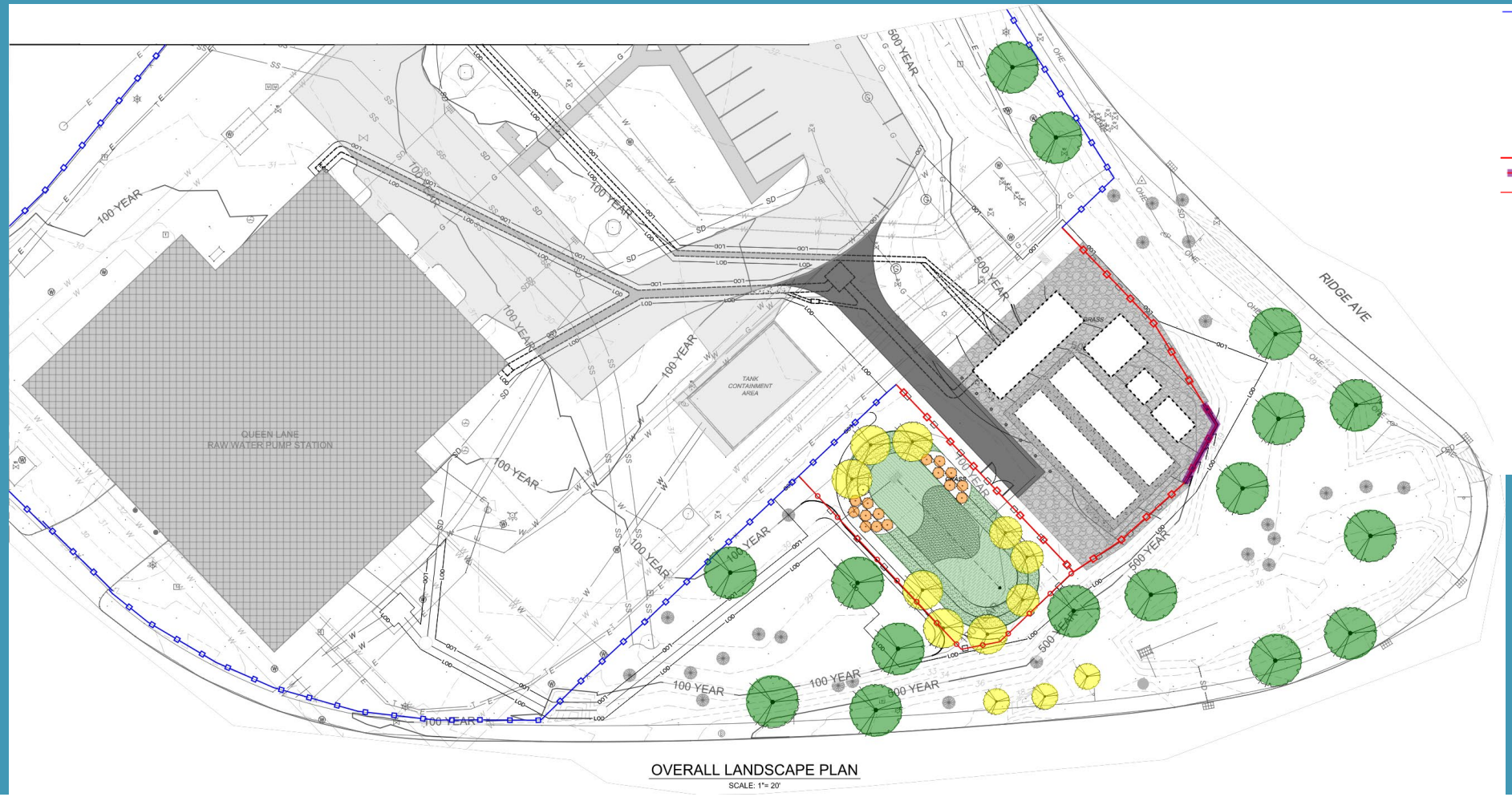
SCALE: N.T.S.

VS.	DATE	INITIALS	REASON
1	06/01/2018	TJL	UPDATE WITH TWO STYLES: 2 RAIL AND 3 RAIL. CHANGE TO WOODEN POSTS.
1	10/24/2019	TJL	CLARIFY INSTALLATION AND STABILITY OF POSTS AND RAILS.

