CITY OF MERCER ISLAND

DEVELOPMENT SERVICES GROUP

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Narrative and Plan Submittal

Instructions: This is a template for a simplified Stormwater Report. This form or an equivalent must accompany your Building Permit Application if the answer is "Yes" to each statement below. If "No" is the answer to one or more of the statements below, a full Drainage Report is required and the project does not qualify for use of the Small Project Stormwater Site Plan/Report template.

Select "yes" or "no" for each statement below. Answer "yes" if the statement accurately describes your project.

Yes	No	Statement
✓		This project disturbs less than 1 acre and is not part of a larger common plan of development.
✓		This project converts less than 3/4 acre to lawn or landscape areas.
✓		This project will create, add, or replace (in any combination) 2,000 square feet or greater, but less than 5,000 square feet, of new plus replaced hard surface **OR** will have a land disturbing activity of 7,000 square feet or greater **OR** will result in a net increase of impervious surface of 500 square feet or greater.
✓		This project will not adversely impact a wetland, stream, water of the state, or change a natural drainage course.

Basic Project Information

Project Name: Plummer Residence

Site Address: 9212 33rd Place NE

Total Lot Size: 12,240 sf

Total Proposed Area to be Disturbed (including stockpile area): 9,475 sq ft

Total Volume of Proposed Cut and Fill: 380 cy sq ft

Total Proposed New Hard Surface Area: 395 sq ft

Total Proposed Replaced Hard Surface Area: 4,568 sq ft

Total Proposed Converted Pervious Surface Area (Native vegetation to lawn or landscape): 0 sq ft

Net Increase in Impervious Surface: 395 sq ft

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #1 : Preparation of Stormwater Site Plan

Written Project Description:

The project is a single-family redevelopment of a 12,240 sf property. All existing improvements including residence, driveway and concrete footpath will be removed. A new two-level residence, driveway, partially covered patios and walkway will be constructed. A stormwater collection system will collect roof and driveway runoff and direct this to an onsite detention system, The detention system will dischage to a proposed pump station that will lift the stormwater to 9212 SE 33rd Place where it will discharge to a new gravity storm drain flowing to the east. The gravity pipe will discharge into a City catchbasin in 94th Avenue SE about 300 feet east of the site.

Calculate new or replaced areas by surface type:

Lawn or Landscape Areas: 7,277 sf sq ft	Roof Area: 3,483 sf sq ft

Other Hard Surface Areas:

Driveway: 1138 sq ft Patio: 223 sq ft Sidewalk: 119 sq ft

Parking Lot: 0 sq ft Other: _____ sq ft

☑ Attach Drainage Plan

Drainage Plan shall include the following:

- Scaled drawing with slopes, lot lines, any public-right-of-way and any easements, location of each on-site stormwater management BMP selected above and the areas served by them, buildings, roads, parking lots, driveways, landscape features, and areas of disturbed soils to be amended.
- The scaled drawing must be suitable to serve as a recordable document that will be attached to the property deed for each lot that includes on-site BMPs. Document submittal must follow the "Standard Formatting Requirements for Recording Documents" per King County: www.kingcounty.gov/depts/records-licensing/recorders-office/recording-documents.aspx
- Identify design details and maintenance instructions for each on-site BMP, and attach them to this Small Project Stormwater Site Plan/Report.

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #2 : Construction Stormwater Pollution Prevention

☑ Complete Section B of this submittal package: Construction Stormwater Pollution Prevention Plan Narrative (SWPPP)

☐ Attach construction SWPPP

Minimum Requirement #3 : Source Control of Pollution

This section contains practices and procedures to reduce the release of pollutants. Provide a description of all known, available and reasonable source control BMPs that will be, or are anticipated to be, used at this location to prevent stormwater from coming into contact with pollutants. Additional BMPs are found in Volume IV of the 2014 Stormwater Management Manual for Western Washington (SWMMWW).

Check the BMPs you will use:

☑ BMP S411 for Landscaping and Lawn/ Vegetation Management
Operational practices for sites with landscaping

☐ BMP S421 for Parking and Storage of Vehicles.
Public and commercial parking lots can be sources of suspended solids, metals, or toxic hydrocarbons such oils and greases.

☐ BMP S433 for Pools, Spas, Hot Tubs, Fountains
Discharge from pools, hot tubs, and fountains can degrade ambient water quality. Routine maintenance activities generate a variety of wastes. Direct disposal of these waters to drainage system and waters of the state are not permitted without prior treatment and approval.

☐ Other BMPs found in Volume IV of SWMMWW applicable to project:

☑ No source control BMPs are applicable for this project.

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #4 : Preservation of Natural Drainage Systems

Natural drainage patterns shall be maintained and discharges from the project site shall occur at the natural location, to the maximum extent practicable. All outfalls require energy dissipation.

Choose the option below that best describes your project:

☑ This site has existing drainage systems or outfalls. These items are shown on the Drainage Plan. Include the following items on the Drainage Plan:

- Pipe invert elevations, slopes, cover, and material
- Locations, grades, and direction of flow in ditches and swales, culverts, and pipes

Describe how these systems will be preserved:

There is an existing small diameter concrete tile drain pipe that exits the north property line and flows into the drainage system of 9216. The system is old and not proposed to be reused.

☐ This site does not have any existing drainage systems or outfalls.

Additional Comments:

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #5 : On-site Stormwater Management

All projects meeting the thresholds for this Small Project Stormwater Report shall employ on-site stormwater management BMPs (See Small Project Stormwater Requirements Tip Sheet) to infiltrate, disperse, and retain stormwater runoff on-site to the extent feasible without causing flooding or erosion impacts.

List #1

For each category select the *first* feasible item on the list below. Document your justification for each infeasible BMP in Section C of this submittal package.

Check one option for each category below:

Lawn and Landscape Areas

- ☐ My project does not have *Lawn or Landscape* areas
- ☑ Post-construction soil quality and depth
- ☐ Post-construction soil quality and depth is infeasible (see Section C of this submittal package)

Roofs

- ☐ My project does not have *Roof* areas
- ☐ 1. Full dispersion or downspout full infiltration
- ☐ 2. Rain garden or bioretention
- ☐ 3. Downspout dispersion system
- ☐ 4. Perforated stub-out connections
- ☑ 5. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-4 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- ☐ 6. No Roof BMP (applicable if options #1-4 are infeasible and on-site detention is not required)

Measured Infiltration Rate: _____ in/ hr

If #5 or #6 is selected, briefly describe why no Roof BMP is feasible (include detailed information in Section C of this submittal package):

The site is inside any area mapped as infeasible for infiltration.
There is insufficient room and the terrain is too steep for dispersion.

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #5 : On-site Stormwater Management (cont.)

Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- ☐ My project does not have *Other Hard Surface* areas
- ☐ 1. Full dispersion

Measured Infiltration Rate: _____ in/ hr

- ☐ 2. Permeable pavement, rain gardens, or bioretention
- ☐ 3. Sheet flow dispersion or concentrated flow dispersion
- ☑ 4. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-3 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- ☐ 5. No Other Hard Surface BMP (applicable if options #1-3 are infeasible and on-site detention is not required)

If #4 or #5 is selected, briefly describe why no Other Hard Surface BMP is feasible (include detailed information in Section C of this submittal package):

The site is inside any area mapped as infeasible for infiltration.
There is insufficient room and to steep slopes for dispersion.

Flow Control Exempt List

Proceed with this list if your project discharges directly to Lake Washington or if findings from a downstream analysis confirm that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile.

For flow control exempt discharges, the BMPs listed below for Roofs and Other Hard Surfaces do not need to be evaluated in priority order. You can select any BMP from the lists provided below and do not need to document infeasibility in Section C of this submittal package.

Check one option for each category below:

Lawn and Landscape Areas

- ☐ My project does not have *Lawn or Landscape* areas
- ☐ Post-construction soil quality and depth

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #5 : On-site Stormwater Management (cont.)

Roofs

- ☐ My project does not have *Roof* areas
- ☐ Downspout full infiltration
- ☐ Downspout dispersion system
- ☐ Perforated stub-out connections
- ☐ Each item above is infeasible

If "Each item above is infeasible" is selected, briefly describe why no Roof BMP is feasible:

Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- ☐ My project does not have *Other Hard Surface* areas
- ☐ Sheet flow dispersion
- ☐ Concentrated flow dispersion
- ☐ Each item above is infeasible

If "Each item above is infeasible" is selected, briefly describe why no Other Hard Surface BMP is feasible:

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Instructions

This is a template for a simplified Construction Stormwater Pollution Prevention Plan ("Construction SWPPP"). If "No" is the answer to one or more of the statements on the first page of Section A of this submittal package, then a full Construction SWPPP is required and the project does not quality for the use of the Small Project Construction SWPPP Narrative template. If the project is less than the thresholds on the first page of Section A of this submittal package, then Minimum Requirement #2 still applies, but this section (Section B) or a full construction SWPPP is not required. You should include your Construction SWPPP in your contract with your builder. A copy of the Construction SWPPP must be located at the construction site or within reasonable access to the site for construction and inspection personnel at all times.

General Information on the Existing Site and Project

Describe the following in the Project Narrative box below (attach additional pages if necessary):

- Nature and purpose of the construction project
- Existing topography, vegetation, and drainage, and building structures
- Adjacent areas, including streams, lakes, wetlands, residential areas, and roads that might be affected by the construction project
- How upstream drainage areas may affect the site
- Downstream drainage leading from the site to the receiving body of water
- Areas on or adjacent to the site that are classified as critical areas
- Critical areas that receive runoff from the site up to one-quarter mile away
- Special requirements and provisions for working near or within critical areas
- Areas on the site that have potential erosion problems

Project Narrative:

The project is a single-family redevelopment of a 12,240 sf property. All existing improvements including residence, driveway and concrete footpath will be removed. A new two-level residence, driveway, partially covered patios and walkway will be constructed. A stormwater collection system will collect roof and driveway runoff and direct this to an onsite detention system, The detention system will dischage to a proposed pump station that will lift the stormwater to 9212 SE 33rd Place where it will discharge to a new gravity storm drain flowing to the east. The gravity pipe will discharge into a City catchbasin in 94th Avenue SE about 300 feet east of the site.

Neither the existing nor the proposed building have a basement.

The existing terrain slope is about 8% on average down towards the north. The vegetation is lawn, landscaping and some trees.

The site is surrounded by single family residential development on all sides. The properties to the north and west are downslope of the site and may be affected by runoff from the site. Property to the east and south is upslope of the site. There are no streams or wetlands onsite or near the site.

A small amount of drainage may enter the property from residential development to the south. This runoff is from landscaped areas and is not expected to be significant in quantity.

Existing roof and driveway drainage from the site flows into the property to the north inside a buried drain pipe. The pipe connects to the north property (9216) drainage system that discharges to Lake Washington. Surface drainage from the site enters 9216 and 9206 and either flows between the houses or enters private collection systems. There are no critical areas within a quarter of a mile downstream. The drainage flow is contained inside a pipe system.

Potential erosion problem areas onsite will be the temporary cut and fill slopes that are created for the building pad and patio. Any stripped and disturbed areas are susceptible to erosion.

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Construction SWPPP Drawings

Refer to the general Drawing Requirements in Stormwater Management Manual for Western Washington (SWMMWW) Volume I, Chapter 3.

Vicinity Map

Provide a map with enough detail to identify the location of the construction site, adjacent roads, and receiving waters.

Site Map

Include the following (where applicable):

- [x] Legal description of the property boundaries or an illustration of property lines (including distances) on the drawings.
- [x] North arrow.
- [x] Existing structures and roads.
- [ ] Boundaries and identification of different soil types.
- [ ] Areas of potential erosion problems.
- [ ] Any on-site and adjacent surface waters, critical areas, buffers, flood plain boundaries, and Shoreline Management boundaries.
- [x] Existing contours and drainage basins and the direction of flow for the different drainage areas.
- [x] Where feasible, contours extend a minimum of 25 feet beyond property lines and extend sufficiently to depict existing conditions.
- [x] Final and interim grade contours as appropriate, drainage basins, and the direction of stormwater flow during and upon completion of construction.
- [x] Areas of soil disturbance, including all areas affected by clearing, grading, and excavation.
- [ ] Locations where stormwater will discharge to surface waters during and upon completion of construction.
- [x] Existing unique or valuable vegetation and vegetation to be preserved.
- [ ] Cut-and-fill slopes indicating top and bottom of slope catch lines.
- [ ] Total cut-and-fill quantities and the method of disposal for excess material.
- [x] Stockpile; waste storage; and vehicle storage, maintenance, and washdown areas.

Temporary and Permanent BMPs

Include the following on site map (where applicable):

- [ ] Locations for temporary and permanent swales, interceptor trenches, or ditches.
- [ ] Drainage pipes, ditches, or cut-off trenches associated with erosion and sediment control and stormwater management.
- [ ] Temporary and permanent pipe inverts and minimum slopes and cover.
- [ ] Grades, dimensions, and direction of flow in all ditches and swales, culverts, and pipes.
- [ ] Locations and outlets of any dewatering systems.
- [ ] Details for bypassing off-site runoff around disturbed areas.
- [x] Locations of temporary and permanent stormwater treatment and/or flow control best management practices (BMPs).
- [x] Details for all structural and nonstructural erosion and sediment control (ESC) BMPs (including, but not limited to, silt fences, construction entrances, sedimentation facilities, etc.)
- [ ] Details for any construction-phase BMPs or techniques used for Low Impact Development (LID) BMP protection.

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 1: Preserve Vegetation / Mark Clearing Limits

The goal of this element is to preserve native vegetation and to clearly show the limits of disturbance.

This element **does not** *apply to my project because:*

☐ The site was cleared as part of clearing activity that is subject to an enforcement action and is re-vegetated. Restoration may be necessary to comply with Critical Area Regulations or NPDES requirements. Buffer Zones-BMP C102 may apply if Critical Areas exist on-site and buffer zones shall be protected.

☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the best management practices (BMPs) you will use:*

☑ The perimeter of the area to be cleared shall be marked prior to clearing operation with visible flagging, orange plastic barrier fencing and/or orange silt fencing as shown on the SWPPP site map. The total disturbed area shall be less than 7,000 square feet. Vehicles will only be allowed in the areas to be graded, so no compaction of the undeveloped areas will occur.

Additional Comments:

Onsite and offsite tree driplines will be delineated with chain link fence to the maximum extent feasible. Other vegetation to be retained, including offsite vegetation, will be delineated with orange barrier fence or silt fence.

Check the BMPs you will use:

☑ C101 Preserving Natural Vegetation ☐ C102 Buffer Zones ☑ C103 High Visibility Fence

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 2: Construction Access

The goal of this element is to provide a stabilized construction entrance/exit to prevent or reduce or sediment track out.

*This element **does not** apply to my project because:*

☐ The driveway to the construction area already exists and will be used for construction access. All equipment and vehicles will be restricted to staying on that existing impervious surface.

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☑ A stabilized construction entrance will be installed prior to any vehicles entering the site, at the location shown on the SWPPP site map.

Additional Comments:

The existing driveway can be used for the initial site work. A rock construction entrance will be installed when the driveway is removed to allow construction of the basement.

Check the BMPs you will use:

☑ C105 Stabilized Construction Entrance / Exit

☐ C106 Wheel Wash

☐ C107 Construction Road / Parking Area Stabilization

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 3: Control Flow Rates

The goal of this element is to construct retention or detention facilities when necessary to protect properties and waterways downstream of development sites from erosion and turbid discharges.

This element **does not** *apply to my project because:*

☑ Other Reason / Additional Comments:

The project is not large enough to warrant flow control.

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

☐ Flow rates will be controlled by using SWPPP Element 4 sediment controls and BMP T5.13 Post-Construction Soil Quality and Depth if necessary.

Additional Comments:

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 4: Sediment Control

The goal of this element is to construct sediment control BMPs that minimize sediment discharges from the site.

*This element **does not** apply to my project because:*

☐ The site has already been stabilized and re-vegetated.

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☑ Sediment control BMPs shall be placed at the locations shown on the SWPPP site map

Additional Comments:

Silt fence will be installed at the down-slope perimeter of the site.

Check the BMPs you will use:

☐ C231 Brush Barrier

☑ C233 Silt Fence

☐ C235 Wattles

☐ C232 Gravel Filter Berm

☐ C234 Vegetated Strip

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 5: Stabilize Soils

The goal of this element is to stabilize exposed and unworked soils by implementing erosion control BMPs.

*This element **does not** apply to my project because:*

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☑ Exposed soils shall be worked during the week until they have been stabilized. Soil stockpiles will be located within the disturbed area shown on the SWPPP site map. Soil excavated for the foundation will be backfilled against the foundation and graded to drain away from the building. No soils shall remain exposed and unworked for more than 7 days from May 1 to September 30 or more than 2 days from October 1 to April 30. Once the disturbed landscape areas are graded, the grass areas will be amended using BMP T5.13 Post-Construction Soil Quality and Depth. All stockpiles will be covered with plastic or burlap if left unworked.

Additional Comments:

Mulch or plastic sheeting are to be used to cover unworked soils.

Check the BMPs you will use:

☐ C120 Temporary & Permanent Seeding
☐ C122 Nets & Blankets
☐ C124 Sodding
☐ C131 Gradient Terraces
☐ C235 Wattles
☑ C121 Mulching
☑ C123 Plastic Covering
☐ C125 Topsoil / Composting
☐ C140 Dust Control

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 6: Protect Slopes

The goal of this element is to design and construct cut-and-fill slopes in a manner to minimize erosion.

This element **does not** *apply to my project because:*

☑ No cut slopes over 4 feet high or slopes steeper than 2 feet horizontal to 1 foot vertical, and no fill slopes over 4 feet high will exceed 3 feet horizontal to 1 foot vertical. Therefore, there is no requirement for additional engineered slope protection.

☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

Additional Comments:

Check the BMPs you will use:

☐ C120 Temporary & Permanent Seeding

☐ C205 Subsurface Drains

☐ C207 Check Dams

☐ C204 Pipe Slope Drains

☐ C206 Level Spreader

☐ C208 Triangular Silt Dike (Geotextile-Encased Check Dam)

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 7: Protect Permanent Drain Inlets

The goal of this element is to protect storm drain inlets during construction to prevent stormwater runoff from entering the conveyance system without being filtered or treated.

This element **does not** *apply to my project because:*

- ☐ The site has open ditches in the right-of-way or private road right-of-way.
- ☑ There are no catch basins on or near the site.
- ☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

- ☐ Catch basins on the site or immediately off site in the right-of-way are shown on the SWPPP site map. Storm drain inlet protection shall be installed.

Additional Comments:

Check the BMPs you will use:

- ☐ C220 Storm Drain Inlet Protection

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 8: Stabilize Channels and Outlets

The goal of this element is to design, construct, and stabilize on-site conveyance channels to prevent erosion from entering existing stormwater outfalls and conveyance systems.

This element **does not** *apply to my project because:*

☑ Construction will occur during the dry weather. No storm drainage channels or ditches shall be constructed either temporary or permanent. A small swale shall be graded to convey yard drainage around the structure using a shallow slope; it shall be seeded after grading and stabilized.

☐ Other Reason / Additional Comments:

The site is too small to warrant construction of drainage ditches, Dispersed sheet flow over stabilized areas should be facilitated.

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

☐ A wattle shall be placed at the end of the swale to prevent erosion at the outlet of the swale.

Additional Comments:

Check the BMPs you will use:

☐ C202 Channel Lining ☐ C207 Check Dams ☐ C209 Outlet Protection ☐ C235 Wattles

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 9: Control Pollutants

The goal of this element is to design, install, implement and maintain BMPs to minimize the discharge of pollutants from material storage areas, fuel handling, equipment cleaning, management of waste materials, etc.

This element **does not** *apply to my project because:*

☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

☑ Any and all pollutants, chemicals, liquid products and other materials that have the potential to pose a threat to human health or the environment will be covered, contained, and protected from vandalism. All such products shall be kept under cover in a secure location on-site. Concrete handling shall follow BMP C151.

Additional Comments:

See also pollution control notes on the plans.

Check the BMPs you will use:

☑ C151 Concrete Handling

☑ C152 Sawcutting and Surfacing Pollution Prevention

☑ C153 Material Delivery, Storage, and Containment

☑ C154 Concrete Washout Area

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 10: Control De-watering

The goal of this element is to handle turbid or contaminated dewatering water separately from stormwater.

*This element **does not** apply to my project because:*

☑ No dewatering of the site is anticipated.

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

Additional Comments:

Check the BMPs you will use:

☐ C203 Water Bars ☐ C236 Vegetated Filtration ☐ C206 Level Spreader

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 11: Maintain Best Management Practices

The goal of this element is to maintain and repair all temporary and permanent erosion and sediment control BMPs to assure continued performance.

Describe the steps you will take:

☑ Best Management Practices or BMPs shall be inspected and maintained during construction and removed within 30 days after the City Inspector or Engineer determines that the site is stabilized, provided that they may be removed when they are no longer needed.

Element 12: Manage the Project

The goal of this element is to ensure that the construction SWPPP is properly coordinated and that all BMPs are deployed at the proper time to achieve full compliance with City regulations throughout the project.

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

The Construction SWPPP will be implemented at all times. The applicable erosion control BMPs will be implemented in the following sequence:

☑ 1. Mark clearing limits

☑ 2. Install stabilized construction entrance

☐ 3. Install protection for existing drainage systems and permanent drain inlets

☑ 4. Establish staging areas for storage and handling polluted material and BMPs

☑ 5. Install sediment control BMPs

☑ 6. Grade and install stabilization measures for disturbed areas

☑ 7. Maintain BMPs until site stabilization, at which time they may be removed

Additional Comments:

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 13: Protect Low Impact Development BMPs

The goal of this element is to protect on-site stormwater management BMPs (also known as "Low Impact Development BMPs") from siltation and compaction during construction. On-site stormwater management BMPs used for runoff from roofs and other hard surfaces include: full dispersion, roof downspout full infiltration or dispersion systems, perforated stubout connections, rain gardens, bioretention systems, permeable pavement, sheetflow dispersion, and concentrated flow dispersion. Methods for protecting on-site stormwater management BMPs include sequencing the construction to install these BMPs at the latter part of the construction grading operations, excluding equipment from the BMPs and the associated areas, and using the erosion and sedimentation control BMPs listed below.

Describe the construction sequencing you will use:

Additional Comments:

No action is necessary. There are no Low Impact Development BMPs proposed for the site.

Select the BMPs you will use:

- ☐ C102 Buffer Zone
- ☐ C103 High Visibility Fence
- ☐ C231 Brush Barrier
- ☐ C233 Silt Fence
- ☐ C234 Vegetated Strip

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SECTION C: INFEASIBILITY CRITERIA

Minimum Requirement #5 (On-Site Stormwater Management)

The following tables summarize infeasibility criteria that can be used to justify not using various on-site stormwater management best management practices (BMPs) for consideration for Minimum Requirement #5. This information is also included under the detailed descriptions of each BMP in the 2014 Stormwater Management Manual for Western Washington (Stormwater Manual), but is provided here in this worksheet for additional clarity and efficiency. Where any inconsistencies or lack of clarity exists, the requirements in the main text of the Stormwater Manual shall be applied. If a project is limited by one or more of the infeasibility criteria specified below, but an applicant is interested in implementing a specific BMP, a functionally equivalent design may be submitted to the City for review and approval. Evaluate the feasibility of the BMPs in priority order based on List #1 or #2 (Small Project Stormwater Requirements Tip Sheet and Stormwater Manual). Select the first BMP that is considered feasible for each surface type. Document the infeasibility (narrative description and rationale) for each BMP that was not selected. Only one infeasibility criterion needs to be selected for a BMP before evaluating the next BMP on the list. Attach additional pages for supporting information if necessary.

Note: If your project discharges directly to Lake Washington (flow control exempt) or a downstream analysis confirms that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile, then you do not need to complete this worksheet, but should still refer to the infeasibility criteria when selecting BMPs.

Lawn and Landscaped Areas		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Post-construction Soil Quality and Depth List #1 and #2	☐ Siting and design criteria provided in BMP T5.13 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ Lawn and landscape area is on till slopes greater than 33 percent.	
Roofs		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Full Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.30 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☑ A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved. ☑ A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.	
Downspout Full Infiltration List #1 and #2	☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards. ☐ Site setbacks and design criteria provided in BMP T5.10A (**Stormwater Manual** Volume III, Section 3.1.1) cannot be achieved. ☐ The lot(s) or site does not have out-wash or loam soils. ☐ There is not at least 3 feet or more of permeable soil from the proposed final grade to the seasonal high groundwater table or other impermeable layer. ☐ There is not at least 1 foot or more of permeable soil from the proposed bottom of the infiltration system to the seasonal high groundwater table or other impermeable layer.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens List #1 (both) and List #2 (bioretention only)	*Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.* Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist): ☐ Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding. ☐ Within an area whose ground water drains into an erosion hazard, or landslide hazard area. ☐ Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces. ☐ Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system. ☐ Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects. ☐ Where infiltrating water would threaten existing below grade basements. ☐ Where infiltrating water would threaten shoreline structures such as bulkheads. The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards ☐ Within setback provided for BMP T7.30 (**Stormwater Manual** Volume V, Section 7.4) ☐ Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area).	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060). ☐ Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent. ☐ Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief. ☐ For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]): • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW. ☐ Within 100 feet of a closed or active landfill. ☐ Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface. ☐ Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with **Stormwater Manual** Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7. ☐ Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated): o 5,000 square feet of pollution-generating impervious surface (PGIS) o 10,000 square feet of impervious area o 0.75 acres of lawn and landscape. ☐ Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds. ☐ Within 100 feet of a drinking water well, or a spring used for drinking water supply. ☐ Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a “large on-site sewage disposal system,” see Chapter 246-272B WAC.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Downspout Dispersion Systems List #1 and #2	☐ Site setbacks and design criteria provided in BMP T5.10B (**Stormwater Manual** Volume III, Section 3.1.2) cannot be achieved. ☑ For splash blocks, a vegetated flowpath at least 50 feet in length from the downspout to the downstream property line, structure, stream, wetland, slope over 15 percent, or other impervious surface is not feasible. ☑ For trenches, a vegetated flowpath of at least 25 feet in between the outlet of the trench and any property line, structure, stream, wetland, or impervious surface is not feasible. A vegetated flowpath of at least 50 feet between the outlet of the trench and any slope steeper than 15 percent is not feasible.	
Perforated Stub-Out Connections List #1 and #2	☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards ☐ For sites with septic systems, the only location available for the perforated portion of the pipe is located up-gradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary. ☐ Site setbacks and design criteria provided in BMP T5.10C (**Stormwater Manual** Volume III, Section 3.1.3) cannot be achieved. ☐ There is not at least 1 foot of permeable soil from the proposed bottom (final grade) of the perforated stub-out connection trench to the highest estimated groundwater table or other impermeable layer. ☐ The only location available for the perforated stub-out connection is under impervious or heavily compacted soils.	
On-site Detention List #1 and #2	☐ Project discharges directly to Lake Washington. ☐ Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints. ☐ Site setbacks and design criteria provided in the **Stormwater Manual** (Volume III, Section 3.2.2) cannot be achieved.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Full Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.30 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☑ A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved. ☑ A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.	
Permeable Pavement List #1 and #2	Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist): ☐ Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding. ☐ Within an area whose ground water drains into an erosion hazard, or landslide hazard area. ☐ Where infiltrating and ponded water below the new permeable pavement area would compromise adjacent impervious pavements. ☐ Where infiltrating water below a new permeable pavement area would threaten existing below grade basements. ☐ Where infiltrating water would threaten shoreline structures such as bulkheads. ☐ Down slope of steep, erosion prone areas that are likely to deliver sediment. ☐ Where fill soils are used that can become unstable when saturated. ☐ Excessively steep slopes where water within the aggregate base layer or at the subgrade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface. ☐ Where permeable pavements cannot provide sufficient strength to support heavy loads at industrial facilities such as ports. ☐ Where installation of permeable pavement would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, or pre-existing road subgrades.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Permeable Pavement (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards ☐ Within an area designated as an erosion hazard, or landslide hazard. ☐ Within 50 feet from the top of slopes that are greater than 20 percent. ☐ For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under MTCA): • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW. ☐ Within 100 feet of a closed or active landfill. ☐ Within 100 feet of a drinking water well, or a spring used for drinking water supply, if the pavement is a pollution-generating surface. ☐ Within 10 feet of a small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC. ☐ Within 10 feet of any underground storage tank and connecting underground pipes, regardless of tank size. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface. ☐ At multi-level parking garages, and over culverts and bridges. ☐ Where the site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Permeable Pavement (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Where the site cannot reasonably be designed to have: • Porous asphalt surface < 5% slope • Pervious concrete surface < 10% slope • Permeable interlocking concrete pavement surface < 12% slope • Grid systems < 6-12% slope (check with manufacturer and local supplier to confirm maximum slope) ☐ Where the subgrade soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment. See soil suitability criteria for treatment in the **Stormwater Manual** Volume III, Section 3.3.7. Note: In these instances, the city may approve installation of a 6 inch sand filter layer meeting city specifications for treatment as a condition of construction. ☐ Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils meeting a California Bearing Ratio of 5 percent are considered suitable for residential access roads. ☐ Where replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity of 4 inches per hour or greater. ☐ Where appropriate field testing indicates soils have a measured (a.k.a., initial) subgrade soil saturated hydraulic conductivity less than 0.3 inches per hour. Only small-scale PIT or large-scale PIT methods in accordance with **Stormwater Manual** Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to evaluate infeasibility of permeable pavement areas. (Note: In these instances, unless other infeasibility restrictions apply, roads and parking lots may be built with an underdrain, preferably elevated within the base course, if flow control benefits are desired.) ☐ Roads that receive more than very low traffic volumes, and areas having more than very low truck traffic. Roads with a projected average daily traffic volume of 400 vehicles or less are very low volume roads (AASHTO 2001) (U.S. Department of Transportation, 2013). Areas with very low truck traffic volumes are roads and other areas not subject to through truck traffic but may receive up to weekly use by utility trucks (e.g., garbage, recycling), daily school bus use, and multiple daily use by pick-up trucks, mail/parcel delivery trucks, and maintenance vehicles. (Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces associated with the collector or arterial).	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Permeable Pavement (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ At sites defined as "high-use sites" (refer to the Glossary in the **Stormwater Manual** Volume I). ☐ In areas with "industrial activity" as identified in 40 CFR 122.26(b)(14). ☐ Where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical storage sites. ☐ Where routine, heavy applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation. ☐ Where the seasonal high groundwater or an underlying impermeable/ low permeable layer would create saturated conditions within 1 foot of the bottom of the lowest gravel base course.	
Bioretention or Rain Gardens List #1 (both) and List #2 (bioretention only)	*Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.* Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist): ☐ Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding. ☐ Within an area whose ground water drains into an erosion hazard, or landslide hazard area. ☐ Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces. ☐ Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system. ☐ Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects. ☐ Where infiltrating water would threaten existing below grade basements. ☐ Where infiltrating water would threaten shoreline structures such as bulkheads.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☑ Where evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards. ☐ Within setback provided for BMP T7.30 (**Stormwater Manual** Volume V, Section 7.4) ☐ Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area). ☐ Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060). ☐ Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent. ☐ Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief. ☐ For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]): • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW. ☐ Within 100 feet of a closed or active landfill. ☐ Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons. ☐ Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with **Stormwater Manual** Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7. ☐ Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated): o 5,000 square feet of pollution-generating impervious surface (PGIS) o 10,000 square feet of impervious area o 0.75 acres of lawn and landscape. ☐ Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds ☐ Within 100 feet of a drinking water well, or a spring used for drinking water supply. ☐ Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Sheet Flow Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.12 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ Positive drainage for sheet flow runoff cannot be achieved. ☑ Area to be dispersed (e.g., driveway, patio) cannot be graded to have less than a 15 percent slope. ☐ For flat to moderately sloped areas, at least a 10 foot-wide vegetation buffer for dispersion of the adjacent 20 feet of contributing surface cannot be achieved. For variably sloped areas, at least a 25 foot vegetated flowpath between berms cannot be achieved.	
Concentrated Flow Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.11 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☑ A minimum 3 foot length of rock pad and 50 foot flowpath OR a dispersion trench and 25 foot flowpath for every 700 square feet of drainage area followed with applicable setbacks cannot be achieved. ☐ More than 700 square feet drainage area drains to any dispersion device.	
On-site Detention List #1 and #2	☐ Project discharges directly to Lake Washington. ☐ Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints. ☐ Site setbacks and design criteria provided in the **Stormwater Manual** (Volume III, Section 3.2.2) cannot be achieved.	

CITY OF MERCER ISLAND

SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

Attachments Required *(Check off required items that are attached)*

- ☐ Site Plan showing, to scale:
  - ☐ Areas of undisturbed native vegetation (no amendment required)
  - ☐ New planting beds (amendment required)
  - ☐ New turf areas (amendment required)
  - ☐ Type of soil improvement proposed for each area
- ☐ Soil test results (required if proposing custom amendment rates)
- ☐ Product test results for proposed amendments

Total Amendment / Topsoil / Mulch for All Areas

Calculate the quantities needed for the entire site based on all of the areas identified on the Site Plan and the calculations on the following page(s):

Product	Total Quantity (CY)	Test Results
Product #1: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes ☐ no ☐
Product #2: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes ☐ no ☐
Product #3: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes ☐ no ☐

CY = cubic yards, C:N = Carbon:Nitrogen

CITY OF MERCER ISLAND

SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

Amendment / Topsoil / Mulch by Area

For each identified area on your Site Plan, provide the following information: (Use additional sheets if necessary)

Area # _____ (should match identified Area # on Site Plan)

Planting type: ☐ Turf ☐ Undisturbed native vegetation
☐ Planting Beds ☐ Other: _____

Pre-Approved Amendment Method		
☐ Amend with compost	Turf:_____ SF x 5.4 CY ÷ 1,000 SF = _____CY Planting beds:_____ SF x 9.3 CY ÷ 1,000 SF= _____CY Total Quantity = _____CY Scarification depth: 8 inches	Product: _____
☐ Stockpile and amend	Turf:_____ SF x 5.4 CY ÷ 1,000 SF = _____CY Planting beds:_____ SF x 9.3 CY ÷ 1,000 SF= _____CY Total Quantity = _____CY Scarification depth: 8 inches	Product: _____
☐ Topsoil import	Turf:_____ SF x 18.6 CY÷1,000 SF = _____CY Planting beds:_____ SF x 18.6 CY ÷ 1,000 SF= _____CY Total Quantity = _____CY Scarification depth: 6 inches	Product: _____
Custom Amendment		
☐ Amend with compost	Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____CY Scarification depth: _____inches	Product: _____
☐ Stockpile and amend	Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____CY Scarification depth: _____inches	Product: _____
Mulch		
☐ Amend with compost	Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF= _____CY Total Quantity = _____CY	Product: _____
☐ Stockpile and amend	Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF= _____CY Total Quantity = _____CY	Product: _____
☐ Topsoil import	Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF= _____CY Total Quantity = _____CY	Product: _____

CY = cubic yards, C:N = Carbon:Nitrogen

CITY OF MERCER ISLAND

SECTION E: SIGNATURE PAGE

Project Engineer's Certification for Section B

For Stormwater Site Plans with engineered elements, the Construction SWPPP is stamped by a professional engineer licensed in the State of Washington in civil engineering.

