

City of Oshkosh Water Filtration Plant Clearwells Replacement Project Aesthetics Ad Hoc Committee Meeting #1

Date: May 9, 2023
Project name: City of Oshkosh Water Filtration Plant Clearwells Replacement
Prepared by: Jacobs Engineering Group (Jacobs)
Location: City Hall, Room 203
Participants: Ad Hoc Committee Members: Brad Spanbauer, Bill Wyman, Chris Anderson, Lauren Bartelt, Aaron Sherer, Kirsten Buckstaff. Committee Staff Liaisons: James Rabe, Steve Gohde, Jason Ellis, Mark Lyons, Aaron Dressler, Brian Schuldes
 Jacobs: Linda Mohr

Purpose

The purpose of this meeting was to charter the City of Oshkosh (City) Water Filtration Plant (WFP) Clearwells Replacement Project (Project) Aesthetics Ad Hoc Committee (Committee) and Committee Staff Liaisons and to provide general Project background information. The meeting presentation and informational handouts are attached to, and supplement, these minutes.

Welcome and Committee Purpose

James called the meeting to order at 4:05 p.m., thanked all the volunteer Committee members and liaisons, and facilitated self-introductions:

Linda Mohr. Jacobs Project design manager.
Lauren Bartelt. Neighborhood resident, City Advisory Park Board member.
Jason Ellis. City Utilities Operations Manager.
Chris Anderson. Otter Street Fishing Club President, Battle on Bago Board member.
Steve Gohde. City Assistant Director of Public Works / Utilities General Manager.
James Rabe, City Director of Public Works.
Brian Schuldes, City Police Department Captain.
Mark Lyons, City Planning Services Manager.
Aaron Droessler, City Fire Department Battalion Chief.
Bill Wyman, Owner of The Waters, Oshkosh Area Community Foundation President, neighborhood resident.
Aaron Sherer, Paine Art Center and Gardens Executive Director.
Brad Spanbauer, Neighborhood resident, UW Oshkosh Sustainability Director
Kirsten Buckstaff, Neighborhood resident, active community volunteer with expertise in native ecology, Indigenous cultures, and natural shoreline restoration and enhancement.

James reviewed the Committee's purpose as approved by City Common Council. He also outlined Committee responsibilities in conformance with City guidelines for public meetings, public records, ethics, and board and commission rules.

Linda presented the proposed meeting plan to develop Committee recommendations for consideration by Plan Commission, Advisory Park Board, and Common Council in August 2023.

Minutes

- The first Committee meeting is focused on providing background on the Project and expectation of Project permitting authorities.
- In the second meeting, the Committee will identify and discuss aesthetic and community-focused features (exterior appearance of reservoirs and pump station; landscaping in designated Committee work areas; Lake Shore Drive vehicle, pedestrian, bicycle, and lake access; water-themed art, educational and/or historical element). Suggestions and concepts preferred by the Committee will be further evaluated in terms implementation, cost, potential impacts to community water supply and public safety, and other potential criteria identified by the Committee.
- The third meeting will involve further discussion of Committee ideas and preparation of Committee preferences and recommendations for consideration by City decision makers.

Project Background

Linda presented Project background and water utility regulatory information. Most of the content is also posted on the City's website: <https://www.ci.oshkosh.wi.us/PublicWorks/WaterUtility.aspx>

The following topics were discussed:

- A new digital model of the WFP exterior and adjacent streets has been developed to potentially depict Committee design concepts in context with existing land features. Bill asked if a view from Linde Street looking east down Merritt Avenue and view from the public beach toward the WFP could be added.

Action item: Linda will get these developed.

- In 2022, after further evaluation of Clearwells replacement alternatives, the Common Council decided to move forward with square and rectangular cast-in-place concrete reservoirs which will cost an estimated \$4M more to construct than circular prestressed concrete reservoirs. Linda explained that based on past project experience, the Public Service Commission (PSC) may not allow the incremental increase in cost to be included in the water rates and that the PSC will not make that determination until 100 percent complete design documents and permit application materials are submitted for their review. Aaron Scherer remarked that other projects in the City are funded by multiple sources and it's not necessarily a negative situation. James agreed and said we simply need to make everyone aware of this. Linda said a description of project funding sources is required in the PSC permit application.
- Aaron Scherer asked about installing a new UV disinfection system downstream of rehabilitated buried Clearwells, as required by Wisconsin Department of Natural Resources (WDNR), and the possible future addition of UV disinfection at the WFP. Linda explained that UV system downstream of buried potable water storage needs to provide 4-log (99.99 percent) virus inactivation. In essence, the WDNR is requiring another pathogen removal barrier in case groundwater gets into the buried Clearwells. The space for a potential future UV system (shown in public meeting presentations) is space set aside for an anticipated treatment process (like UV or UV with advanced oxidation) to inactivate emerging contaminants like pharmaceutical and personal care product compounds. These contaminants are not regulated yet, but it is anticipated they will be in the future. Kirsten asked about reverse osmosis membrane treatment. Linda said reverse osmosis membranes are a physical removal process which is different than UV light or a chemical oxidant. Membrane treatment technologies can be an effective treatment process, depending on the treatment objective(s). In all cases, treatment processes are designed for specific objectives, i.e., different levels of inactivation for different types of pathogens, or particle removal, or other. Consequently, a UV system designed for 4-log virus inactivation will not be the same as a UV system designed to dissociate chemical bonds of emerging contaminants.

