

Construction Management Plan

5236 W Mercer Way – Mercer Island, WA

DATE: July 31, 2018
TO: Robin Proebsting, City of Mercer Island Development Services – Building and Planning
FROM: Dan Westley, PE, PACE Engineers, Inc.
SUBJECT: Construction Management Plan CAO17-014

The following Construction Management Plan is intended to provide supplemental information to the civil engineering plans regarding various aspects of the construction process as requested by the City during permitting review. This construction management plan is general in nature, providing preliminary guidelines for construction practices. This is a living document, subject to modification, and shall be updated by a licensed and bonded general contractor as specific field information becomes available. All construction activities shall be performed in accordance with governing regulations by a licensed and bonded contractor.

The civil plan sheet C1.0, TESC & Construction Management Plan, shall be referenced for additional information. The following Construction Management Plan topics have been addressed:

1. **Project overview** – Proposed development consists of construction of a single-family home, driveway and associated service utilities.
2. **Construction activities description** – The proposed development consists of the following construction activities:
 - Utility Infrastructure – sewer, stormwater, domestic water, dry utilities (gas, power, TV and com)
 - Vehicle access driveway
 - Walls – soldier pile shoring walls, Cast-in-place concrete walls, foundation cast in place retaining walls, keystone gravity block walls, gabion basket gravity earth retaining walls
 - Building construction – consists of concrete foundation walls, concrete slab-on-grade floors, wood frame structure (above grade)
3. **Construction hours** –
 - Monday through Friday: 7am – 7pm
 - Saturday: 9am-6pm
 - Sunday and Holidays: closed

4. Contact information –

- Contractor:
- ESC Supervisor:
- Owner's Representative:

5. Neighborhood impacts coordination plan –

- To be completed by contractor upon award of construction contract. Contractor shall notify construction impacts

6. Construction phasing plan for site work (reference civil plans, sheet C1.0, TESC & Construction Management Plan)

- Install chain link fencing to delineate construction limits, tree protection, and wetland buffer disturbance boundaries
- Install silt fence
- Install permanent downstream piped conveyance including CB5 and CB2 (
- Install storm drain inlet protection
- Grade and install construction staging, parking and stockpile areas
- Install temporary interceptor swale, check dams, and additional erosion control measures as deemed necessary by the TESC project lead.
- Begin driveway clearing and grading
- Install utilities located in driveway corridor
- Install driveway grade walls, driveway access base course or ATB prelevel
- Install gabion basket walls located at rear of SFH structure
- Install building foundation soldier pile shoring walls
- Construct building and remaining hardscape features
- Connect utilities
- Stabilize site
- Remove remaining TESC features

7. Temporary Erosion and Sediment Control

- Reference civil plans, sheet C1.0, TESC and Construction Management Plan, for recommended
- Contractor shall assign a “ESC Supervisor” to ensure erosion control BMPs are implemented to meet performance standards as described in the 2014 Department of Ecology Surface Water Management Manual for Western Washington, Volume II.

8. Wetland Protection –

- Construction limits and wetland impacts are defined in the wetland mitigation plan.
- Temporary impacts shall not extend beyond the established construction limits and construction fencing unless approved by an authorized City representative (e.g. onsite inspector).

9. Construction Material Stockpile and Parking –

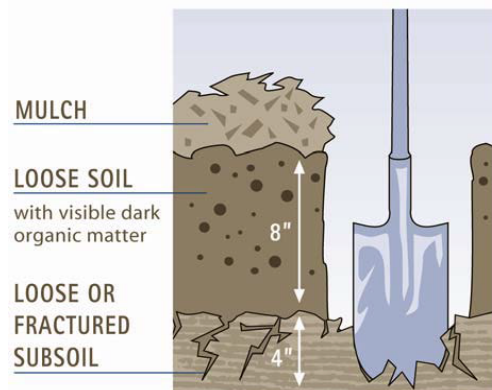
- **Onsite construction parking** is limited and designated locations are identified in the civil plans, sheet C1.0, TESC & Construction Management Plan.
- **Offsite construction parking** - Contractor shall determine appropriate location for overflow parking and shall designate an offsite parking shuttle service when needed. Overflow parking location shall be agreed upon by an authorized City representative (e.g. onsite inspector).
- **Material stockpile** is limited and designated locations are identified in the civil plans, sheet C1.0, TESC & Construction Management Plan. The locations have been