If required, attach a page with the project engineer's seal with the following statement:

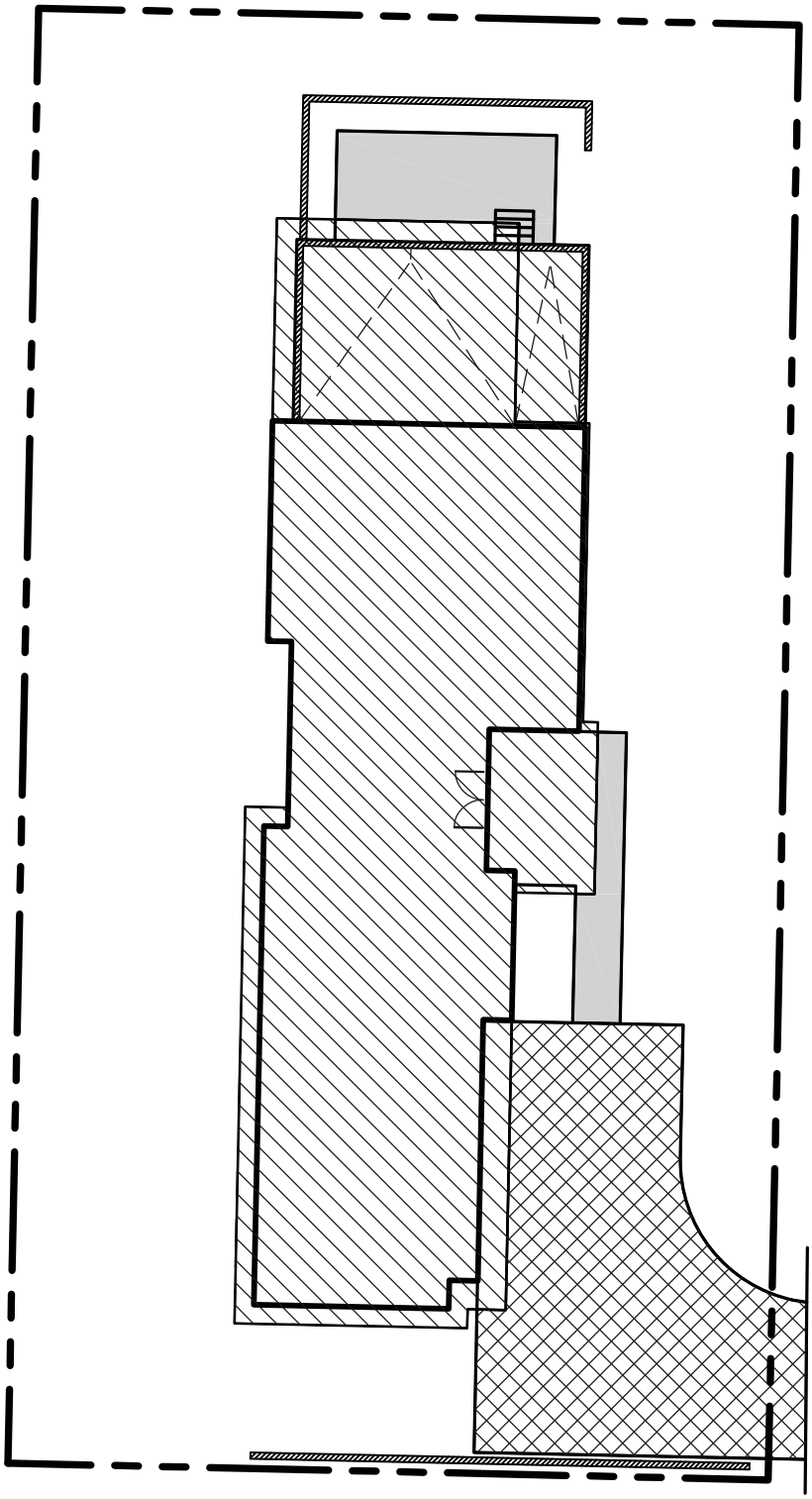
"I hereby state that this Construction Stormwater Pollution Prevention Plan for _____ *(name of project)*
has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that the City of Mercer Island does not and will not assume liability for the sufficiency, suitability, or performance of Construction SWPPP BMPs prepared by me."

Applicant Signature for Full Stormwater Package (Sections A through D)

I have read and completed the Stormwater Submittal Package and know the information provided to be true and correct.

Print Applicant Name: Nick Bossoff

Applicant Signature: _____ Date 1-24-2023



AREAS

STRUCTURE AND ROOF: 3,483 SF

DRIVEWAY: 1,138 SF

WALKWAY: 342 SF

TOTAL IMPERVIOUS: 4,963 SF

PERVIOUS: 7,277 SF

TOTAL 12,240 SF

N

1"=20'

DEVELOPED IMPERVIOUS AREA

Table 1

ON-SITE DETENTION DESIGN FOR PROJECTS BETWEEN 500 SF AND 9,500 SF NEW PLUS REPLACED IMPERVIOUS SURFACE AREA

New and Replaced Impervious Surface Area (sf)	Detention Pipe Diameter (in)	Detention Pipe Length (ft)		Lowest Orifice Diameter (in)[3]		Distance from Outlet Invert to Second Orifice (ft)		Second Orifice Diameter (in)	
		B soils	C soils	B soils	C soils	B soils	C soils	B soils	C soils
500 to 1,000 sf	36"	30	22	0.5	0.5	2.2	2.0	0.5	0.8
	48"	18	11	0.5	0.5	3.3	3.2	0.9	0.8
	60"	11	7	0.5	0.5	4.2	3.4	0.5	0.6
1,001 to 2,000 sf	36"	66	43	0.5	0.5	2.2	2.3	0.9	1.4
	48"	34	23	0.5	0.5	3.2	3.3	0.9	1.2
	60"	22	14	0.5	0.5	4.3	3.6	0.9	0.9
2,001 to 3,000 sf	36"	90	66	0.5	0.5	2.2	2.4	0.9	1.9
	48"	48	36	0.5	0.5	3.1	2.8	0.9	1.5
	60"	30	20	0.5	0.5	4.2	3.7	0.9	1.1
3,001 to 4,000 sf	36"	120	78	0.5	0.5	2.4	2.2	1.4	1.6
	48"	62	42	0.5	0.5	2.8	2.9	0.8	1.3
	60"	42	26	0.5	0.5	3.8	3.9	0.9	1.3
4,001 to 5,000 sf	36"	134	91	0.5	0.5	2.8	2.2	1.7	1.5
	48"	73	49	0.5	0.5	3.6	2.9	1.6	1.5
	60"	46	31	0.5	0.5	4.6	3.5	1.6	1.3
5,001 to 6,000 sf	36"	162	109	0.5	0.5	2.7	2.2	1.8	1.6
	48"	90	59	0.5	0.5	3.5	2.9	1.7	1.5
	60"	54	37	0.5	0.5	4.6	3.6	1.6	1.4
6,001 to 7,000 sf	36"	192	128	0.5	0.5	2.7	2.2	1.9	1.8
	48"	102	68	0.5	0.5	3.7	2.9	1.9	1.6
	60"	64	43	0.5	0.5	4.6	3.6	1.8	1.5
7,001 to 8,000 sf	36"	216	146	0.5	0.5	2.8	2.2	2.0	1.9
	48"	119	79	0.5	0.5	3.8	2.9	2.2	1.7
	60"	73	49	0.5	0.5	4.5	3.6	2.0	1.6
8,001 to 8,500 sf[1]	36"	228	155	0.5	0.5	2.8	2.2	2.1	1.9
	48"	124	84	0.5	0.5	3.7	2.9	1.9	1.8
	60"	77	53	0.5	0.5	4.6	3.6	2.0	1.6
8,501 to 9,000 sf	36"	NA [1]	164	0.5	0.5	NA [1]	2.2	NA [1]	1.9
	48"	NA [1]	89	0.5	0.5	NA [1]	2.9	NA [1]	1.9
	60"	NA [1]	55	0.5	0.5	NA [1]	3.6	NA [1]	1.7
9,001 to 9,500 sf[2]	36"	NA [1]	174	0.5	0.5	NA [1]	2.2	NA [1]	2.1
	48"	NA [1]	94	0.5	0.5	NA [1]	2.9	NA [1]	2.0
	60"	NA [1]	58	0.5	0.5	NA [1]	3.7	NA [1]	1.7

Notes:

▪ Minimum Requirement #7 (Flow Control) is required when the 100-year flow frequency causes a 0.15 cubic feet per second increase (when modeled in WWHM with a 15-minute timestep). Breakpoints shown in this table are based on a flat slope (0-5%). The 100-year flow frequency will need to be evaluated on a site-specific basis for projects on moderate (5-15%) or steep (> 15%) slopes.

▪ Soil type to be determined by geotechnical analysis or soil map.

▪ Sizing includes a Volume Correction Factor of 120%.

▪ Upper bound contributing area used for sizing.

[1] On Type B soils, new plus replaced impervious surface areas exceeding 8,500 sf trigger Minimum Requirement #7 (Flow Control)

[2] On Type C soils, new plus replaced impervious surface areas exceeding 9,500 sf trigger Minimum Requirement #7 (Flow Control)

[3] Minimum orifice diameter = 0.5 inches

in = inch

ft = feet

sf = square feet

Basis of Sizing Assumptions:

Sized per MR#5 in the Stormwater Management Manual for Puget Sound Basin (1992 Ecology Manual)

SBUH, Type 1A, 24-hour hydrograph

2-year, 24-hour storm = 2 in; 10-year, 24-hour storm = 3 in; 100-year, 24-hour storm = 4 in

Predeveloped = second growth forest (CN = 72 for Type B soils, CN = 81 for Type C soils)

Developed = impervious (CN = 98)

0.5 foot of sediment storage in detention pipe

Overland slope = 5%

Stormwater Lift Station

Lift Station

The lift station will convey the entire impervious area runoff from the site to the City storm drain in the right-of-way. Per City requirements the station will be a duplex system with each pump capable of discharging the design flow rate for the 100-year, 24-hour design storm.

Areas draining to lift station: 4,963 sf (0.11 acres)

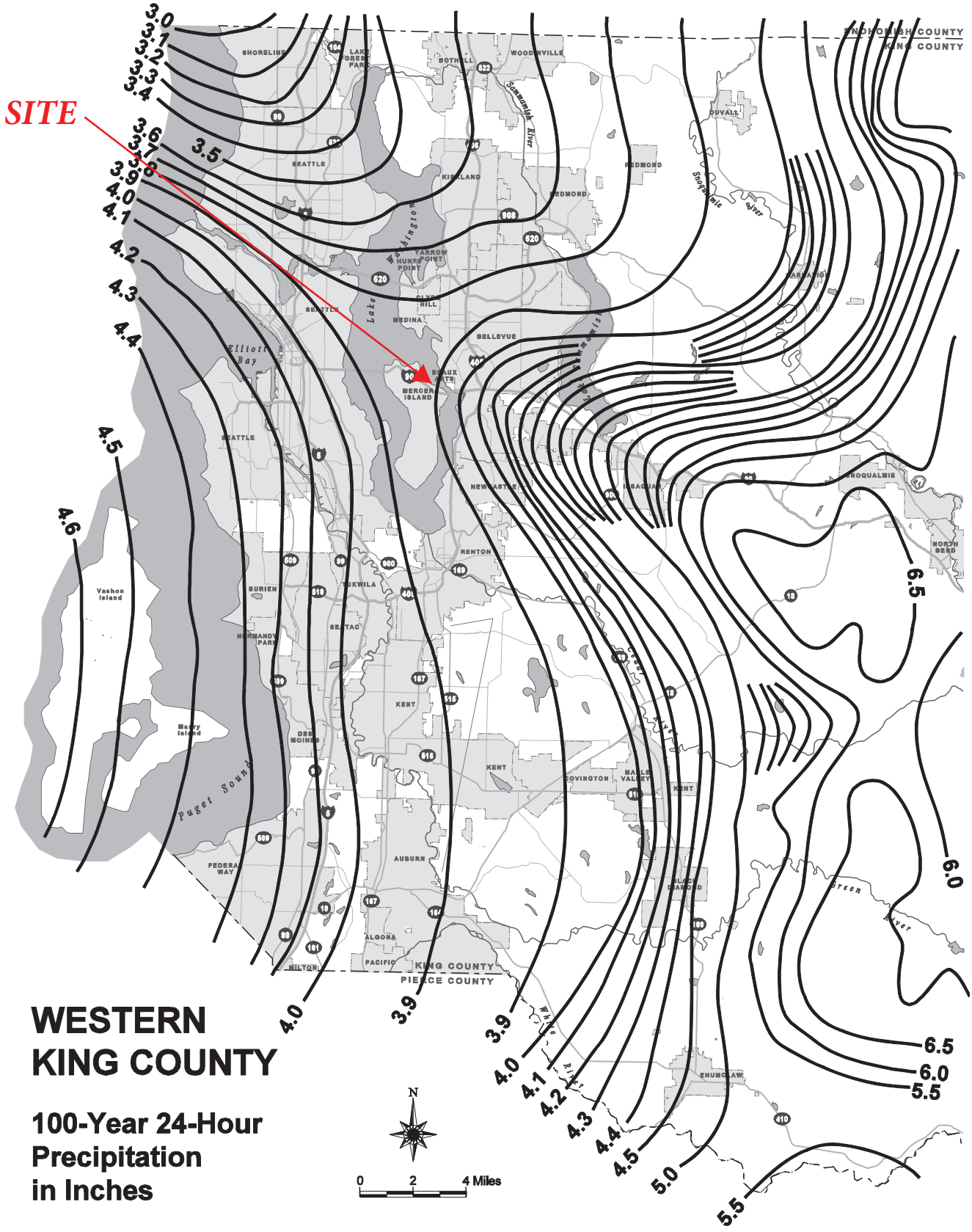
Using the SCS Santa Barbera Method:

100-year/24-hour (P_{100}): 3.9 inches (see attached isopluval)
Time of concentration: 6.3 mins. (minimum allowed)
CN: 98

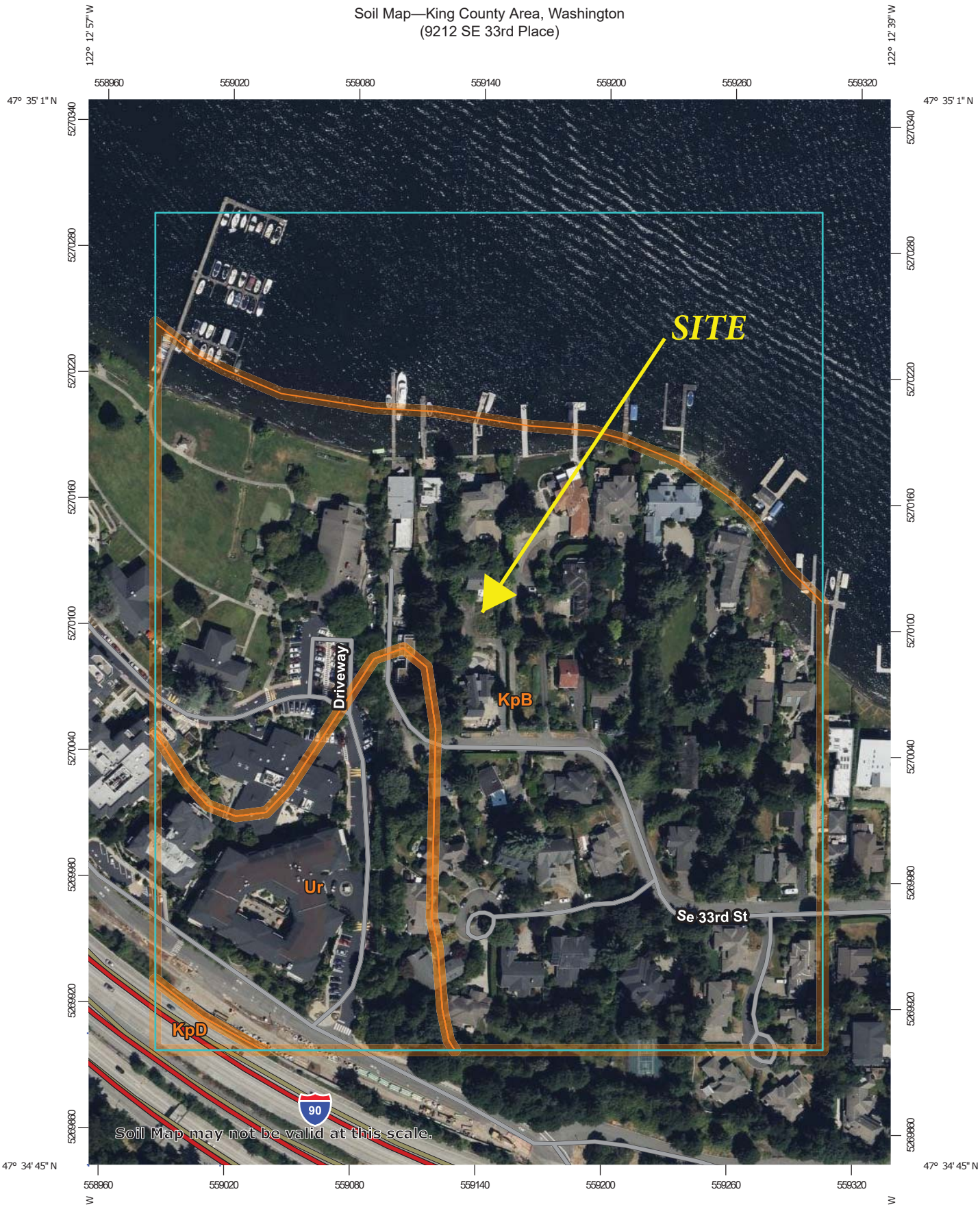
The 100 yr/24hr flow is computed is 0.1010 cfs or 45 gpm.

Two alternating 48 gpm pumps will be installed.

FIGURE 3.2.1.D 100-YEAR 24-HOUR ISOPLUVIALS



Soil Map—King County Area, Washington
(9212 SE 33rd Place)



Map Scale: 1:2,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 18, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 31, 2022—Aug 8, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

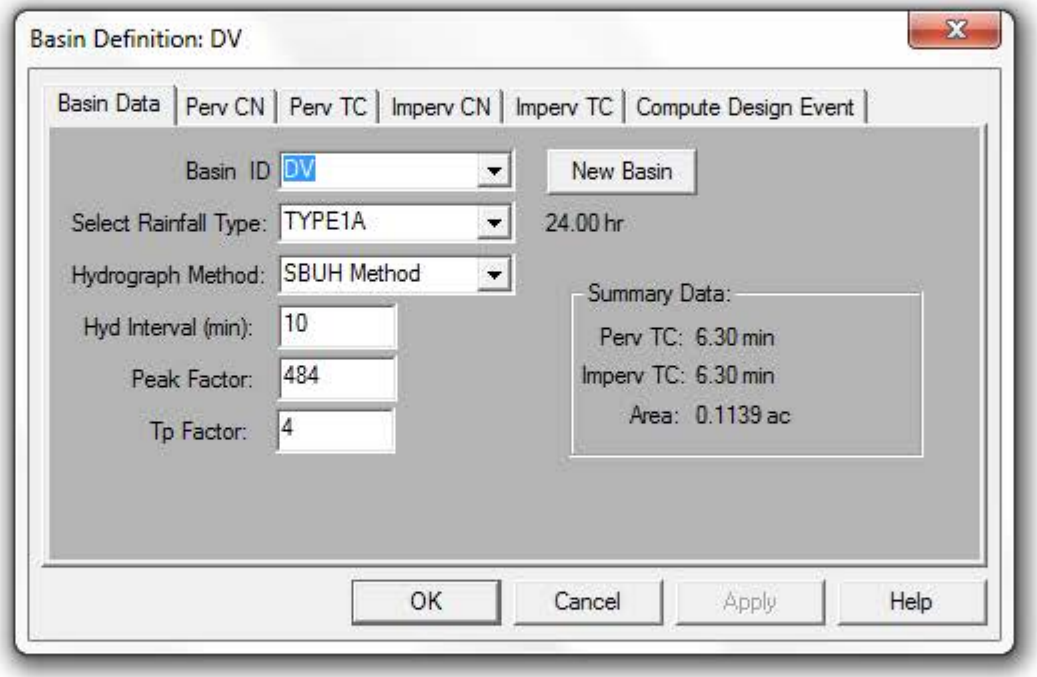
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KpB	Kitsap silt loam, 2 to 8 percent slopes	18.4	58.4%
KpD	Kitsap silt loam, 15 to 30 percent slopes	0.2	0.6%
Ur	Urban land	4.7	14.8%
Totals for Area of Interest		**31.6**	**100.0%**

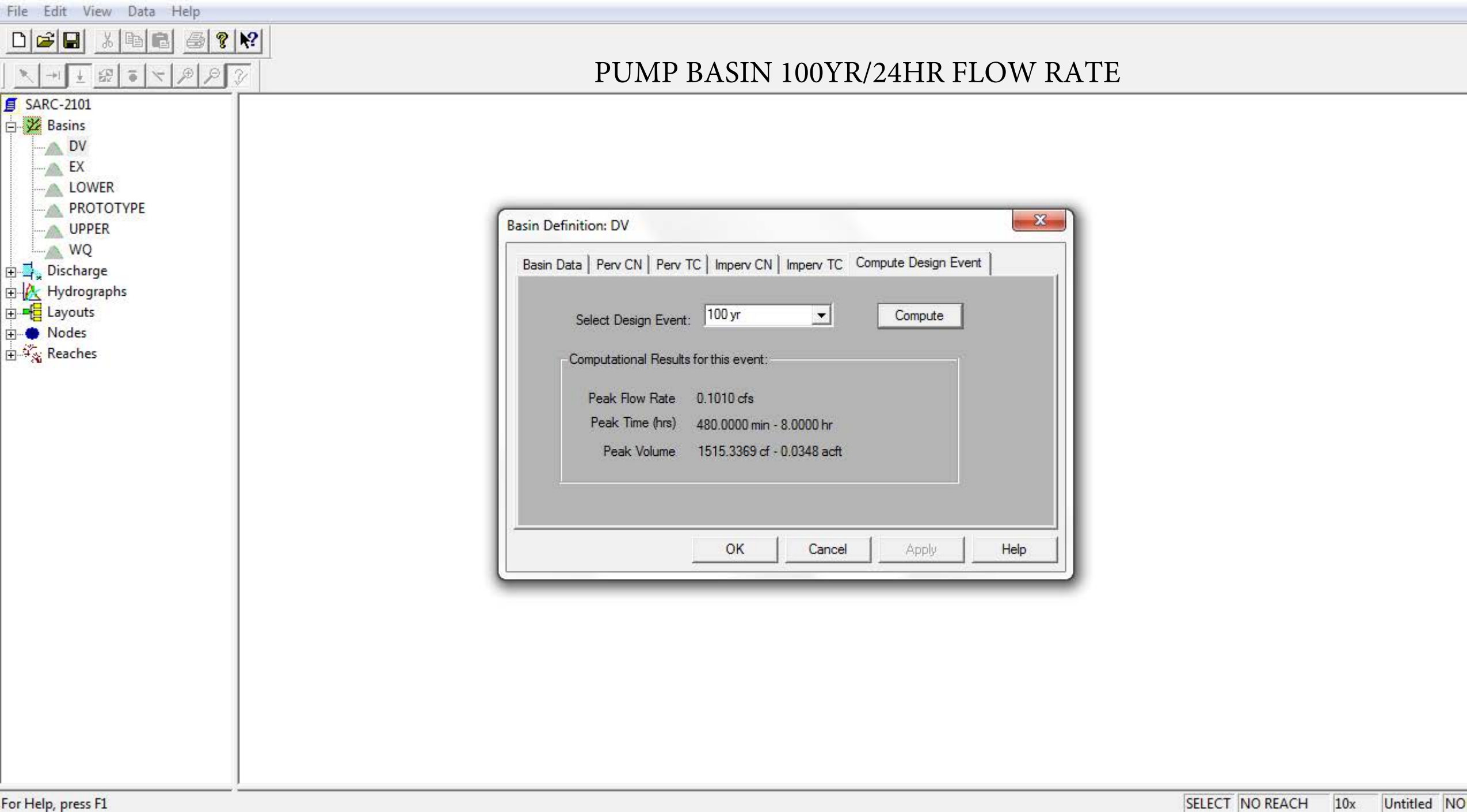
File Edit View Data Help

PUMP BASIN DETAILS

- SARC-2101
  - Basins
    - DV
    - EX
    - LOWER
    - PROTOTYPE
    - UPPER
    - WQ
  - Discharge
  - Hydrographs
  - Layouts
  - Nodes
  - Reaches



PUMP BASIN 100YR/24HR FLOW RATE



PUMP DESIGN SHEET 9212 SE 33rd Place 24-Jan-23
Pump station

100yr/24hr flow 45 gpm

Pumps # 1
Flow Incr. 10 gpm
Target flow: 45 gpm

PIPE DETAILS	PUMP WELL	
Pipe dia.	2	inches
C	140	
Length	10	feet
Flow Area	0.02	sf
Eff. Length	57.8	feet
Static Head	4	feet

FITTINGS

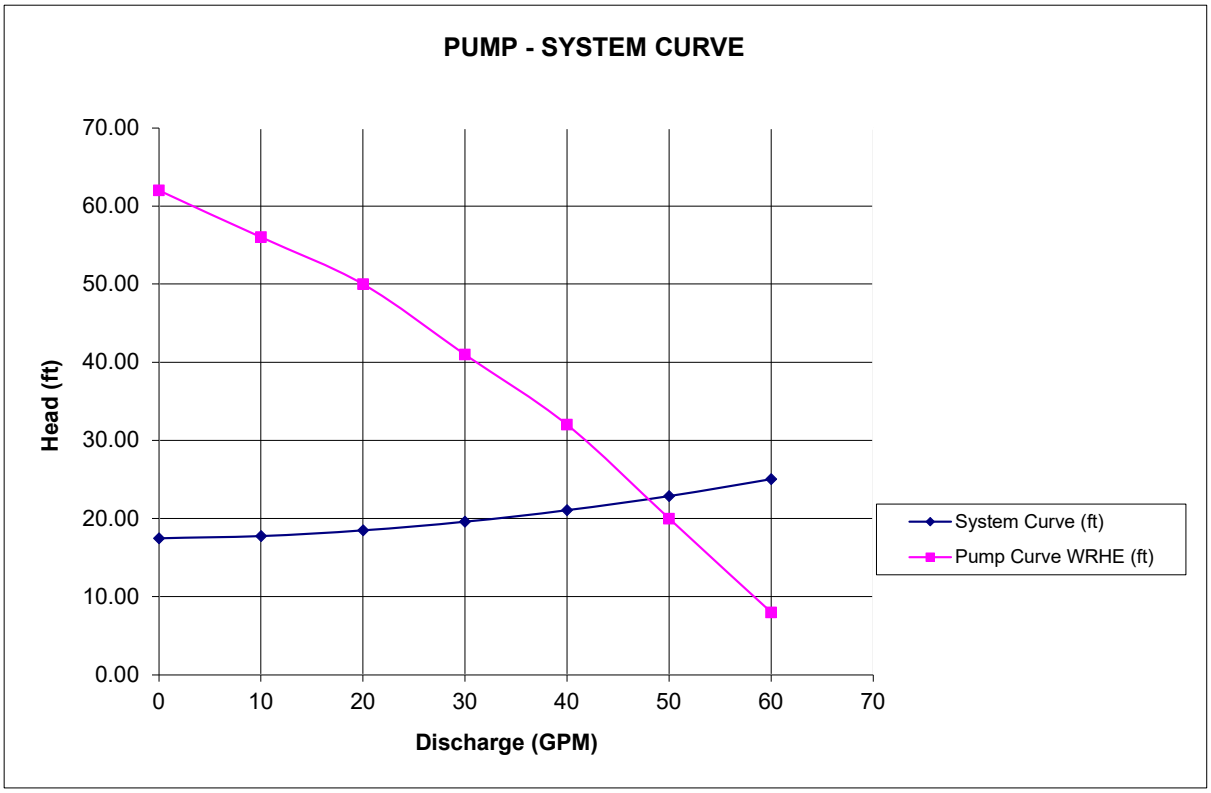
TYPE	NUMBER	EFF. LENGTH	TOTAL EFF. LGTH
90 Bend	1	5.7	5.7
45 Bend	1	2.6	2.6
Tee Through		4.3	0
Tee Branch		12	0
Wye Branch	1	7	7
Gate Valve	1	1.5	1.5
Check Valve	1	25	25
Outlet	1	6	6
Total			47.8

PIPE DETAILS	FORCE MAIN		1 X PUMP FLOW
Pipe dia.	3	inches	
C	140		
Length	285	feet	
Flow Area	0.05	sf	
Eff. Length	312.3	feet	
Static Head	13.5	feet	

FITTINGS

TYPE	NUMBER	EFF. LENGTH	TOTAL EFF. LGTH
90 Bend	1	5.7	5.7
45 Bend	6	2.6	15.6
Tee Through		4.3	0
Tee Branch		12	0
Wye Branch		7	0
Gate Valve		1.5	0
Check Valve		25	0
Outlet	1	6	6
Total			27.3

Per Pump Discharge (gpm)	Well Head Loss (feet)	Force Main Discharge (gpm)	Force Main Head Loss (feet)	System Curve (ft)	Pump Curve SP WRHE (ft)
0	0.00	0	0.00	17.50	62.00
10	0.16	10	0.12	17.77	56.00
20	0.57	20	0.43	18.49	50.00
30	1.20	30	0.90	19.60	41.00
40	2.04	40	1.53	21.07	32.00
50	3.08	50	2.32	22.90	20.00
60	4.32	60	3.24	25.06	8.00



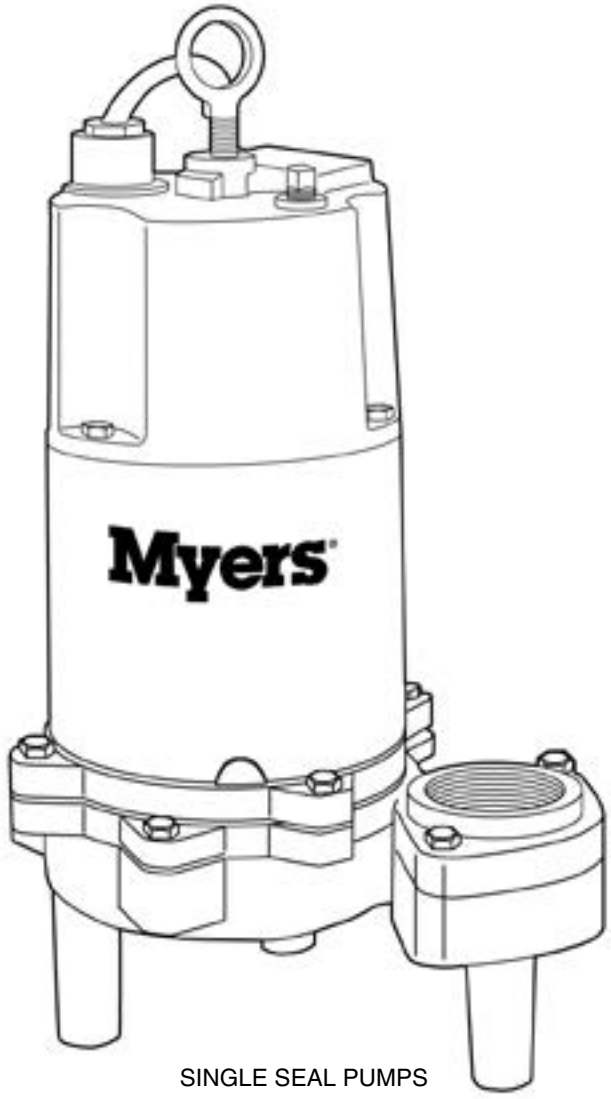
Target Flow:		45 gpm
Estimated flow		48 gpm
System head at target		21.94 feet
Pump head at target		25.00 feet
Flow Velocity	Well	4.91 fps
	Main	2.18 fps

PENTAIR

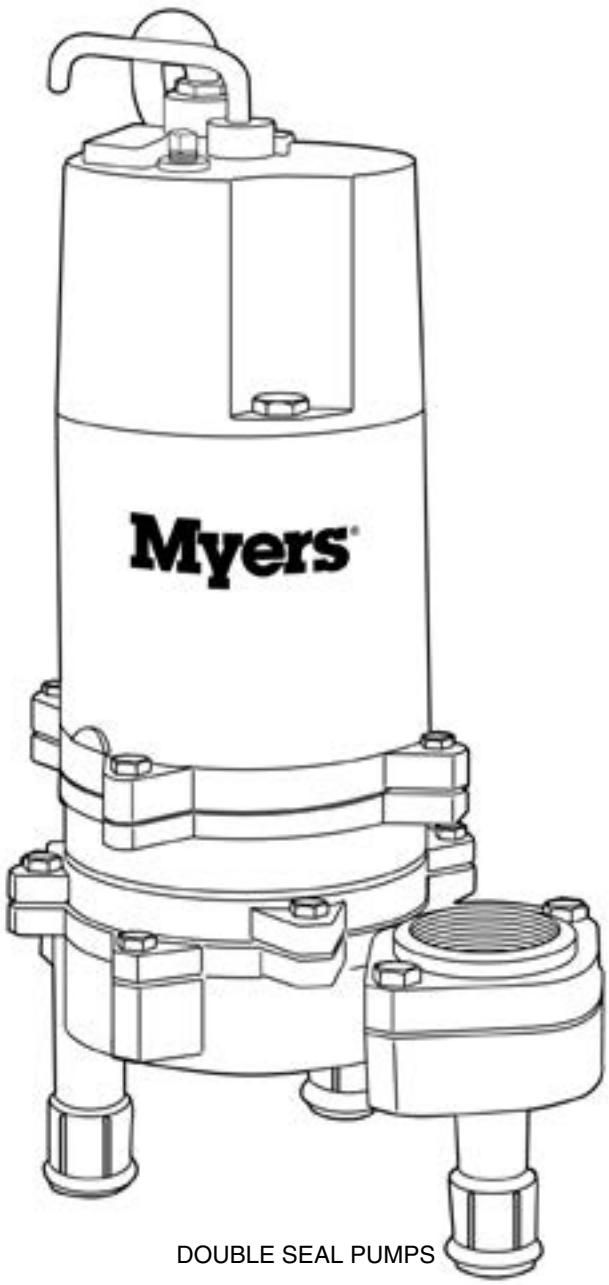
OWNER'S MANUAL

Waste Handling Sump Pumps

MYERS®



SINGLE SEAL PUMPS

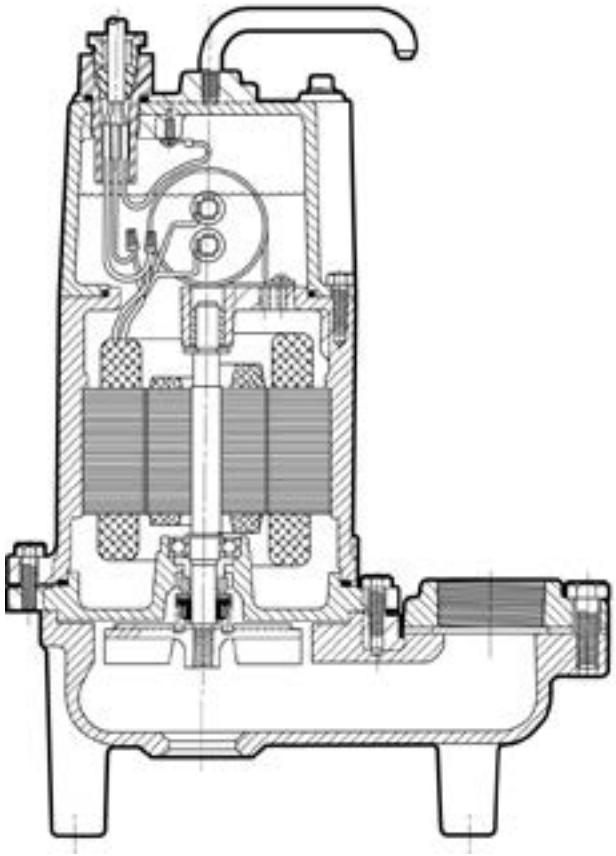


DOUBLE SEAL PUMPS

293 WRIGHT STREET, DELAVAN, WI 53115 WWW.FEMYERS.COM
PH: 888-987-8677

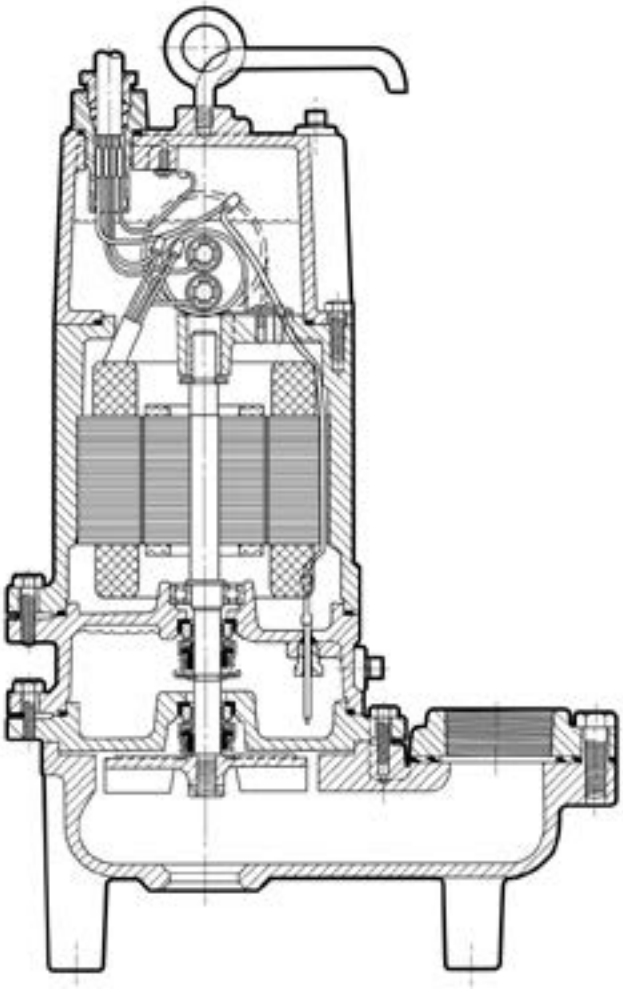
23833A201 (03/27/14)

TYPICAL SECTIONAL DRAWINGS
FOR WHR/WHRH AND WHRE
SINGLE AND DOUBLE SEAL WASTE HANDLING PUMPS



SINGLE SEAL
FIG. 1

WHR
WHRH
WHRE



DOUBLE SEAL
FIG. 2

WHR-DS	WHR-SD L/D
WHRH-DS	WHRH-DS L/D
WHRE-DS	WHRE-DS L/D

GENERAL DESCRIPTION AND USES

The WHR and WHRH Series are solids handling pumps that can be used to pump RAW SEWAGE for COMMERCIAL and DOMESTIC use, but are not intended to handle large rags, mop heads, or strings. All pumps can be used for normal sump duty where extra capacity is required. The WHRE Series is for pumping sump water and EFFLUENT from septic tanks only. DO NOT USE FOR RAW SEWAGE.