Minutes

- Brad asked why the operation and maintenance (O&M) costs are greater for square and rectangular tanks than for circular tanks. Linda explained that the square and rectangular tanks are cast-in-place concrete structures which must first crack under tension to engage the reinforcing steel. The steel, not the concrete, holds the tank together. To keep cracks small in water-holding structures and to minimize seepage, special details are used. But eventually moisture reaches the steel resulting in corrosion and more active leaks. Repairing leaks increases O&M costs. The circular tanks are constructed primarily of prestressed concrete that is poured, cured, and prestressed in controlled factory conditions. The manufacturing and construction techniques used result in significantly less cracking and leaking of the structure over its service life.
- Kirsten asked about the estimated 2.5-year construction phase and Linda explained that there will be periods of varying activity. For example, in the first six months will be relatively quiet and focused on obtaining approved materials and products for the project and preparing for major activities. There will be two significant phases of demolition and construction because the City needs to maintain continuous water production and conveyance capabilities. James remarked that the end of each construction phase is quieter because new systems are being tested and commissioned.

Project Requirements and Opportunities

- Linda described how perimeter fencing and video surveillance are an important parts of the Water Utility's risk management and security strategy. There have been multiple instances of unauthorized site access and attempted site access. Some enhancements to existing security features will be included in the Project because the WFP is critical infrastructure and is staffed with only one operator 16 hours a day. While on solo duty, the operator periodically reviews surveillance cameras but is primarily dedicated to making operating decisions about the plant and the distribution system, performing facility rounds, addressing control system notices and alarms, and confirming data for routine reporting.
- Aaron Sherer mentioned a Neenah water utility treatment facility that is not fenced and asked about fencing requirements. Do regulations require fencing? Do regulations requirement minimum distances between the fence and a water utility asset? Linda said that the drinking water industry regulatory community (including WDNR, US Environmental Protection Agency, Department of Homeland Security) require community water systems to be secure and resilient. Regulators don't prescribe types of perimeter barriers but look for them in their review of facilities and in their permitting process. If, for example, fencing is removed from the WFP, the City needs to demonstrate how an equivalent or enhanced means of deterring, delaying, and detecting unauthorized site access is provided. In essence, regulators develop resources, including best practices and risk and resiliency assessment tools, and require water utilities to design the physical security systems, personnel training programs, and emergency response plans that are most effective for their community and infrastructure. Since the September 11, 2001, terrorist attacks and the establishment of the Department of Homeland Security, perimeter fence and monitoring are standard features at most water treatment plants. As far as distances between buildings and fencing, City Planning Services has established requirements and a process of adapting requirements for specific site conditions.
- Bill asked if there was a budget in mind for aesthetic features that may be added to the project and what level of detail is expected for development of Committee ideas? James said that there was not budget value in mind yet and the hopefully one could be estimated with input from the Committee. Jason said he envisioned the Committee could identify concepts that could be further refined. Steve said that it may be that envisioned improvements adjacent to the WFP would be designed and implemented as a separate project.
- Kirsten requested the WFP property line be added to the Committee Work Areas graphic.


Minutes

Action item: Linda will update the graphic.

The Committee is willing to meet the last week of May or the first week of June. A Doodle poll will be sent to identify the time for Meeting #2. Committee members are encouraged to come up with ideas and send any questions to staff ahead of the next meeting.

The meeting was adjourned at 6:05 p.m.

Jacobs




**Water Filtration Plant
Clearwells Replacement Project
Aesthetics Ad Hoc Committee**

Meeting No. 1
May 9, 2023


AGENDA

1. Call to Order
2. Introductions
3. Ad Hoc Committee Purpose
4. Committee Responsibilities and Meeting Plan
5. Clearwells Replacement Project Background
6. Project Requirements
7. Project Objectives and Opportunities
8. Look Ahead to Meeting No. 2
9. Adjournment



Call To Order And Introductions

- Call to order
- Introductions
 - Committee members
 - Staff liaison team



Clearwells Replacement Project Aesthetics Ad Hoc Committee Purpose

- Review options and provide a recommendation for the following:
 - Architectural finishes on the reservoirs and pump station.
 - Landscaping on Water Filtration Plant (WFP) site and the rights-of-way of Lake Shore Drive, Washington Avenue, and Merritt Avenue.
 - Landscaping for the park area east of Lake Shore Drive.
 - Water-themed educational and/or historical feature for inclusion in the project.
- By August 1, 2023, provide above recommendations for review by the Plan Commission and Advisory Parks Board prior to Council Action.

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Committee Member Responsibilities

- Conduct appropriate for open public meetings.
 - Compliance with rules of procedure.
 - Public are invited to observe.
- Refrain from communication outside of meetings.
 - In person conversations, phone calls, email, Internet postings, etc., are not allowed.
- Committee meeting attendance and participation.
 - Ethical participation to benefit the community, not special interests.
- Meeting minutes and recording of votes will be documented for public record.
- Committee liaisons provide perspectives and insights from City departments with critical interfaces with the WFP and potable water storage.

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Committee Meeting Plan

- Meeting No. 1 – Review project background and expectations of the Committee.
- Meeting No. 2 – Gather and discuss Committee ideas; prepare a list of ideas to evaluate in terms of constructability, operation and maintenance impacts, cost, and other criteria identified by the Committee or Committee liaisons.
- Meeting No. 3 – Discuss evaluation of ideas; prioritize preferences and make recommendations.