DRAWING NUMBER: C-44

EXAMPLE SPLIT RAIL FENCE SURROUNDING RAIN GARDEN

EXAMPLE SPLIT RAIL FENCE AND GATE SURROUNDING RAIN GARDEN



3D Image Renderings

QLRWPS Electrical Yard and Rain Basin

RIDGE AVENUE VIEW 1
EXISTING CONDITIONS

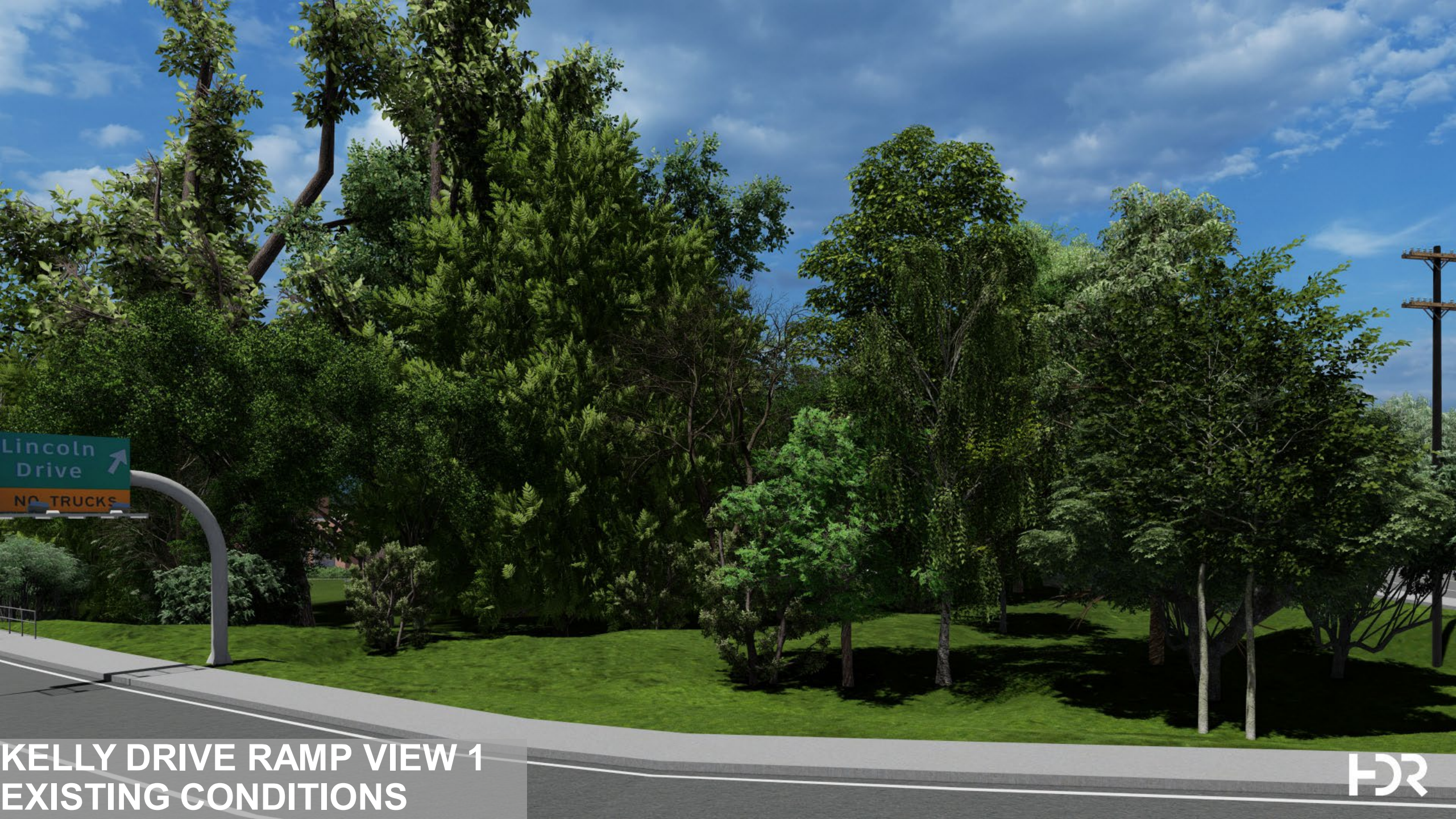
RIDGE AVENUE VIEW 1
PROPOSED WORK

RIDGE AVENUE VIEW 2
EXISTING CONDITIONS

RIDGE AVENUE VIEW 2
PROPOSED WORK

RIDGE AVENUE VIEW 3
EXISTING CONDITIONS


RIDGE AVENUE VIEW 3
PROPOSED WORK



KELLY DRIVE RAMP VIEW 1
EXISTING CONDITIONS

KELLY DRIVE RAMP VIEW 1
PROPOSED WORK

KELLY DRIVE RAMP VIEW 2
EXISTING CONDITIONS

KELLY DRIVE RAMP VIEW 2
PROPOSED WORK

KELLY DRIVE RAMP VIEW 3
EXISTING CONDITIONS

KELLY DRIVE RAMP VIEW 3
PROPOSED CONDITIONS

QLRWPS PARKING LOT VIEW 1
EXISTING CONDITIONS

QLRWPS PARKING LOT VIEW 1
PROPOSED WORK

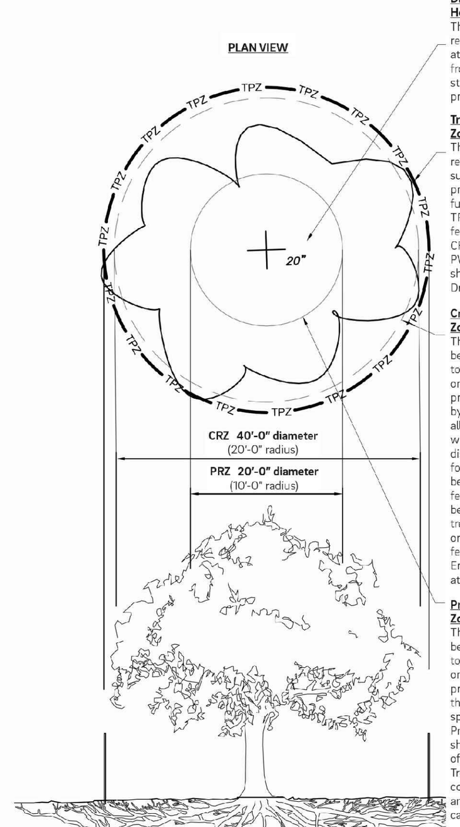
ID	DBH	SPECIES	ISA COND QUAN	ISA COND QUAL	NOTES	
150	30.0	Sycamore	97%	Excellent	vines, pruning - Heritage Tree	X
151	12.3	Box elder	94%	Good	multi stem, vines 9.1, 17.1, 10.8	
152	13.4	Honeylocust	66%	Fair	multi stem, die back, stunted leaves, 12.9, 11.7, 15.9, 13.2	
153	15.7	Box elder	72%	Fair	multi stem, vines, co dom, broken stem, 17.8, 13.5	
154	10.6	Box elder	63%	Fair	vines, broken leader, wounds	
155	25.9	Norway maple	94%	Good	vines, co dom	
156	11.7	Box elder	56%	Poor	lean, pruned	
157	8.0	Box elder	91%	Good	vines, lean	
158	22.0	Honeylocust	56%	Poor	vines, co dom, stunted leaves	
159		Dead	0%	Dead		
160	9.1	Crataegus sp.	69%	Fair	6.2, 12.1, 9.0 leaning, exposed roots	
161	10.5	Parsley hawthorne	44%	Very Poor	vines, dead branches	
162	-	Dead	0%	Dead		
163	7.3	Box elder	25%	Very Poor	vines and missing leader	
164	-	Dead	0%	Dead		
165	12.1	Box elder	53%	Poor	vines, codom	
166	**35.2**	**Silver maple**	**63%**	Fair	covered in vines - Heritage Tree	X
167	-	Dead	0%	Dead		
168	3.6	Norway maple	50%	Poor	vines, gurdled	
169	12.5	Norway maple	81%	Good	covered in vines	
170	3.5	Norway maple	88%	Good	vines , gurdled trunk	
171	22.1	Box elder	25%	Very Poor	vines, broken leader	
172	-	Dead	0%	Dead		
173	14.7	Box elder	53%	Poor	vines, lean	
174	4.4	Black cherry	97%	Excellent		
175	14.9	Silver maple	44%	Very Poor	14.5, 15.3, removal, vines, missing leader, broken limbs	
176	13.9	Box elder	84%	Good	root wound	
177	15.0	Silver maple	25%	Very Poor	14.5, 15.4, removal, vines	
178	17.5	Box elder	25%	Very Poor	removal, vines	
179	22.1	Box elder	25%	Very Poor	removal, vines	
180	18.3	Silver maple	63%	Fair	32.0, 19.4, 22, 10, 8 vines	
181	15.4	Box elder	69%	Fair	22.7, 8, vines, codom	
182	2.7	White oak	63%	Fair		
183	24.1	Box elder	25%	Very Poor	removal, vines	
184	-	Dead	0%	Dead		
185	-	Dead	0%	Dead		
186	2.8	Norway maple	25%	Very Poor	vines, lean, broken limbs	
187	18.1	Box elder	53%	Poor	vines, lean	
188	9.5	Box elder	72%	Fair	vines, lean	
189	28.1	Norway maple	94%	Good	vines, codom	
190	32.1	Box elder	56%	Poor	vines, codom, broken leader	
191	9.1	Red mulberry	72%	Fair	vines, die back	
192	24.1	Red pine	44%	Very Poor	removal, vines	
193	26.1	Elm	84%	Good	removal, butt rot, over infrastructure - Heritage Tree	X
194	3.0	Red mulberry	91%	Good	Dead branches	
195	16.1	Box elder	63%	Fair	16.1, 20.1, lean, exposed roots, wound	
196	10.1	Red mulberry	66%	Fair	removal, vines	
197	3.7	Red mulberry	81%	Good	vines	
198	4.1	White oak	88%	Good	vines	
199	8.9	White oak	100%	Excellent		
200	4.4	White oak	91%	Good	vines	
201	4.1	White oak	97%	Excellent	vines	
202	10.8	Honeylocust	100%	Excellent	12.1, 9.4	
203	7.9	Chinese elm	97%	Excellent	7.1, 8.6	
204	8.6	Willow sp	94%	Good	9.7, 8.0, 8.1, Trunk wound	
205	8.7	Winged elm	100%	Excellent		
206	**34.1**	**Silver maple**	**78%**	Fair	vines, die back - Heritage Tree	X
207	**45.1**	**Pin oak**	**94%**	Good	vines, dead branches - Heritage Tree	X
208	24.1	Silver maple	66%	Fair	trunk wound, vines - Heritage Tree	X
	33	Trees To Be Removed - 7 DEAD				
	233.0	Total caliper / Excellend/Good/Fair Condition				
	93	Replacement Trees Required @ 2.5" DBH new trees				
	31	**Proposed 2.5" cal trees**				
	62	Trees - Still Required				