RECESSED IMPELLERS

All of the pumps are of the recessed impeller type that provides a clear volute passage for solids as no solids pass through the impeller. All of the pumps listed can be used to pump septic tank EFFLUENT or GROUND sewage as used in some pressure sewer systems.

DESIGN OF PRESSURE SEWER SYSTEMS

MYERS has available complete computer SOFTWARE for designing PRESSURE SEWER SYSTEMS. This gives pipe sizes to use and gives exact flow from any pump or group of pumps in the system when operating simultaneously. This design DISK for IBM or COMPATIBLE computers is available to engineers on request.

DOUBLE SEAL PUMPS

All double seal models have two seals with an oil chamber between the seals so that seal faces of both lower and upper seals are oil lubricated for longer life and greater protection against water leaking into the motor windings. These double seal units are made with and without a seal leak probe. The leak probe in the oil seal chamber detects any water leakage into the chamber and turns on a red signal light in the control panel. Pumps should be removed from sump and seals replaced after seal light shows in the panel. Control panels must be used for pumps having the seal leak probe.

Double seal pumps without the seal leak probe, should be pulled and seal leak checked in 12 to 18 months.

LEVEL CONTROLS

All pumps must use sealed level control switches for automatic operation. MLC and MFLC controls have sealed mercury switches that are 1 H.P. rated at 230 volts. ALC and AWS-1 controls have sealed mechanical switches that are rated 2 H.P. at 230 volts.

Simplex single phase pumps can be made automatic by attaching MFLC or MLC controls to pump. These switches have a fixed draw off level of 8 to 10” and can be used up to 1 H.P. For higher H.P. ratings two mercury switch (or SMNO) controls with a magnetic starter can be used.

The ALC and AWS-1 controls can be used for simplex single phase pumps with ratings up to 2 H.P.

All duplex systems must use pilot mercury control sensor switches with control box and magnetic starters.

Plug in cords can be used on all the single phase pumps without seal leak detector. The cord has a GROUND pin that plugs into a grounded receptacle. The grounded receptacle cannot be used in the wet sump or basin due to DANGER of current leakage.

Sealed junction boxes must be used in wet sumps or basins to make connections to motor cord. The AWS-1 control also acts as a sealed junction box for connecting power cord to pump cord.

SAFETY WARNING

All pumps single or three phase must have a GROUND WIRE that is connected to a screw in the metal pump housing. This wire goes to the control box and is connected to a good outside GROUND such as a metal water pipe or GROUND STAKE driven at least 6 feet into the ground.

MOTOR TYPES

All single phase pump motors are of the permanent split capacitor type that do not require a start switch or start relay.

Automatic reset overload switches are attached directly to the motor windings.

Three phase pump motors require a magnetic starter with 3 leg overload protection.

INSTALLATION

Pumps can be installed inside sealed basin with proper venting for either simplex or duplex systems. SIMPLEX or DUPLEX basin systems are available. See Figs. 3 and 4.

It is not recommended that basins be used for RAW SEWAGE inside the home, but are for use in office buildings and small industrial buildings and factories.

Basins can be used inside the home where extra capacity sump pumps are required for water softeners and wash water.

If raw sewage must be pumped in the home use outside basins that connect with pressure sewer mains or gravity sewers, or run to septic tanks.

If an inside basin is used it is usually installed at time of pouring the concrete floor.

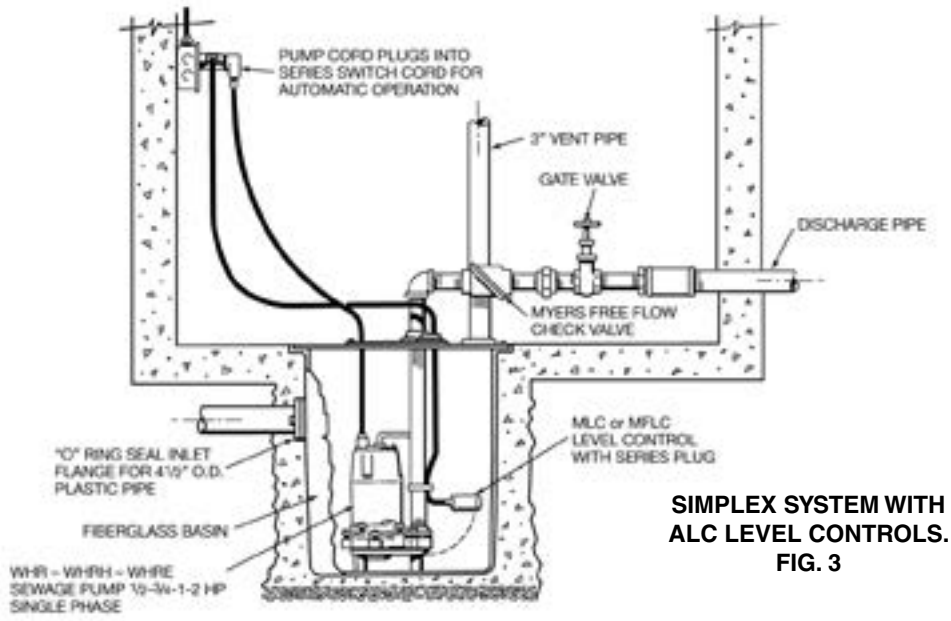
Pumps can be installed in a compartment of septic tanks for pumping to pressure sewer mains, gravity sewers, leach fields, or evaporation mounds. See Figs. 5, 6 and 7.

PROPER VENTING FOR BASINS INSTALLED INSIDE

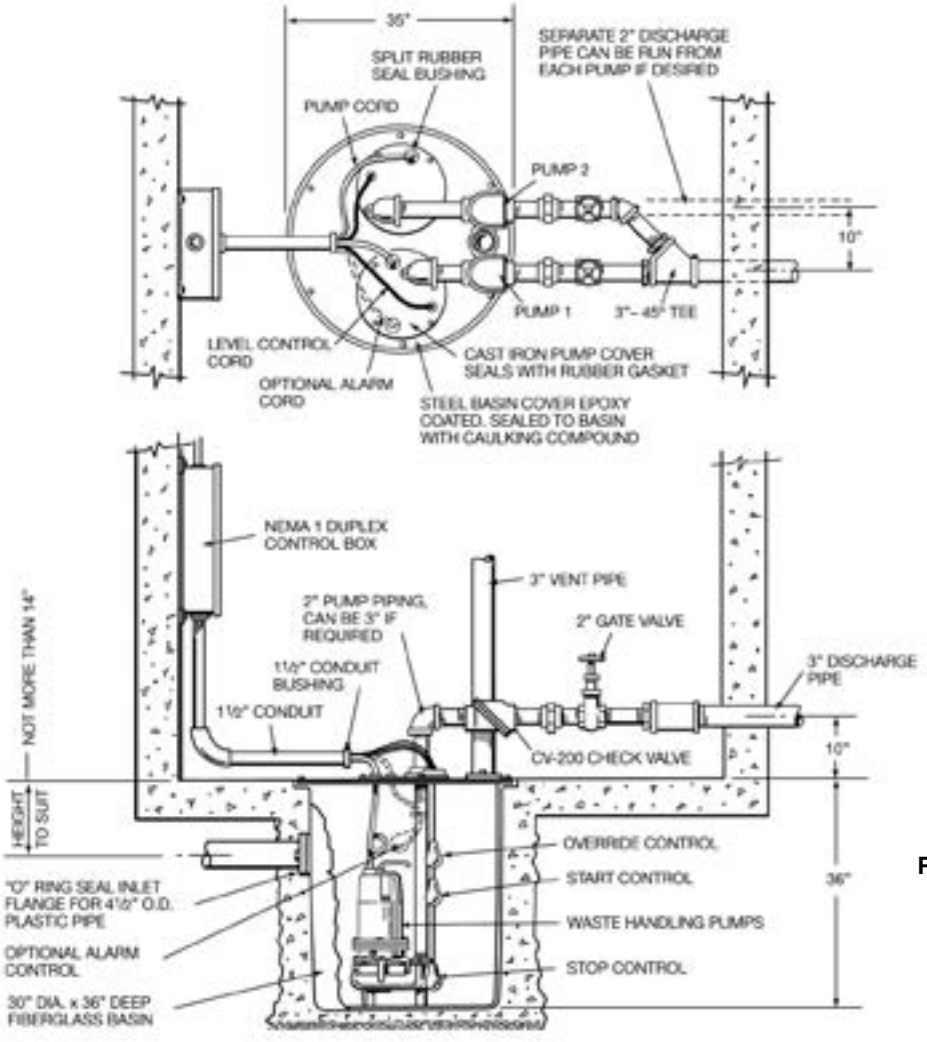
All inside sealed basins must have a 2” or 3” vent pipe installed in accordance with local codes. Sumps for handling softener water, wash or drainage water do not have to be sealed or vented.

Outside basins are usually of fiberglass and from 4 to 8 feet deep and have a sealed cover. Pump is usually installed with a lift out rail system so that pump can be removed without disturbing the discharge piping. The check valve comes out with pump for servicing. Complete LIFT OUT SYSTEMS mounted in fiberglass basins are available to meet customer’s specifications.

⚠WARNING Sump basin must be vented in accordance with local plumbing codes. These pumps are not designed for and CANNOT be installed in locations classified as hazardous in accordance with the National Electric Code ANSI/NFPA 70.



SIMPLEX SYSTEM WITH ALC LEVEL CONTROLS. FIG. 3



DUPLEX SYSTEM WITH MERCURY FLOAT OR SMNO CONTROLS AND REMOTE CONTROL BOX. FIG. 4

PIPING

Pumps are fitted with 2" or 3" female threaded pipe flange. Galvanized or PVC plastic pipe can be used. Plastic pipe is preferred for raw sewage or septic tank effluent.

CHECK VALVES AND SHUT-OFF VALVES

All pumps must have check valves and shut-off valves in the discharge line. Check valves must be flapper type with outside spring or ball type. Shutoff valves can be ball or gate type. Plastic construction for both check and shut-off valves is preferred.

STARTING SIMPLEX SYSTEMS

1. For single phase pumps with MLC or MFLC control, plug cords piggy back into receptacle and run water into sump until pump starts. Allow pump to make several on/off cycles. Leave power cord plugged in. If pump runs but does not pump it may be air locked. Unplug cord and crack union in the discharge line then restart pump, this should vent off any trapped air. Re-tighten union.
2. With 2 "mercury" controls turn on power at the control box and run water into sump. When level gets above top control pump should start and continue to pump until level drops to lower control stopping pump. Run pump through several cycles. If pump runs but does not pump, check air lock as in 1. Leave power on for automatic operation.
3. Where ALCL or AWS-1 controls are used plug in cord or turn on power and run water into sump, when level is about half way up on upper weight pump should start and run until level drops until about half the lower weight is above water, stopping pump. Check 1, if pump does not operate properly. For all cases if motor does not start when water level is up check for proper plug in or that start switch is on, or if fuse is blown. ALWAYS HAVE ELECTRICTIAN MAKE ELECTRICAL CHECKS.

STARTING PUMP "WHE-P" (AUTOMATIC) USING MECHANICAL SWITCH WITH SERIES PLUG-SIMPLEX SYSTEM

1. These pumps have a mechanical (mercury-free) float switch with a 20 ft. cord and 115 volt or 230 volt series piggy-back plug on ½ H.P. with switch mounted to the pump. On ¾ H.P. and 1 H.P., it requires 20 ft. cord and 230 volt only.
2. Plug the switch cord plug into a proper voltage properly grounded outlet.
3. Plug the pump power cord into the back of the switch cord series plug.
4. Tape the cords to the discharge pipe every 12".
5. Run water into sump until pump starts. Be sure discharge line valve is open.
6. Allow pump to operate through several on/off cycles.
7. If pump does not operate properly, see trouble shooting service chart for remedy.

HOW TO SET CONTROLS AND START DUPLEX SYSTEMS

CONTROL BOX MUST BE USED ON ALL DUPLEX SYSTEMS

1. 4 "mercury" controls are used for duplex systems. Set turn-on control 6" to 8" above pumps. Set turn-off control 8" to 10" above bottom of sump. Set override control 6" to 8" above turn-on control. Set high level alarm control about 6" to 8" above override control. Mark all control cords so that they can be connected correctly in the control box. See Fig. 4.
2. Turn Hand-Off-Auto switches to OFF position and close circuit breaker.
3. Turn H-O-A switches to the AUTO position and run water into sump. When level floats up and activates the turn-on switch one pump should start and run, pump will continue to run until lower control is exposed stopping pump.
4. Run water into sump again and when level floats up turn-on control, opposite pump will start and run until level drops exposing lower control, stopping pump.
5. Run this test several times to be sure pumps are alternating properly.

AIR LOCKING

A sump pump is said to be air locked if water traps in the pump and it cannot get out, thus preventing pump from operating. ALL MYERS SUMP PUMPS HAVE A SMALL AIR VENT HOLE IN THE IMPELLER CHAMBER TO LET OUT TRAPPED AIR. IF THIS HOLE BECOMES PLUGGED, PUMP MAY AIR LOCK. THIS USUALLY HAPPENS ON PUMPS THAT ARE USED MAINLY IN THE SEASONS. IN SUMMER MONTHS, THE PUMP MAY BE TURNED OFF AS SUMP WATER DRIED UP. WHEN PUMP IS TURNED ON AGAIN AND WATER COMES UP IN SUMP, THE AIR WILL TRAP IN PUMP IF NOT VENTED.

AS A SECONDARY PRECAUTION IN INSTALLATIONS OF THIS TYPE – 1/8" HOLE SHOULD BE DRILLED IN THE DISCHARGE PIPE BELOW THE CHECK VALVE. THE CHECK VALVE SHOULD BE 12 TO 18 INCHES ABOVE PUMP DISCHARGE. DO NOT PUT CHECK VALVE DIRECTLY INTO PUMP DISCHARGE OPENING.

In normal sumps where the pump is operating daily, air locking rarely occurs.

LEVEL CONTROL SYSTEMS AVAILABLE

1. Simplex single phase packaged automatic system. This system has the MLC or MFLC mercury float switch attached directly to the pump. This system has a fixed pump-off level of 8" to 10" and is usually used for drainage water and is good up to and including 1 H.P.
2. Simplex single phase pumps can use the ALC or AWS-1 controls which are mounted separate from the pump. These controls can be used up to 2 H.P. motors. See Fig. 3
3. Simplex pumps can use two "mercury" controls mounted separate from the pump. These controls must be used with a control box and magnetic contactor. These controls can be spaced apart for any draw off level required and can be used for 2 H.P. or larger motors.
4. Duplex pump systems must use only the "mercury" controls with electrical control box. These control boxes mounted remote from the sump tank are generally of plastic construction for best corrosion resistance. See Fig. 4.

MOTOR OVERLOAD PROTECTION

All single phase motors have built-in automatic reset overload switches fastened directly to the motor windings.

All 3 phase motors must be installed with magnetic starters having 3 leg overload protection.

HOW TO SET CONTROLS AND START SIMPLEX SYSTEMS

1. Automatic systems – These systems have the MLC, MFLC, or ALC switches mounted on the pump, so pump is installed in the sump and motor cord is plugged into GROUNDED receptacle. For sealed sump cover, power cord is brought through a split rubber plug in the sump cover.
2. Where 2 “mercury” controls are used the turn on control is set 3” to 6” above top of motor, and the turn-off control is set about 6” to *’ above bottom of sump. If a high level alarm control is used it is set about 6” above upper control. If sump depth will not allow these settings closer spacing can be used.
3. Where ALLC or AWS-1 controls are used the DISPLACEMENT WEIGHTS are set so that turnon weight is 4” to 6” above top of motor and lower weight is set about 6” above sump bottom.
4. Repeat this operation with one pump off which will duplicate a failed pump condition. When the level reaches the override control the pump that is turned on should start and run and pump down sump level.
5. To check high level alarm, again turn both switches to OFF and fill sump until level is above the alarm control. Turn switches to Auto position and ALARM BUZZER should sound and alarm light should come on. When level drops below the alarm control buzzer should stop.
6. If pumps operate as described then set both H-O-A to Auto and pumps are ready to operate automatically.
7. If pumps do not operate properly then check as described for simplex systems. See page. 13.

⚠ WARNING NEVER WORK ON PUMPS OR CONTROL BOXES UNTIL CIRCUIT BREAKERS ARE TURNED OFF.

Always have a qualified ELECTRICIAN make electrical connections and service checks.

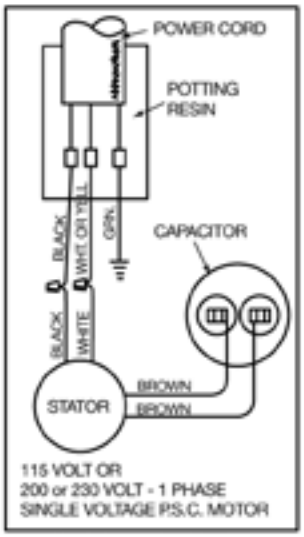
SPECIAL INSTRUCTIONS FOR THREE PHASE PUMPS

1. **⚠ WARNING Only qualified persons shall conduct services and installations of this pump. The pump must be wired by a qualified electrician, using an approved starter box and switching device.**
   ⚠ WARNING Risk of electric shock. Do not connect conduit to pump
2. Three phase pumps are always installed with control boxes having magnetic starters with 3 leg overload protection. **DO NOT TRY TO RUN THREE PHASE PUMPS DIRECTLY ACROSS THE LINE.**
3. To Connect Pump: Run wire from pump to the bottom of control box or appropriate junction box suitable for enclosing splice connections. A hole must be cut into the control box for the wires. With power to control box off, connect green (ground) line to ground lug. Connect black (power) wires to power lead terminals. Make sure that all wires are inside control box and not in a position to be pinched or shorted when the door is closed. See wiring diagrams, page 8.
4. All three phase motors can run either direction, ROTATION can be changed by interchanging any two line leads at magnetic starter. **BE SURE CIRCUIT BREAKER IS OFF BEFORE MAKING THIS CHANGE.** To find if rotation is correct operate pumps and check delivery operation. If flow and head is low (refer to pump curves shown in this manual) the rotation is wrong. With duplex pumps check operation of both pumps. All pump impellers either single or three phase must turn counterclockwise when looking into pump inlet. If uncertain of rotation, **TURN OFF POWER** and lift pump from basin with cord connected and lay pump on side so impeller can be seen. Turn on power and start pump using hand position of H-O-A switch. Turn on and off fast so that coast of impeller can be seen. **NEVER PUT HAND OR FINGERS ON THE IMPELLER**. Interchange any two line leads at the magnetic starter to change rotation:

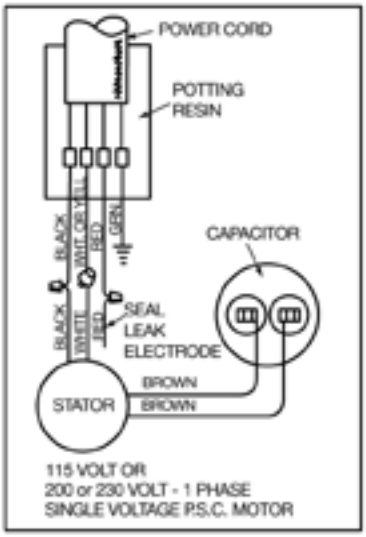
WIRING DIAGRAMS SINGLE PHASE MOTORS

SINGLE PHASE PUMPS

⚠ WARNING Risk of electric shock. This pump is supplied with a grounding conductor and grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle.

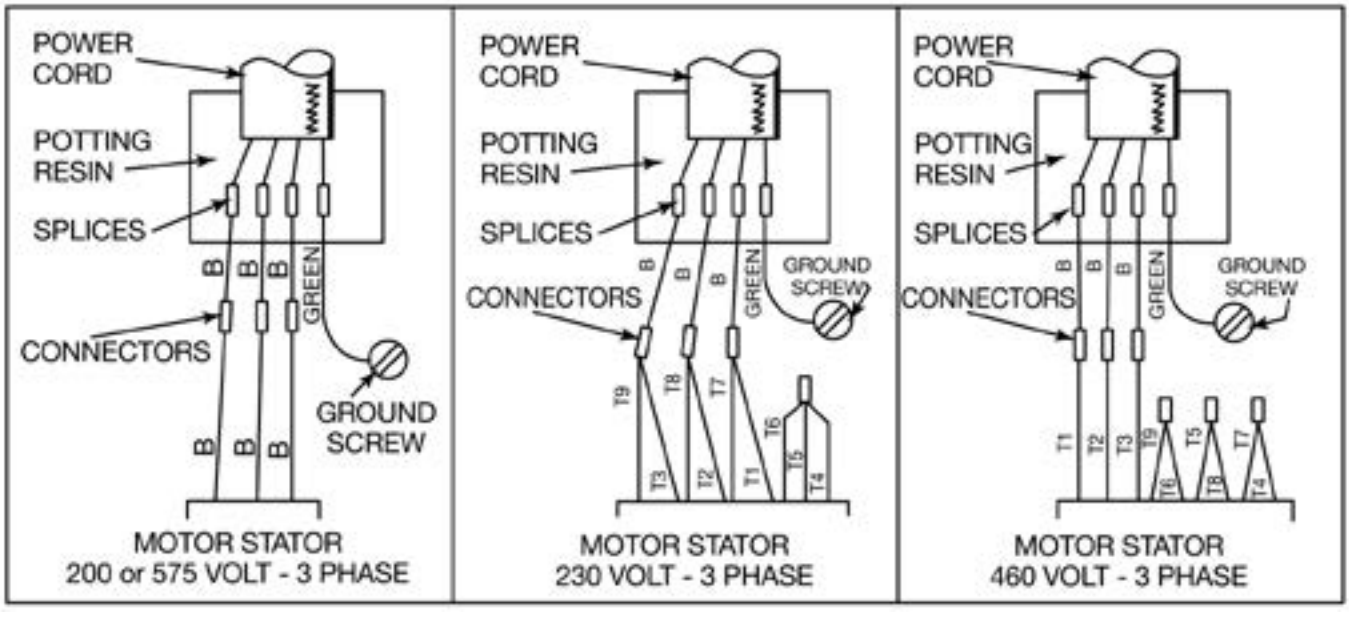


SINGLE SEAL PUMPS AND DOUBLE SEAL PUMPS WITHOUT SEAL LEAK PROBE



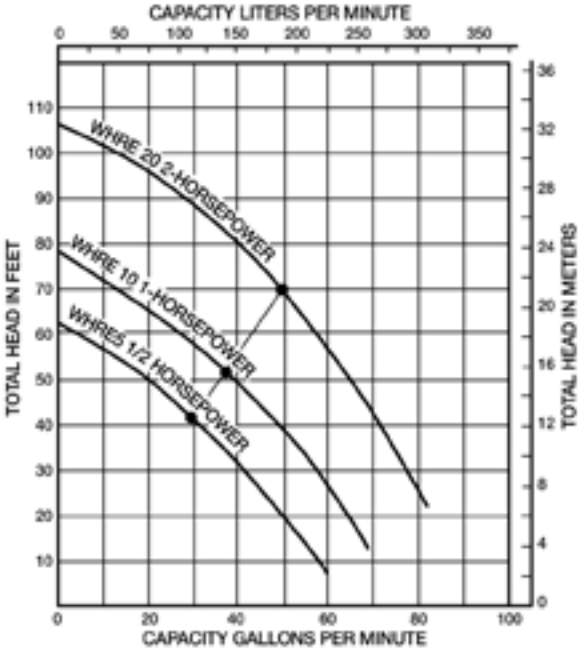
DOUBLE SEAL PUMPS WITH SEAL LEAK PROBE
(RED CONDUCTOR IN POWER CORD IS FOR SEAL LEAK PROBE)

WIRING DIAGRAMS FOR 3 PHASE MOTORS

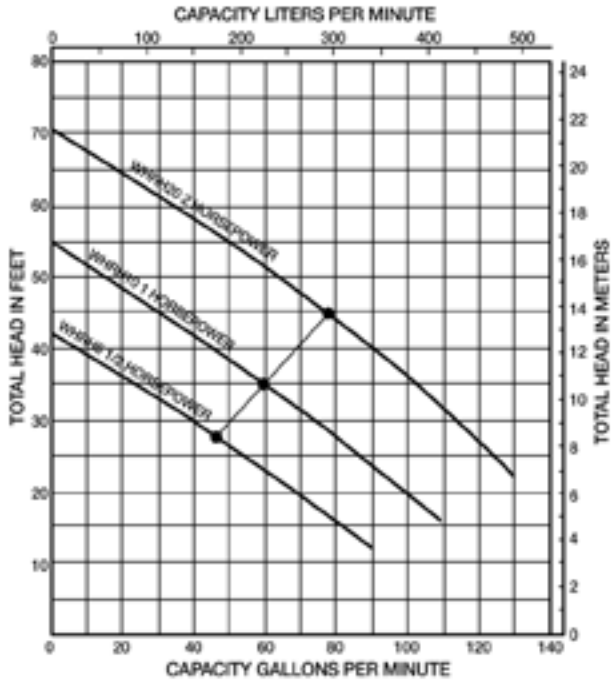


FOR SINGLE SEAL PUMPS AND DOUBLE SEAL PUMPS WITHOUT SEAL LEAK PROBE

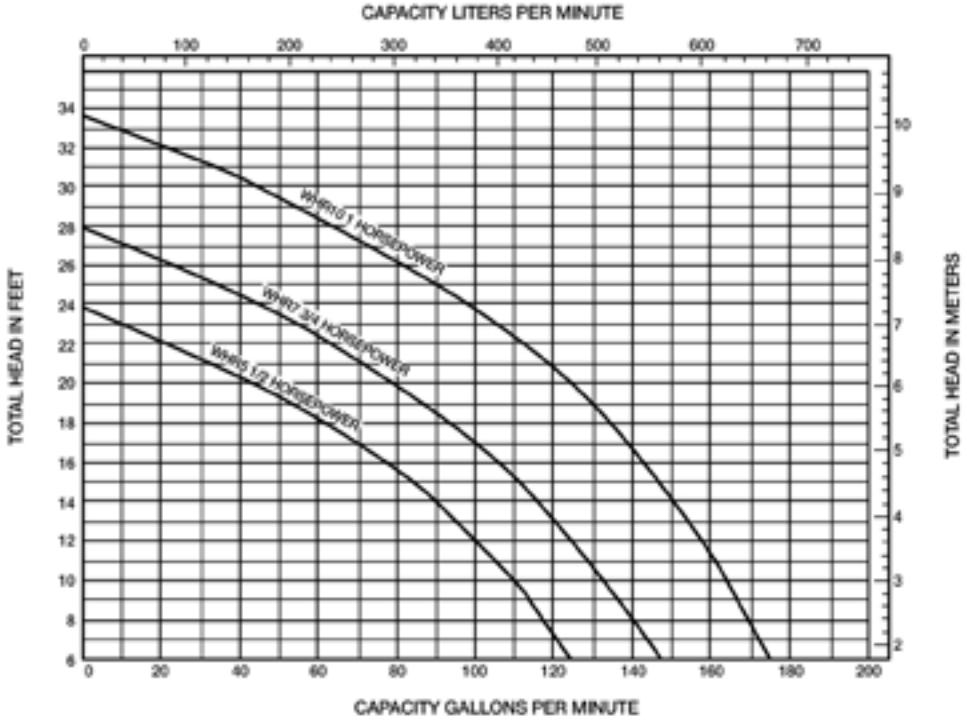
PERFORMANCE CURVES



PERFORMANCE CURVE
WHRE SERIES EFFLUENT PUMPS



PERFORMANCE CURVE
WHRH SERIES WASTE HANDLING PUMPS



PERFORMANCE CURVE
WHR SERIES WASTE HANDLING PUMPS

FIG. 5 PUMP IN SEPARATE TANK PUMPING TO SEEPAGE MOUND

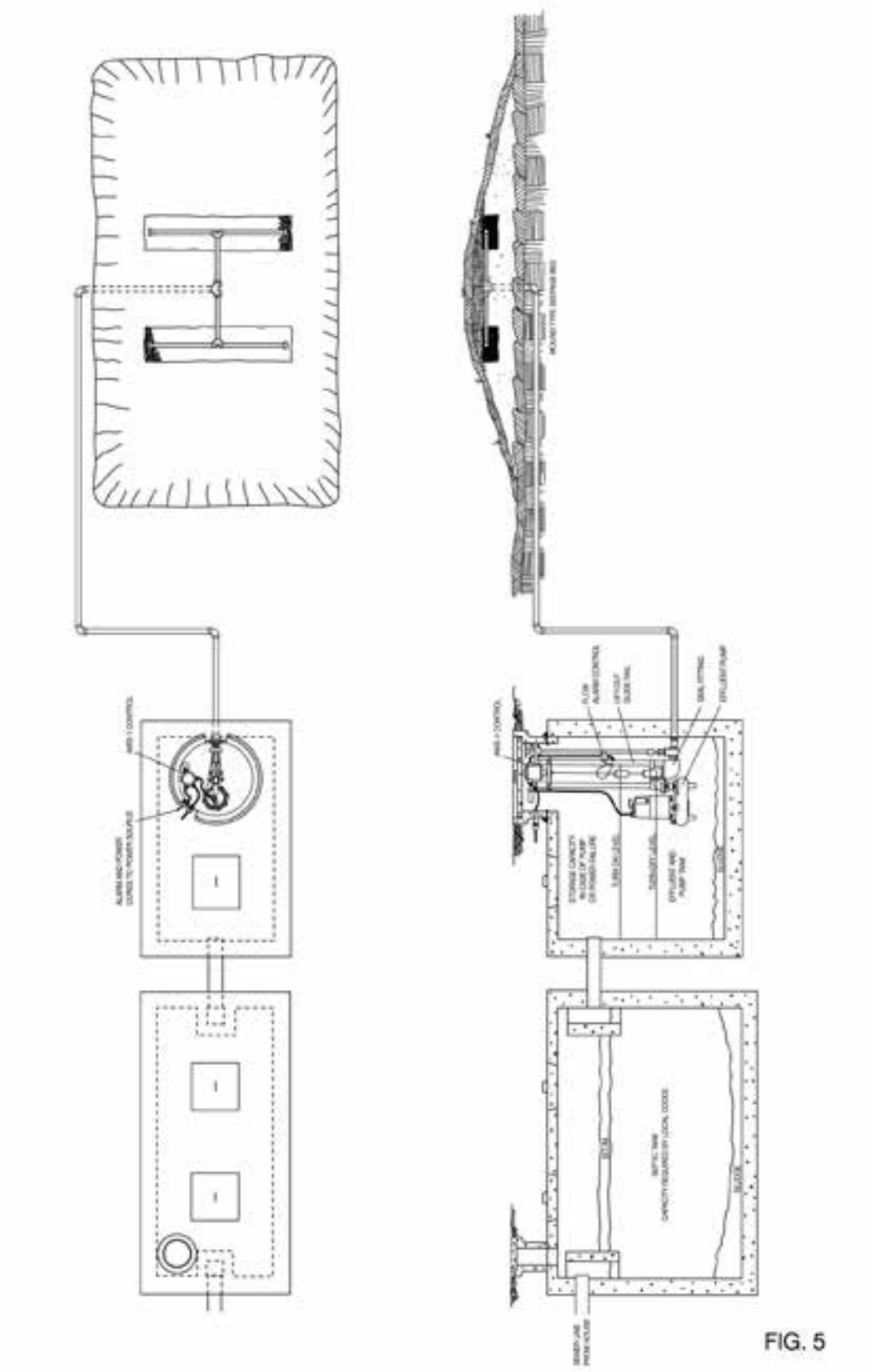


FIG. 5

FIG. 6 PUMP INSTALLED IN FIBERGLASS BASIN AT OUTLET OF SEPTIC TANK USED WHEN PUMPING INTO PRESSURIZED SEWER MAIN OR LEACH FIELD

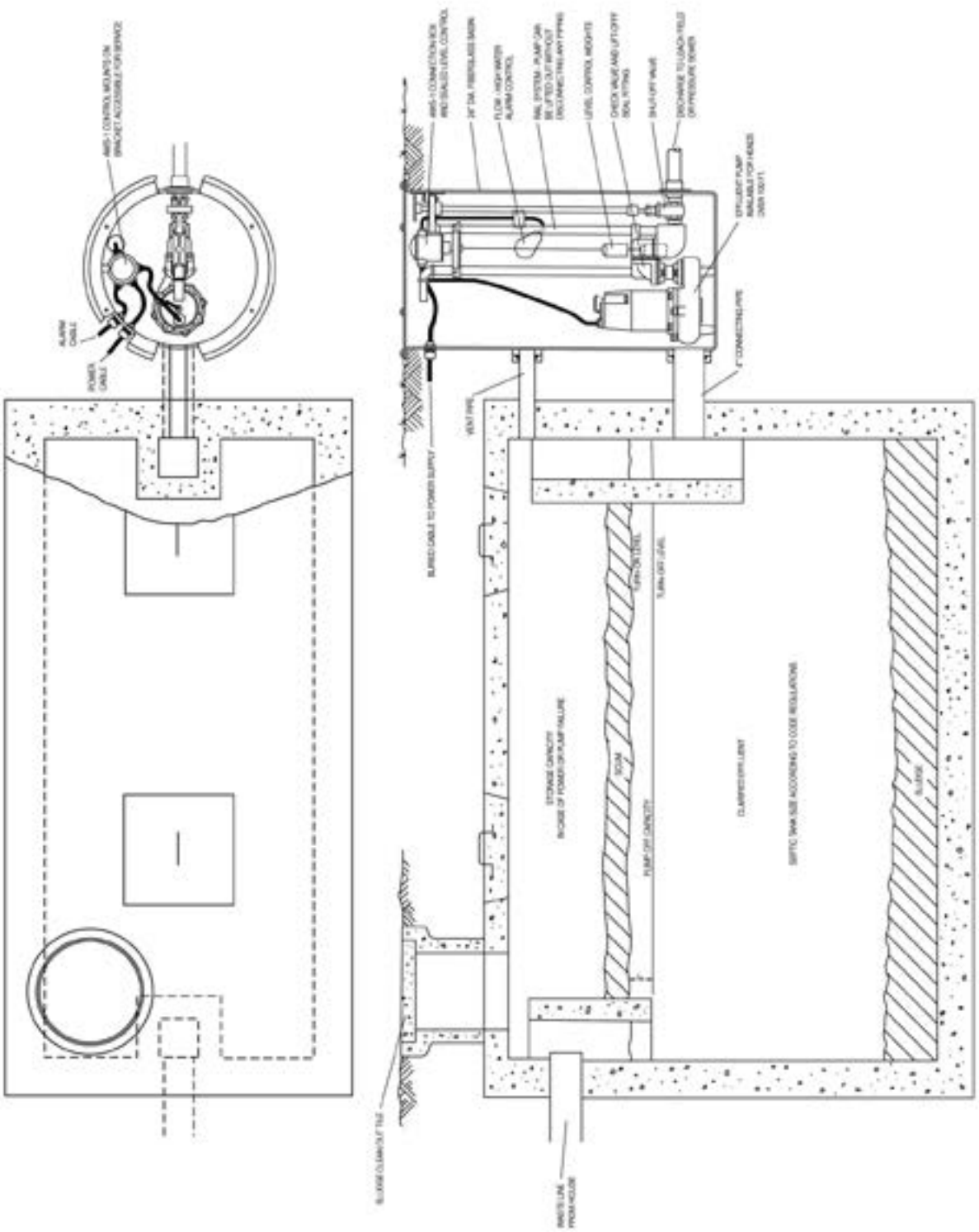


FIG. 6

FIG.7 PUMP AND CONTROLS INSTALLED DIRECTLY IN SEPTIC TANK USED WHEN PUMPING INTO PRESSURIZED MAIN OR LEACH FIELD

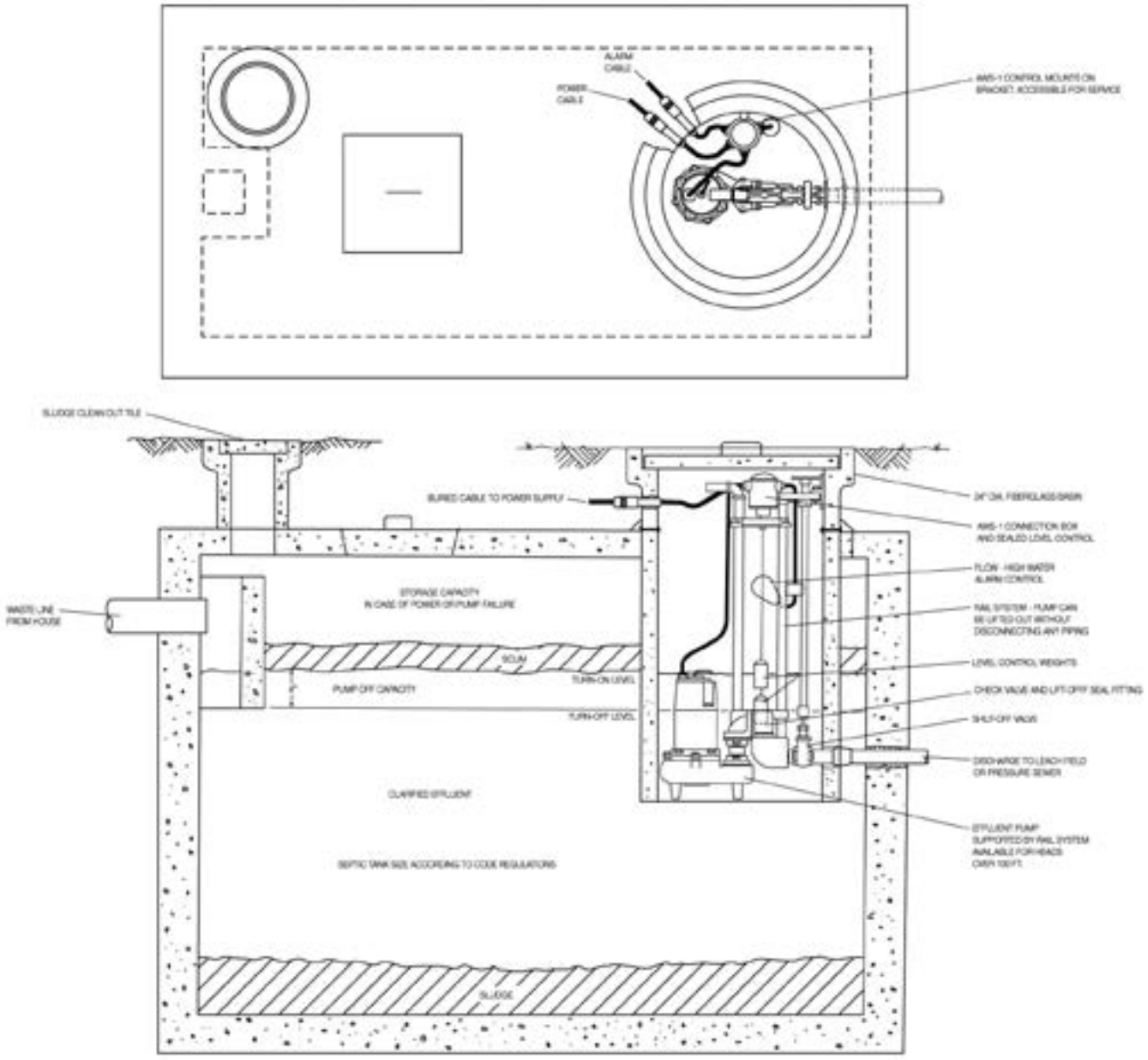


FIG. 7

POINTS TO CHECK IF PUMP DOES NOT RUN OR DOES NOT RUN PROPERLY

1. Pump does not run or start when water is up in sump.
   a. Check for blown fuse or tripped circuit breaker.
   b. Check for defective level switch.
   c. Where control panel is used be sure H-O-A switch is in the Auto position. Turn switch to the HAND position and if pump runs then trouble is in the automatic electrical system. Have an ELECTRICIAN make electrical checks.
   d. Check for burned out motor. Occasionally lightning can damage a motor even with lightning protection.
   e. Where plug-in cords are used be sure contract blades are clean. DO NOT USE PLUG-IN CORDS INSIDE A SUMP OR WET WELL.
2. Pump runs but does not deliver flow.
   a. Check for air lock. Start and stop pump several times if this does not help it may be necessary to loosen a union in the discharge line to relieve air lock.
   b. Check valve may be installed backward. Check flow arrow on valve body. Check shut-off valve it may be closed.
   c. Check vertical elevation, it may be higher than pump can develop. (See pump curve.)
   d. Pump inlet may be plugged with a rag or trash. Remove pump to check.
   e. If pump is three phase be sure pump rotation is correct. (See instructions for checking rotation.)
   f. Level control ball or weight may be stuck on side of basin. Trash may be stuck on ball preventing it from floating up.