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Clearwells Replacement Project Background

- The current WFP site has been the location of community water supply and treatment facilities since the 1880s.
- Areas adjacent to the WFP today include residential, commercial, and recreational land use.



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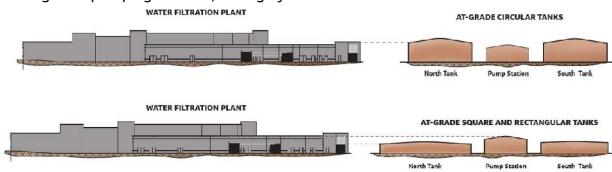
Clearwells Replacement Project Background

- 2007. Wisconsin Department of Natural Resources (WDNR) issues Clearwells deficiency notice.
 - Regulations changed to require locating potable water storage above groundwater table and floodplain.
- 2008 – 2010. WFP Modifications and Demolition Project.
- 2012 – 2016. Clearwells Replacement preliminary design and other studies.
- 2017. Clearwells Replacement final design, permitting, and public review.
 - Public Service Commission (PSC) requests updates to water utility customer demand forecasts.
- 2018 – 2019. Update water demand forecasts.
- 2020 - 2021. Revise Clearwells Replacement Project scope; submit partially complete redesign for WDNR, PSC, and public review.
- 2021 – 2022. Investigate extending Clearwells service life and other alternatives.
- 2023. Form project aesthetics Ad Hoc Committee and re-initiate design.

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Clearwells Replacement Project Background - Alternatives

- Aesthetics are important because the new structures, constructed in area available for water storage and pumping facilities, are highly visible.



Pump Station: 20 feet side wall height, 30 feet to top of roof
 Circular Tanks: 28 feet side wall height, 34 feet to top of roof dome*
 Square/Rectangular Tanks: 20 feet side wall height, 21 feet to top of roof
 *A flat (5 foot-lower) roof option is available at about 25% greater cost.

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Clearwells Replacement Project Background - Alternatives



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Clearwells Replacement Project Background - Alternatives



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Clearwells Replacement Project Background - Alternatives



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Clearwells Replacement Project Background - Alternatives

1. Repair and rehabilitate Clearwells, install new High Lift Pump Station and downstream UV disinfection.
2. Construct new at-grade reservoirs, new Intermediate and High Lift Pump Station.
 - A. Circular pre-stressed concrete reservoirs.
 - B. Square and rectangular cast-in-place concrete reservoirs.

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Clearwells Replacement Project Background - Alternatives

• Alternative life cycle cost comparison

At-Grade Circular Prestressed Concrete Tanks		At-Grade Rectangular Cast in Place Concrete Tanks		Extend Existing Clearwells Service Life	
Estimated Service Life, years	60 - 100	Estimated Service Life, years	60 - 100	Estimated Service Life, years	20 - 30*
Tanks		Tanks		Repaired Clearwells	
Construction Cost	\$5,398,600	Construction Cost	\$9,548,300	Repairs Cost	\$11,139,000
Annual O&M Costs	\$11,000	Annual O&M Costs	\$31,200	Annual O&M Costs	\$63,500
20-Year Lifecycle Cost	\$5,588,600	20-Year Lifecycle Cost	10,088,300	20-Year Lifecycle Cost	\$12,122,900
High Lift Pump Station		High Lift Pump Station		High L/R Pump Station	
Construction Cost	\$4,746,100	Construction Cost	\$4,746,100	Construction Cost	\$4,746,100
Annual O&M Costs	\$148,700	Annual O&M Costs	\$148,700	Annual O&M Costs	\$148,700
20-Year Lifecycle Cost	\$7,277,100	20-Year Lifecycle Cost	\$7,277,100	20-Year Lifecycle Cost	\$7,277,100
Intermediate Pump Station		Intermediate Pump Station		UV Treatment	
Construction Cost	\$2,554,600	Construction Cost	\$2,554,600	Construction Cost	\$4,485,000
Annual O&M Costs	\$41,100	Annual O&M Costs	\$34,200	Annual O&M Costs	\$143,000
20-Year Lifecycle Cost	\$3,254,600	20-Year Lifecycle Cost	\$3,144,600	20-Year Lifecycle Cost	\$6,915,000
20-Year Estimated Lifecycle Cost Storage and Pumping	\$16,110,300	20-Year Estimated Lifecycle Cost Storage and Pumping	\$20,459,400	20-Year Estimated Lifecycle Cost Storage, Pumping and UV	\$28,315,000

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Clearwells Replacement Project Background - Alternatives

- Consultation with PSC on whether estimated \$4M additional cost for rectangular tanks, compared to circular tanks, can be included in water rates:
 - A determination will be made when 100% complete design and the Application for Construction Authorization are submitted to the PSC.
 - There is precedence for PSC not allowing the cost of aesthetic project enhancements to be included in water rates.

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Clearwells Replacement Project Requirements

- Comply with WDNR – Approved Clearwells corrective action plan.
 - Replace deficient Clearwells and pumping facilities to avoid legal action and fines.

Time	Activity
May – July 2023	Facilitate project aesthetics Ad Hoc Committee
August 2023 – January 2024	Approve project design criteria and complete redesign
February – April 2024	WDNR and PSC review and construction authorization
May – June 2024	Project construction bid and award
July 2024 – December 2026	Project construction

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Clearwells Replacement Project Requirements

- Construct potable water storage reservoirs and pump stations above groundwater table and above the floodplain.
- Provide a total of 2 million gallons (MG) storage capacity in 2 separate reservoirs to accommodate routine reservoir inspection and maintenance.
 - Replacing 2.4 MG storage volume with 2 MG to minimize project costs while maintaining adequate storage for customers and WFP operational needs.
- Provide 13.7 million gallons per day (mgd) pumping capacity to fill and empty the storage tanks.
 - Replacing 17.8 mgd pumping capacity with 13.7 mgd to minimize project costs and more efficiently meet projected future water demands.
- Use construction materials with long service life and limited maintenance requirements to control costs for rate payers.