Construction Tree Protection

- Existing trees and other vegetation that will remain as part of the project must be shown at their current size. Accurate, to-scale, dripline(s) of tree canopies and trunk DBH size(s) must be shown in accordance with the GSI Survey and Drawing Standards.
- Healthy existing trees should be preserved whenever possible, following the Construction Tree Protection requirements listed in the GSI Typical Details, the Survey and Drawing Standards as well as the Master Green Specifications.
- Designers are responsible for determining where the Critical Root Zone (CRZ) and Prohibited Root Zone (PRZ) are for all trees adjacent to anticipated construction areas and activities. Establishing these extents will determine which areas are acceptable for excavation, trenching, and compaction from heavy equipment.
- Tree Protection Zone (TPZ) must be shown on E&S plans for all trees being preserved that are adjacent to or within the Limit of Disturbance (LOD). Site access points should be considered when drafting and specifying the layout and amount of fencing needed for the construction tree protection. The area within the construction tree protection fencing is referred to as the TPZ and should be labeled as such on the plans. Once established with fencing, **no** work, including excavation or placement of equipment, should occur within this zone. To accurately delineate the TPZ, one foot of radius from the trunk of the tree should be established for each diameter inch of DBH.

  Example: a 10" DBH tree would have a TPZ that is 10 feet in radius (20 feet in diameter) away from the trunk of the tree all the way around.
- Since the TPZ is depicting a fenced area around trees that are to be protected, the line should be drafted to accurately show the extents of a single tree or grouping of trees and their associated CRZ(s) that are to be protected with construction tree protection fencing (see figures in this section).
- If the limit of disturbance requires disturbing existing trees, then permission must be given from both PWD and the landowner. Additional protection such as a mulch layer and planking around the trunk of the tree may be needed if access is necessary within the CRZ of a tree that will remain. The extents of mulch will then need to be shown on the E&S plans (see *"Figure 5.1.5: Construction Tree Protection with Root Buffer Protection"*) in addition to a planking detail (typically used for street trees - see Master Green Specification) if work must occur within the CRZ. This all should be confirmed with the project manager.
- Trees that are 12" DBH or less shall not be considered to possess a CRZ for the purposes of project review, however; they shall possess a PRZ that must be protected.
- For more information on Construction Tree Protection, see the GSI Typical Details and Section 01535 Construction Tree Protection in PWD's Master Green Specification (request the latest version of the specification from your project manager).

PLAN VIEW

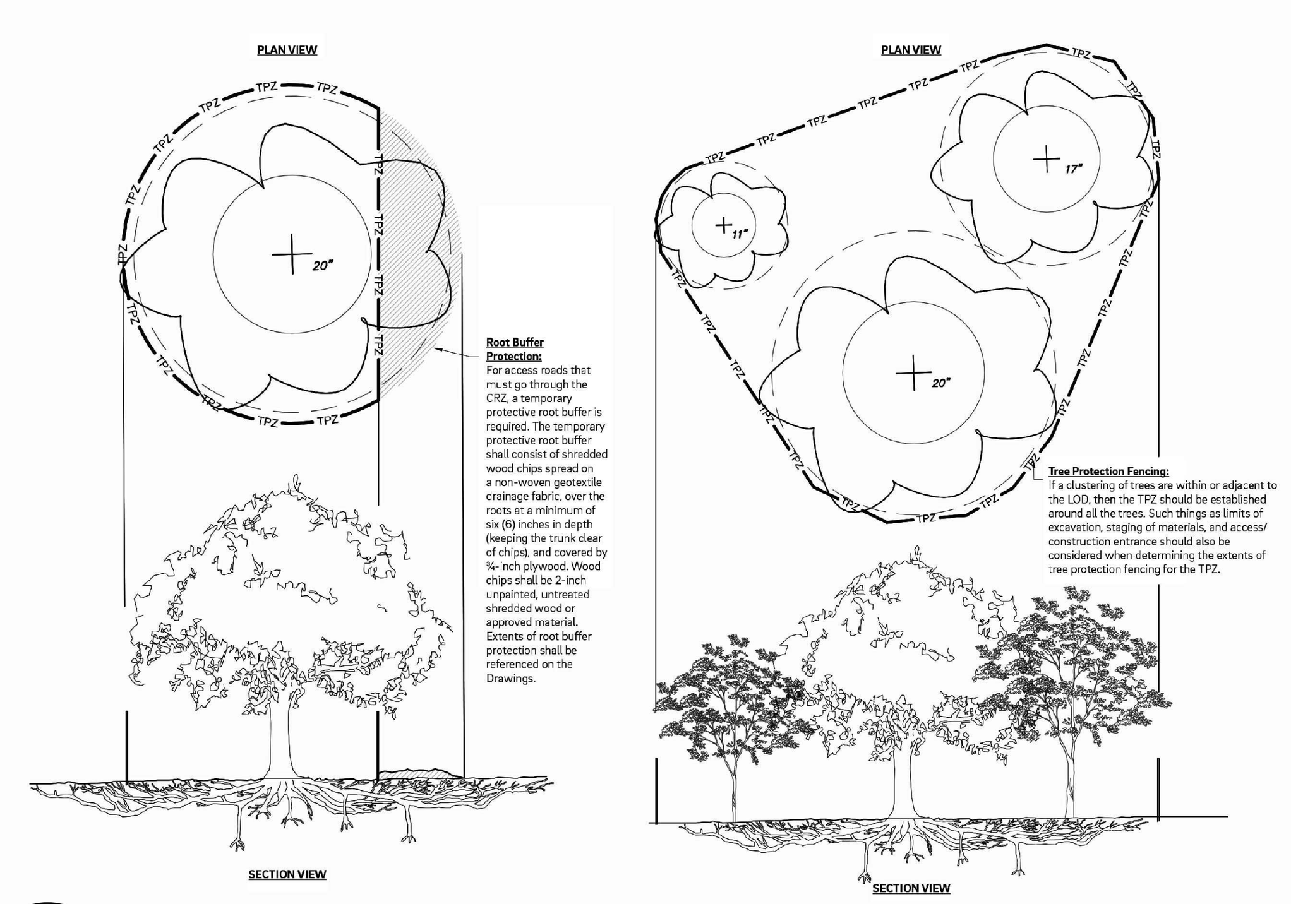


Diameter at Breast Height (DBH): The diameter at breast height (DBH) refers to the diameter of the tree trunk at four and a half feet (4 ½') from ground surface. This is a standard measurement used by tree professionals.