⚠ WARNING ALWAYS UN-PLUG CORD OR TURN OFF CIRCUIT BREAKER BEFORE DOING ANY WORK ON THE PUMP. If control panel is remote from pump, disconnect lead wires to motor so that someone cannot turn the circuit breaker back on. If motor is three phase mark the leads so they can be replaced in same order.

DISMANTLING PUMP FOR REPLACEMENT OF PARTS

Clean pump thoroughly. Knock off all scale and deposits. Use sandblast if possible. Submerge complete unit in bleach solution for one hour before taking apart.

TO REPLACE CAPACITORS ONLY

The motors on all WHR, WHRH and WHRE series single phase pumps are of the permanent split capacitor type, so have no relays or starting switch, and have only a starting capacitor that is in the circuit for both starting and running conditions.

1. Remove oil fill plug in top of motor and pour out oil. Fig. 8
2. Remove bolts from capacitor housing and bump housing with plastic hammer to loosen. Fig. 9
3. Lift housing and disconnect motor leads and capacitor wires. Fig. 10
4. Remove capacitor clamp and slide out capacitor. Replace with new capacitor and re-connect. Fig. 11
   Wiring connections are given in these instructions.
5. Replace capacitor housing, be sure rubber seal ring is in place. Fig. 12
6. Refill motor with Myers submersible motor oil, DON'T OVER FILL WITH OIL. OIL LEVEL SHOULD BE ONE INCH FROM TOP OF CASTING. Fig. 13
7. Be sure pump turns free before plugging into power. Turn pump on side and turn impeller, using screwdriver in slotted shaft.
   Plug pump into receptacle to test operation. Pump must run quiet and free of vibration.

FIG. 8

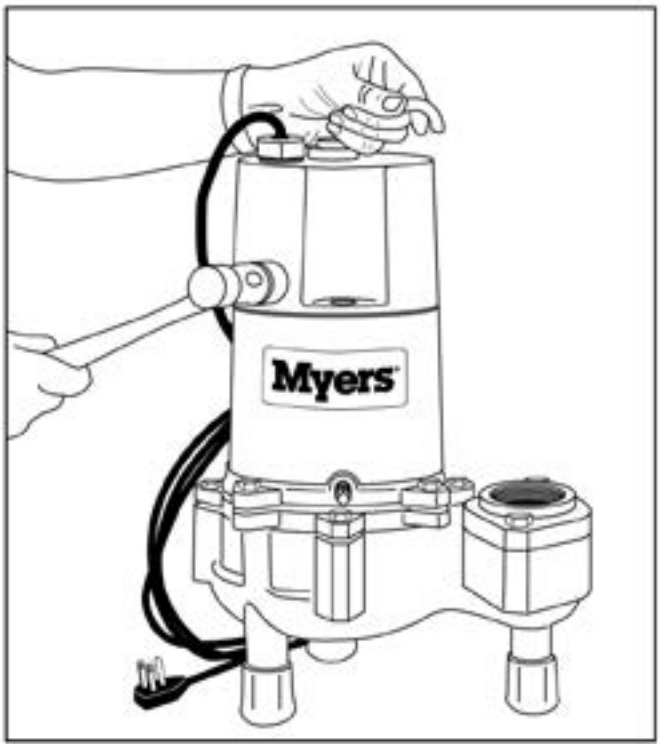


FIG. 9

FIG. 10

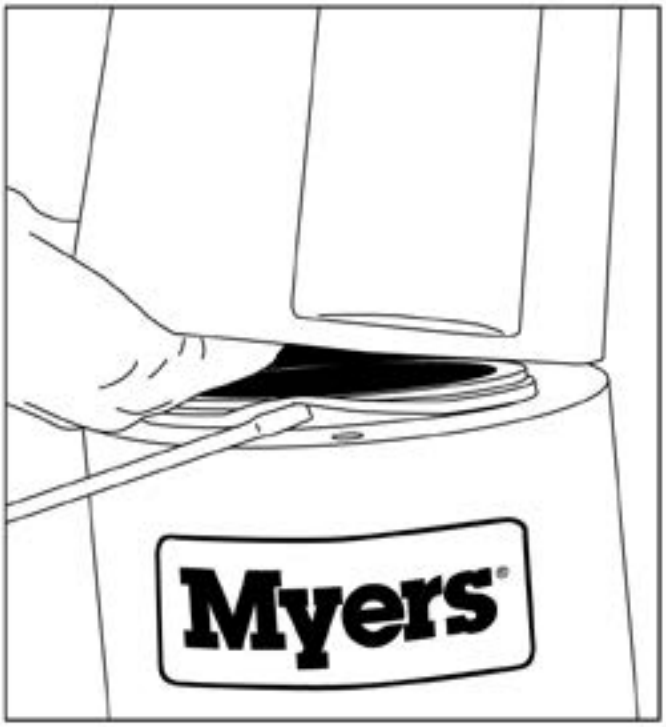


FIG. 12

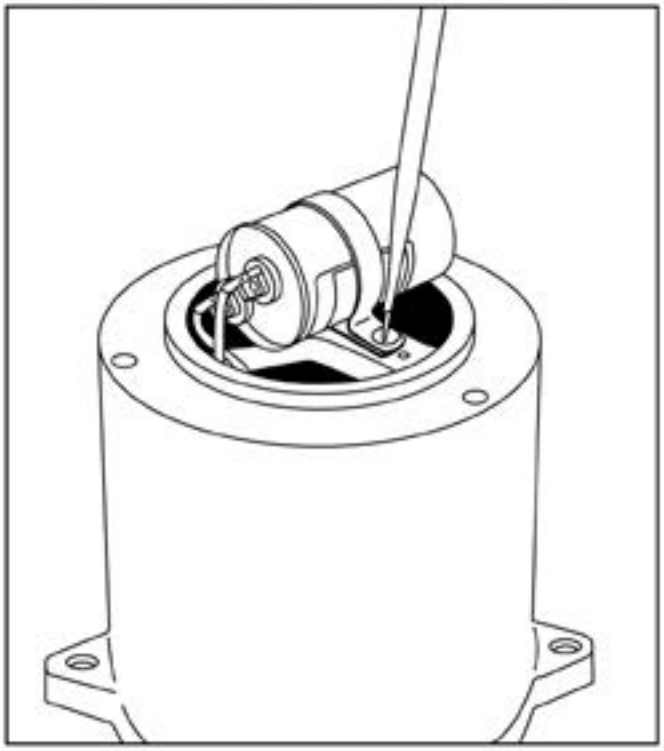


FIG. 11

FIG. 13

TO REPLACE POWER CORD ONLY

1. Remove capacitor housing as described above. Disconnect cord leads from motor and remove ground screw.
2. Unscrew cord bushing and remove from housing. Fig. 14
3. Replace with new fitting and cord, be sure “O” ring seal is in place. Fig. 14
4. Replace ground screw and re-connect motor wires. Wiring diagram is given in these instructions.
5. Replace capacitor housing and refill motor with Myers submersible oil. See Fig. 13 for oil level. One inch from top of casting.

COMPLETELY DISMANTLE PUMP TO REPLACE MOTOR STATOR AND SEAL

1. Pour oil from motor and remove capacitor housing as described above.
2. Remove bolts from motor housing only. Do not remove bolts that hold motor plate to volute case. Fig. 15

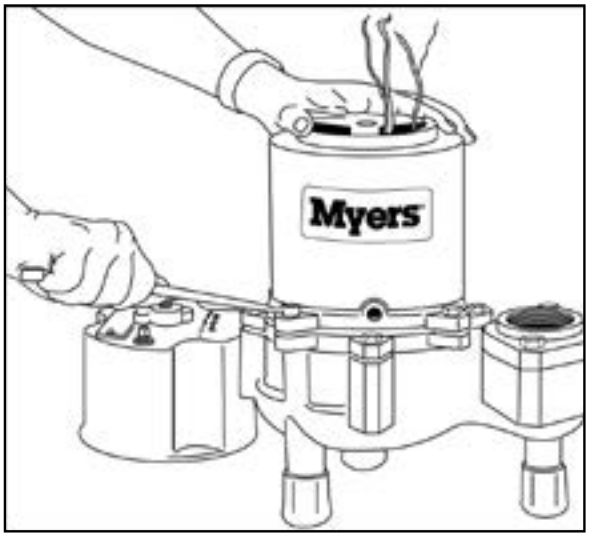


FIG. 15

FIG. 14

3. Lift off motor housing, pry between ears to loosen. Fig. 16
4. Remove case holding bolts and lift out rotating unit. Pry between ears to loosen. Fig. 17
5. Hold rotor and unscrew impeller locking nut. Turn counter-clockwise as thread is right hand. Fig. 18.
6. Unscrew impeller, turn counter-clockwise to loosen. Fig. 19
7. Pry off seal with screwdrivers. It is not important if seal is damaged, as it must be replaced. Replace both parts of seal, never one or the other. Fig. 20.

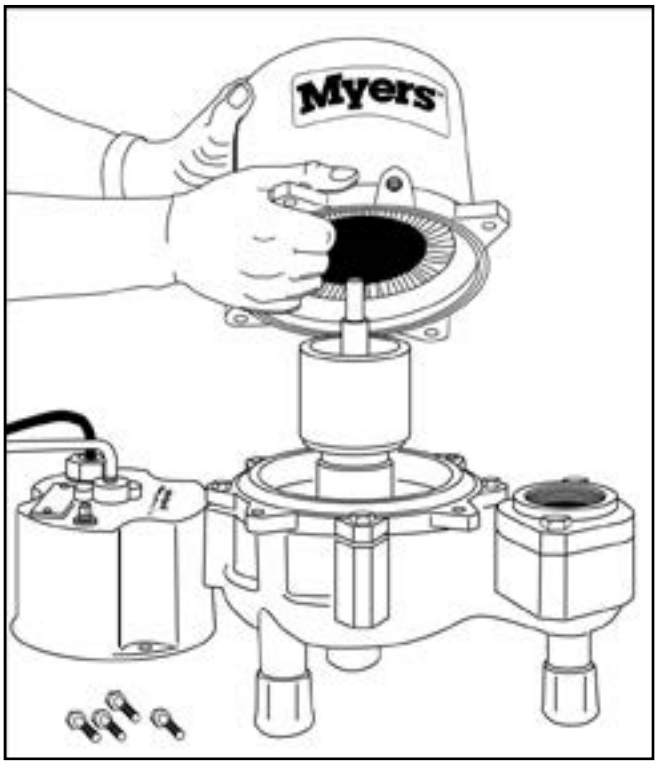


FIG. 16

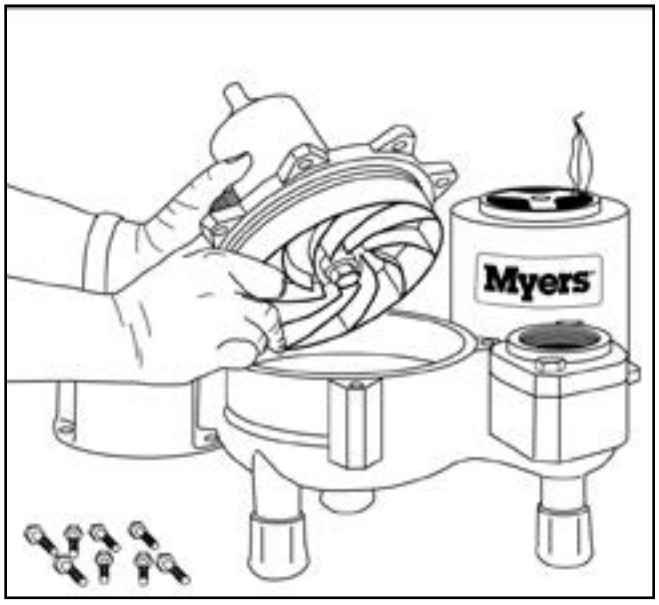


FIG. 17

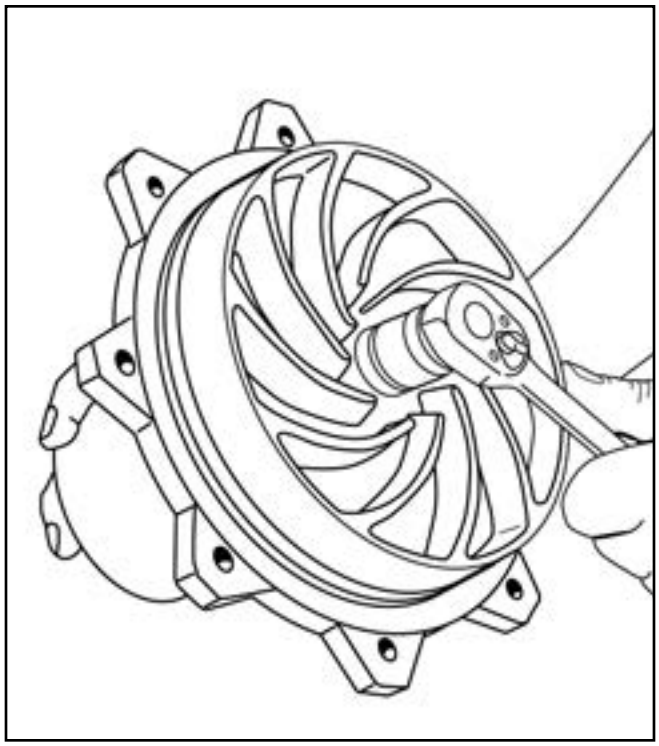


FIG. 18

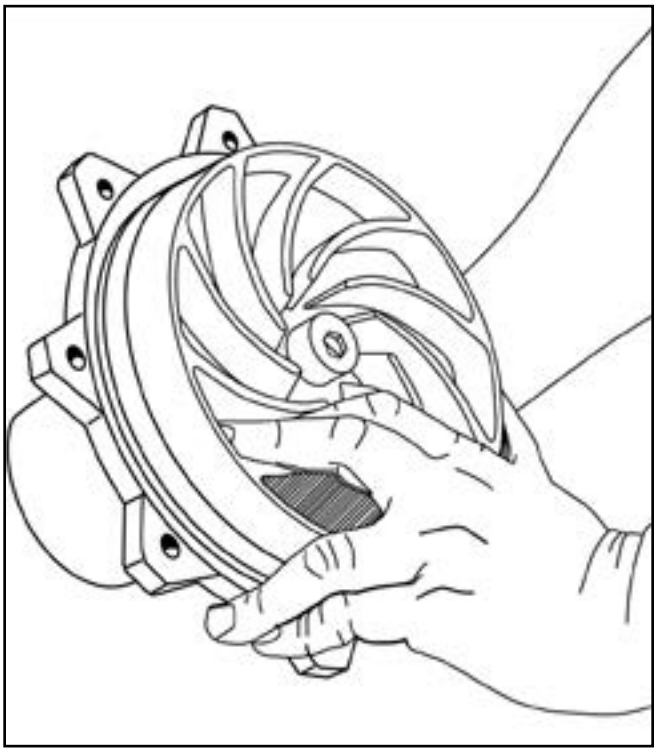


FIG. 19

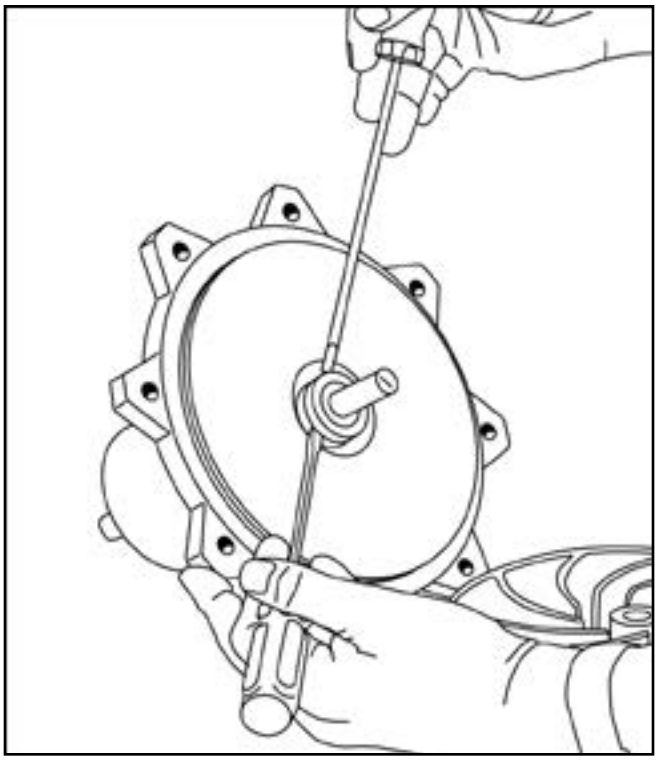


FIG. 20

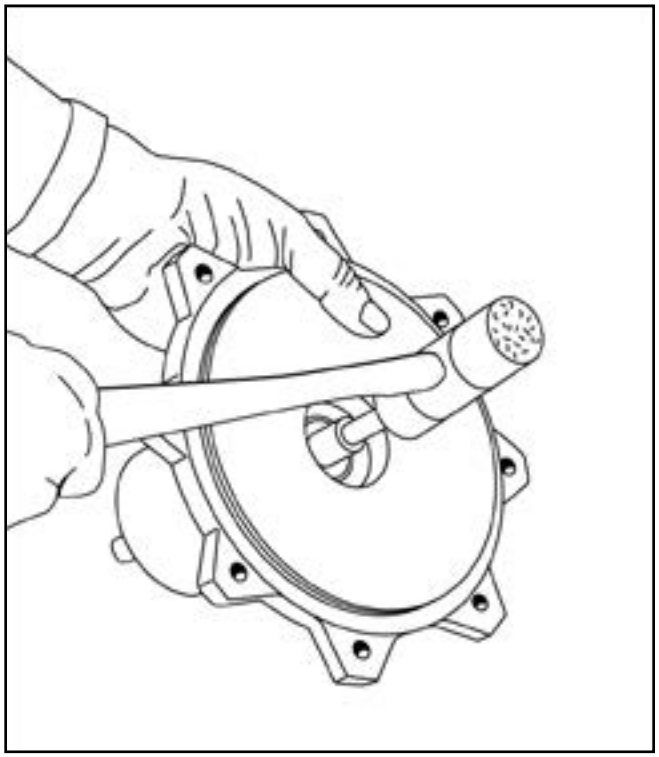
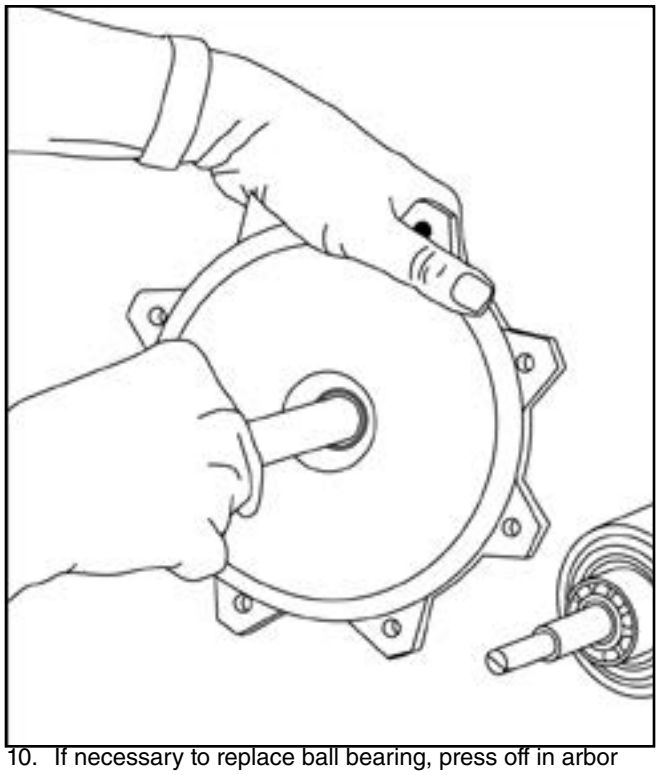


FIG. 21

8. Bump shaft on end with plastic hammer to push ball bearing from lower motor plate. Fig. 21.
9. Clean seal cavity thoroughly before replacing ceramic seal. Use grease on rubber cup of seat and push into housing, use plastic rod to push into place. Clean seal face to remove any speck of dirt, and use light oil on face before installing bellows part of seal. Fig. 22



10. If necessary to replace ball bearing, press off in arbor

FIG. 22

press. Use strips of metal between bearing and rotor to press off. Fig. 23. Always press on inner race of bearing when replacing.

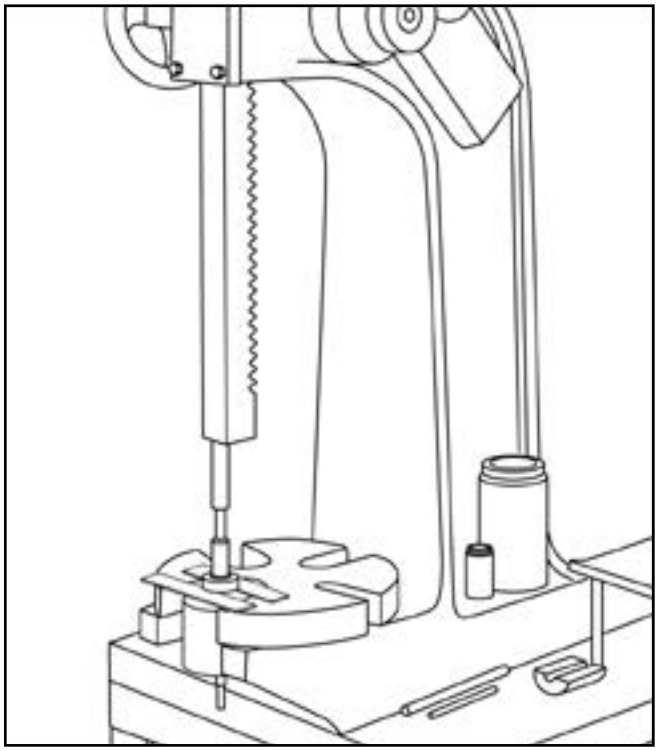


FIG. 23

11. If necessary to replace motor stator, use new housing with stator pressed in. Both housing and stator must be replaced as a unit, as stator is pressed in at factory and is not to be replaced in the field. Fig. 24
12. In reassembly, be sure rubber seal ring and thrust washer are in place as shown. Fig. 25

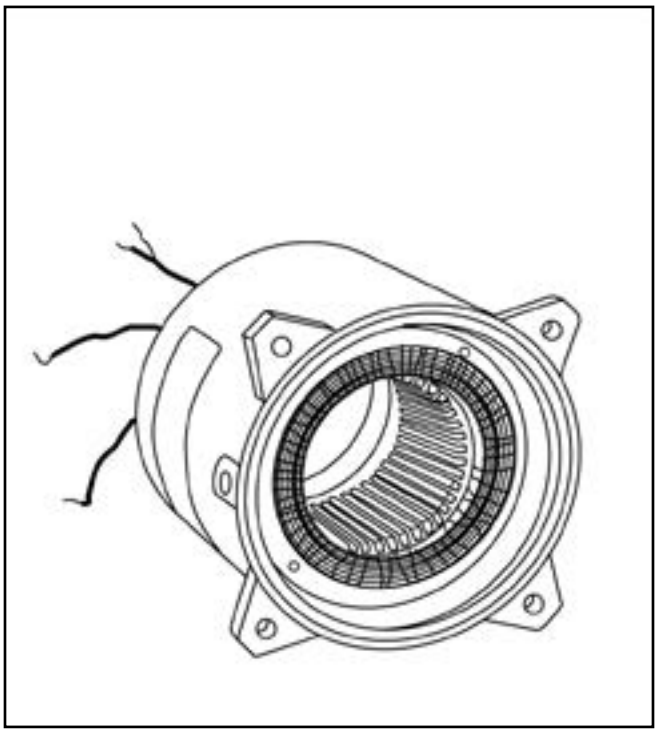


FIG. 24

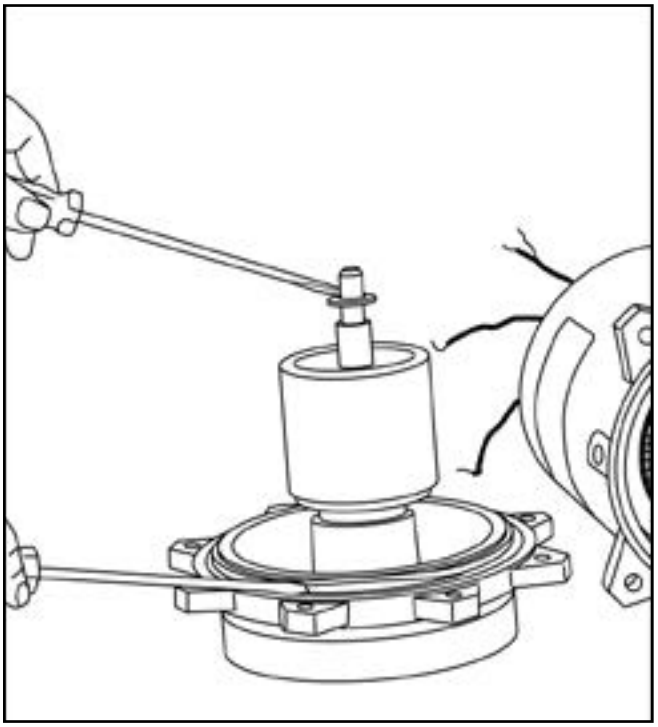


FIG. 25

SPECIAL INSTRUCTIONS FOR REPLACING SEALS IN DOUBLE SEAL PUMPS

1. Remove plugs in motor housing and in seal housing and drain oil.
2. Remove bolts in lower plate only.
3. Lift off pump case.
4. Hold impeller and unscrew holding nut. Hold shaft with screwdriver and unscrew impeller, turn counterclockwise.
5. Pry off seal bellows and ceramic seat. Break seats if necessary to get out as they must be replaced with new parts.
6. NEVER USE OLD SEAL PARTS. USE ONLY COMPLETELY NEW SEALS.
7. Remove snap ring with snap ring pliers.
8. Pry off upper seal bellows and ceramic seat.
9. If no water has entered motor housing (check winding with ohmmeter or megger) wipe seal chamber thoroughly and replace seals.
10. Replace oil in motor housing and seal chamber. Use only MYERS submersible oil.
11. If water has been in motor then remove seal chamber and lift out rotor unit and remove motor stator. See single seal instructions for replacing ball bearing and motor stator.

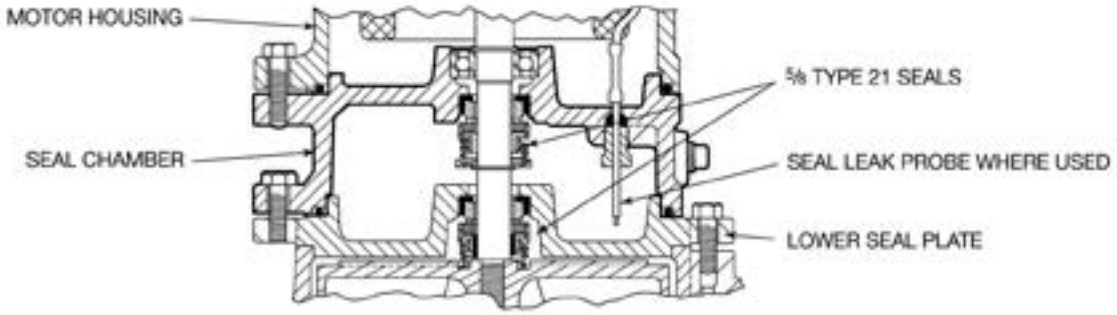
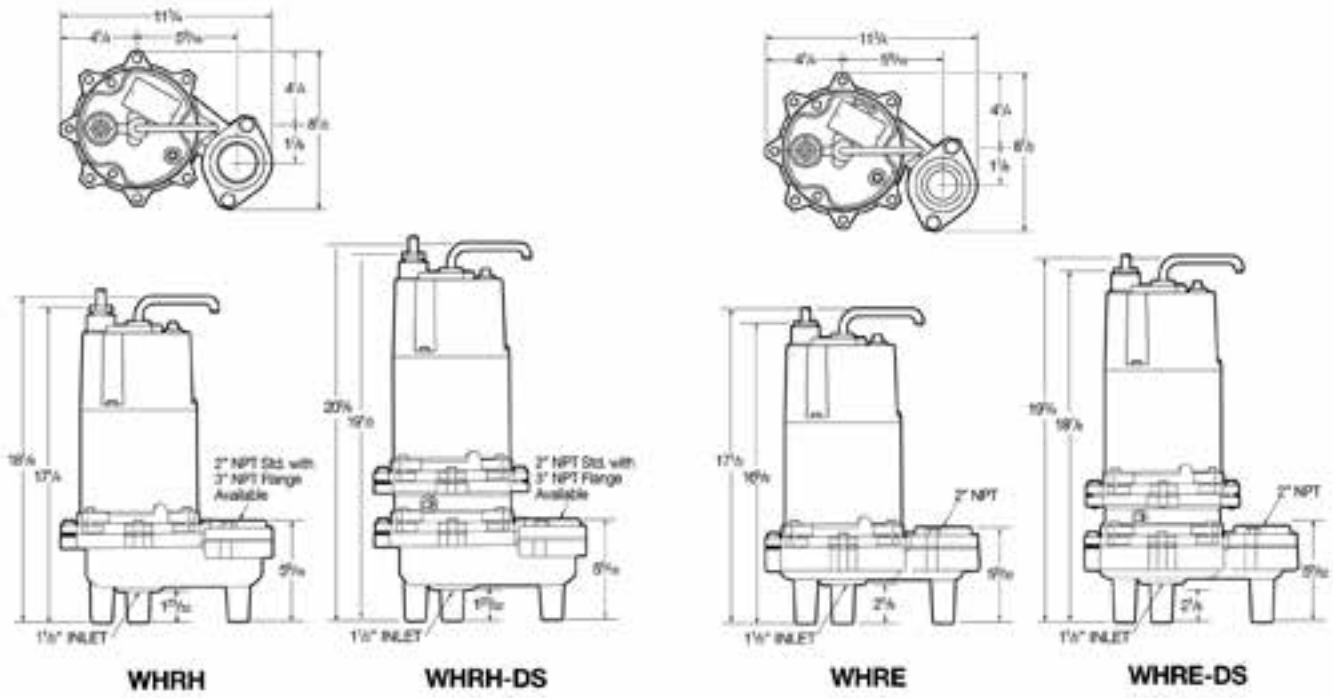
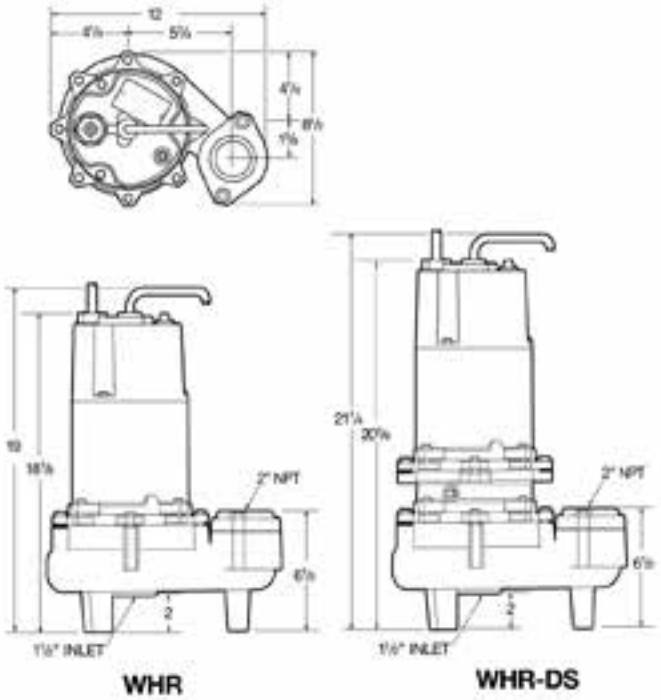


FIG. 26

PUMP DIMENSIONS





LIMITED WARRANTY

F.E. MYERS warrants to the original consumer purchaser ("Purchaser" or "You") of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period shown below.

Product	Warranty Period
Sump/Sewage/Effluent Products	24 months from date of manufacture
Fibrewound Tanks	5 years from date of original installation
Steel Pressure Tanks	5 years from date of original installation
Jet pumps, small centrifugal pumps, submersible pumps and related accessories	*whichever occurs first:* 12 months from date of original installation, or 18 months from date of manufacture

Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Without limiting the foregoing, operating a three phase motor with single phase power through a phase converter will void the warranty. Note also that three phase motors must be protected by three-leg, ambient compensated, extra-quick trip overload relays of the recommended size or the warranty is void.

Your only remedy, and F.E. MYERS's only duty, is that F.E. MYERS repair or replace defective products (at F.E. MYERS's choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service through the installing dealer as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

F.E. MYERS SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION EXPRESSLY PROVIDED HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on the duration of an implied warranty, so the above limitations or exclusions may not apply to You. This warranty gives You specific legal rights and You may also have other rights which vary from state to state.