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Clearwells Replacement Project Requirements

- Locate reservoirs in area occupied by Clearwells.
 - Use Clearwells' floor slabs as uniform foundations for new reservoirs.
 - Maximize re-use of buried WFP piping and power distribution assets with substantial remaining service life.
 - Avoid WFP areas needed for anticipated future projects.
 - Maintain continuous storage and pumping operations.



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Clearwells Replacement Project Requirements

- Ensure WFP chemical delivery truck access from Merritt Avenue (primary) and Washington Avenue (secondary).
 - Refer to [WFP truck movement handout](#).
- Improve WFP perimeter security.
 - Unauthorized access to a drinking water facility with malicious intent can result in a felony criminal charge.
 - Trees along perimeter fence are used by children to access the site.
 - On-site hazards include toxic gases, combustible gas, corrosive liquid chemicals and high-voltage electricity
 - Existing automated gate performance issues need to be addressed.
- Maintain perimeter fence line surveillance cameras.



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Clearwells Replacement Project Requirements

- Refer to [security fencing handout](#).

- Why perimeter fencing at water treatment and storage facilities?
 - The primary goals of fencing is to establish a legal demarcation by defining the perimeter boundaries of a facility, to present a barrier that causes an intruder to make an overt action to penetrate that demonstrates intent, and to create a delay barrier against unauthorized access.
 - Secondary goals may include screening the facility against visual observations, establishing a clear zone enhancing lighting and surveillance, and providing a means of installing intrusion detection sensors.
- Perimeter fencing deters and delays intruders. It provides the first layer of physical security.
- Perimeter fencing performs an important role in the Water Utility's risk and resiliency strategy.
 - 2018. US Environmental Protection Agency and WDNR requires the Water Utility to conduct and update every 5 years a detailed Risk and Resiliency Assessment.
 - 2002. Public Health Security and Bioterrorism Preparedness and Response Act required water utility vulnerability assessments, security improvements, and emergency response plans.

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Project Objectives and Opportunities

- New construction addressed the community's aesthetic needs.
 - To the extent possible, follow Crime Prevention Through Environmental Design (CPTED) principles.
 - Refer to [CPTED handout](#).
 - Project improvements encompass areas adjacent to the WFP with potential enhancements to the following:
 - Pedestrian access
 - Bicyclist access
 - Water access
 - Local ecology
- Refer to [Committee Work Areas handout](#)



Landscaping that does not create hiding places

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Project Objectives and Opportunities



Landscaping and lighting that provides safe, high visibility areas for pedestrians, bicyclists, and vehicles.



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Project Objectives and Opportunities



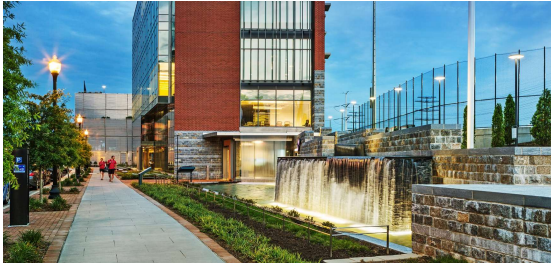
WFP facilities are hardened with locked, solid core doors and electronic intrusion detection.



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Project Objectives and Opportunities



Low level landscaping; grade change and fence delineate boundary; water system educational signs; directed lighting; defined areas for people and vehicles.

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Project Objectives and Opportunities

- Introduce a water-theme educational/historic feature.
 - "What do we want people to know? What do we want people to feel? What do we want people to do?"



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Look Ahead

Ad Hoc Committee Meeting No. 2

Possible Agenda

1. Meeting No. 1 minutes and action items
2. Committee member ideas
 - Structure
 - Landscaping
 - Lake Shore Drive park area
 - Water-themed educational/historic feature
3. Ideas discussion and refinement
 - Develop design ideas short list for further evaluation
4. Meeting No. 3 look ahead