Tree Protection Zone (TPZ): The tree protection zone (TPZ) refers to the arborist defined area surrounding the trunk intended to protect the roots and soil to ensure future tree health and stability. The TPZ is comprised of tree protection fencing using the dimension of the CRZ, unless otherwise authorized by PWD or the PP&R Arborist. The TPZ shall be installed as shown on the Drawings.

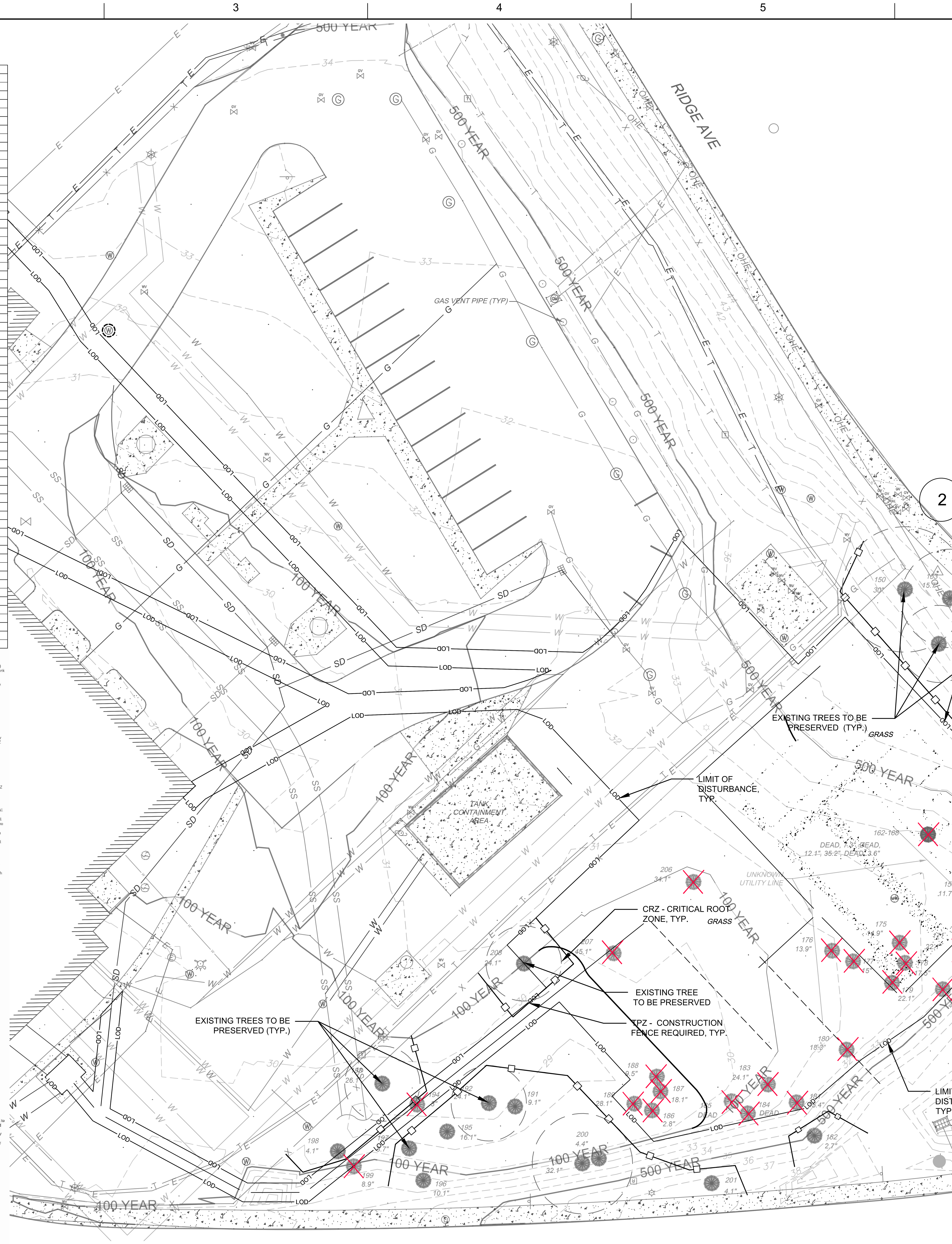
Critical Root Zone (CRZ): The critical root zone (CRZ) shall be a zone surrounding a tree equal to one (1) foot in radius for each one (1) inch DBH of the tree to be protected. Excavation within the CRZ by mechanical means is prohibited; all excavation shall be performed with hand tools and care taken to disturb as little of the existing root formations as possible. The CRZ shall be delineated using tree protection fencing. Tree protection fencing shall be as indicated on the Drawings. If no tree protection fencing is identified on the Drawings, the tree protection fencing shall be as depicted in the Erosion and Sediment Control Detail attached to these Specifications.