10. Turbidity Testing

- Contractor shall be responsible to evaluate turbidity prior to discharge. The designated testing location is identified on the TESC & Construction Management Plan as proposed CB 2
- Onsite inspector and/or designated ESC supervisor shall have authority to request turbidity testing and request corrective action for sub-standard testing results

11. Compost Amended Soils (BMP T5.13)

- **BMP T5.13** shall be implemented on all disturbed soils to remain pervious (e.g. landscaped lawns) using one of the following methods:
 - Leave undisturbed native vegetation and soil, and protect from compaction during construction.
 - Amend existing site topsoil or subsoil either at default “pre-approved” rates, or at custom calculated rates based on tests of the soil and amendment.
 - Stockpile existing topsoil during grading, and replace it prior to planting. Stockpiled topsoil must also be amended if needed to meet the organic matter or depth requirements, either at a default “pre-approved” rate or at a custom calculated rate.
 - Import topsoil mix of sufficient organic content and depth to meet the requirements.
- More than one method may be used on different portions of the same site. Soil that already meets the depth and organic matter quality standards, and is not compacted, does not need to be amended.
- Reference BMP T5.13 for additional information



12. Tree protection measures during construction

- **Tree protection** is provided by construction fencing. The locations of construction limits and tree protection fencing is provided on civil plans, sheet C1.0, TESC & Construction Management Plan

13. Mitigation Measures for Temporary Impacts to the Wetland Buffer (as prepared by professional wetland scientist Robert Knable)

Construction Sequencing

In addition to site layout and design, the proper sequencing of construction events during the project will help to minimize impacts to the wetland and its buffer. The applicant is proposing to clear a portion of the site to build a driveway and single-family residence and has utilized BMPS and construction sequencing to protect the wetland area. The majority of the construction and disturbance will occur outside of the wetland and its buffer. Due to the proximity of the driveway and proposed residence to the wetland and its buffer, it is extremely important to use environmentally sound construction practices in order to protect the wetland.

Temporary impacts to the wetland buffer would be in the form of clearing and grading for construction of a driveway and to prepare the site for development. There will also be impacts from construction of the proposed retaining walls. Staging areas and vehicle access will be located outside of the wetland buffer and would have no impact. Construction impacts to the wetland buffer would be avoided to the extent possible. Mitigation in the form of plantings and buffer area addition is proposed.

Temporary impacts to the onsite wetland would occur during the removal of non-native invasive vegetation such as English Ivy and mitigation planting. Invasive plant species will be removed manually before mitigation planting to ensure plant survival. There will be no other impacts to the wetland. Construction impacts to the wetland would be avoided with the exception of invasive species removal and mitigation plantings, which will result in improved habitat and increased functional value. Heavy machinery will not be used in the wetland for plant removal or planting to minimize impacts.

Stages:

1. Preconstruction Survey

The limits of construction will be clearly marked/staked prior to construction. The wetland buffer line will be located and marked to prevent accidental damage during construction. Sensitive areas to be protected from disturbance will be marked with highly visible construction sheeting and brightly colored flagging, or construction fence for equipment operators. Equipment will be allowed to enter and operate only within the delineated limits of disturbance. Flagging, signs, and other markings identifying the limits of disturbance will be maintained through all phases of construction and routinely checked.

2. Installation of Sediment and Erosion Controls:

Sediment and erosion controls should be installed first. All sediment and erosion controls must be checked and maintained on a regular basis and after any storm events. Controls should be cleaned when accumulated debris and sediment reach approximately one-half the height of the controls.

Temporary erosion control measures will be installed in conjunction with clearing activities and prior to grading (initial soil disturbance). Installed erosion control BMPs will be routinely inspected and any damaged or temporarily removed BMPs will be replaced at the end of each working day. Brush and trees within the construction area will be felled to prevent damage to adjacent trees and structures and will be felled away from the wetland and wetland buffer. Temporary erosion control measures will be maintained until the area disturbed during construction is stabilized (i.e., successful revegetation has been achieved) and approval is achieved from local and state agencies. Depending on site conditions, straw wattles and compost socks may also be installed to control stormwater runoff velocity on the steeper portions of the property.

3. Phased Clearing and Grading:

The flagged limits of disturbance will be maintained throughout all construction phases and will be monitored. If necessary, the site should be cleared in such a way that the entire site is not exposed all at once. If more ground is cleared and exposed than will be built upon immediately, it may be necessary to temporarily cover, seed and stabilize the soil. Non-native invasive vegetation such as English Ivy will be removed manually before mitigation planting to ensure plant survival. Noxious weeds will be handled in an approved method to prevent the migration of noxious weeds.