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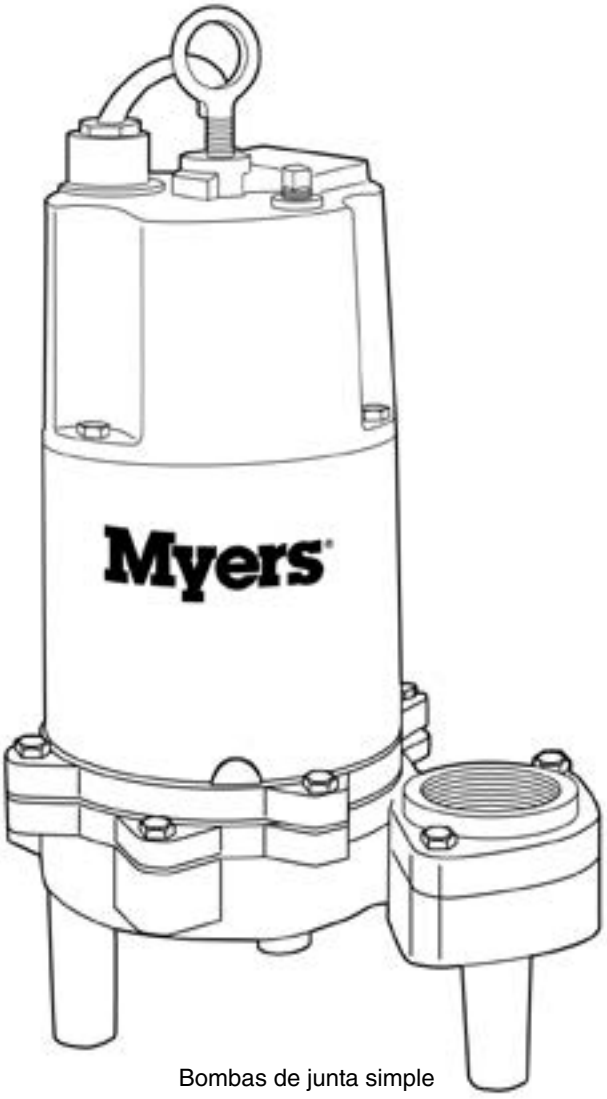
PENTAIR

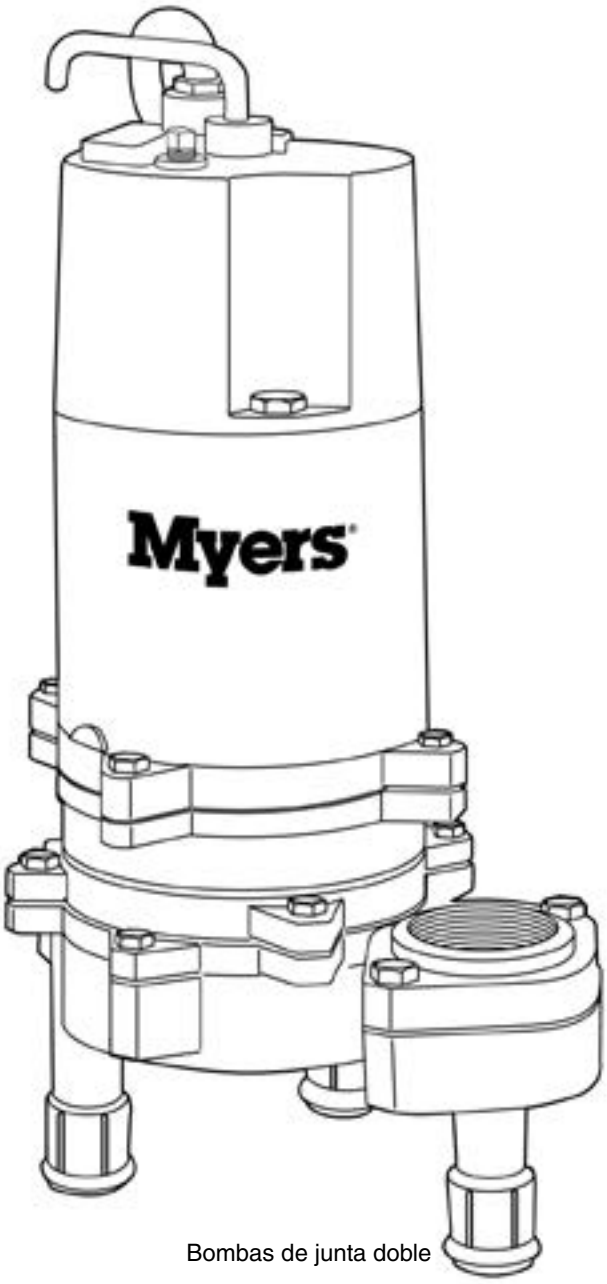
MYERS®

INSTRUCCIONES DE INSTALACIÓN

Bombas De Sumidero Para El Manejo De Desechos WHR/WHRH y WHRE



Bombas de junta simple

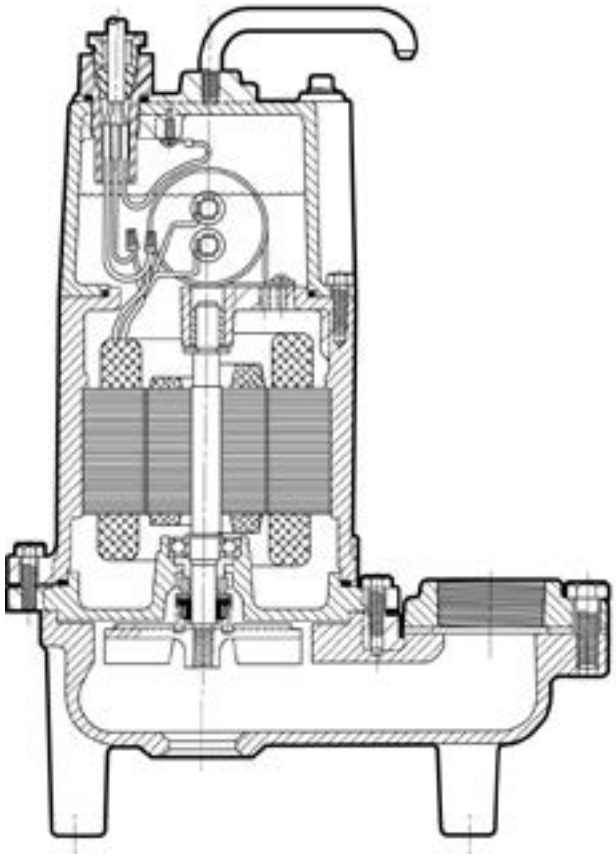


Bombas de junta doble

293 WRIGHT STREET, DELAVAN, WI 53115 WWW.FEMYERS.COM
PH: 888-987-8677

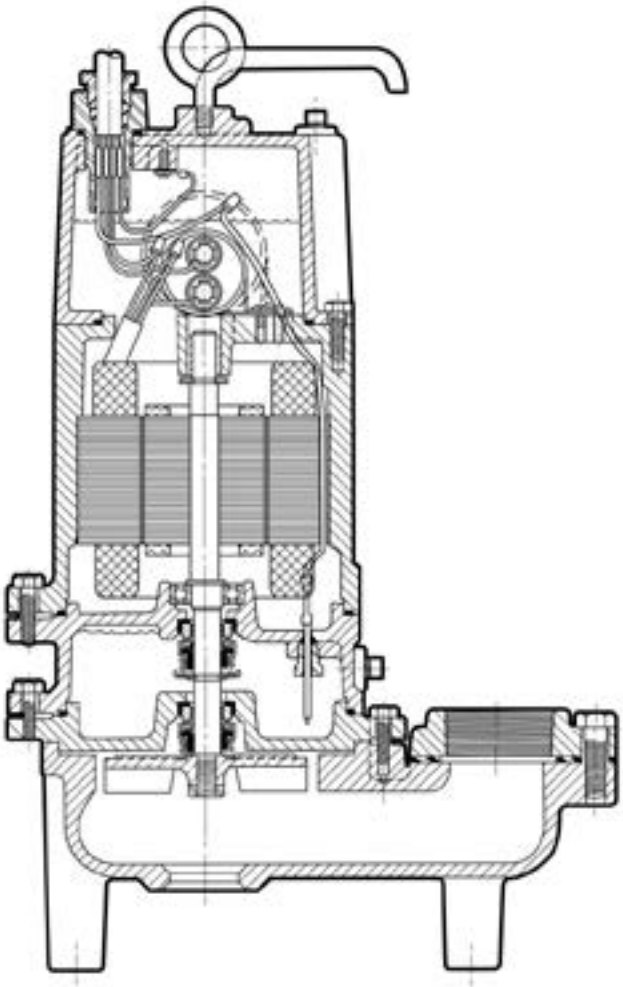
23833A201 (03/27/14)

Dibujos de corte típicos para las bombas de manejo de desechos con junta simple y doble WHR/WHRH y WHRE



Junta simpe
Fig. 1

WHR
WHRH
WHRE



Junta doble
Fig. 2

WHR-DS	WHR-SD L/D
WHRH-DS	WHRH-DS L/D
WHRE-DS	WHRE-DS L/D

Descripción general y usos

Las bombas de la serie WHR y WHRH son aparatos para el manejo de sólidos que se pueden usar para bombear AGUAS RESIDUALES CRUDAS en aplicaciones COMERCIALES y DOMÉSTICAS, pero no están diseñadas para manejar trapos grandes, trapeadores o cuerdas. Todas las bombas se pueden usar para un servicio normal de sumidero en donde se requiera una capacidad adicional.

La bomba de la serie WHRE es sólo para bombear agua de sumidero y EFLUENTE de tanques sépticos. NO SE DEBE USAR PARA AGUAS RESIDUALES CRUDAS.

Impulsores empotrados

Todas las bombas son de tipo con impulsor empotrado que ofrece un pasaje de la voluta despejado para los sólidos, ya que los sólidos no pasan por el impulsor. Todas las bombas indicadas se pueden usar para bombear el EFLUENTE o las AGUAS RESIDUALES que se usan en ciertos sistemas cloacales a presión.

Diseño de los sistemas cloacales a presión

Myers dispone de un programa de computación (SOFTWARE) completo para diseñar SISTEMAS CLOACALES A PRESIÓN. Este indica los tamaños de las tuberías que se deben usar y el flujo exacto de cualquier bomba o grupo de bombas en el sistema cuando funcionan simultáneamente. Este DISCO de diseño para IBM o computadoras COMPATIBLES se encuentra disponible para los ingenieros a solicitud.

Bombas de junta doble

Todos los modelos de junta doble tiene dos juntas con una cámara de aceite entre las juntas para que las caras de las juntas inferior y superior estén lubricadas con aceite y proporcionen una vida más larga y una mayor protección contra el agua que gotee en el bobinaje del motor.

Estas unidades de junta doble están hechas con y sin una sonda de fugas de la junta. La sonda de fugas en la cámara de aceite de la junta detecta toda pérdida de agua en la cámara y enciende una luz roja de señal en el tablero de control. Se deberán sacar las bombas del sumidero y se deberá cambiar las juntas después de que la luz de la junta se ilumine en el tablero. Es importante usar los tableros de control para las bombas con una sonda de fugas de la junta.

Es importante sacar las bombas de junta doble, que no tienen una sonda de fugas de la junta, cada 12 a 18 meses y verificar que no haya fugas desde la junta.

Controles de nivel

Todas las bombas deben usar interruptores de control de nivel herméticos para una operación automática. Los controles MLC y MFLC tienen interruptores de mercurio herméticos con una clasificación nominal de 1 HP a 230 voltios. Los controles ALC y AWS-1 tienen interruptores mecánicos herméticos con una clasificación nominal de 2 HP a 230 voltios.

Las bombas monofásicas simplex se pueden convertir en automáticas adjuntado un control MFLC o MLC a la bomba. Estos interruptores tienen un nivel fijo de desagüe de 8 a 10" y se pueden usar con hasta 1 HP. Para clasificaciones de más HP se pueden usar dos controles de interruptor de mercurio (o SMNO) con un arranque magnético.

Los controles ALC y AWS-1 se pueden usar para las bombas monofásicas simplex con clasificaciones nominales de hasta 2 HP.

Todos los sistemas dúplex deben usar interruptores de detección de control piloto de mercurio con una caja de mando y arranques magnéticos.

Se pueden usar cordones de enchufe en todas las bombas monofásicas sin detector de fugas de la junta. El cordón tiene una clavija a TIERRA que se enchufa en un receptáculo puesto a tierra. El receptáculo puesto a tierra no se puede usar en un sumidero o depósito húmedo debido al PELIGRO de una pérdida de corriente.

Se deben usar cajas de empalme herméticas en los sumideros o depósitos húmedos para hacer las conexiones al cordón del motor. El control AWS-1 también actúa como caja de empalme hermética para conectar el cordón eléctrico al cordón de la bomba.

Advertencia de seguridad

Todas las bombas monofásicas o trifásicas deben tener un CABLE A TIERRA que esté conectado a un tornillo en la caja metálica de la bomba. Este cable va a la caja de mando y está conectado a TIERRA en el exterior en forma adecuada a una tubería de agua metálica o a una ESTACA A TIERRA hincada al menos 6 pies dentro del suelo.

Tipos de motor

Todos los motores de bombas monofásicas son de tipo condensador auxiliar permanente y no requieren un interruptor de arranque o un relé de arranque.

Los interruptores de reposición automática de sobrecarga están adosados directamente al bobinado del motor.

Los motores de bombas trifásicas requieren de un arranque magnético con una protección de sobrecarga de 3 patas.

Instalación

Las bombas se pueden instalar dentro de un depósito hermético con una ventilación debida ya sea para sistemas simplex o dúplex. Se dispone de sistemas de depósito SIMPLEX o DÚPLEX. Ver las Figuras 3 y 4.

No se recomienda usar depósitos para AGUAS RESIDUALES CRUDAS dentro de la casa, pero éstos son adecuados para usar en edificios de oficinas y pequeños edificios industriales y fábricas.

Los depósitos se pueden usar dentro de la casa cuando se requieren bombas de sumidero de capacidad adicional para los suavizadores de agua y agua de lavado.

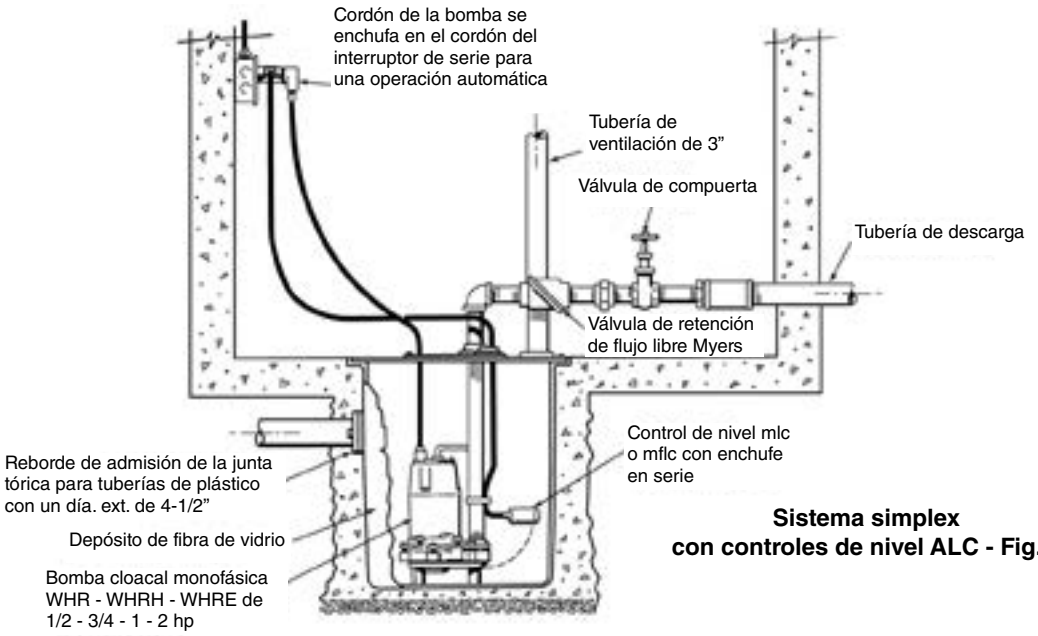
Si es necesario bombear aguas residuales crudas en la casa, use depósitos exteriores que se conecten con las tuberías principales del alcantarillado a presión o con alcantarillados por gravedad, o que corran a tanques sépticos.

Si se usa un depósito interior, éste generalmente se instala cuando se vierte el piso de hormigón.

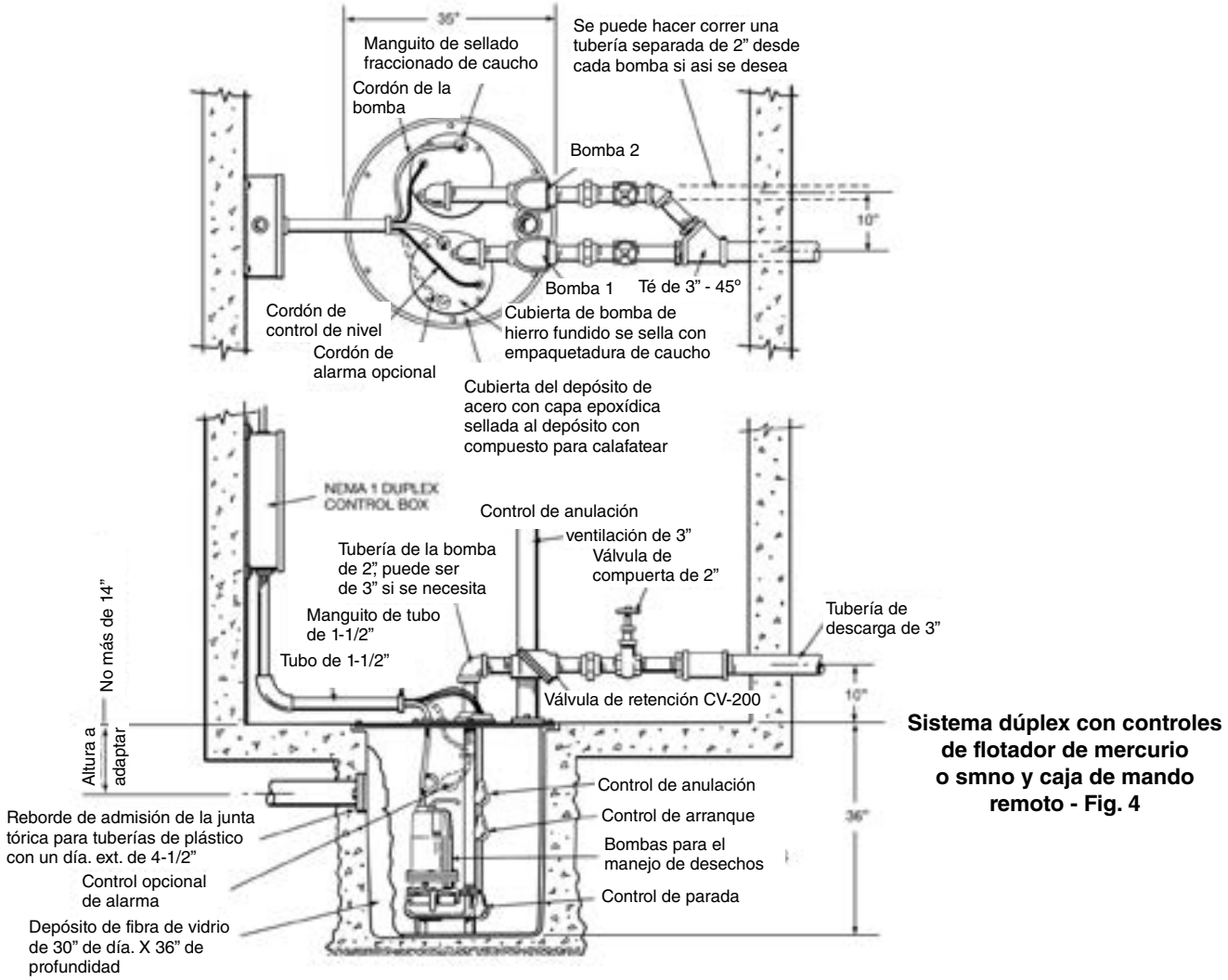
Las bombas se pueden instalar en un compartimiento para tanques sépticos para bombear a las tuberías principales del alcantarillado a presión, al alcantarillado por gravedad, a campos de aplicación de fangos cloacales o a montículos de evaporación. Ver las Figuras 5, 6 y 7.

Ventilación correcta para depósitos instalados en el interior

Todos los depósitos herméticos en interiores deben tener una tubería de ventilación de 2" o 3" instalada conforme a las normas locales. Los sumideros para el manejo de agua que proviene del suavizador, agua de lavado o de desagüe no necesitan ser herméticos ni ventilados.



Sistema simplex con controles de nivel ALC - Fig. 3



Sistema dúplex con controles de flotador de mercurio o smno y caja de mando remoto - Fig. 4

Los depósitos en exteriores son generalmente de fibra de vidrio y entre 4 y 8 pies de profundidad y tienen una cubierta hermética. La bomba se instala generalmente con un sistema de riel de elevación para poder sacar la bomba sin perturbar la tubería de descarga. La válvula de retención sale con la bomba para reparaciones o servicio. Sistemas completos de ELEVACIÓN montados en los depósitos de fibra de vidrio están disponibles para adaptarse a las especificaciones del cliente.

⚠ ADVERTENCIA El depósito de sumidero debe ser ventilado conforme a las normas de plomería locales. Estas bombas no están diseñadas para lugares clasificados como peligrosos, NI SE PUEDEN instalar en tales lugares, conforme al National Electric Code ANSI/NFPA 70.

Tubería

Las bombas vienen equipadas con una brida hembra fileteada de 2" o 3". Se pueden usar tubos galvanizados o de PVC de plástico. Se prefiere el uso de tubos de plástico para aguas residuales crudas o efluente del tanque séptico.

Válvulas de retención y válvulas de cierre

Todas las bombas deben tener válvulas de retención y válvulas de cierre en la tubería de descarga. Las válvulas de retención deben ser tipo chapaleta con resorte exterior o tipo esférico. Las válvulas de cierre pueden ser tipo esférico o de compuerta. Se prefiere una construcción de plástico tanto para la válvula de retención como de cierre.

Activación de los sistemas simplex

1. Para las bombas monofásicas con control MLC o MFLC, enchufe los cordones superpuestos en el receptáculo y haga correr el agua hacia el sumidero hasta que se active. Permita que la bomba pase por varios ciclos de encendido/apagado. Deje el cordón eléctrico enchufado. Si la bomba marcha pero no bombea, puede haber una bolsa de aire. Desenchufe el cordón y rompa la unión en la tubería de descarga, luego vuelva a encender la bomba. Esto deberá dejar escapar el aire atrapado. Vuelva a apretar la unión.
2. Con los 2 controles de "mercurio", active la corriente eléctrica en la caja de mando y haga correr el agua hacia el sumidero. Cuando el nivel llegue por encima del control, la bomba deberá encenderse y continuar bombeando hasta que el nivel baje a la altura del control inferior, deteniendo la bomba. Haga marchar la bomba por varios ciclos. Si la bomba marcha pero no bombea, verifique que no haya una bolsa de aire, como en el punto 1. Deje la corriente eléctrica activada para una operación automática.
3. Cuando se usen controles ALCL o AWS-1 enchufe el cordón o active la corriente eléctrica y deje correr el agua hacia el sumidero; cuando el nivel esté a mitad de camino en la plomada superior, la bomba deberá encenderse y marchar hasta que el nivel baje y hasta que aproximadamente la mitad de la plomada inferior esté por encima del agua, deteniendo la bomba. Verifique el punto 1 si la bomba no funciona debidamente. Para todos los casos, si el motor no se enciende cuando el nivel del agua se eleva, verifique que esté enchufado debidamente o que el interruptor de arranque esté en la posición encendida, o que el fusible no se haya fundido. SIEMPRE HAGA QUE UN ELECTRICISTA REALICE LAS VERIFICACIONES DE ÍNDOLE ELÉCTRICA.

Activación de la bomba "WHE-P" (automática) usando el interruptor mecánico con enchufe en serie - sistema simplex

1. Estas bombas tienen un interruptor de flotador mecánico (sin mercurio) con un cordón de 20 pies de largo y un enchufe superpuesto en serie de 115 voltios o 230 voltios en 1/2 HP, con el interruptor montado en la bomba. Los modelos de 3/4 HP y de 1 HP, requieren un cordón de 20 pies de largo y 230 voltios solamente.
2. Enchufe la ficha del cordón del interruptor en un tomacorriente debidamente puesto a tierra y de la tensión correcta.
3. Enchufe el cordón eléctrico de la bomba en la parte posterior del enchufe en serie del cordón del interruptor.
4. Adhiera los cordones a la tubería de descarga, con cinta adhesiva cada 12".
5. Haga correr el agua hacia el sumidero hasta que la bomba se encienda. Verifique que la válvula de la tubería de descarga esté abierta.
6. Permita que la bomba pase por varios ciclos de encendido/apagado.
7. Si la bomba no funciona correctamente, consulte el cuadro de servicio de localización de fallas para solucionar el problema.

Bolsa de aire

Se dice que una bomba tiene una bolsa de aire si el agua atrapa aire dentro de la bomba y no puede salir, impidiendo que la bomba funcione.

TODAS LAS BOMBAS DE SUMIDERO MYERS TIENEN UN PEQUEÑO ORIFICIO DE VENTILACIÓN EN LA CÁMARA DEL IMPULSOR PARA DEJAR SALIR EL AIRE ATRAPADO. SI ESTE ORIFICIO SE TAPA, ES POSIBLE QUE SE CREE UNA BOLSA DE AIRE EN LA BOMBA. ESTO GENERALMENTE SUCEDE EN LA BOMBAS QUE SE USAN PRINCIPALMENTE POR TEMPORADAS. DURANTE LOS MESES DE VERANO, LA BOMBA SE PUEDE APAGAR CUANDO EL AGUA DEL SUMIDERO SE SECÓ. CUANDO LA BOMBA SE VUELVA A ENCENDER Y EL AGUA VUELVA AL SUMIDERO, EL AIRE QUEDARÁ ATRAPADO EN LA BOMBA SI NO SE DEJA ESCAPAR.

COMO PRECAUCIÓN SECUNDARIA, SE DEBERÍA PERFORAR UN ORIFICIO DE 1/8" EN LA TUBERÍA DE DESCARGA POR DEBAJO DE LA VÁLVULA DE RETENCIÓN. LA VÁLVULA DE RETENCIÓN DEBE ESTAR ENTRE 12 Y 18 PULGADAS POR ENCIMA DE LA DESCARGA DE LA BOMBA. NO COLOQUE UNA VÁLVULA DE RETENCIÓN DIRECTAMENTE EN LA ABERTURA DE DESCARGA DE LA BOMBA.

En sumideros normales en donde la bomba funciona diariamente, raramente ocurren bolsas de aire.

Cómo configurar los controles y activar los sistemas dúplex

Se debe usar una caja de mando en todos los sistemas dúplex

1. Se usan 4 controles de "mercurio" para los sistemas dúplex. Configure el control de activación entre 6" y 8" por encima de las bombas. Configure el control de desactivación entre 8" y 10" por encima del fondo del sumidero. Configure el control de anulación entre 6" y 8" por encima del control de activación. Configure el control de alarma de nivel alto entre 6" y 8" por encima del control de anulación. Marque todos los cordones de control para que se puedan conectar correctamente en la caja de mando. Ver la Figura 4.
2. Coloque los interruptores de Manual-Apagado-Automático (H-O-A) en la posición apagada (OFF) y cierre el disyuntor.
3. Coloque los interruptores de H-O-A en la posición AUTO y haga correr el agua hacia el sumidero. Cuando el nivel del agua suba y active el interruptor de encender, una bomba deberá activarse y marchar, la bomba continuará marchando hasta que el control inferior quede expuesto, deteniendo la bomba.
4. Haga correr el agua hacia el sumidero nuevamente y cuando el

nivel del agua suba al control de activación, la bomba opuesta se encenderá y marchará hasta que el nivel baje, dejando expuesto el control inferior y deteniendo la bomba.
5. Haga esta prueba varias veces para verificar que las bombas se alternen debidamente.

Sistemas de control de nivel disponibles

1. Sistema automático simplex monofásico empaquetado. Este sistema viene con el interruptor de flotador de mercurio MLC o MFLC adjunto directamente a la bomba. Este sistema tiene un nivel fijo de bombeo de 8" a 10" y generalmente se usa para drenar agua y sirve hasta e incluyendo 1 HP.
2. Las bombas monofásicas simplex pueden usar los controles ALC o AWS-1 que están montados separados de la bomba. Estos controles se pueden usar con motores de hasta 2 HP. Ver la Figura 3
3. Las bombas smplex pueden usar dos controles de "mercurio" montados separadamente de la bomba. Estos controles se deben usar con una caja de mando y un contactor magnético. Estos controles se pueden espaciar para el nivel de consumición que se requiera y se pueden usar para motores de 2 HP o mayores.
4. Los sistemas de bomba dúplex deben usar solamente los controles de "mercurio" con una caja de mando eléctrica. Estas cajas de mando montadas a distancia del tanque del sumidero, están generalmente construidas de plástico para ofrecer una mejor resistencia a la corrosión. Ver la Figura 4.

Protección del motor contra sobrecarga

Todos los motores monofásicos tienen interruptores automáticos incorporados de reposición de sobrecarga, fijados directamente al bobinado del motor.

Todos los motores trifásicos deben ser instalados con arranques magnéticos con una protección contra sobrecarga de tres patas.

Cómo configurar los controles y activar los sistemas simplex

1. Sistemas automáticos – Estos sistemas tienen interruptores MLC, MFLC, o ALC montados en la bomba, de manera que la bomba está instalada en el sumidero y el cordón del motor está enchufado en un receptáculo a TIERRA. Para las cubiertas de sumidero herméticas, el cordón eléctrico sale por un tapón de caucho fraccionado en la cubierta del sumidero.
2. Cuando se usan 2 controles de "mercurio", el control de activación está configurado entre 3" y 6" por encima de la parte superior del motor, y el control de desactivación está configurado entre 6" y *' por encima del fondo del sumidero. Si se usa un control de alarma de alto nivel, éste debe estar configurado a unas 6" por encima del control superior. Si la profundidad del sumidero no permite estas configuraciones, se deberán espaciar a menor distancia.
3. Cuando se usen controles ALLC o AWS-1 las PLOMADAS DE DESPLAZAMIENTO se deberán configurar de manera que la plomada de activación esté entre 4" y 6" por encima de la parte superior del motor y la plomada inferior esté configurada a unas 6" por encima del fondo del sumidero.
4. Repita esta operación con una bomba apagada, lo cual duplicará un estado de falla de la bomba. Cuando el nivel llegue al control de anulación, la bomba que esté encendida deberá activarse y marchar, bombeando para reducir el nivel del sumidero.
5. Para verificar la alarma de alto nivel, nuevamente, coloque ambos interruptores en la posición apagada (OFF) y llene el sumidero hasta que el nivel quede por encima del control de la alarma. Coloque los interruptores en la posición "Auto" - el TIMBRE DE ALARMA deberá sonar y la luz de alarma se deberá encender. Cuando el nivel descienda más bajo que el control de la alarma, el timbre dejará de sonar.
6. Si las bombas funcionan como se describió, entonces configure ambos H-O-A en "Auto" y las bombas estarán listas para funcionar automáticamente.
7. Si las bombas no funcionan correctamente, entonces haga las verificaciones necesarias que se describen para los sistemas simplex. Ver la página 13.

⚠ ADVERTENCIA NUNCA TRABAJE EN LAS BOMBAS O EN LAS CAJAS DE MANDO SIN ANTES HABER DESACTIVADO LOS DISYUNTORES.

Siempre haga que un ELECTRICISTA certificado realice las conexiones eléctricas y los chequeos de servicio.

Instrucciones especiales para bombas trifásicas

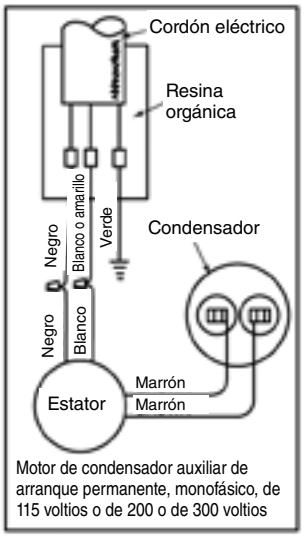
1. ⚠ ADVERTENCIA **Sólo personas capacitadas deberán realizar el servicio y las instalaciones en esta bomba. El cableado de esta bomba debe ser realizado por un electricista certificado usando una caja de arranque y un dispositivo de conmutación aprobados.**

   ⚠ ADVERTENCIA **Peligro de choque eléctrico.** No conecte el conducto a la bomba.
2. Las bombas trifásicas siempre se instalan con cajas de mando que tengan arranques magnéticos con protección contra sobrecarga de 3 patas. **NO TRATE DE HACER MARCHAR UNA BOMBA TRIFÁSICA DIRECTAMENTE A TRAVÉS DE LA LÍNEA.**
3. Para conectar la Bomba: Haga correr el cable desde la bomba al fondo de la caja de mando o de una caja de empalme adecuada para contener las conexiones de empalme. Se debe perforar un orificio en la caja de mando para los cables. Con la corriente eléctrica a la caja de mando desactivada, conecte la línea verde (tierra) a la saliente de tierra. Conecte los cables negros (corriente eléctrica) a los bornes de alimentación eléctrica. Verifique que todos los cables estén dentro de la caja de mando y no en una posición en donde se les pueda prensar o que provoquen un cortocircuito cuando se cierre la puerta. Consulte los diagramas de cableado en la página 8.
4. Todos los motores trifásicos pueden marchar en cualquiera de las dos direcciones, la ROTACIÓN se puede cambiar, si se intercambian dos conductores de línea cualesquiera en el arranque magnético. **ASEGÚRESE DE QUE EL DISYUNTOR ESTÉ DESACTIVADO ANTES DE REALIZAR ESTE CAMBIO**. Para verificar si la rotación es la correcta, haga funcionar las bombas y chequee su funcionamiento. Si el flujo y la altura son bajos (consulte las curvas de rendimiento de la bomba ilustradas en este manual), la rotación es incorrecta. Con las bombas dúplex, deberá verificar el funcionamiento de ambas bombas.
   Todos los impulsores, ya sean monofásicos o trifásicos, deben girar en la dirección opuesta a las agujas del reloj cuando se esté mirando hacia el orificio de aspiración de la bomba. Si no está seguro de la dirección de la rotación, **DESACTIVE LA CORRIENTE ELÉCTRICA** y saque la bomba del depósito con el cordón conectado y colóquela sobre un costado para poder ver el impulsor. Active la corriente eléctrica y encienda la bomba usando la posición manual del interruptor H-O-A. Encienda y apague rápidamente para poder observar la inercia del impulsor. **NUNCA COLOQUE LA MANO O LOS DEDOS EN EL IMPULSOR.** Intercambie dos conductores de línea cualquiera en el arranque magnético para cambiar la rotación.

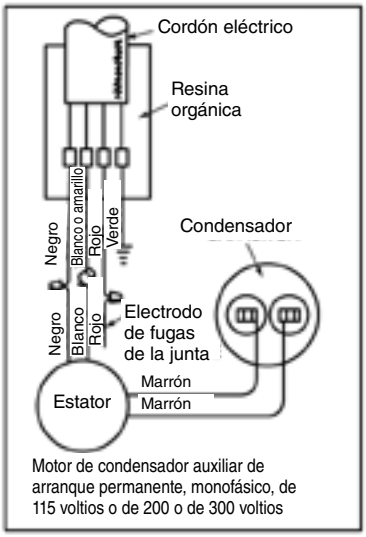
Diagramas de cableado de motores monofásicos

Bombas monofásicas

⚠ ADVERTENCIA Peligro de choque eléctrico. Esta bomba viene equipada con un conductor de puesta a tierra y una ficha de conexión de tipo puesta a tierra. Para reducir el peligro de un choque eléctrico, asegúrese de conectarla sólo a un receptáculo de tipo puesta a tierra, debidamente conectado a tierra.