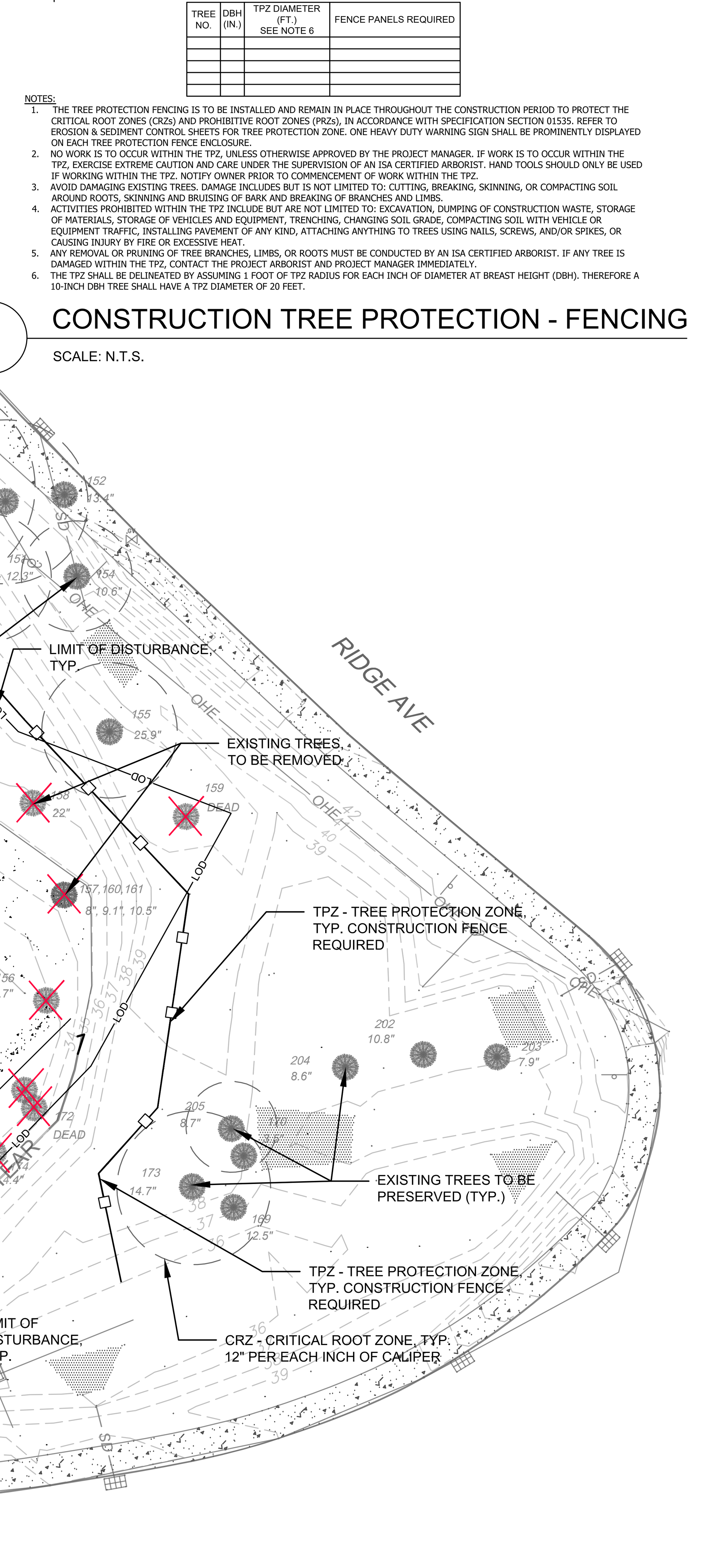
Prohibited Root Zone (PRZ): The prohibited root zone (PRZ) shall be a zone surrounding a tree equal to one-half (½) foot in radius for each one (1) inch DBH of the tree to be protected. Excavation within the PRZ is prohibited, unless specifically authorized by the City/ Project Arborist. In no instance shall excavation within six (6) feet of the base of a tree be authorized. Tree replacement or equivalent compensation may be required for any extensive root system damage caused by construction activities.



1 CONSTRUCTION TREE PROTECTION

SCALE: N.T.S.

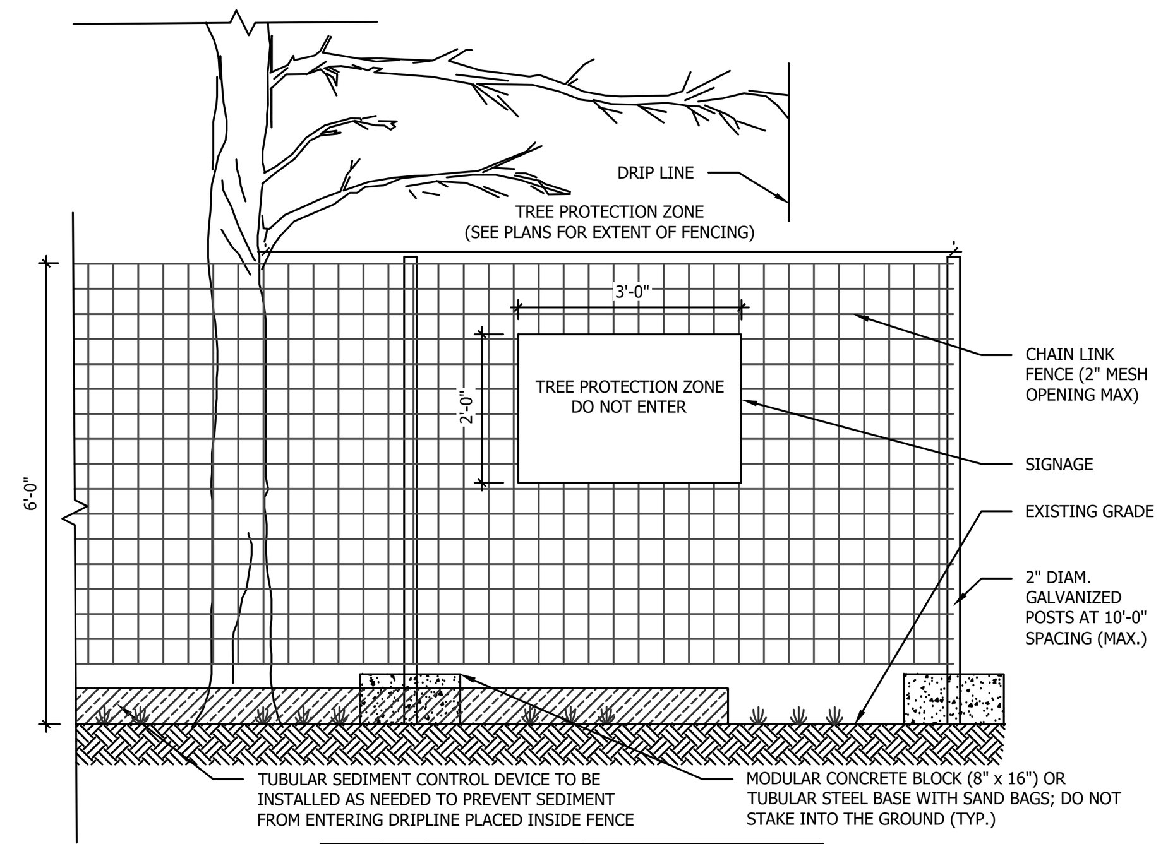




OVERALL TREE PROTECTION PLAN

SCALE: 1"= 20'

1"=10' 0 10 20 FT.