Grading of the construction area in upland areas shall be limited to the minimum required to provide a safe working area necessary to construct the driveway and home. Grading should maintain the original upland topography as much as possible and limit disturbed soils.

4. Maintenance and Inspection:

Inspect temporary erosion control structures at least on a daily basis in areas of active construction and equipment operation. In areas where active construction and equipment operation are not occurring, inspection of controls will be made at least weekly. All structures will be inspected within 24 hours of each 0.5-inch or greater rainfall; however, state and other local jurisdictions may require more frequent inspection of erosion control structures. Any ineffective temporary erosion control measures will be repaired as soon as possible but no more than 24 hours after discovery. Whenever possible, erosion control measures will be inspected in advance of predicted storm events and take preventative measures to minimize the potential for off-site sedimentation. Temporary sediment barriers will be maintained in place until permanent revegetation measures are successful or until the upland areas adjacent to wetlands are stabilized. The structures will be removed once the area has been successfully stabilized.

5. Recontouring:

All graded areas associated with construction will be regraded and contoured to blend into the surrounding landscape and to reestablish natural drainage patterns. Emphasis during recontouring will be to return the exposed areas to their approximate original contours, to stabilize slopes, to control

surface drainage, and to provide a more aesthetic appearance. Recontouring to the original grade within the disturbed areas adjacent to the wetland buffers is especially critical so that the wetland hydrology is not altered.

6. Stabilization and Restoration:

All exposed soils should be seeded and replanted to keep soil from eroding and to replace invasive species. These plantings will mitigate and minimize any project impacts and maintain a healthy wetland and buffer.

7. Wetland Buffer Restoration:

Initial revegetation of disturbed areas will begin as soon as possible after construction. Temporary disturbance within the wetland from vegetation removal and plantings, and in the buffer from construction, will be stabilized and temporary sediment barriers will be installed. The wetland and buffer will be mitigated to a greater functional quality than its preconstruction condition and revegetated in accordance with the restoration plan. If precipitation events or other complications preclude the completion of seeding and revegetation immediately following construction, exposed erodible substrates will be covered with straw or other suitable mulch until seeding is completed and seedlings are established as described in the restoration plan. The plant containers will be inspected for signs of noxious weeds prior to planting in restoration areas. Once site restoration is complete, as-built surveys and post-construction data for compliance and effectiveness monitoring will be collected per Monitoring and Maintenance.

Suggested BMPs

The following are a list of suggested BMPs.

- Properly install and maintain sediment and erosion control BMPs.
- Do not clear any more land than is absolutely necessary for the project.
- Avoid and minimize disturbing soils, especially on steep slopes.
- Stabilize exposed soils by seeding and mulch.
- Limit construction activities that disturb soil to the dry season.
- Preserve existing tree canopies and natural areas in and around wetlands as much as possible.
- Removal of invasive plant species within the wetland or its buffer will be completed by hand.
- Plan for restoration to be completed before the end of the growing season and as soon as possible.
- After site construction is complete, final grading and landscaping should be completed as soon as possible to minimize erosion and help ensure that invasive species don't take root and spread.

- All sediment and erosion controls should be removed once planting is completed, and all disturbed surfaces must be adequately stabilized.
- Properly install all sediment and erosion controls BMPs.
- Check all sediment and erosion controls BMPs and maintain them on a daily to weekly basis and after any storm event.
- After the driveway and house are constructed, disturbed areas will be restored as nearly as possible to their original contours. Permanent erosion control measures will be installed, and revegetation will be performed.
- Tracking Construction equipment and construction vehicles have the potential to track soils from the construction project into public roadways. Any soils tracked off the construction sites may be a possible source of sediment in stormwater.
- Inspecting and ensuring the maintenance of temporary erosion control measures at least daily in areas of active construction or equipment operation, on a weekly basis in areas with no construction or equipment operation, and within 24 hours of each 0.5-inch or greater rainfall. Inspections will be recorded, and records maintained for review upon request.
- Ensuring the repair of all ineffective temporary erosion control measures as soon as possible but not longer than 24 hours after identification.
- The wetland and buffer will be given special attention to ensure stabilization, restoration, and the reduction of the spread of noxious weeds after the construction phase.
- Adjacent to the wetland and its buffer install temporary erosion control measures (such as sediment barriers) prior to initial disturbance to minimize the potential for sediment to enter the wetland or buffer.

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