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Thank you

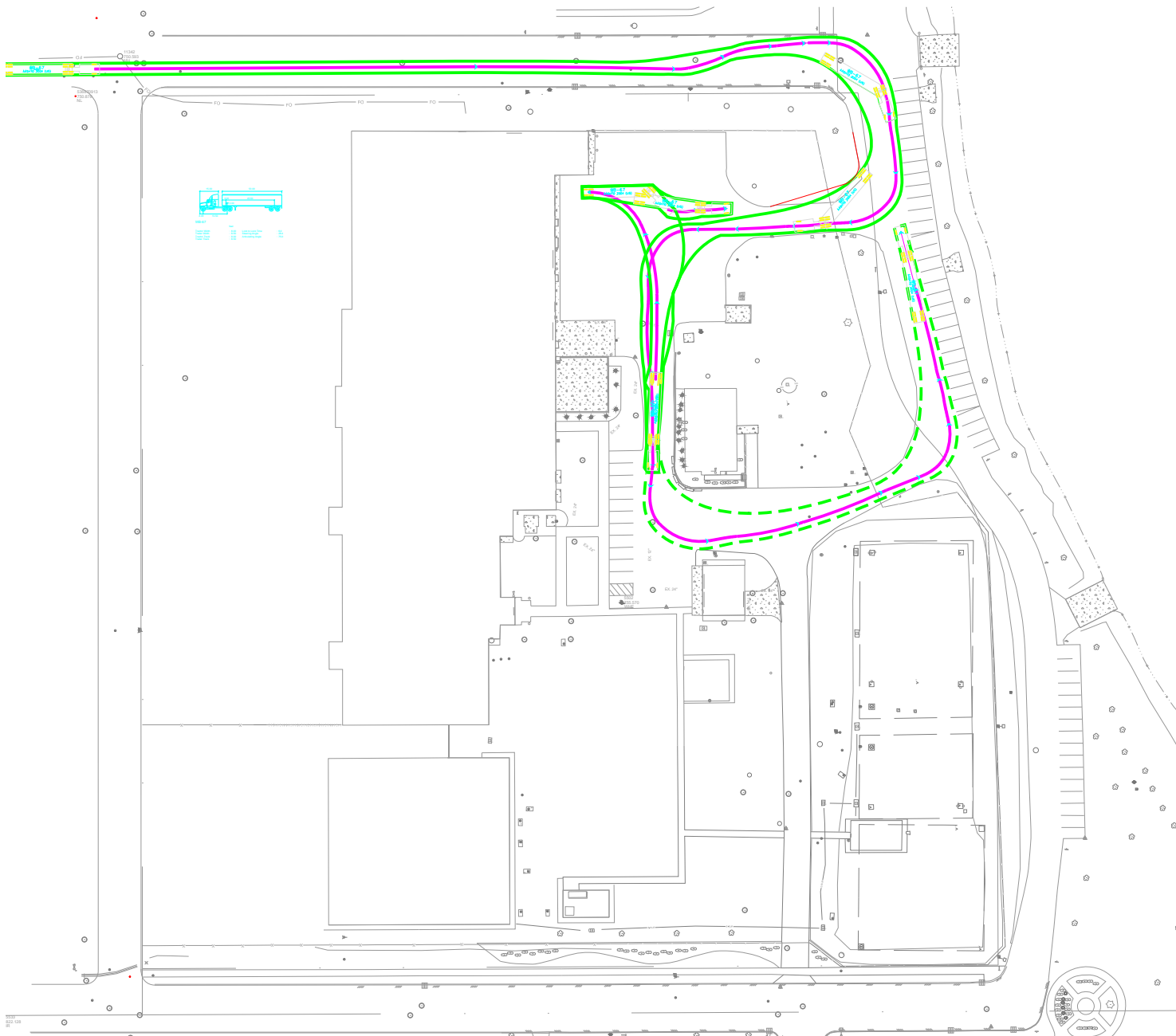
Direction from WDNR

"Buried clearwell" is a buried water storage tank located below groundwater table and below floodplain. Watertight buried clearwells do not comply with NR 811.

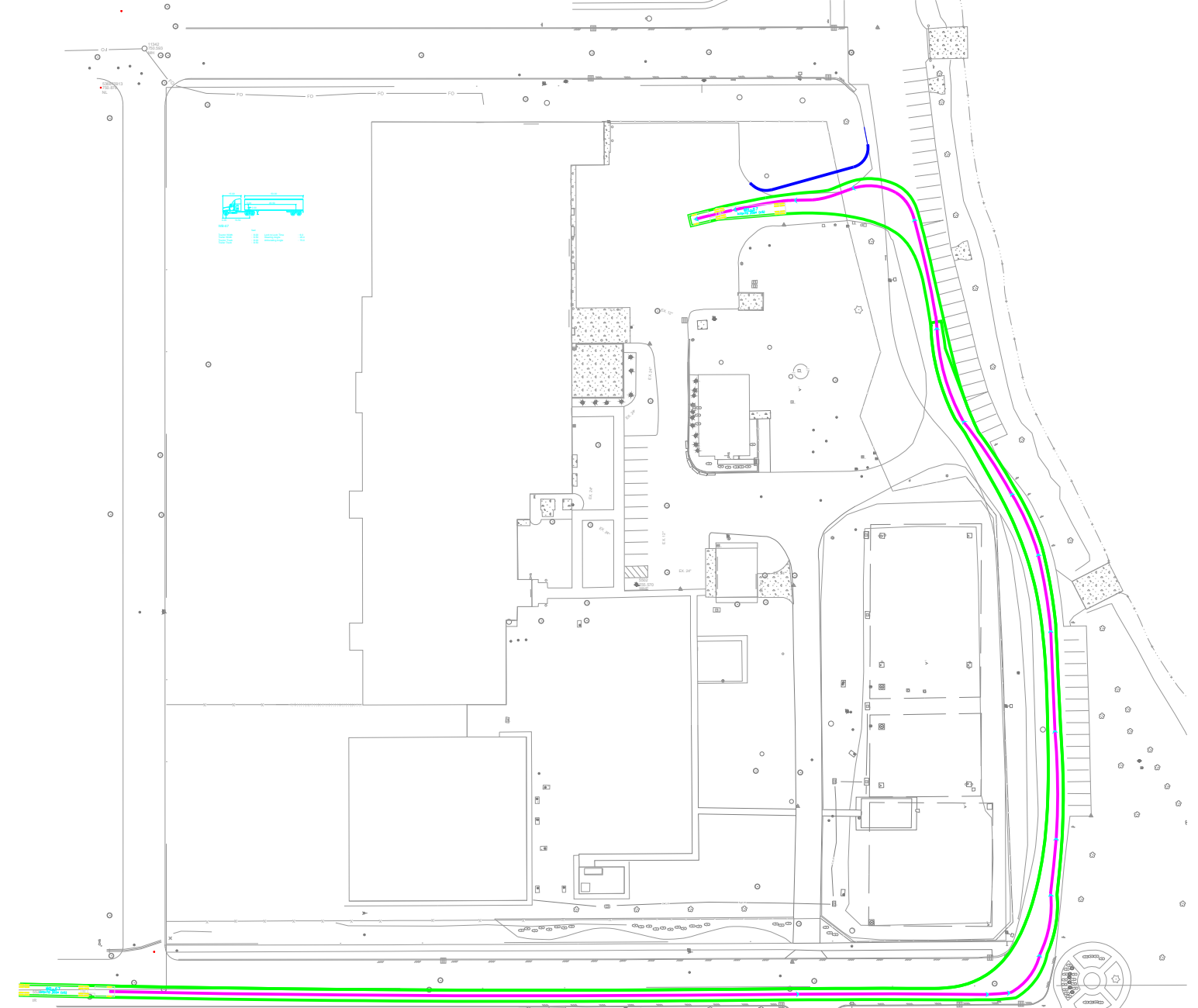
IF	THEN
Buried clearwell is watertight	Operation of non-compliant tank allowed with additional safeguards.
Buried clearwell needs standard maintenance, like concrete crack repair, to restore watertight condition	Standard maintenance work is not a project requiring WDNR review. Operation of repaired non-compliant tank allowed with additional safeguards.
Buried clearwell needs major repairs including concrete crack repair to restore watertight condition, replacement of interior concrete lining to mitigate corrosion, and/or addition of sloped membrane roof.	Major repair and improvement work is a project requiring WDNR review. At time of WDNR review, all tank deficiencies must be addressed to bring the tank into full compliance with current code. Two possible paths forward are available: 1. Complete major repairs to restore watertight condition and add a downstream treatment system to achieve 4-log (99.99%) virus inactivation. 2. Replace buried tanks with compliant (above groundwater and floodplain) tanks and a pump station to fill the tanks.