TREE NO.	DBH (IN.)	TPZ DIAMETER (FT.) SEE NOTE 6	FENCE PANELS REQUIRED

NOTES:
1. THE TREE PROTECTION FENCING IS TO BE INSTALLED AND REMAIN IN PLACE THROUGHOUT THE CONSTRUCTION PERIOD TO PROTECT THE CRITICAL ROOT ZONES (CRZs) AND PROHIBITIVE ROOT ZONES (PRZs), IN ACCORDANCE WITH SPECIFICATION SECTION 01535. REFER TO EROSION & SEDIMENT CONTROL SHEETS FOR TREE PROTECTION ZONE. ONE HEAVY DUTY WARNING SIGN SHALL BE PROMINENTLY DISPLAYED ON EACH TREE PROTECTION FENCE ENCLOSURE.
2. NO WORK IS TO OCCUR WITHIN THE TPZ, UNLESS OTHERWISE APPROVED BY THE PROJECT MANAGER. IF WORK IS TO OCCUR WITHIN THE TPZ, EXERCISE EXTREME CAUTION AND CARE UNDER THE SUPERVISION OF AN ISA CERTIFIED ARBORIST. HAND TOOLS SHOULD ONLY BE USED IF WORKING WITHIN THE TPZ. NOTIFY OWNER PRIOR TO COMMENCEMENT OF WORK WITHIN THE TPZ.
3. AVOID DAMAGING EXISTING TREES. DAMAGE INCLUDES BUT IS NOT LIMITED TO: CUTTING, BREAKING, SKINNING, OR COMPACTING SOIL AROUND ROOTS, SKINNING AND BRUISING OF BARK AND BREAKING OF BRANCHES AND LIMBS.
4. ACTIVITIES PROHIBITED WITHIN THE TPZ INCLUDE BUT ARE NOT LIMITED TO: EXCAVATION, DUMPING OF CONSTRUCTION WASTE, STORAGE OF MATERIALS, STORAGE OF VEHICLES AND EQUIPMENT, TRENCHING, CHANGING SOIL GRADE, COMPACTING SOIL WITH VEHICLE OR EQUIPMENT TRAFFIC, INSTALLING PAVEMENT OF ANY KIND, ATTACHING ANYTHING TO TREES USING NAILS, SCREWS, AND/OR SPIKES, OR CAUSING INJURY BY FIRE OR EXCESSIVE HEAT.
5. ANY REMOVAL OR PRUNING OF TREE BRANCHES, LIMBS, OR ROOTS MUST BE CONDUCTED BY AN ISA CERTIFIED ARBORIST. IF ANY TREE IS DAMAGED WITHIN THE TPZ, CONTACT THE PROJECT ARBORIST AND PROJECT MANAGER IMMEDIATELY.
6. THE TPZ SHALL BE DELINEATED BY ASSUMING 1 FOOT OF TPZ RADIUS FOR EACH INCH OF DIAMETER AT BREAST HEIGHT (DBH). THEREFORE A 10-INCH DBH TREE SHALL HAVE A TPZ DIAMETER OF 20 FEET.

2 CONSTRUCTION TREE PROTECTION - FENCING

SCALE: N.T.S.

LEGEND

- EXISTING TREES TO BE PRESERVED
- EXISTING TREE DRIP LINE
- TREE PROTECTION FENCE
- TREES TO BE REMOVED

GENERAL NOTES

1. ALL ITEMS LABELED AS TO BE REMOVED, ARE TO BE DEMOLISHED, REMOVED FROM SITE AND DISPOSED OF LEGALLY.
2. ALL PROPER SOIL EROSION CONTROL MEASURES SHALL BE FOLLOWED AS PER PLAN. IF S.E.C. CONTROLS ARE IN THE WAY, THEY MAY BE MOVED IN CLEAR WEATHER ONLY. THEY SHALL BE REPLACED BACK PROPERLY AS SOON AS POSSIBLE OR BEFORE LEAVING THE WORK SITE, ON A DAILY BASIS.
3. RESET ALL VALVES, CATCH BASINS, MANHOLES AND SURFACE APPURTENANCES, NOT BEING REMOVED, TO FINISH GRADE IN ALL AREAS OF REGRADING AND RESURFACING.
4. ALL CONTAMINATED SOIL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.
5. ALL TREES TO BE REMOVED SHALL BE TAGGED AND APPROVED BY THE A/E PRIOR TO REMOVAL.
6. ALL STUMPS TO BE REMOVED AND PROPERLY DISPOSED OF OFF SITE. IF OPTION TO DISPOSE OF ON SITE PER A/E & OWNER REQUIREMENTS.
7. IF CHIPPING, SPREAD ALL CHIPS IN AN EVEN COATING IN AREAS ACCEPTABLE TO A/E & OWNER.
8. ALL TREES TO REMAIN SHALL HAVE TREE PROTECTION. TREE PROTECTION SHALL REMAIN UNTIL COMPLETION OF CONSTRUCTION. DISTURBANCE SHALL BE KEPT TO A MINIMUM WHEN WORKING WITHIN TREE PROTECTION AREAS; FENCING SHALL BE UP WHEN AREAS ARE NOT BEING WORKED ON.
9. CONTRACTOR, RESPONSIBLE FOR CALLING LOCAL UTILITY COMPANY WITHIN 72 HOURS ADVANCE NOTICE OF ANY EXCAVATION. CONTRACTOR SHALL HAND DIG IN THE VICINITY OF ANY UTILITY CONNECTIONS.

ISSUE	DATE	DESCRIPTION
3	09/2023	PRELIMINARY L&I REVIEW RESPONSES
2	06/2023	90% DESIGN SUBMITTAL
1	03/2023	60% DESIGN SUBMITTAL

PROJECT MANAGER	MASON W. BECK
DESIGNED BY	J. DENNIS
DRAWN BY	K. HUGHES
CHECKED BY	M.ANDREWSKY
APPROVED BY	M. BECK
PROJECT NUMBER	10331592