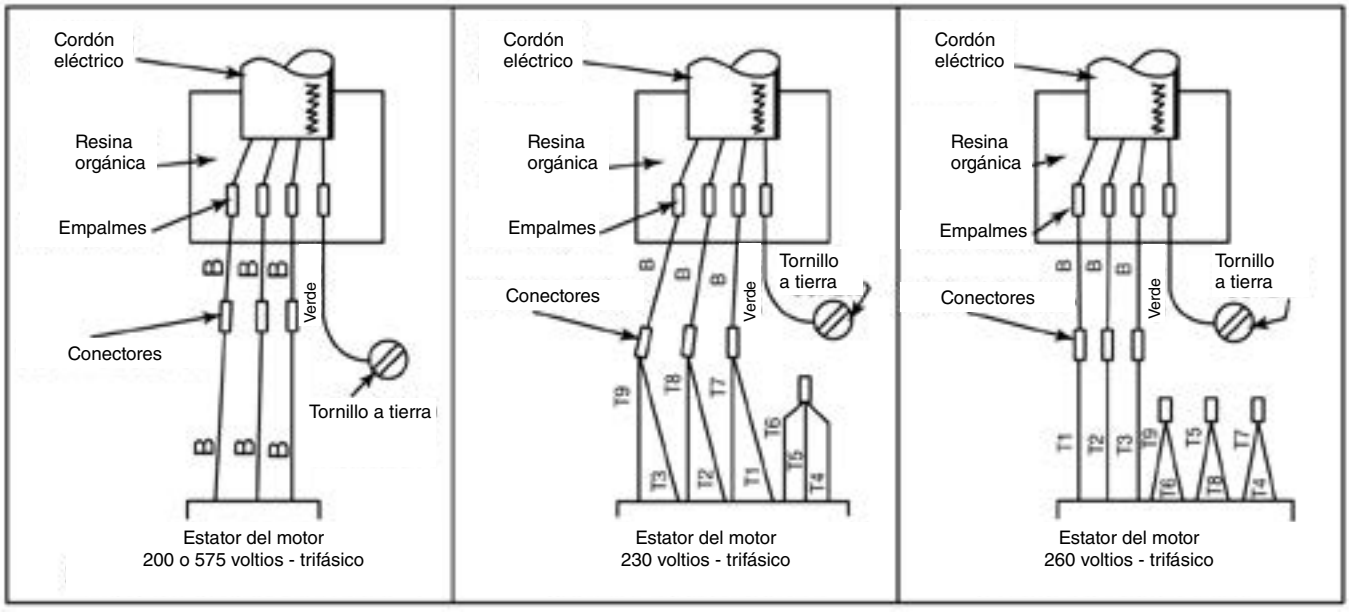


Bombas de junta simple y bombas de junta doble sin sonda de fugas de la junta



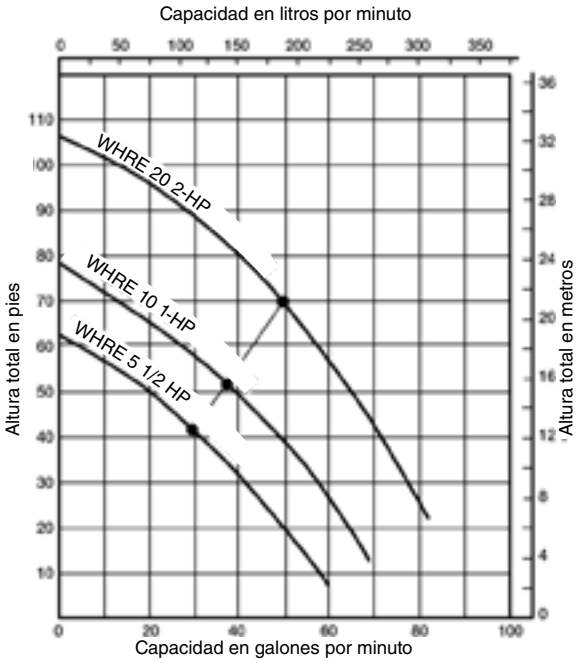
Bombas de junta doble con sonda de fugas de la junta
(el conductor rojo en el cordón eléctrico es para la sonda de fugas de la junta)

Diagramas de cableado para motores trifásicos

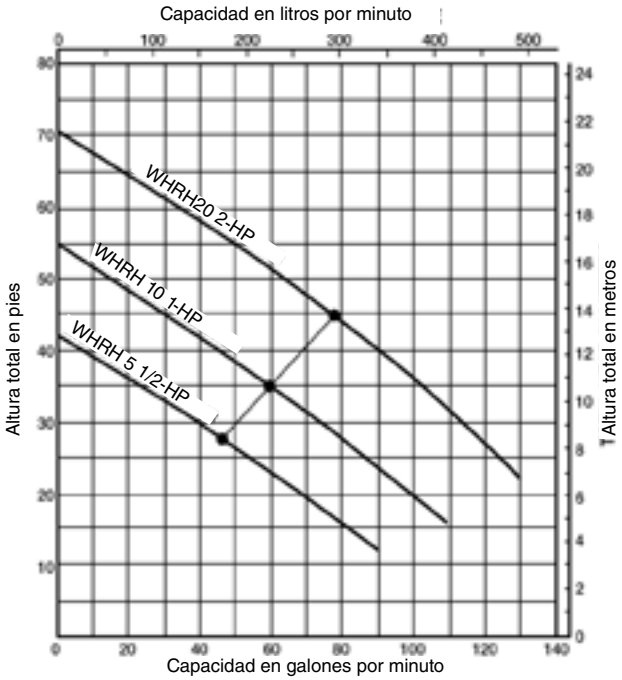


Para bombas de junta simple y bombas de junta doble sin sonda de fugas de la junta

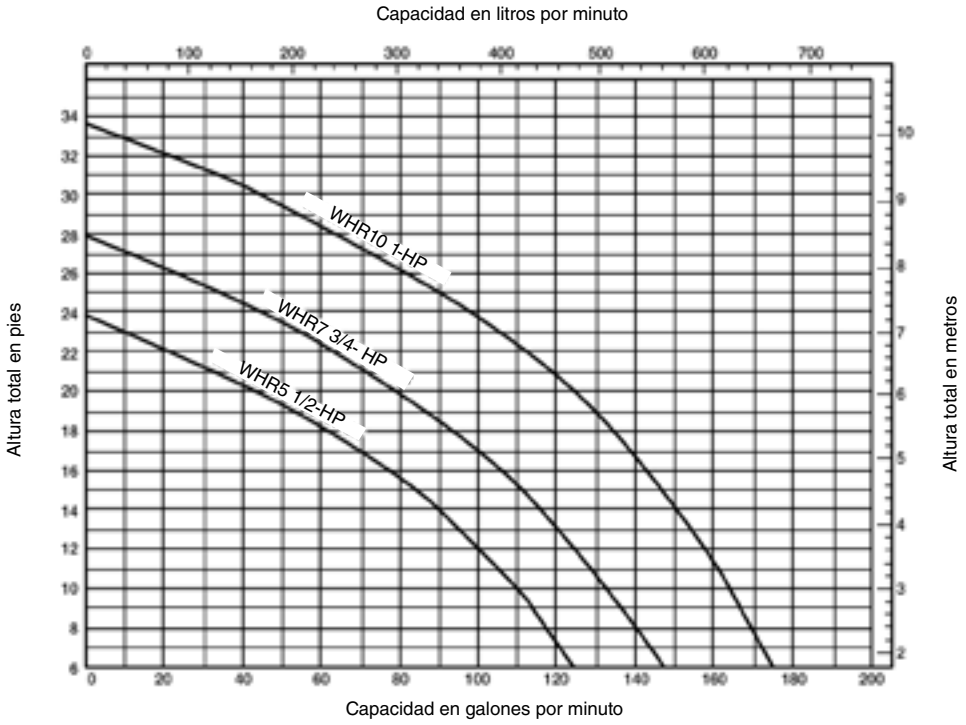
Curvas de rendimiento



Curva de rendimiento
Bombas de efluente de la serie WHRE



Curva de rendimiento
Bombas para el manejo de desechos de la serie WHRH



Curva de rendimiento
Bombas para el manejo de desechos de la serie WHR

Fig. 5 Bomba en tanque separado bombeando al montículo de infiltración

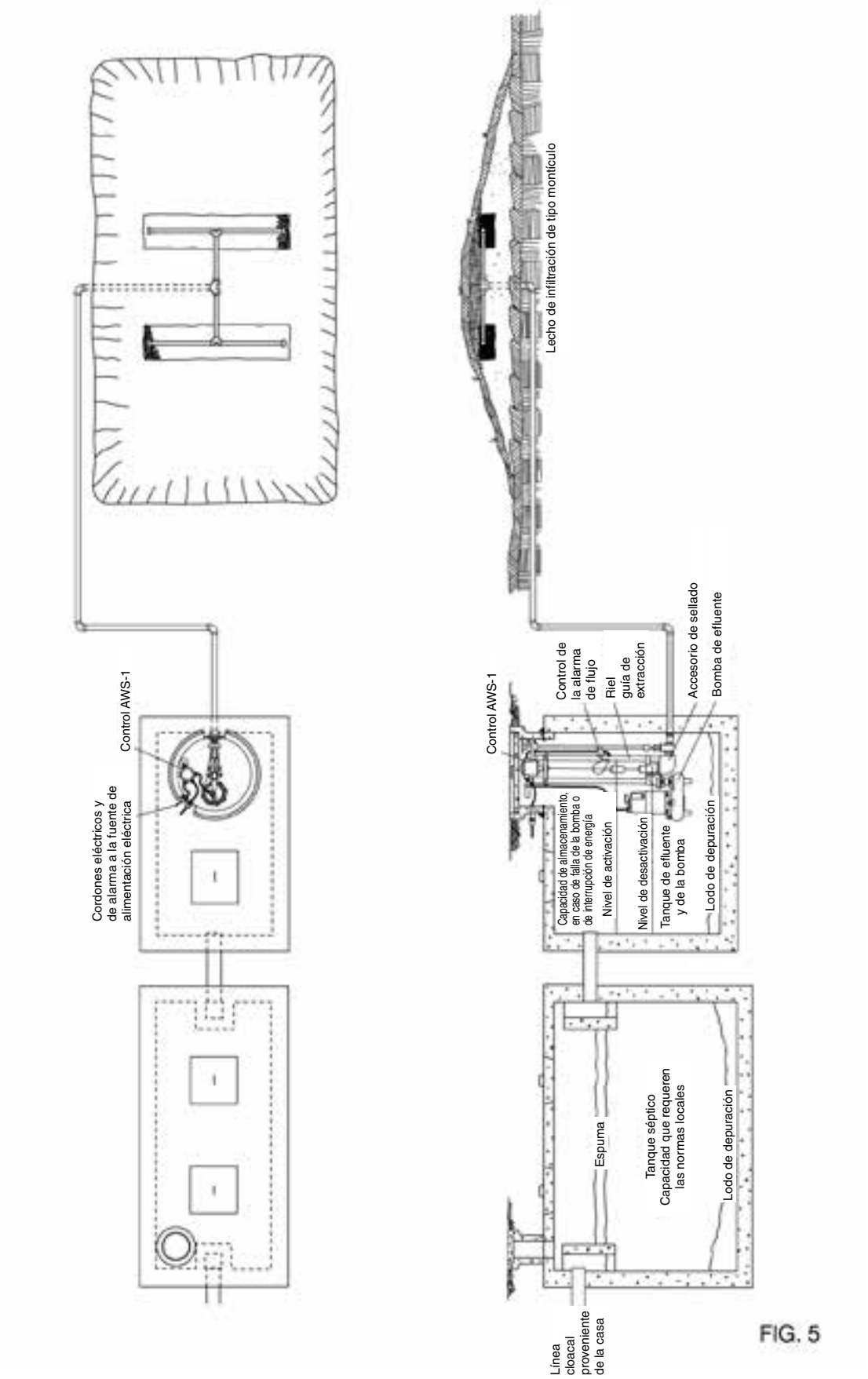


FIG. 5

Fig. 6 Bomba instalada en un depósito de fibra de vidrio a la salida del tanque séptico, se usa cuando se bombea en un alcantarillado principal a presión o en un campo de aplicación de fangos cloacales

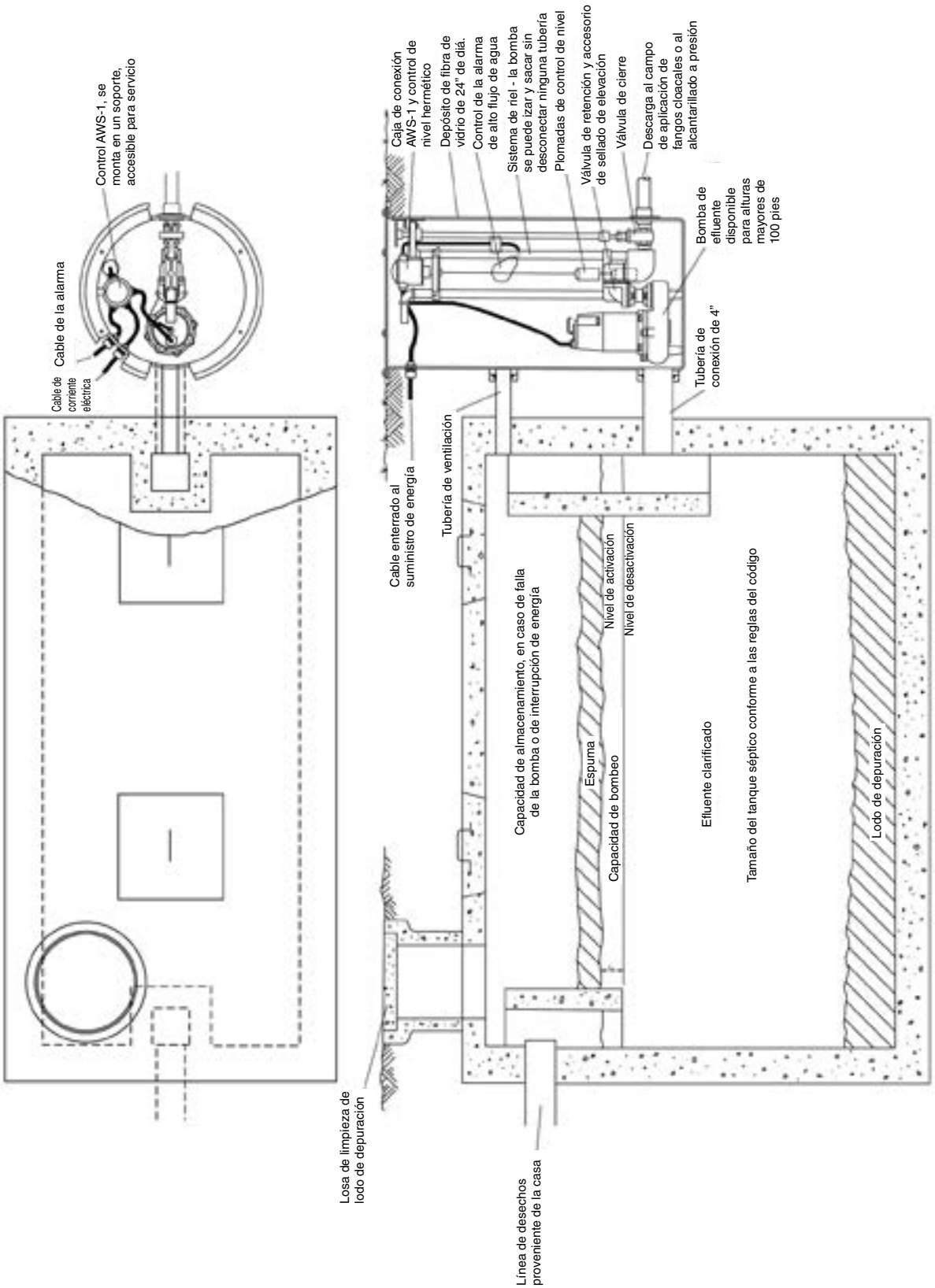


FIG. 6

Fig. 7 Bomba y controles instalados directamente en el tanque séptico se usan cuando se bombea en un alcantarillado principal a presión o en un campo de aplicación de fangos cloacales

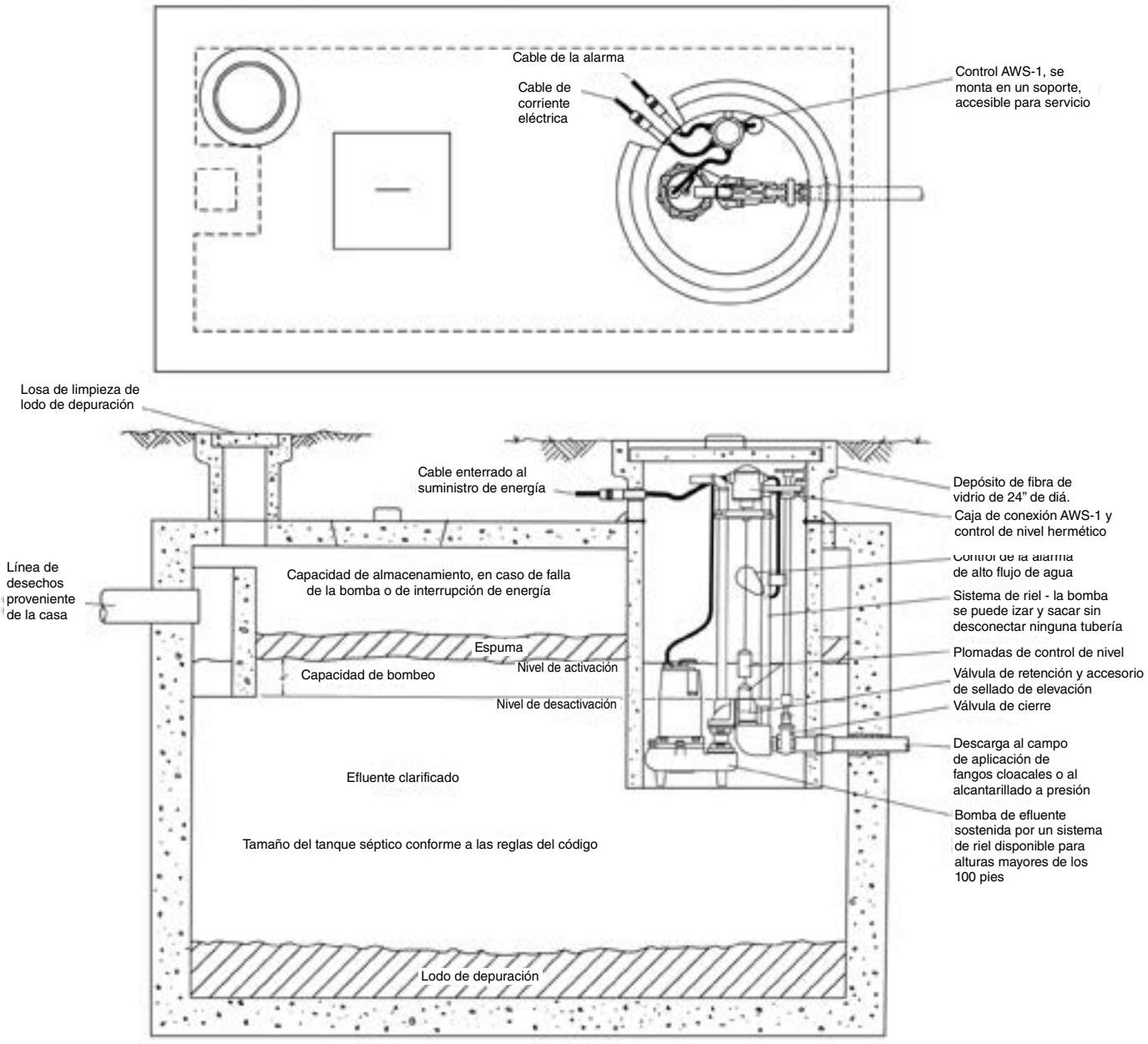


FIG. 7

Puntos a verificar si la bomba no marcha o no funciona correctamente

1. La bomba no marcha ni se enciende cuando el nivel del agua ha subido en el tanque.
   a. Verifique si hay un fusible fundido o si se disparó el disyuntor.
   b. Verifique que el interruptor de nivel no esté defectuoso
   c. Cuando se use un tablero de control, verifique que el interruptor H-O-A esté en la posición AUTO. Coloque el interruptor en la posición HAND (manual), y si la bomba marcha, entonces el problema está en el sistema eléctrico automático. Haga que un ELECTRICISTA realice un chequeo del sistema eléctrico.
   d. Verifique si el motor está quemado. Ocasionalmente, un relámpago puede perjudicar el motor, aún cuando tenga protección anti-rayos.
   e. Cuando se usen cordones de enchufar, verifique que las patas de contacto estén limpias. NO USE CORDONES DE ENCHUFAR DENTRO DE UN SUMIDERO O UN POZO DE BOMBEO.
2. La bomba marcha pero no hay flujo.
   a. Verifique que no hayan bolsas de aire. Encienda y detenga la bomba varias veces, si esto no ayuda, es posible que deba aflojar una unión en la tubería de descarga para dejar escapar la bolsa de aire.
   b. Verifique que la válvula no esté instalada en la posición invertida. Verifique la posición de la flecha del flujo en el cuerpo de la válvula. Verifique la válvula de cierre, puede que esté cerrada.
   c. Verifique la elevación vertical. Puede que esté más alta de lo que la bomba puede desarrollar (Consulte la curva de rendimiento de la bomba).
   d. Es posible que el orificio de aspiración de la bomba esté obstruida con un trapo o con basura. Saque la bomba para inspeccionarla.
   e. Si la bomba es trifásica, asegúrese de que la rotación de la bomba sea la correcta. (Consulte las instrucciones para verificar la rotación).
   f. La esfera o la plomada de control de nivel puede estar atorada en un costado del depósito. Puede haber basura en la bola, impidiéndole flotar.

⚠ ADVERTENCIA SIEMPRE DESENCHUFE EL CORDÓN O DESACTIVE EL DISYUNTOR ANTES DE REALIZAR TRABAJOS EN LA BOMBA. Si el tablero de control está lejos de la bomba, desconecte los cables conductores al motor para que nadie pueda volver a activar el disyuntor. Si el motor es trifásico, marque los cables conductores para que se puedan volver a colocar en el mismo orden.

Cómo desarmar la bomba para reemplazar las piezas

Limpie la bomba a fondo. Elimine todo el sarro y los depósitos. Sumerja la unidad completamente en una solución de chlorin durante una hora antes de desarmarla.

Para reemplazar los condensadores solamente

Los motores en todas las bombas monofásicas de las series WHR, WHRH y WHRE son de tipo de condensador auxiliar de arranque permanente, de manera que no tienen relés ni interruptor de arranque y sólo tienen un condensador de arranque que está en el circuito tanto para las condiciones de inicio como de marcha.

1. Saque el tapón de llenado de aceite en la parte superior del motor y vierta el aceite hacia afuera. Fig. 8
2. Saque los pernos de la caja del condensador y golpee la caja con un martillo de plástico para aflojarlos. Fig. 9
3. Levante la caja y desconecte los cables conductores del motor y los cables del condensador. Fig. 10
4. Saque la abrazadera del condensador y deslice el condensador hacia afuera. Reemplácelo con un condensador nuevo y vuelva a hacer las conexiones. Fig. 11
   Estas instrucciones ilustran las conexiones de los cables.
5. Vuelva a colocar la caja del condensador, verifique que la junta tórica de caucho esté en su lugar. Fig. 12
6. Vuelva a llenar el motor con aceite de motor sumergible Myers, NO LO RECARGUE DEMASIADO. EL NIVEL DEL ACEITE DEBE ESTAR A UNA PULGADA DE LA PARTE SUPERIOR DE LA PIEZA FUNDIDA. Fig. 13
7. Verifique que la bomba gire libremente antes de volver a enchufarla. Coloque la bomba sobre un costado y haga girar el impulsor, usando un destornillador en el eje ranurado. Enchufe la bomba en el receptáculo para hacer una prueba de funcionamiento. La bomba debe marchar en forma silenciosa y sin vibraciones.

FIG. 8

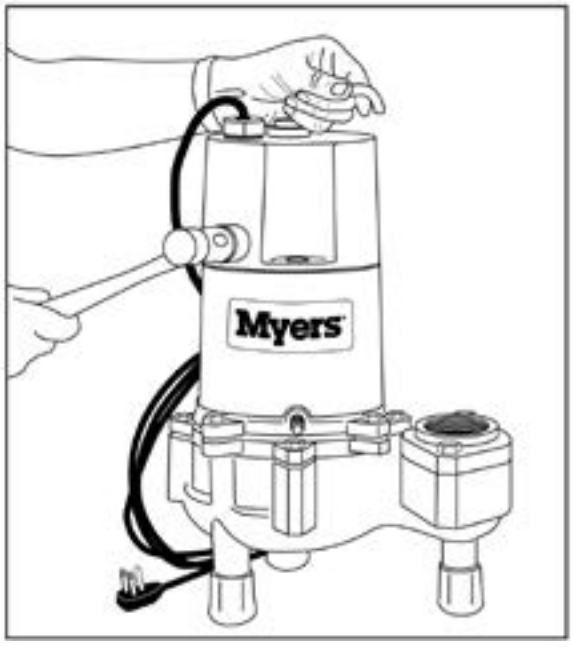


FIG. 9

FIG. 10

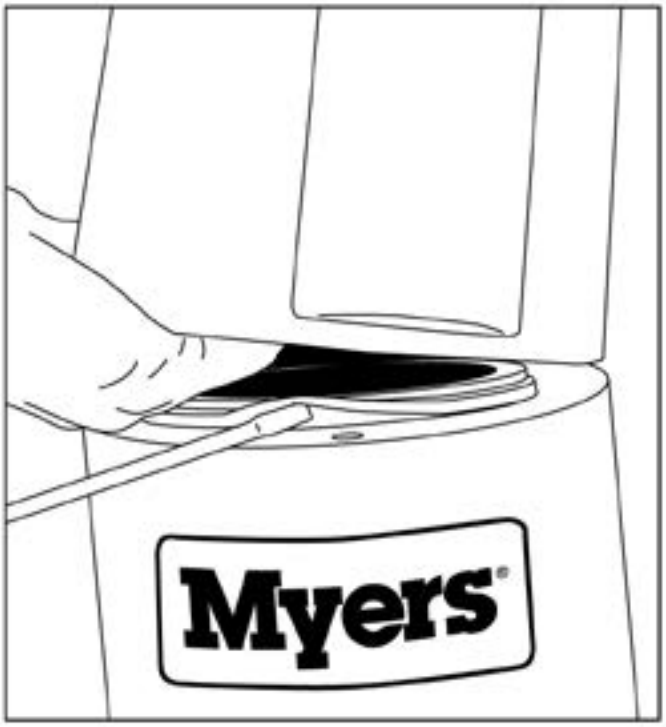


FIG. 12

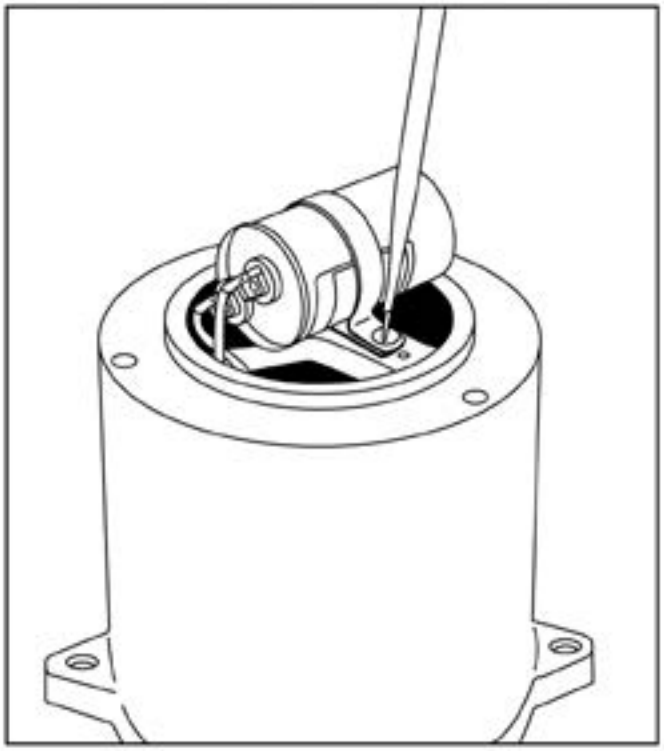


FIG. 11

FIG. 13

Para reemplazar el cordón eléctrico solamente

1. Saque la caja del condensador como se describe arriba. Desconecte los conductores del cordón del motor y saque el tornillo de puesta a tierra.
2. Destornille el manguito del cordón y sáquelo de la caja. Fig. 14
3. Reemplace con un nuevo accesorio y cordón, verifique que la junta tórica esté en su lugar. Fig. 14
4. Vuelva a colocar el tornillo de puesta a tierra y reconecte los cables del motor. Estas instrucciones ilustran el diagrama de cableado.
5. Vuelva a colocar la caja del condensador y vuelva a llenar el motor con aceite sumergible Myers. Consulte la Figura 13 para el nivel del aceite. A una pulgada de la parte superior de la pieza fundida.

Desarmar la bomba completamente para reemplazar el estator del motor y la junta

1. Vierta el aceite del motor y saque la caja del condensador como se describe arriba.
2. Saque los pernos del cárter del motor solamente. No saque los pernos que sostienen la placa del motor a la cubierta en voluta. Fig. 15

FIG. 14

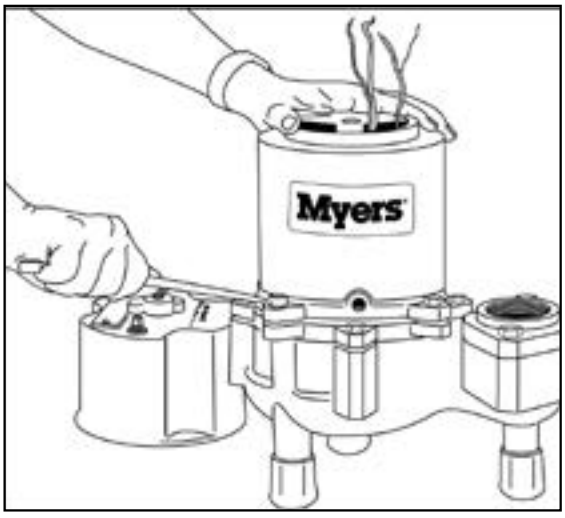


FIG. 15

3. Levante y saque el cárter del motor, separe las aletas haciendo palanca para aflojarlo. Fig. 16
4. Saque los pernos que sujetan la tapa de la caja y levante la unidad giratoria para sacarla. Separe las aletas haciendo palanca para aflojarla. Fig. 17
5. Sostenga el rotor y destornille la tuerca de fijación del impulsor. Gire en dirección opuesta a las agujas del reloj, ya que la rosca es a la derecha. Fig. 18.
6. Destornille el impulsor, gire en dirección opuesta a las agujas del reloj para aflojarlo. Fig. 19
7. Separe la junta haciendo palanca con destornilladores para sacarla. No importa si la junta se estropea, ya que se debe reemplazar. Reemplace ambas partes de la junta, nunca reemplace solamente una o la otra. Fig. 20.

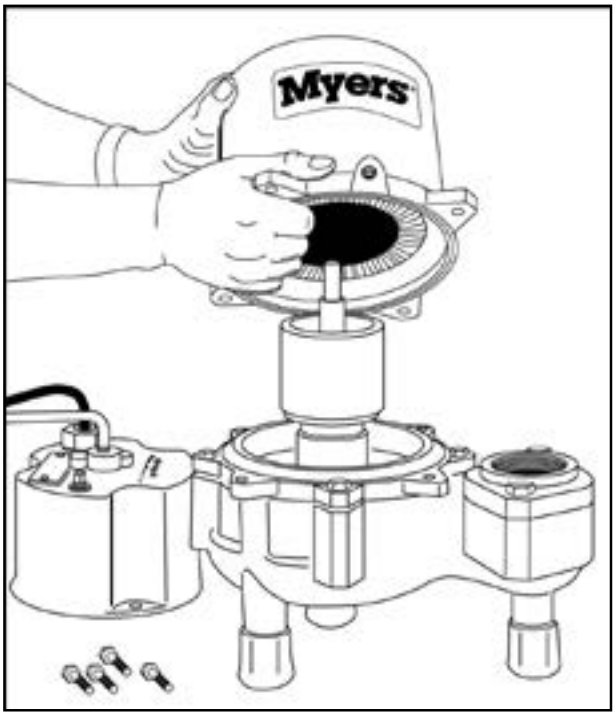


FIG. 16

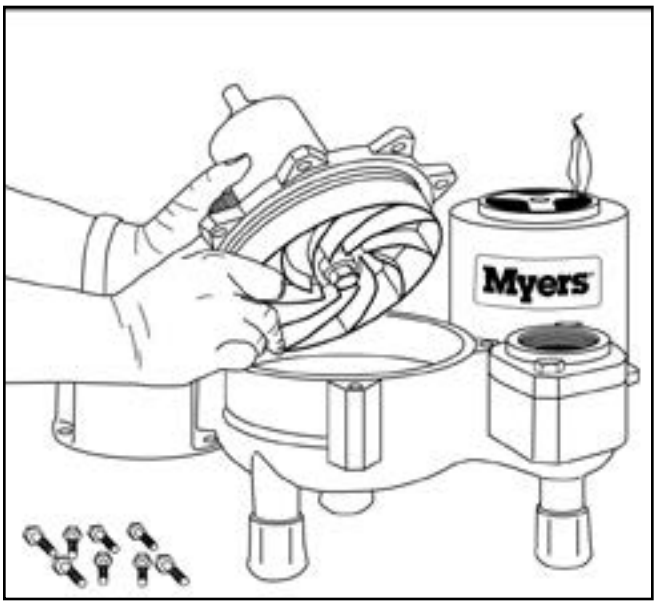


FIG. 17

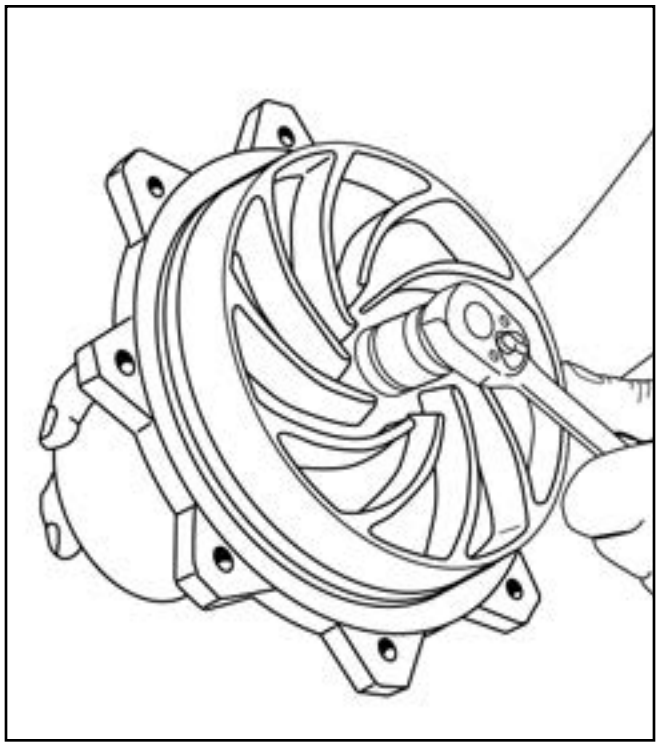


FIG. 18

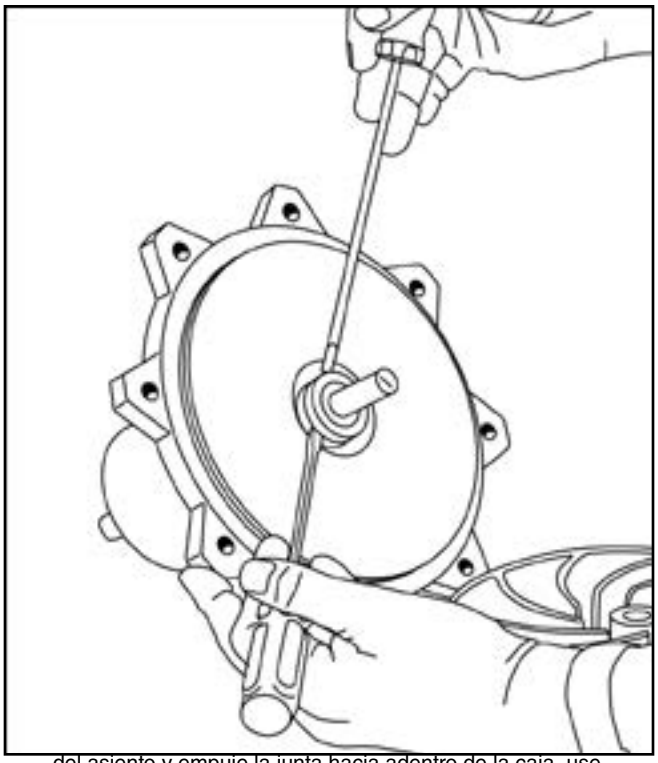


FIG. 20

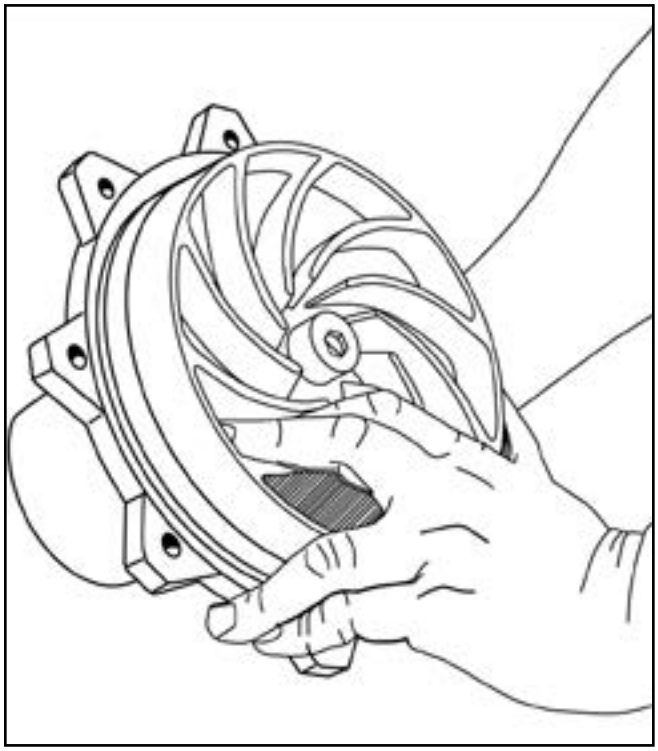


FIG. 19

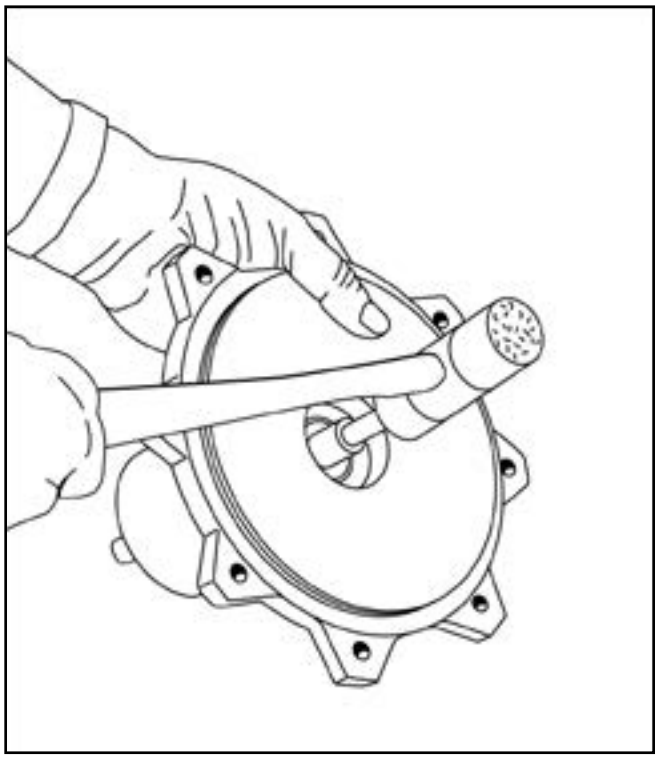


FIG. 21

8. Golpee el eje en un extremo con un martillo de plástico para empujar el cojinete de bolas desde la placa inferior del motor. Fig. 21.
9. Limpie la cavidad de la junta a fondo antes de reemplazar la junta de cerámica. Use grasa en la cúpula de caucho del asiento y empuje la junta hacia adentro de la caja, use una varilla de plástico para empujarla en posición. Limpie la superficie de la junta para eliminar todo indicio de suciedad, y use un aceite ligero en la superficie antes de instalar la parte de fuelle de la junta. Fig. 22

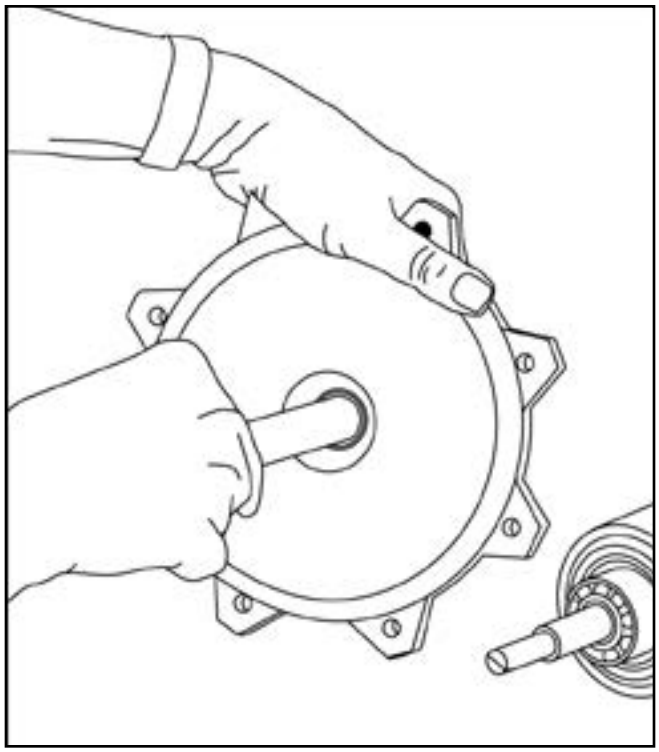


FIG. 22

10. Si es necesario reemplazar el cojinete de bolas, oprima y sáquelo en una prensa de husillo. Use tiras de metal entre el cojinete y el rotor para oprimir y sacarlo. Fig. 23. Siempre oprima en el anillo interior del cojinete cuando lo esté reemplazando.