Chemical Truck Delivery Movements

Truck Access from Merritt Avenue and Lake Shore Drive



Truck Access from Washington Avenue and Lake Shore Drive



Legend

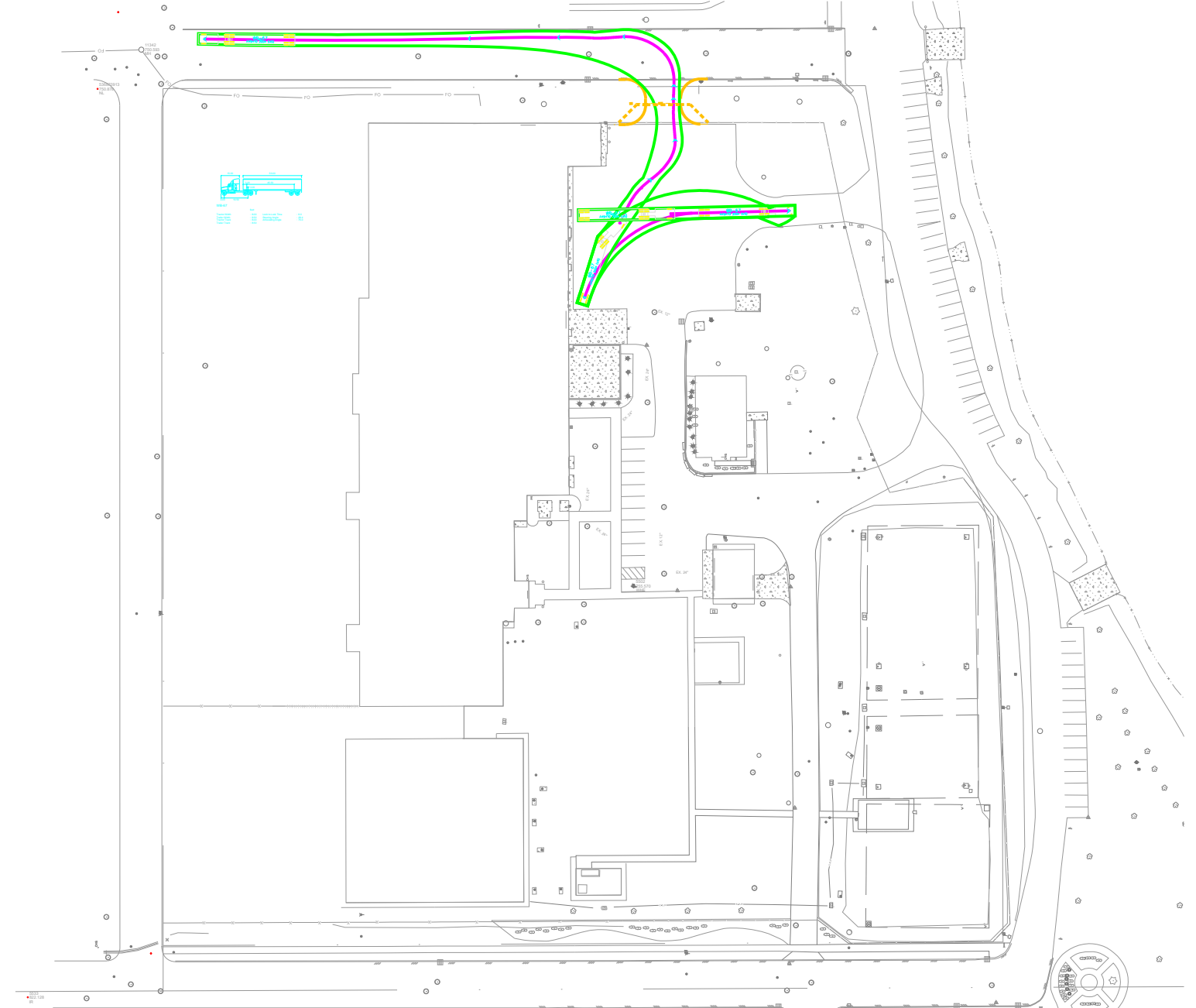
- Truck centerline path from the front of the vehicle
- Body of truck and trailer