PRELIMINARY NOT FOR CONSTRUCTION

PHILADELPHIA WATER EST. 1801

QUEEN LANE RAW WATER PUMP STATION GENERATOR PROJECT

OVERALL TREE REMOVAL AND TREE PROTECTION PLAN

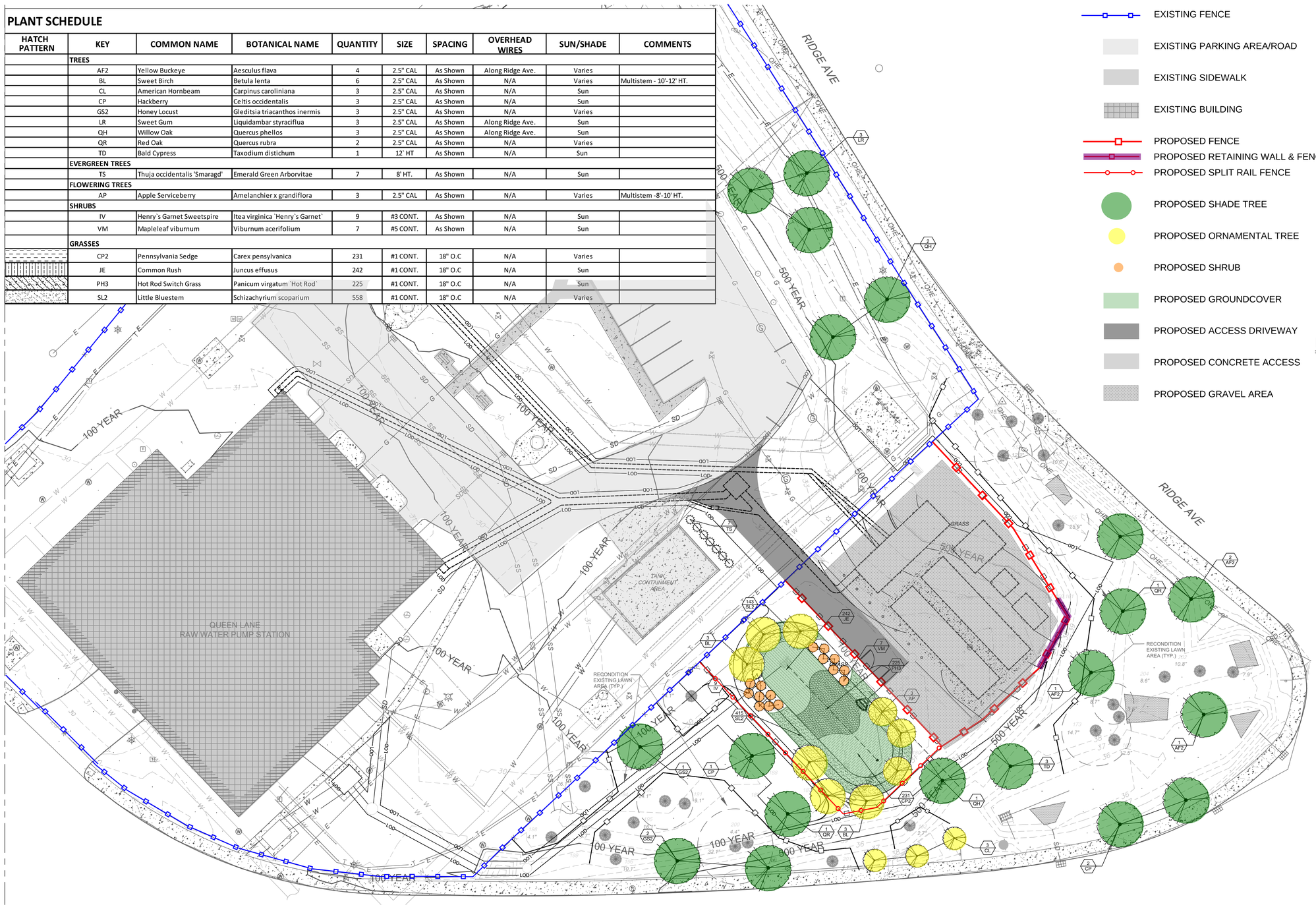
FILENAME L-01-04.DWG

SCALE 1"=20'

SHEET L-00

PLANT SCHEDULE

HATCH PATTERN	KEY	COMMON NAME	BOTANICAL NAME	QUANTITY	SIZE	SPACING	OVERHEAD WIRES	SUN/SHADE	COMMENTS
	TREES								
	AF2	Yellow Buckeye	Aesculus flava	4	2.5" CAL	As Shown	Along Ridge Ave.	Varies	
	BL	Sweet Birch	Betula lenta	6	2.5" CAL	As Shown	N/A	Varies	Multistem - 10'-12' HT.
	CL	American Hornbeam	Carpinus caroliniana	3	2.5" CAL	As Shown	N/A	Sun	
	CP	Hackberry	Celtis occidentalis	3	2.5" CAL	As Shown	N/A	Sun	
	GS2	Honey Locust	Gleditsia triacanthos inermis	3	2.5" CAL	As Shown	N/A	Varies	
	LR	Sweet Gum	Liquidambar styraciflua	3	2.5" CAL	As Shown	Along Ridge Ave.	Sun	
	QH	Willow Oak	Quercus phellos	3	2.5" CAL	As Shown	Along Ridge Ave.	Sun	
	QR	Red Oak	Quercus rubra	2	2.5" CAL	As Shown	N/A	Varies	
	TD	Bald Cypress	Taxodium distichum	1	12` HT	As Shown	N/A	Sun	
	EVERGREEN TREES								
	TS	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	7	8` HT.	As Shown	N/A	Sun	
	FLOWERING TREES								
	AP	Apple Serviceberry	Amelanchier x grandiflora	3	2.5" CAL	As Shown	N/A	Varies	Multistem -8'-10' HT.
	SHRUBS								
	IV	Henry`s Garnet Sweetspire	Itea virginica `Henry`s Garnet`	9	#3 CONT.	As Shown	N/A	Sun	
	VM	Mapleleaf viburnum	Viburnum acerifolium	7	#5 CONT.	As Shown	N/A	Sun	
	GRASSES								
	CP2	Pennsylvania Sedge	Carex pensylvanica	231	#1 CONT.	18" O.C	N/A	Varies	
	JE	Common Rush	Juncus effusus	242	#1 CONT.	18" O.C	N/A	Sun	
	PH3	Hot Rod Switch Grass	Panicum virgatum `Hot Rod`	225	#1 CONT.	18" O.C	N/A	Sun	
	SL2	Little Bluestem	Schizachyrium scoparium	558	#1 CONT.	18" O.C	N/A	Varies	



EXISTING FENCE

EXISTING PARKING AREA/ROAD

EXISTING SIDEWALK

EXISTING BUILDING

PROPOSED FENCE

PROPOSED RETAINING WALL & FENCE

PROPOSED SPLIT RAIL FENCE

PROPOSED SHADE TREE

PROPOSED ORNAMENTAL TREE

PROPOSED SHRUB

PROPOSED GROUNDCOVER

PROPOSED ACCESS DRIVEWAY

PROPOSED CONCRETE ACCESS

PROPOSED GRAVEL AREA

N

LEGEND

EXISTING TREES TO BE PRESERVED

EXISTING TREE DRIP LINE

TREE PROTECTION FENCE

PROPOSED TREE

PROPOSED SHRUBS

PLANTING NOTES

1. THE FINAL LOCATION OF ALL PLANT MATERIAL SHALL BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF THE OF THE A/E & O/R.
2. SEE SPECIFICATIONS FOR ADDITIONAL PLANTING REQUIREMENTS.
3. FOR PLANT DETAILS, SEE SHEET LP501.
4. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING AND PROPOSED SITE UTILITIES PRIOR TO THE INSTALLATION OF PLANT MATERIAL. IF A CONFLICT ARISES, NOTIFY A/E.
5. PROVIDE 3" SHREDDED COMPOSTED HARDWOOD BARK MULCH CONTINUOUS UNDER PLANT MASSINGS AND AROUND INDIVIDUAL PLANTS.
6. PERFORM WORK IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.
7. PLANTING SHALL BE GUARANTEED FOR A PERIOD OF ONE GROWING SEASON BEYOND THE TIME OF PLANTING.
8. CONTRACTOR SHALL ALLOW FOR THE STAKING OF 10% OF THE TOTAL NUMBER OF SHADE, EVERGREEN, AND ORNAMENTAL TREES.
9. ALL DISTURBED AREAS ARE TO BE LAWN AREAS, SEED AND MULCH AS NEEDED.

OVERALL LANDSCAPE PLAN

SCALE: 1"= 20'

0 10 20 FT.
1"=10'

ISSUE	DATE	DESCRIPTION
3	09/2023	PRELIMINARY L&I REVIEW RESPONSES
2	06/2023	90% DESIGN SUBMITTAL
1	03/2023	60% DESIGN SUBMITTAL

PROJECT MANAGER	MASON W. BECK
DESIGNED BY	J. DENNIS
DRAWN BY	K. HUGHES
CHECKED BY	M.ANDREWSKY
APPROVED BY	M. BECK
PROJECT NUMBER	10331592

PRELIMINARY NOT FOR CONSTRUCTION

PHILADELPHIA WATER EST. 1801

QUEEN LANE RAW WATER PUMP STATION GENERATOR PROJECT

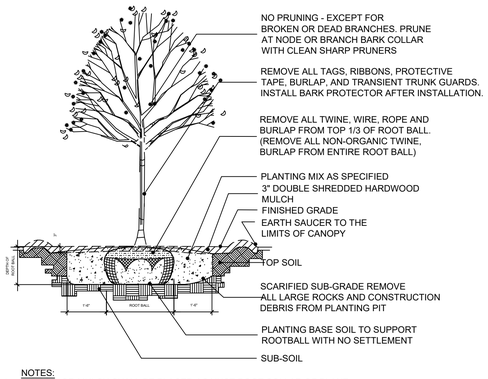
OVERALL LANDSCAPE PLAN

0 1" 2"