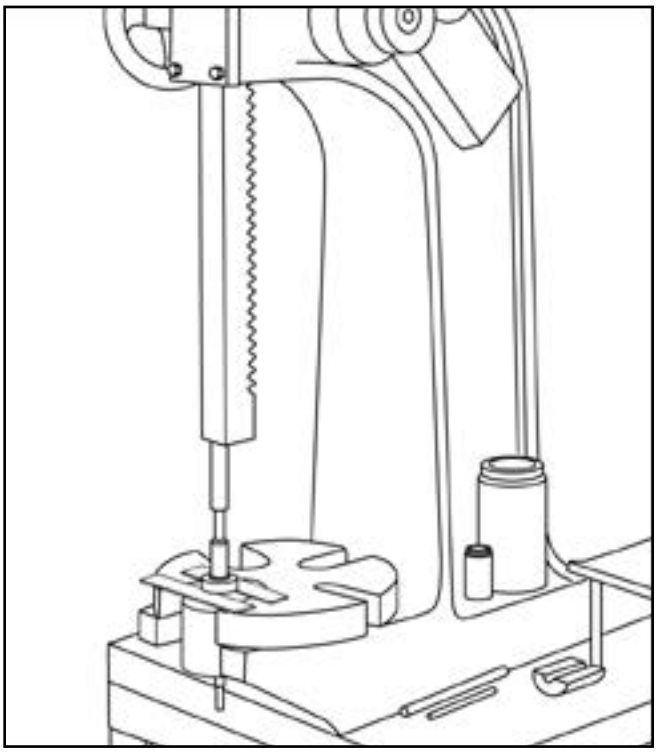


FIG. 23

11. Si es necesario reemplazar el estator del motor, use una caja nueva con el estator prensado dentro.
    Tanto la caja como el estator se deben reemplazar como una unidad ya que el estator viene prensado de fábrica y no se puede reemplazar en el terreno. Fig. 24
12. Al volver a armar, asegúrese de que la junta tórica de caucho y la arandela de empuje estén en su lugar, como se ilustra. Fig. 25

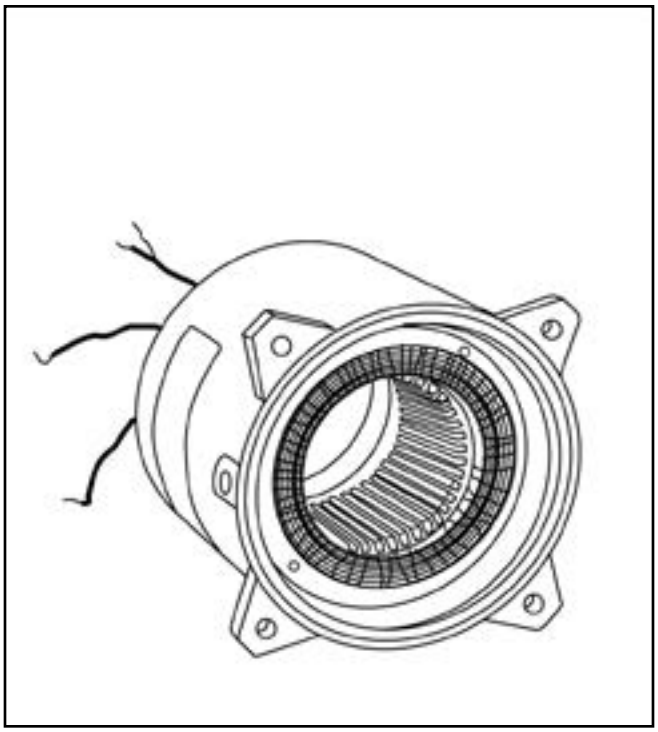


FIG. 24

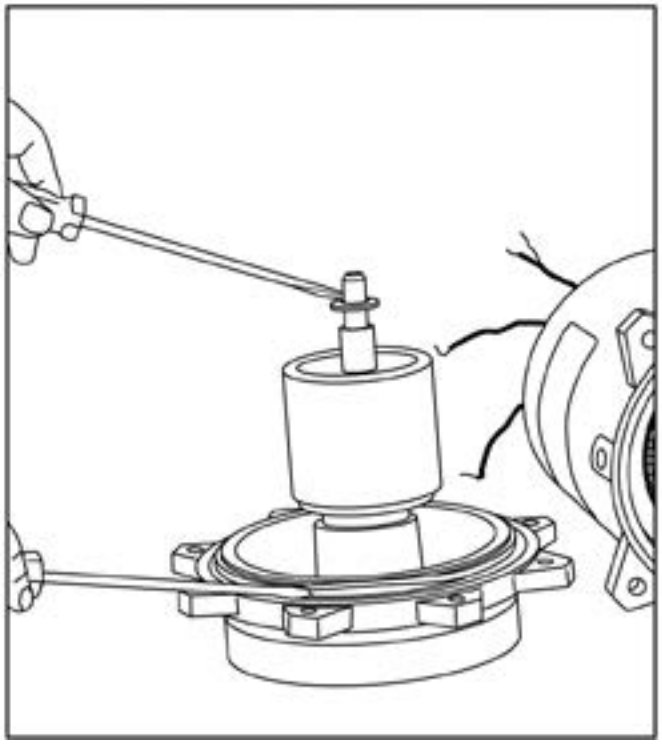


FIG. 25

Instrucciones especiales para reemplazar las juntas en las bombas con junta doble

1. Saque los tapones en el cárter del motor y en la caja de la junta y drene el aceite.
2. Saque los pernos de la placa inferior solamente.
3. Levante y saque la caja de la bomba.
4. Sostenga el impulsor y destornille la tuerca de sujeción. Sostenga el eje con un destornillador y destornille el impulsor, girando en dirección opuesta a las agujas del reloj.
5. Empuje y saque el fuelle de la junta y el asiento de cerámica. Rompa los asientos si fuese necesario, para sacarlos ya que estos deberán ser reemplazados por piezas nuevas.
6. NUNCA USE PIEZAS DE JUNTAS VIEJAS. USE SOLAMENTE JUNTAS COMPLETAMENTE NUEVAS.
7. Saque el aro elástico con pinzas para aros elásticos.
8. Empuje y saque el fuelle de la junta superior y el asiento de cerámica.
9. Si no ha entrado agua en el cárter del motor (inspeccione el bobinaje con un ohmímetro o con un meghómetro) limpie y seque bien la cámara de la junta y reemplace las juntas
10. Reemplace el aceite en el cárter del motor y en la cámara de la junta. Use solamente aceite sumergible MYERS.
11. Si ha entrado agua en el motor, entonces saque la cámara de la junta, levante y saque la unidad del rotor y saque el rotor del motor. Consulte las instrucciones sobre cómo reemplazar el cojinete de bolas y el estator del motor, en la sección de la junta simple.

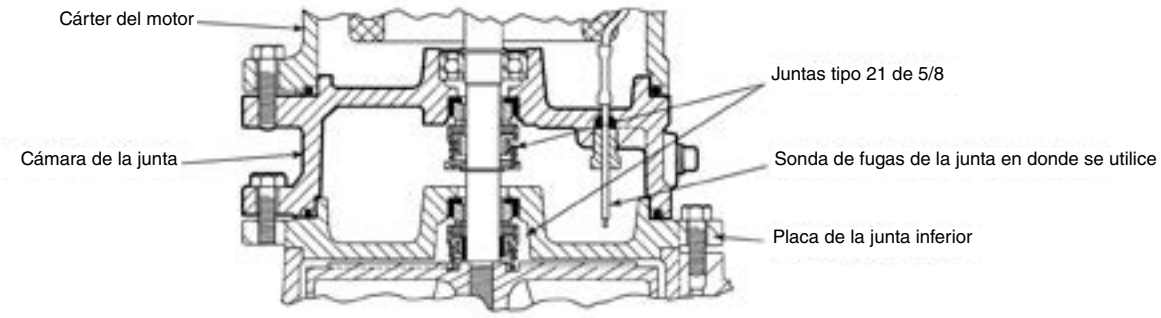
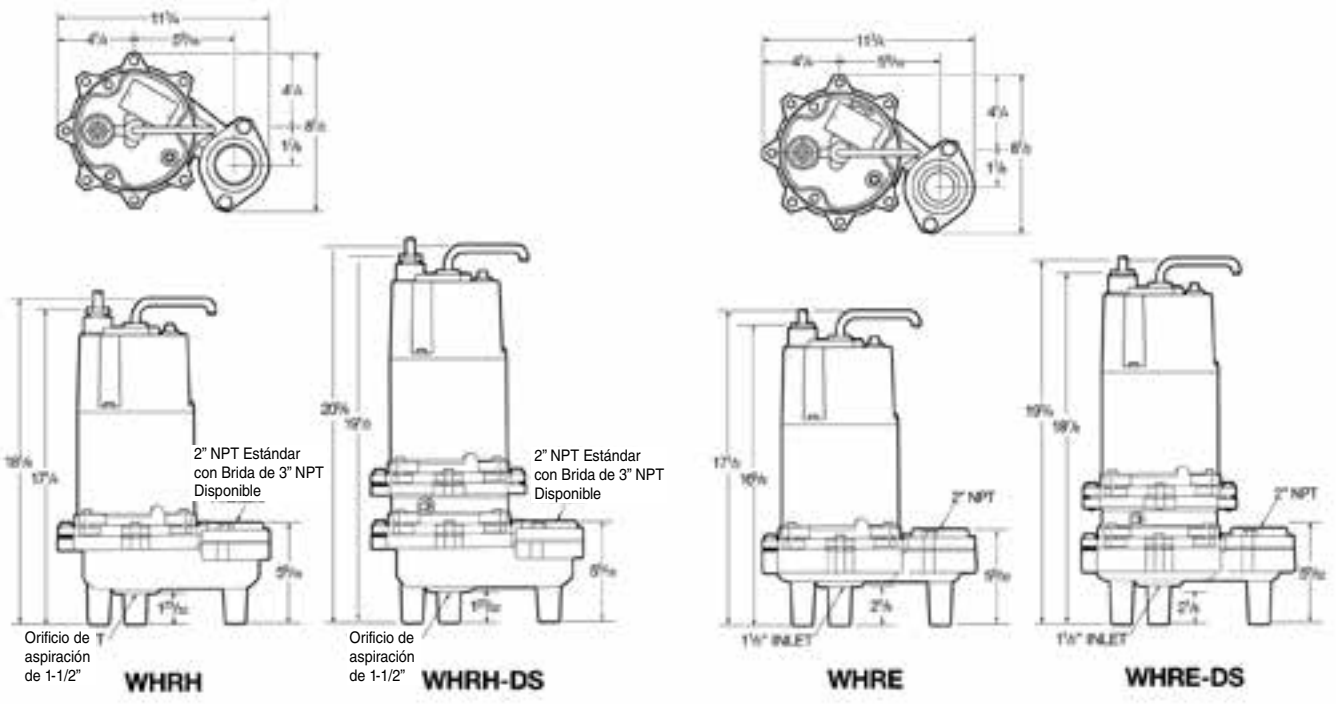
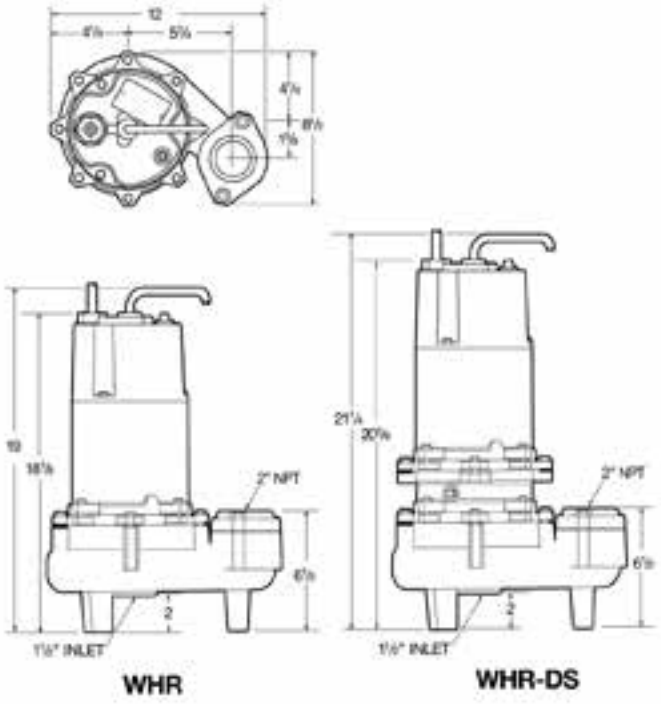


FIG. 26

Dimensiones de la bomba





GARANTÍA LIMITADA

F.E. MYERS le garantiza al comprador/consumidor original (“Comprador” o “Usted”) de los productos enumerados abajo, que estos estarán libres de defectos en material y mano de obra durante el Período de Garantía indicado a continuación.

Producto	Período de Garantía
Productos para sumideros/aguas residuales/efluente	24 meses desde la fecha de fabricación
Tanques de devanado de fibra de vidrio	5 años desde la fecha de la instalación inicial
Tanques a presión de acero	5 años desde la fecha de la instalación inicial
Bombas de chorro, pequeñas bombas centrífugas, bombas sumergibles y accesorios asociados	*lo que ocurra primero:* 12 meses desde la fecha de la instalación inicial, o 18 meses desde la fecha de fabricación

Nuestra garantía no se aplicará a ningún producto que, a nuestro sólo juicio, haya sido sometido a negligencia, mal uso, instalación inadecuada o mal mantenimiento. Sin prejuicio a lo que antecede, la garantía quedará anulada en el caso en que un motor trifásico se haya usado con una fuente de alimentación monofásica, a través de un convertidor de fase. Es importante indicador que los motores trifásicos deben estar protegidos por relés de sobrecarga de disparo extra-rápido, con compensación ambiental de tres etapas, del tamaño recomendado, de lo contrario, la garantía quedará anulada.

Su único recurso, y la única obligación de F.E. MYERS es que F.E. MYERS repare o reemplace los productos defectuosos (a juicio de F.E. MYERS). Usted deberá pagar todos los cargos de mano de obra y de envío asociados con esta garantía y deberá solicitar el servicio bajo garantía a través del concesionario instalador tan pronto como se descubra un problema. No se aceptará ninguna solicitud de servicio bajo garantía que se reciba después del vencimiento del Período de Garantía. Esta garantía no se puede transferir.

F.E. MYERS NO SE HARÁ RESPONSABLE DE NINGÚN DA—O CONSECUENTE, INCIDENTAL O CONTINGENTE.

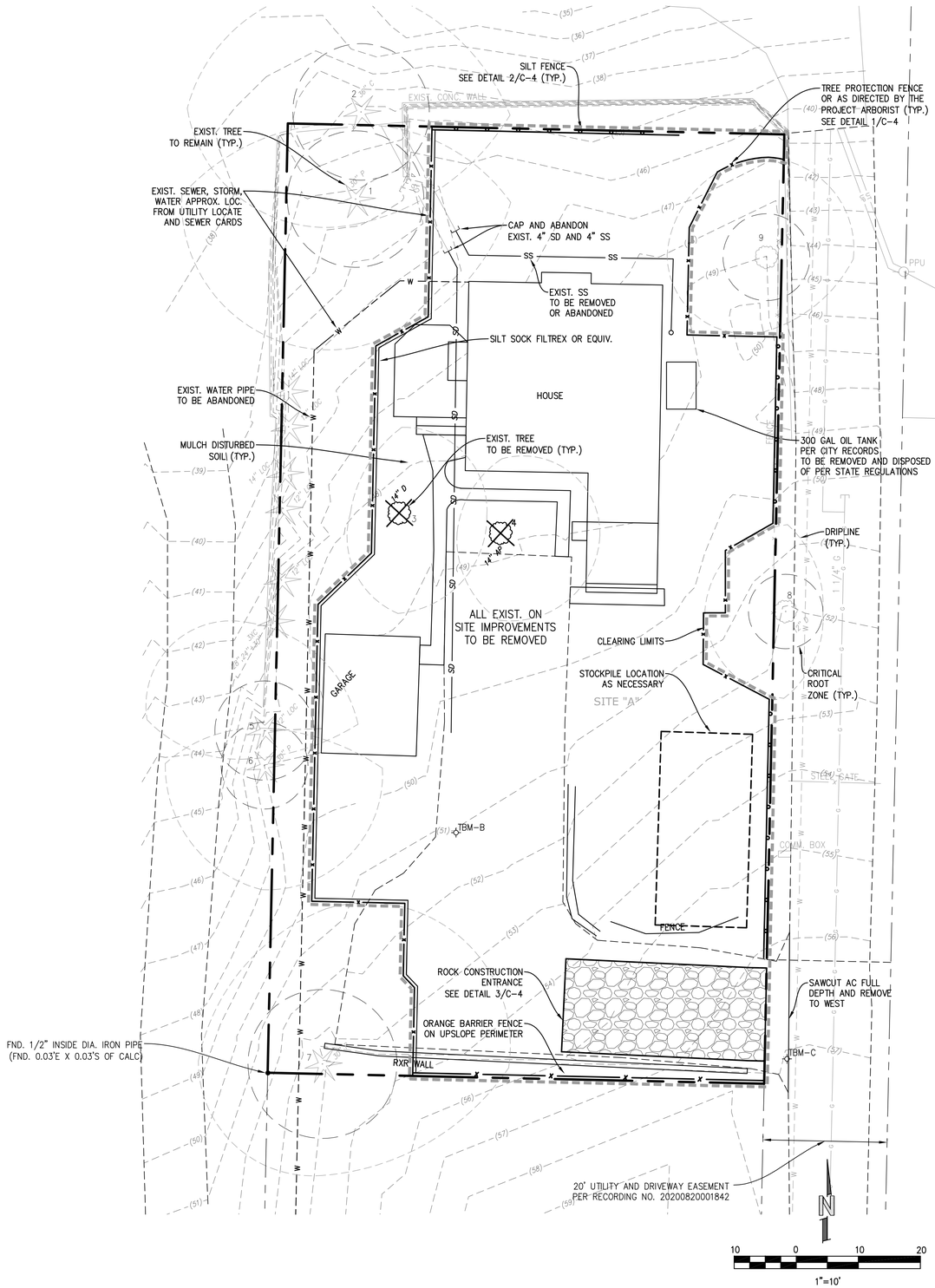
LAS GARANTÍAS QUE ANTECEDEN SON EXCLUSIVAS Y EN LUGAR DE TODA OTRA GARANTÍA EXPLÍCITA O IMPLÍCITA, INCLUYENDO PERO SIN LIMITARSE A LAS GARANTÍAS IMPLÍCITAS DE COMERCIABILIDAD E IDONEIDAD PARA UN FIN ESPECÍFICO. LAS GARANTÍAS QUE ANTECEDEN NO SE EXTENDERÁN MÁS ALLÁ DE LA DURACIÓN EXPRESAMENTE SUMINISTRADA EN LA PRESENTE.

Algunos estados no permiten la exclusión o limitación de daños incidentales o consecuentes o de limitaciones de tiempo sobre garantías implícitas, de modo que es posible que las limitaciones o exclusiones que preceden no correspondan en su caso. Esta garantía le otorga derechos legales específicos y es posible que usted también tenga otros derechos que pueden variar de un estado al otro.

Esta garantía reemplaza toda garantía publicada anteriormente.

F.E. MYERS
1101 Myers Parkway, Ashland, OH 44805-1989
Teléfono: 888-987-8677 • Fax: 800-426-9446 • www.femyers.com

NW1/4, SE1/4, SEC. 7, T. 24 N., R. 4 E., W.M.



LEGAL DESCRIPTION

SITE "A"
THAT PORTION OF GOVERNMENT LOT 4, SECTION 7, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE SOUTH LINE OF SAID GOVERNMENT LOT WHICH POINT IS NORTH 89°57'00" WEST 726.00 FEET FROM THE SOUTHEAST CORNER THEREOF, AS SHOWN ON THE ORIGINAL PLAT OF LAKEMONT, ACCORDING TO THE UNRECORDED PLAT THEREOF, (SAID SOUTHEAST CORNER BEING NORTH 89°57'00" WEST, 1,333.64 FEET FROM THE SOUTHEAST CORNER OF GOVERNMENT LOT 5, IN SAID SECTION 7); THENCE NORTH 1230.0 FEET TO THE TRUE POINT OF BEGINNING OF THIS DESCRIPTION: THENCE SOUTH 89°57'00" EAST 80.00 FEET; THENCE NORTH 20.00 FEET TO A POINT CALLED HEREIN "X" THENCE CONTINUING NORTH 153.00 FEET; THENCE NORTH 89°57'00 WEST 80 FEET TO A POINT FROM WHICH THE TRUE POINT OF BEGINNING BEARS SOUTH; THENCE 153.00 FEET TO THE POINT OF BEGINNING; TOGETHER WITH AN EASEMENT FOR DRIVEWAY AND UTILITY PURPOSES OVER A 20 FOOT WIDE STRIP, THE WEST LINE OF WHICH BEGINS AT POINT "X" ABOVED DESCRIBED AND RUNS SOUTH 160 FEET.

SITE "B"
THAT PORTION OF GOVERNMENT LOT 4, SECTION 7, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE SOUTH LINE OF SAID GOVERNMENT LOT 2 WHICH IS NORTH 89°57'00" WEST 646.00 FEET FROM THE SOUTHEAST CORNER THEREFORE, SAID SOUTHEAST CORNER BEING NORTH 89°57'00" WEST, 1,333.64 FEET FROM THE SOUTHEAST CORNER OF
GOVERNMENT LOT 5 IN SAID SECTION 7;
THENCE NORTH 1070 FEET TOT THE TRUE POINT OF BEGINNING;
THENCE CONTINUING NORTH 140.00 FEET;
THENCE NORTH 89°57'00" WEST 80.00
THENCE SOUTH 140.00 FEET;
THENCE SOUTH 89°57'00" EAST 80.00 FEET TO THE TRUE POINT OF BEGINNING;

(ALSO BEING KNOWN AS A PORTION OF TRACTS 57 AND 58 IN REPLAT OF TRACTS E,F,G,H,I,J, AND K OF LAKEMONT, AN UNRECORDED PLAT.)

SITUATED IN THE CITY OF MERCER ISLAND, COUNTY OF KING, STATE OF WASHINGTON.

BENCHMARK & DATUM

VERICAL DATUM: NAVD88

ORIGINAL BM: 2 1/2" DIA. IRON PIPE WITH INVERTED NAIL IN CASE ON W MERCER WAY. GSOW ID BM-11081.
ELEV=92.88

TBM – A: SET MAG NAIL. ELEV=59.75
TBM – B: SET MAG NAIL. ELEV=51.00
TBM – C: SET MAG NAIL. ELEV=57.05

EROSION AND SEDIMENT CONTROL NOTES

1. APPROVAL OF THIS EROSION AND SEDIMENT CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
2. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/ESC SUPERVISOR UNTIL ALL CONSTRUCTION IS APPROVED.
3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED BY A CONTINUOUS LENGTH OF SURVEY TAPE (OR FENCING, IF REQUIRED) PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE APPLICANT/ESC SUPERVISOR FOR THE DURATION OF CONSTRUCTION.
4. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
5. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.).
6. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/ESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE ESC FACILITIES DURING THE WET SEASON (OCT. 1 TO APRIL 30) AND OF MONTHLY REVIEWS DURING THE DRY SEASON (MAY 1 TO SEPT. 30).
7. ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
8. ANY AREA NEEDING ESC MEASURES NOT REQUIRING IMMEDIATE ATTENTION SHALL BE ADDRESSED WITHIN FIFTEEN (15) DAYS.
9. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN FORTY-EIGHT (48) HOURS FOLLOWING A STORM EVENT.
10. AT NO TIME SHALL MORE THAN ONE (1) FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
11. STABILIZED CONSTRUCTION ENTRANCES AND ROADS SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
12. ANY PERMANENT FLOW CONTROL FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. IF THE FACILITY IS TO FUNCTION ULTIMATELY AS AN INFILTRATION SYSTEM, THE TEMPORARY FACILITY MUST BE GRADED SO THAT THE BOTTOM AND SIDES ARE AT LEAST THREE FEET ABOVE THE FINAL GRADE OF THE PERMANENT FACILITY.
13. WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2 TO 3 INCHES.
14. PRIOR TO THE BEGINNING OF THE WET SEASON (OCT. 1), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH ONES CAN BE SEEDED IN PREPARATION FOR THE WINTER RAINS. DISTURBED AREAS SHALL BE SEEDED WITHIN ONE WEEK OF THE BEGINNING OF THE WET SEASON. A SKETCH MAP OF THOSE AREAS TO BE SEEDED AND THOSE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE DDES INSPECTOR. THE DDES INSPECTOR CAN REQUIRE SEEDING OF ADDITIONAL AREAS IN ORDER TO PROTECT SURFACE WATERS, ADJACENT PROPERTIES, OR DRAINAGE FACILITIES.

POLLUTION PREVENTION AND SPILL CONTROL

STORAGE AND HANDLING OF LIQUIDS
1. MINIMIZE AMOUNT OF LIQUIDS STORED ON SITE.
2. STORE AND CONTAIN LIQUID MATERIALS IN SUCH A MANNER THAT IF A VESSEL IS RUPTURED OR LEAKS, THE CONTENTS WILL NOT DISCHARGE, FLOW, OR BE WASHED INTO THE STORM DRAINAGE SYSTEM, SURFACE WATERS, OR GROUNDWATER. TYPICALLY THIS MEANS INSTALLING SECONDARY CONTAINMENT, SUCH AS A LINED EXCAVATION, LARGER CONTAINER, OR USING A DOUBLE-WALLED TANK OR SIMILAR COMMERCIALLY AVAILABLE CONTAINMENT FACILITY.
3. PLACE TIGHT-FITTING LIDS ON ALL CONTAINERS.
4. ENCLOSE OR COVER THE CONTAINERS WHERE THEY ARE STORED TO PROTECT FROM RAIN. THE LOCAL FIRE DISTRICT MUST BE CONSULTED FOR LIMITATIONS ON CLEARANCE OF ROOF COVERS OVER CONTAINERS USED TO STORE FLAMMABLE MATERIALS.
5. RAISE THE CONTAINERS OFF THE GROUND BY USING A SPILL CONTAINMENT PALLET OR SIMILAR METHOD THAT HAS PROVISIONS FOR SPILL CONTROL.
6. PLACE DRIP PANS OR ABSORBENT MATERIALS BENEATH ALL MOUNTED CONTAINER TAPS, AND AT ALL POTENTIAL DRIP AND SPILL LOCATIONS DURING FILLING AND UNLOADING OF CONTAINERS. ANY COLLECTED LIQUIDS OR SOILED ABSORBENT MATERIALS MUST BE REUSED, RECYCLED, OR PROPERLY DISPOSED OF.
7. STORE AND MAINTAIN ABSORBENT PADS OR APPROPRIATE SPILL CLEANUP MATERIALS NEAR THE CONTAINER STORAGE AREA, IN A LOCATION KNOWN TO ALL. ENSURE THAT EMPLOYEES ARE FAMILIAR WITH THE SITE'S SPILL PLAN AND/OR PROPER SPILL CLEANUP PROCEDURES.
8. CHECK CONTAINERS (AND ANY CONTAINMENT SUMPS) DAILY FOR LEAKS AND SPILLS. REPLACE CONTAINERS THAT ARE LEAKING, CORRODED, OR OTHERWISE DETERIORATING. IF THE LIQUID CHEMICALS ARE CORROSIVE, CONTAINERS MADE OF COMPATIBLE MATERIALS MUST BE USED INSTEAD OF METAL DRUMS. NEW OR SECONDARY CONTAINERS MUST BE LABELED WITH THE PRODUCT NAME AND HAZARDS.
9. PLACE DRIP PANS OR ABSORBENT MATERIALS BENEATH A CONTAINER THAT IS FOUND TO BE LEAKING. REMOVE THE DAMAGED CONTAINER AS SOON AS POSSIBLE. MOP UP THE SPILLED LIQUID WITH ABSORBENT PADS OR RAGS. ANY COLLECTED LIQUIDS OR SOILED ABSORBENT MATERIALS MUST BE REUSED, RECYCLED, OR PROPERLY DISPOSED OF.

FUELING
1. LOCATE THE FUELING OPERATION TO ENSURE LEAKS OR SPILLS WILL NOT DISCHARGE, FLOW, OR BE WASHED INTO THE STORM DRAINAGE SYSTEM, SURFACE WATER, OR GROUNDWATER.
2. USE DRIP PANS OR ABSORBENT PADS TO CAPTURE DRIPS OR SPILLS DURING FUELING OPERATIONS.
3. IF FUELING IS DONE DURING EVENING HOURS, LIGHTING MUST BE PROVIDED.
4. STORE AND MAINTAIN APPROPRIATE SPILL CLEANUP MATERIALS IN THE MOBILE FUELING VEHICLE. ENSURE THAT EMPLOYEES ARE FAMILIAR WITH PROPER SPILL CONTROL AND CLEANUP PROCEDURES.
5. IMMEDIATELY MOP UP ANY SPILLED FUEL WITH ABSORBENT PADS OR RAGS. ANY COLLECTED LIQUIDS OR SOILED ABSORBENT MATERIALS MUST BE REUSED, RECYCLED, OR PROPERLY DISPOSED OF.

CONCRETE SAW CUTTING, SLURRY, AND WASHWATER DISPOSAL
1. SLURRY FROM SAW CUTTING THE SIDEWALK SHALL BE VACUUMED SO THAT IT DOES NOT ENTER NEARBY STORM DRAINS.
2. CONCRETE TRUCK CHUTES, PUMPS, AND INTERNALS SHALL BE WASHED OUT ONLY INTO FORMED AREAS AWAITING INSTALLATION OF CONCRETE.
3. UNUSED CONCRETE REMAINING IN THE TRUCK AND PUMP SHALL BE RETURNED TO THE ORIGINATING BATCH PLANT FOR RECYCLING.
4. HAND TOOLS INCLUDING, BUT NOT LIMITED, SCREEDS, SHOVELS, RAKES, FLOATS, AND TROWELS SHALL BE WASHED OFF ONLY INTO FORMED INTO FORMED AREAS AWAITING INSTALLATION OF CONCRETE OR IMPERMEABLE ASPHALT.
5. EQUIPMENT THAT CANNOT BE EASILY MOVED, SUCH AS CONCRETE PAVERS, SHALL ONLY BE WASHED IN AREAS THAT DO NOT DIRECTLY DRAIN TO NATURAL OR CONSTRUCTED STORMWATER CONVEYANCES.
6. WASHDOWN FROM AREAS SUCH AS CONCRETE AGGREGATE DRIVEWAY SHALL NOT DRAIN DIRECTLY TO NATURAL OR CONSTRUCTED STORMWATER CONVEYANCES.
7. WHEN NO FORMED AREAS ARE AVAILABLE, WASHWATER AND LEFTOVER PRODUCT SHALL BE CONTAINED IN A LINED CONTAINER. CONTAINED CONCRETE SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT VIOLATE GROUNDWATER OR SURFACE WATER QUALITY STANDARDS.
8. CONTAINERS SHALL BE CHECKED FOR HOLES IN THE LINER DAILY DURING CONCRETE POURS AND REPLACED THE SAME DAY.