Chemical Truck Delivery Movements

Truck Access off Washington Avenue



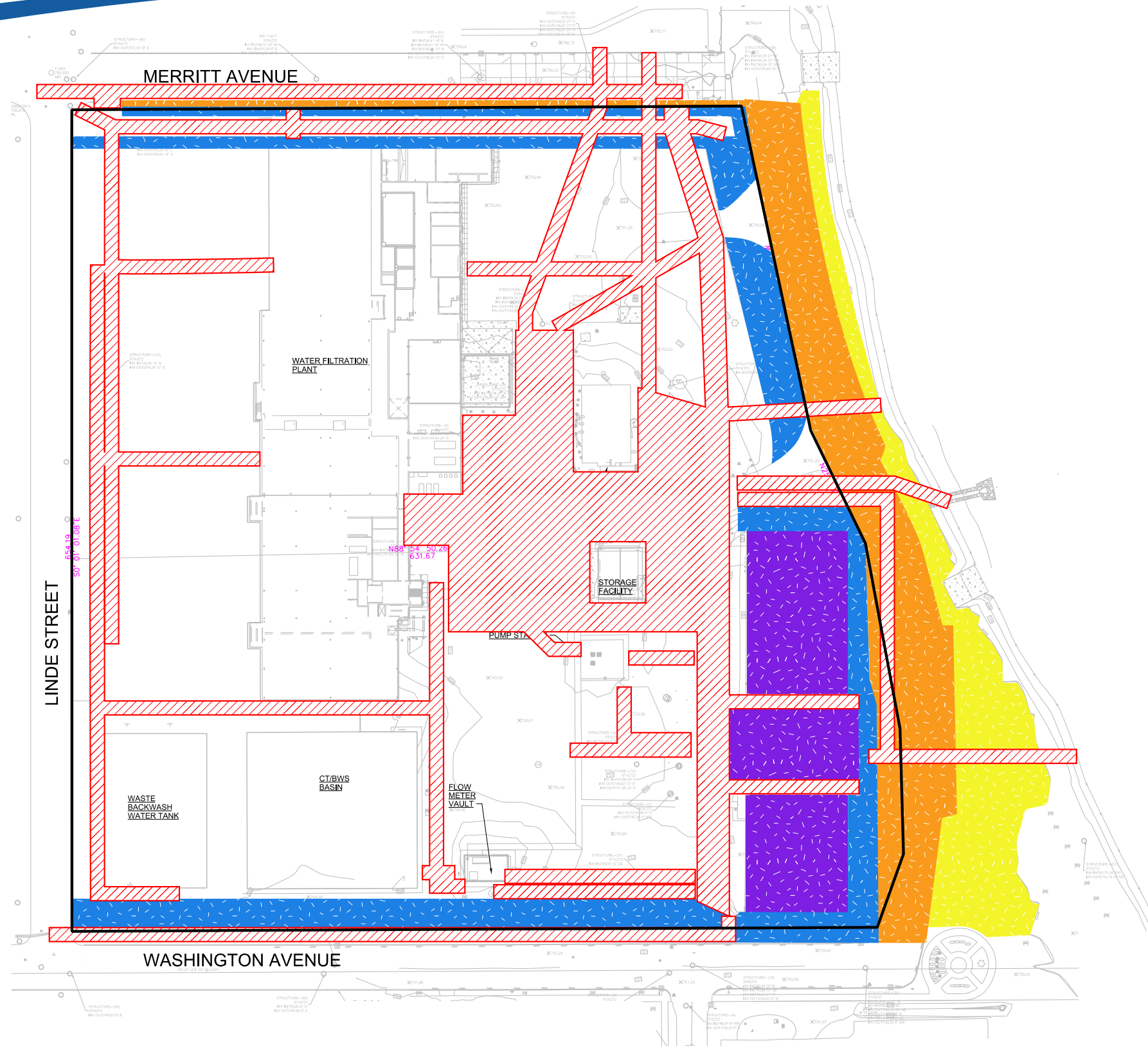
Truck Access off Merritt Avenue



Legend

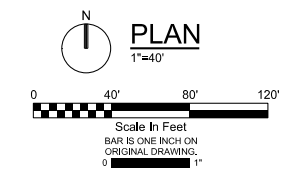
-  Truck centerline path from the front of the vehicle
-  Body of truck and trailer
-  Conceptual road widening/construction and new or temporary fencing and gates to facilitate the truck path alternative

Committee Work Areas



Legend

- Approximate Locations of Buried Piping and Utilities
- Property Line
- Committee Work Areas**
- Right-of-Ways Adjacent to WFP and WFP On-Site Area
- Lake Shore Drive and Public Parking
- Park Area
- Water Storage and Pumping Facilities