FILENAME L-01-04.DWG

SCALE 1"=20'

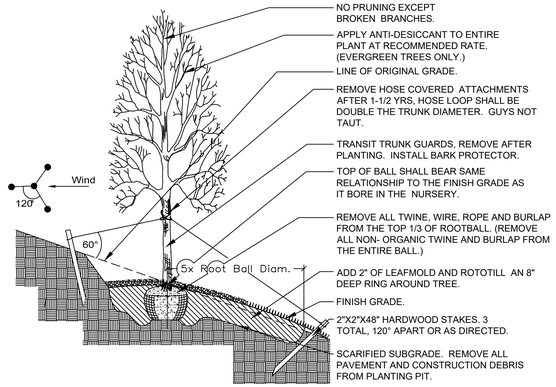
SHEET L-01



NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK BELOW GRADE.
3. STAKING IS NOT REQUIRED UNLESS PROPER VERTICAL ALIGNMENT OF PLANT CANNOT BE MAINTAINED DUE TO WINDY CONDITIONS, OR IF PLANTING ON A STEEP SLOPE.

1 SHADE TREE PLANTING DETAIL

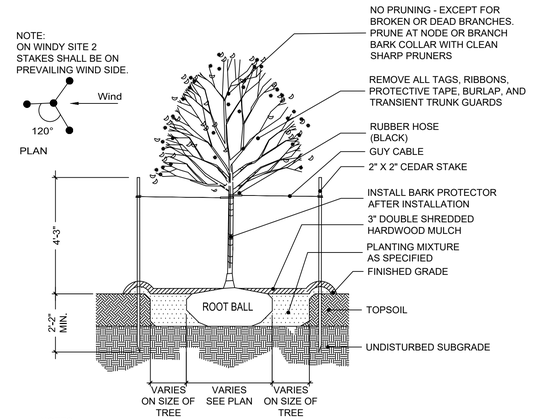
SCALE: N.T.S.



NOTE:
1. DO NOT FERTILIZE UNTIL LATE SPRING OF 2ND YEAR FOLLOWING PLANTING.
2. PLANTING SOIL MIX & 3" DOUBLE SHREDDED HARDWOOD MULCH AS SPECIFIED. MULCH SHALL BE PLACED AT A DISTANCE EQUAL TO THE WIDTH OF THE DRIPLINE.
3. ON WINDY SITES 2 STAKES SHALL BE ON PREVAILING WIND SIDE.

2 SHADE TREE SLOPE PLANTING DETAIL

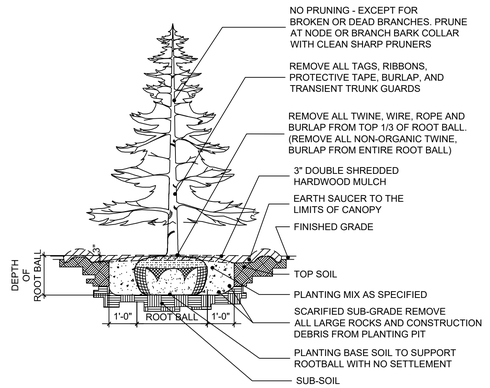
SCALE: N.T.S.



NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK BELOW GRADE.
3. SEE RELATED PLANTING DETAILS PER TREE SIZE FOR ALL OTHER RELATED DETAILS AND DEPTHS FOR TREE PLANTING.

3 SHADE TREE STAKING DETAIL

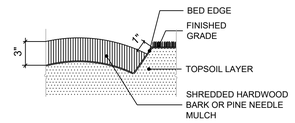
SCALE: N.T.S.



NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK BELOW GRADE.
3. STAKING IS NOT REQUIRED UNLESS PROPER VERTICAL ALIGNMENT OF PLANT CANNOT BE MAINTAINED DUE TO WINDY CONDITIONS, OR IF PLANTING ON A STEEP SLOPE MAY BE REQUIRED. SEE DETAIL

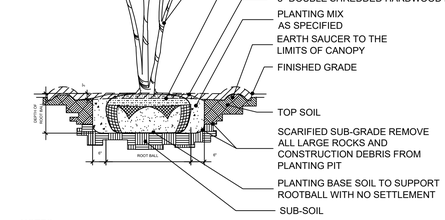
4 EVERGREEN PLANTING DETAIL

SCALE: N.T.S.



8 PLANTING BED EDGE DETAIL

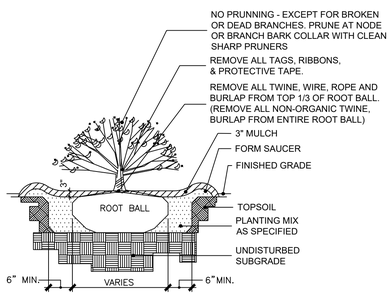
SCALE: N.T.S.



NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK BELOW GRADE.
3. STAKING IS NOT REQUIRED UNLESS PROPER VERTICAL ALIGNMENT OF PLANT CANNOT BE MAINTAIN DUE TO WINDY CONDITIONS, OR IF PLANTING ON A STEEP SLOPE.

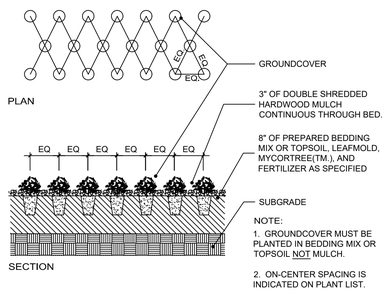
5 MULTI-STEMMED PLANTING DETAIL

SCALE: N.T.S.



6 B&B SHRUB PLANTING DETAIL

SCALE: N.T.S.



NOTE:
1. GROUNDCOVER MUST BE PLANTED IN BEDDING MIX OR TOPSOIL NOT MULCH.
2. ON-CENTER SPACING IS INDICATED ON PLANT LIST.

7 GROUNDCOVER & PERENNIAL PLANTING DETAIL

SCALE: N.T.S.

ISSUE	DATE	DESCRIPTION
3	09/2023	PRELIMINARY L&I REVIEW RESPONSES
2	06/2023	90% DESIGN SUBMITTAL
1	03/2023	60% DESIGN SUBMITTAL

PROJECT MANAGER	MASON W. BECK
DESIGNED BY	J.DENNIS
DRAWN BY	K.HUGHES
CHECKED BY	M.ANDREWSKY
APPROVED BY	M.BECK
PROJECT NUMBER	10331592

PRELIMINARY NOT FOR CONSTRUCTION

PHILADELPHIA WATER EST. 1801

QUEEN LANE RAW WATER PUMP STATION GENERATOR PROJECT

LANDSCAPE PLANTING DETAILS

0 1" 2"

FILENAME L-01-04.DWG

SCALE N.T.S.

SHEET **L-02**