Security Fencing

Water Filtration Plant Surrounding Space

Cochrane ClearVu



Ameristar Wireworks Anti-Climb



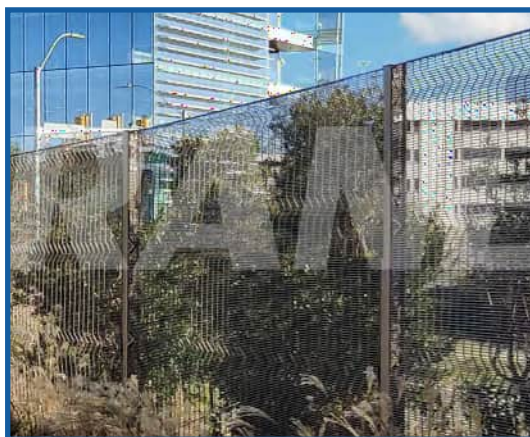
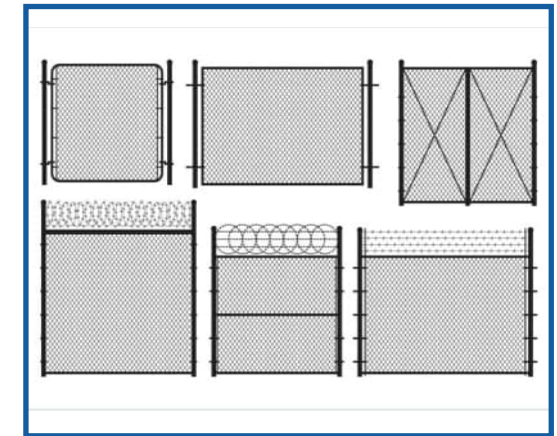
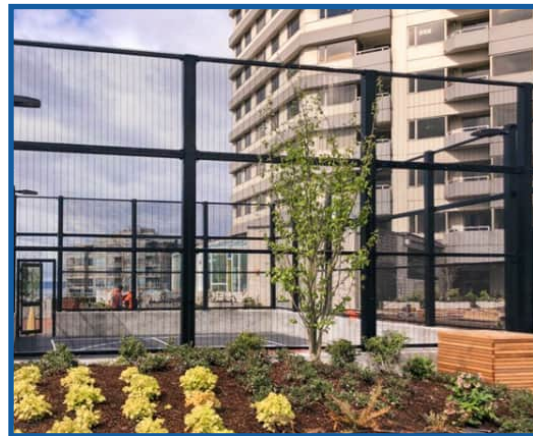
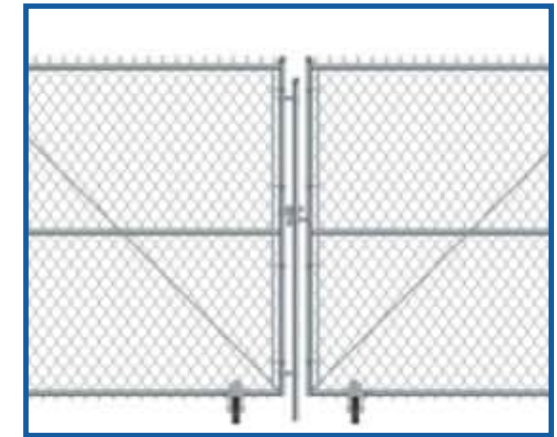
Wallace Rampart 354 Security



Ametco Steel Security Fence



Chain Link



Crime Prevention Through Environmental Design



Proper design and effective use of the built environment can lead to a *reduction in the opportunity for crime*.



For success, engage the *appropriate stakeholders* and *identify existing crime* and disorder problems in and around the site.

CPTED Concepts

Defensible Space Strongly defined areas of influent and improved opportunities for surveillance that combine to bring the environment under the control of its reside.

Natural Access control Decreasing opportunities for crime by denying access to crime targets and creating a perception of risk in offenders. Accomplished by designing streets, sidewalks, entrances and by using structural elements to discourage access to restricted areas.

Natural Surveillance Criminals do not wish to be observed. Design to make intruders easily observable, maximize visibility of people, parking areas, and entrances. Pedestrian friendly sidewalks and streets, adequate nighttime lighting.

Territorial Reinforcement Desing to develop a sense of territorial control promoted by features that define property lines and distinguish private spaces from public spaces, such as landscaping, pavement design and fences.

Maintenance Keep security components in good working order.

Landscaping

Provide landscaping and plants that do not create hiding places.

Consider size of mature plants. Select and maintain plants to use transparent rather than opaque fencing. Consider fencing schemes that work aesthetically as well as functionally to provide visibility.

Utilize trees with a thin branch crown at maturity , preferably a cylindrically shaped tree to reduce shadows and effectiveness of lighting. Trees should not be planted within 10 feet of light poles.

Lighting

Provide appropriate levels of lighting for streets, paths, and parks.

Lighting should increase visibility of pedestrians, vehicles, and structures at night.

Illumination should provide ability for pedestrians to see each other, avoid trip and fall hazards, and enhance public safety.

Select lighting that minimizes glare, light pollution, and light trespass.

Buildings

Clearly delineate property area from public spaces through such methods as alternative paving materials, color, or changes in grade.

Provide unobstructed views of secured buildings.

Provide hardened entryways – solid core doors, secured with locks, and monitored with intrusion detection.