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

Nick Bossoff Engineering, Inc.
191 NE Tarl Lane
Stevenson, WA 98648-4201
Phone: (425) 881-5904

STATE OF WASHINGTON NICHOLAS A. BOSSOFF 29631 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 7/2/23

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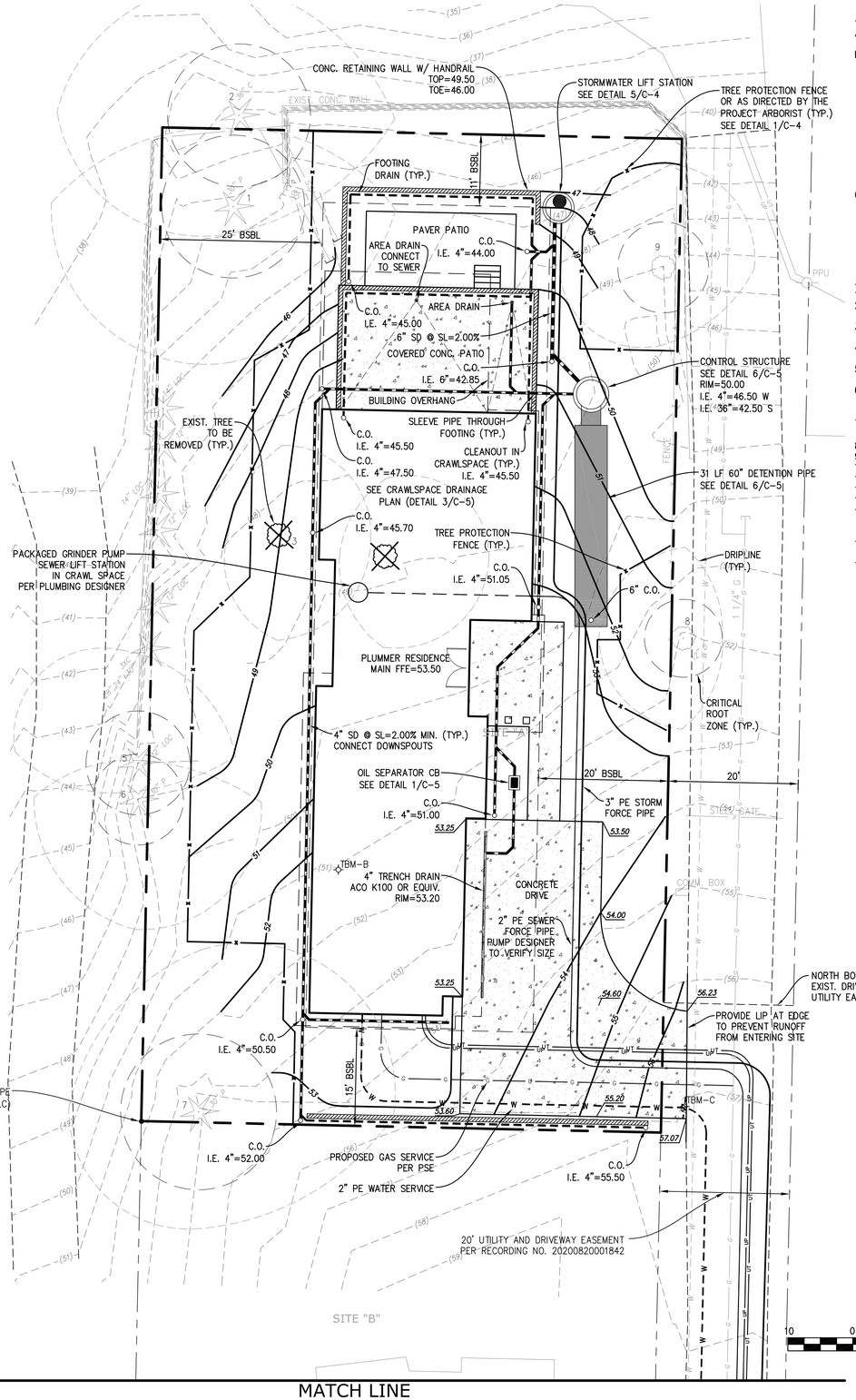
PROJECT MANAGER: N. BOSSOFF, P.E.
DESIGNED: NB
DRAWN: TKB
JOB NUMBER: SARC-2101
FILE NAME: SARC-2101pln.dwg

PLUMMER RESIDENCE
9212 SE 33RD PL
MERCER ISLAND WASHINGTON

TITLE: T.E.S.C. PLAN

SHEET: C-1

NW1/4, SE1/4, SEC. 7, T. 24 N., R. 4 E., W.M.



POST-CONSTRUCTION SOIL QUALITY AND DEPTH NOTES

A. SOIL RETENTION. RETAIN, IN AN UNDISTURBED STATE, THE DUFF LAYER AND NATIVE TOPSOIL TO THE MAXIMUM EXTENT PRACTICABLE. IN ANY AREAS REQUIRING GRADING REMOVE AND STOCKPILE THE DUFF LAYER AND TOPSOIL ON SITE IN A DESIGNATED, CONTROLLED AREA, NOT ADJACENT TO PUBLIC RESOURCES AND CRITICAL AREAS, TO BE REAPPLIED TO OTHER PORTIONS OF THE SITE WHERE FEASIBLE.

B. SOIL QUALITY. ALL AREAS SUBJECT TO CLEARING AND GRADING THAT HAVE NOT BEEN COVERED BY IMPERVIOUS SURFACE, INCORPORATED INTO A DRAINAGE FACILITY OR ENGINEERED AS STRUCTURAL FILL OR SLOPE SHALL, AT PROJECT COMPLETION, DEMONSTRATE THE FOLLOWING:
   1. A TOPSOIL LAYER WITH A MINIMUM ORGANIC MATTER CONTENT OF 10% DRY WEIGHT IN PLANTING BEDS, AND 5% ORGANIC MATTER CONTENT IN TURF AREAS, AND A PH FROM 6.0 TO 8.0 OR MATCHING THE PH OF THE UNDISTURBED SOIL. THE TOPSOIL LAYER SHALL HAVE A MINIMUM DEPTH OF EIGHT INCHES EXCEPT WHERE TREE ROOTS LIMIT THE DEPTH OF INCORPORATION OF AMENDMENTS NEEDED TO MEET THE CRITERIA. SUBSOILS BELOW THE TOPSOIL LAYER SHOULD BE SCARIFIED AT LEAST 4 INCHES WITH SOME INCORPORATION OF THE UPPER MATERIAL TO AVOID STRATIFIED LAYERS, WHERE FEASIBLE.
   2. MULCH PLANTING BEDS WITH 2 INCHES OF ORGANIC MATERIAL
   3. USE COMPOST AND OTHER MATERIALS THAT MEET THESE ORGANIC CONTENT REQUIREMENTS:
      A. THE ORGANIC CONTENT FOR "PRE-APPROVED" AMENDMENT RATES CAN BE MET ONLY USING COMPOST MEETING THE DEFINITION OF "COMPOSTED MATERIALS" IN WAC 173-350-220, WITH THE EXCEPTION THAT THE COMPOST MAY HAVE UP TO 35% BIOSOLIDS OR MANURE. THE COMPOST MUST ALSO HAVE AN ORGANIC MATTER CONTENT OF 40% TO 65%, AND A CARBON TO NITROGEN RATIO BELOW 25:1. THE CARBON TO NITROGEN RATIO MAY BE AS HIGH AS 35:1 FOR PLANTINGS COMPOSED ENTIRELY OF PLANTS NATIVE TO THE PUGET SOUND LOWLANDS REGION.
      B. CALCULATED AMENDMENT RATES MAY BE MET THROUGH USE OF COMPOSTED MATERIAL MEETING (A.) ABOVE; OR OTHER ORGANIC MATERIALS AMENDED TO MEET THE CARBON TO NITROGEN RATIO REQUIREMENTS, AND NOT EXCEEDING THE CONTAMINANT LIMITS IDENTIFIED IN TABLE 220-B, TESTING PARAMETERS, IN WAC 173- 350-220.

   THE RESULTING SOIL SHOULD BE CONDUCIVE TO THE TYPE OF VEGETATION TO BE ESTABLISHED.

C. IMPLEMENTATION OPTIONS: THE SOIL QUALITY DESIGN GUIDELINES LISTED ABOVE CAN BE MET BY USING ONE OF THE METHODS LISTED BELOW:
   1. LEAVE UNDISTURBED NATIVE VEGETATION AND SOIL AND PROTECT FROM COMPACTION DURING CONSTRUCTION.
   2. AMEND EXISTING SITE TOPSOIL OR SUBSOIL EITHER AT DEFAULT "PREAPPROVED" RATES, OR AT CUSTOM CALCULATED RATES BASED ON TESTS OF THE SOIL AND AMENDMENT.
   3. 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.
   4. 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.

ADDITIONAL NOTES:

1. ALL CONSTRUCTION MATERIALS AND PRACTICE SHALL CONFORM TO THE CITY OF MERCER ISLAND STANDARDS AND THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARDS.
2. EXISTING UTILITIES AS SHOWN ARE FROM CITY RECORDS AND ARE APPROXIMATE. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO IDENTIFY, LOCATE AND PROTECT ABOVE AND BELOW GRADE UTILITIES. CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION IF A CONFLICT EXISTS BETWEEN EXISTING UTILITIES AND THE PROPOSED IMPROVEMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR EROSION AND SEDIMENTATION CONTROL AND SHALL MAINTAIN THE NECESSARY SAFEGUARDS AND MANAGE THE CONSTRUCTION SO AS TO PREVENT WATERBORNE SEDIMENTS FROM LEAVING THE SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR.
5. ON-SITE PRIVATE STORM AND SEWER PIPE SHALL BE SOLVENT WELDED SCHEDULE 40 PVC OR PVC ASTM D3034 SDR35 UNLESS SHOWN OTHERWISE. PVC PIPE LAID AT A SLOPE IN EXCESS OF 20% SHALL BE SOLVENT WELDED SCHEDULE 40 PVC. STORM PIPE IN THE RIGHT-OF-WAY SHALL BE HIGH-DENSITY POLYETHYLENE DOUBLE-WALLED SMOOTH INTERIOR PIPE SUCH AS ADS N-12 OR EQUIVALENT.
6. FOOTING DRAINS SHALL BE INSTALLED AROUND THE BASE OF ALL FOUNDATION FOOTINGS THAT ENCLOSE A CRAWL SPACE, CELLAR, BASEMENT, GARAGE OR OTHER BUILDING SPACE. FOOTING DRAINS SHALL BE PERFORATED 4-INCH DIAMETER PVC CONFORMING TO D2729, PERFORATIONS DOWN. GRANULAR BACKFILL SHALL BE PLACED AROUND AND ABOVE THE DRAIN TO A DEPTH OF 2/3 OF THE WALL HEIGHT. FILTER FABRIC (MIRAFI 140N OR EQUIVALENT) SHALL BE PLACED BETWEEN THE GRANULAR BACKFILL AND NATIVE SOILS. TIE THE FOOTING DRAIN INTO THE STORM LINE AT A LOCATION WHERE THE FOOTING DRAIN ELEVATION IS AT LEAST 12-INCHES ABOVE THE STORM LINE.
7. EXISTING SIDE SEWER AND STORM DRAIN DEPTH AND LOCATION SHALL BE DETERMINED PRIOR TO ANY CONSTRUCTION, INCLUDING BUILDING CONSTRUCTION. REPORT CONFLICTS WITH PROPOSED CONSTRUCTION TO ENGINEER. NEW SIDE SEWER CONNECTION TO MAIN OR SEWER EJECTOR PUMP MAY BE NECESSARY FOR BASEMENT.
8. PROPOSED METER LOCATION, IF SHOWN, IS APPROXIMATE. CONTRACTOR TO COORDINATE EXACT LOCATION OF NEW SERVICE/METER/ SUPPLY LINE WITH CITY WATER DEPARTMENT DURING CONSTRUCTION.
9. EACH DOWNSPOUT SHALL CONNECT TO A RIGID NON-PERFORATED PIPE AT THE BUILDING PERIMETER. UNDER NO CIRCUMSTANCES SHALL DOWNSPOUTS CONNECT DIRECTLY TO THE PERFORATED FOOTING DRAIN.
10. USE SAND COLLARS FOR PVC PIPE CONNECTIONS TO MANHOLES.
11. VERTICAL BENDS ON THE STORM DRAINS MAY BE NECESSARY TO MAINTAIN MIN. 1.5' SOIL COVER OVER PIPE. MAX. PIPE BENDS TO BE 45°.
12. DOWNSPOUT LOCATIONS SHOWN ARE PRELIMINARY. REFER TO ARCHITECTURAL PLANS FOR FINAL DOWNSPOUT LOCATIONS.
13. AN UNDERSLAB DRAINAGE SYSTEM MAY BE NECESSARY DEPENDENT ON GEOTECHNICAL EVALUATION BY OTHERS.
14. WINDOW WELLS SHALL BE DESIGNED FOR PROPER DRAINAGE BY CONNECTING TO THE BUILDING'S FOUNDATION DRAINAGE SYSTEM REQUIRED PER SECTION R310.2.3.2 OF THE INTERNATIONAL RESIDENTIAL CODE. A DRAINAGE SYSTEM FOR WINDOW WELLS IS NOT REQUIRED WHERE THE FOUNDATION IS ON WELL-DRAINED SOIL OR SAND-GRAVEL MIXTURE SOILS IN ACCORDANCE WITH THE UNITED SOIL CLASSIFICATION SYSTEM, GROUP I SOILS, AS DETAILED IN TABLE R405.1 OF THE IRC.
15. CITY RECORDS INDICATE THAT AN EXISTING SIDE SEWER MAY BE PRESENT NEAR THIS LOCATION. THIS SIDE SEWER MAY BE REUSED IN LIEU OF CONSTRUCTION OF A NEW SEWER IF IN SATISFACTORY CONDITION AS DETERMINED BY THE CITY INSPECTOR, AND ALLOWED BY THE SIDE SEWER OWNER. A TV INSPECTION OF THE EXISTING SIDE SEWER IS REQUIRED IF REUSED.
16. ONSITE SOILS ARE UNSUITABLE FOR USE AS STRUCTURAL FILL UNDER THE PATIO SLAB, GARAGE SLAB, AND FRONT PORCH SLAB. ALL STRUCTURAL FILL SHALL BE IMPORTED FROM OFFSITE AND MEET THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER.

MATCH LINE

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191 NE Tari Lane
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Phone: (425) 881-5904

STATE OF WASHINGTON · NICHOLAS BOSSOFF · 29631 · REGISTERED PROFESSIONAL ENGINEER

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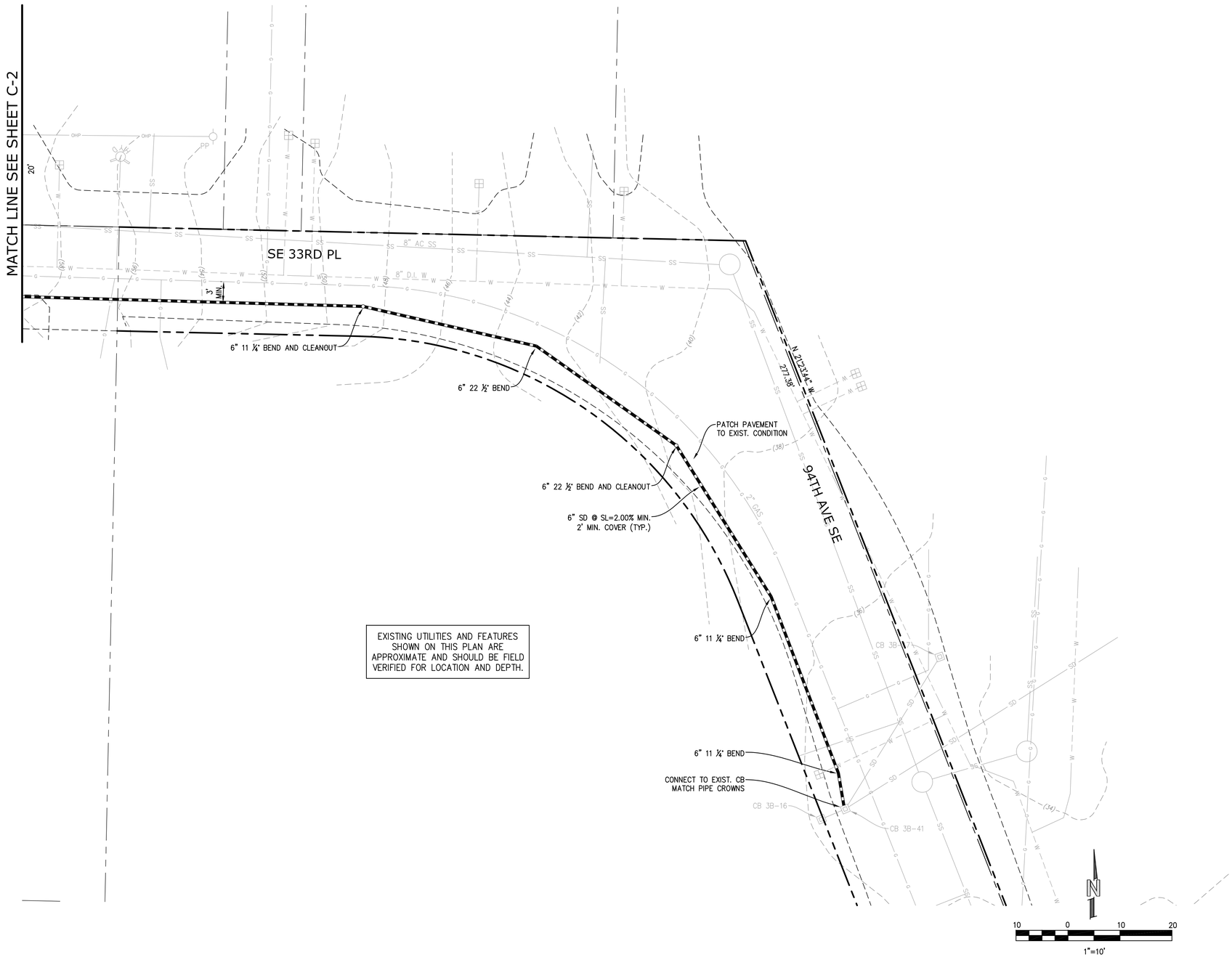
DESIGNED:
TKB
DRAWN:
SARC-2101
JOB NUMBER:
SARC-2101pln.dwg
FILE NAME:

PLUMMER RESIDENCE
9212 SE 33RD PL
MERCER ISLAND WASHINGTON

TITLE:
DRAINAGE
PLAN

SHEET:
C-2

NW1/4, SE1/4, SEC. 7, T. 24 N., R. 4 E., W.M.



EXISTING UTILITIES AND FEATURES SHOWN ON THIS PLAN ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED FOR LOCATION AND DEPTH.

N.B.I.
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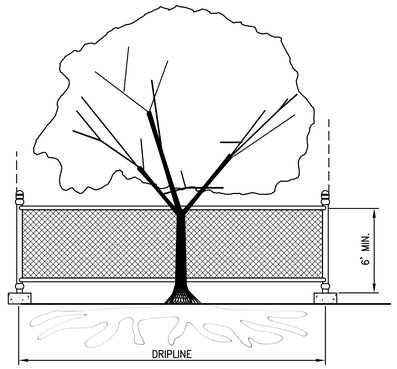
MERCER ISLAND WASHINGTON

TITLE:
DRAINAGE PLAN

SHEET:
C-3

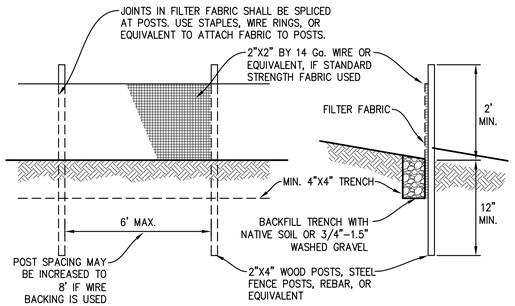


TREE PROTECTION DURING CONSTRUCTION

1. 6–FT. HIGH TEMPORARY CHAIN LINK FENCE SHALL BE PLACED AT THE DRIPLINE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE THE TREE(S). INSTALL FENCE POSTS USING PIER BLOCKS ONLY. AVOID DRIVING POSTS OR STAKES INTO MAJOR ROOTS.
2. FOR ROOTS OVER 1–IN DIA. THAT ARE DAMAGED DURING CONSTRUCTION, MAKE A CLEAN, STRAIGHT CUT TO REMOVE THE DAMAGED PORTION. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING, AND SHALL BE COVERED WITH SOIL AS SOON AS POSSIBLE.
3. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING.

TREE PROTECTION

SCALE: NTS — 1



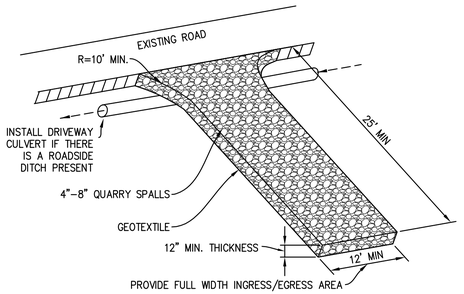
NOTE: FILTER FABRIC FENCE SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE.

MAINTENANCE STANDARDS

1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT TRAP OR POND.
3. IT IS IMPORTANT TO CHECK THE UPHILL SIDE OF THE FENCE FOR SIGN OF THE FENCE CLOGGING AND ACTING AS A BARRIER TO FLOW AND THEN CAUSING CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCUR, REPLACE THE FENCE AND/OR REMOVE THE TRAPPED SEDIMENT.
4. SEDIMENT MUST BE REMOVED WHEN THE SEDIMENT IS 6" HIGH.
5. IF THE FILTER FABRIC HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN, IT SHALL BE REPLACED.

SILT FENCE

SCALE: NTS — 2

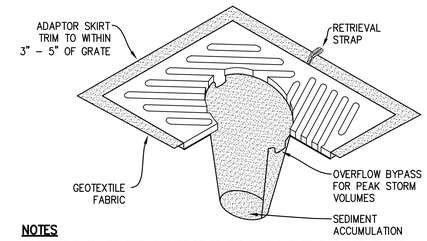


MAINTENANCE STANDARDS

1. QUARRY SPALLS (OR HOG FUEL) SHALL BE ADDED IF THE PAD IS NO LONGER IN ACCORDANCE WITH THE SPECIFICATIONS.
2. IF THE ENTRANCE IS NOT PREVENTING SEDIMENT FROM BEING TRACKED ONTO PAVEMENT, THEN ALTERNATIVE MEASURES TO KEEP THE STREETS FREE OF SEDIMENT SHALL BE USED. THIS MAY INCLUDE STREET SWEEPING, AN INCREASE IN THE DIMENSIONS OF THE ENTRANCE, OR THE INSTALLATION OF A WHEEL WASH. IF WASHING IS USED, IT SHALL BE DONE ON AN AREA COVERED WITH CRUSHED ROCK, AND WASH WATER SHALL DRAIN TO A SEDIMENT TRAP OR POND.
3. ANY SEDIMENT THAT IS TRACKED ONTO PAVEMENT SHALL BE REMOVED IMMEDIATELY BY SWEEPING. THE SEDIMENT COLLECTED BY SWEEPING SHALL BE REMOVED OR STABILIZED ON–SITE. THE PAVEMENT SHALL NOT BE CLEANED BY WASHING DOWN THE STREET, EXCEPT WHEN SWEEPING IS INEFFECTIVE AND THERE IS A THREAT TO PUBLIC SAFETY. IF IT IS NECESSARY TO WASH THE STREET, THE CONSTRUCTION OF A SMALL SUMP SHALL BE CONSIDERED. THE SEDIMENT WOULD THEN BE WASHED INTO THE SUMP.
4. ANY ROCK SPALLS THAT ARE LOOSENED FROM THE PAD AND END UP ON THE ROADWAY SHALL BE REMOVED IMMEDIATELY.
5. IF VEHICLES ARE ENTERING OR EXITING THE SITE AT POINTS OTHER THAN THE CONSTRUCTION ENTRANCE(S), FENCING (SECTION 5.4.1) SHALL BE INSTALLED TO CONTROL TRAFFIC.

ROCK CONSTRUCTION ENTRANCE

SCALE: NTS — 3

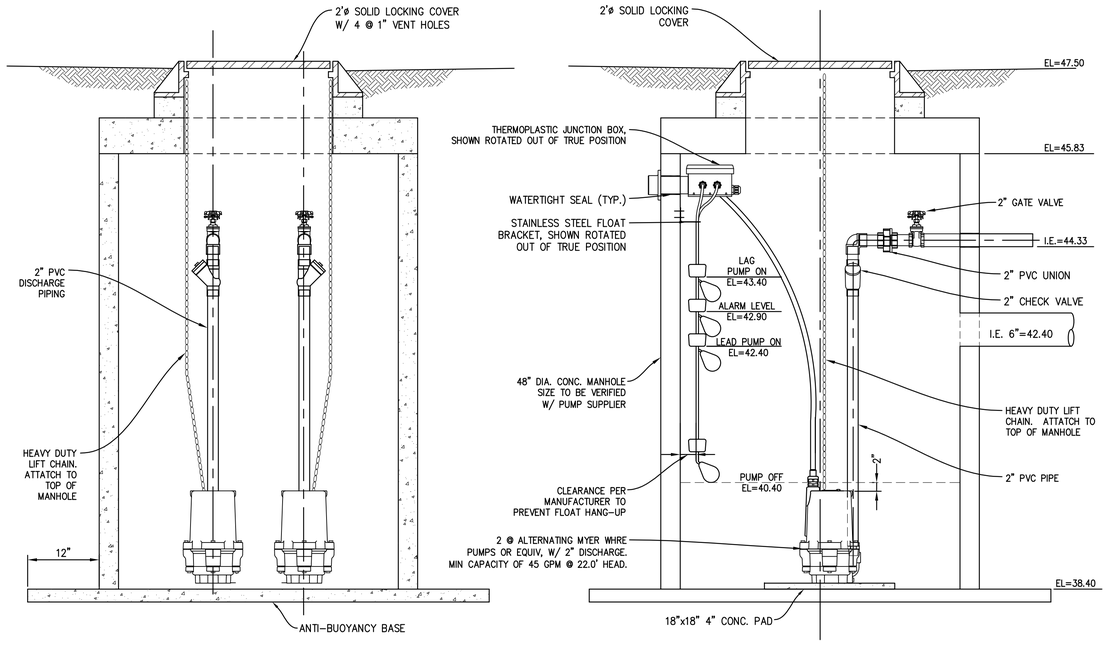


NOTES

1. INSERT SHALL BE INSTALLED PRIOR TO CLEARING AND GRADING ACTIVITY, OR UPON PLACEMENT OF A NEW CATCH BASIN.
2. SEDIMENT SHALL BE REMOVED FROM THE UNIT WHEN IT BECOMES HALF FULL.
3. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING, AND RE–INSERTING IT INTO THE CATCH BASIN.

CB INSERT

SCALE: NTS — 4

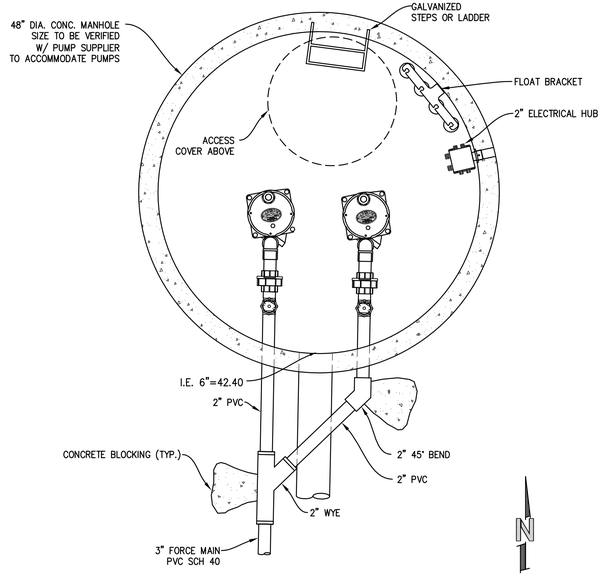


DRAIN LIFT STATION #1

SCALE: NTS — 5

NOTES:

–THE SYSTEM IS TO BE AN ALTERNATING DUPLEX SYSTEM.
–LOCATE CONTROL PANEL AND ALARM ON EXTERIOR BUILDING WALL. USE HYDROMATIC PANEL OR APPROVED EQUIVALENT.
–SYSTEM TO BE FULLY AUTOMATIC WITH MANUAL OVERRIDE.
–ALARM TO BE AUDIO (BELL) AND VISUAL (LIGHT).
–BOTH PUMPS TO OPERATE AT "LAG PUMP ON" FLOAT LEVEL.
–SCH 80 PVC PIPE INSIDE MANHOLE.
–FOLLOW MANUFACTURER'S INSTRUCTIONS FOR ALL INSTALLATION.
–PROVIDE ELECTRICAL SUPPLY TO PANEL AND LIFT STATION PER MANUFACTURER'S SPECIFICATIONS. POWER TO PANEL AND PUMP SHALL BE ON A DEDICATED CIRCUIT.
–ELECTRICAL CONNECTIONS AND SERVICES WITHIN THE PUMP WETWELL SHOULD BE WATERTIGHT.
–THE PRIVATE PROPERTY OWNER(S) SHALL BE RESPONSIBLE FOR ANY AND ALL CLAIMS FOR INJURIES AND DAMAGE DUE TO THE OPERATION OR NON–OPERATION OF THE PUMP SYSTEM.



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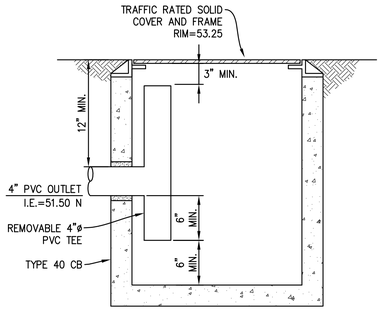
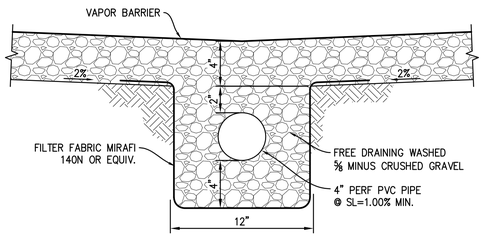


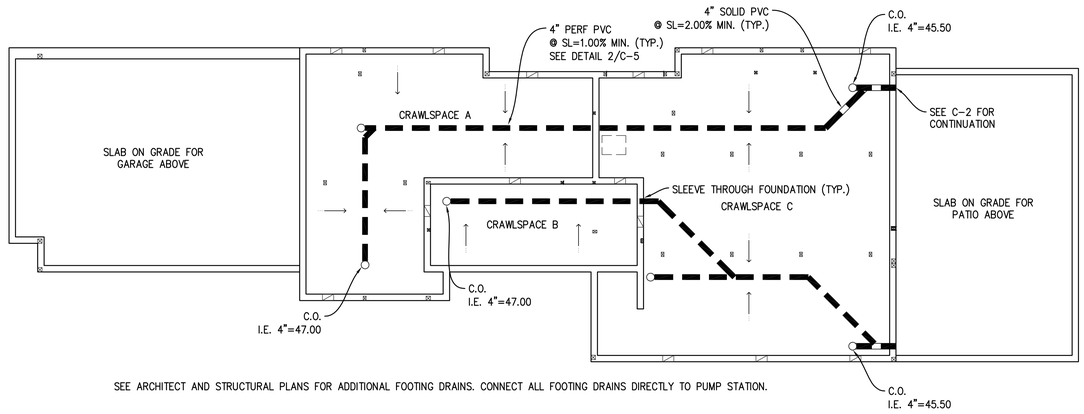
OIL SEPARATOR CB

SCALE: NTS (1)



CRAWL SPACE DRAIN

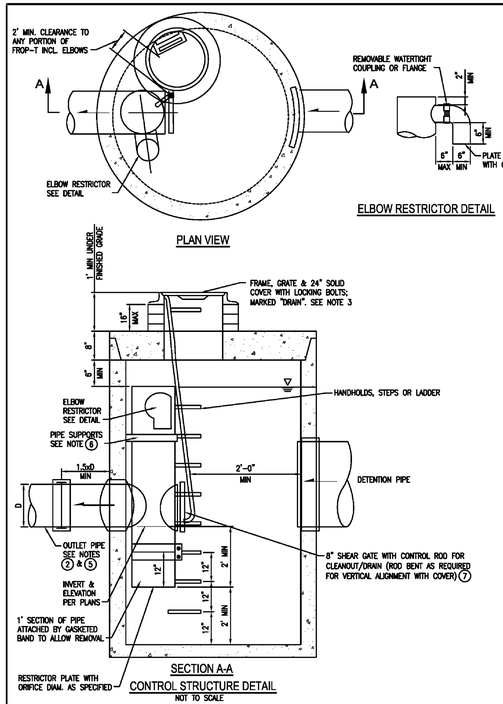
SCALE: NTS (2)



SEE ARCHITECT AND STRUCTURAL PLANS FOR ADDITIONAL FOOTING DRAINS. CONNECT ALL FOOTING DRAINS DIRECTLY TO PUMP STATION.

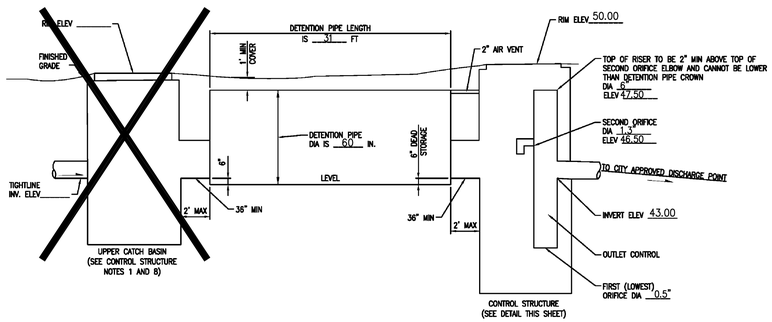
CRAWL SPACE DRAINAGE

SCALE: NTS (3)



ATTACHMENT 1
CITY OF MERCER ISLAND
ON-SITE DETENTION SYSTEM WORKSHEET
(FOR NEW PLUS REPLACED IMPERVIOUS AREA OF 9,500 SF OR LESS)

OWNER: PLUMMER
PERMIT #: _____
ADDRESS: 9212 SE 33RD PL
MERCER ISLAND
PREPARED BY: NICK BOSSOFF ENG
PHONE: (425) 881-5904
DATE: _____
NEW PLUS REPLACED IMPERVIOUS SURFACE AREA (SF): 4,363
SOIL TYPE: C
DETENTION PIPE DIA (INCH): 60"
PIPE MATERIAL: ADS N-12
DETENTION PIPE LENGTH (FT): 46
ORIFICE #1 DIA 0.5 INCH, ELEV 43.00
ORIFICE #2 DIA 1.3 INCH, ELEV 46.50



ON-SITE DETENTION SYSTEM
NOT TO SCALE (ENGINEER TO FILL IN BLANKS)

CONTROL STRUCTURE NOTES:

1. USE A MINIMUM OF A 54 IN. DIAM. TYPE 2 CATCH BASIN. THE ACTUAL SIZE IS DEPENDENT ON CONNECTING PIPE MATERIAL AND DIAMETER.
2. OUTLET PIPE: MIN. 6 INCH.
3. METAL PARTS: CORROSION RESISTANT. NON-GALVANIZED PARTS PREFERRED. GALVANIZED PIPE PARTS TO HAVE ASPHALT TREATMENT 1.
4. FRAME AND LADDER OR STEPS OFFSET SO:
   A. CLEANOUT GATE IS VISIBLE FROM TOP;
   B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE;
   C. FRAME IS CLEAR OF CURB.
5. IF METAL OUTLET PIPE CONNECTS TO CEMENT CONCRETE PIPE, OUTLET PIPE TO HAVE SMOOTH O.D. EQUAL TO CONCRETE PIPE I.D. LESS 1/4 IN.
6. PROVIDE AT LEAST ONE 3 X 0.090 GAUGE SUPPORT BRACKET ANCHORED TO CONCRETE WALL WITH 5/8 IN. STAINLESS STEEL EXPANSION BOLTS OR EMBEDDED SUPPORTS 2 IN. INTO CATCH BASIN WALL (MAXIMUM 3'-0" VERTICAL SPACING).
7. THE SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26M AND ASTM B 275, DESIGNATION 2032A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B.
   THE LIFT HANDLE SHALL BE MADE OF A SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION), IT MAY BE OF SOLID ROD OR HOLLOW TUBING, WITH ADJUSTABLE HOOK AS REQUIRED.
   A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE RISER MOUNTING FLANGE AND THE GATE FLANGE.
   INSTALL THE GATE SO THAT THE LEVEL-LINE MARK IS LEVEL WHEN THE GATE IS CLOSED.
   THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED FOR PROPER FIT.
   ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL.
8. THE UPPER CATCH BASIN IS REQUIRED IF THE LENGTH OF THE DETENTION PIPE IS GREATER THAN 50 FT.

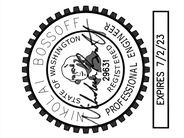
ON-SITE DETENTION SYSTEM NOTES:

1. CALL DEVELOPMENT SERVICES (206-275-7605) 24 HOURS IN ADVANCE FOR A DETENTION SYSTEM INSPECTION BEFORE BACKFILLING AND FOR FINAL INSPECTIONS.
2. RESPONSIBILITY FOR OPERATION AND MAINTANANCE OF DRAINAGE SYSTEMS ON PRIVATE PROPERTY IS RESPONSIBILITY OF THE PROPERTY OWNER. MATERIAL ACCUMULATED IN THE STORAGE PIPE MUST BE REMOVED FROM CATCH BASINS TO ALLOW PROPER OPERATION. THE OUTLET CONTROL ORIFICE MUST BE KEPT OPEN AT ALL TIMES.
3. PIPE MATERIAL, JOINT, AND PROTECTIVE TREATMENT SHALL BE IN ACCORDANCE WITH SECTION 7.04 AND 9.05 OF THE WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, LATEST VERSION. SUCH MATERIALS INCLUDE THE FOLLOWING, LINED CORRUGATED POLYETHYLENE PIPE (LCPE), ALUMINIZED TYPE 2 CORRUGATED STEEL PIPE AND PIPE ARCH (MEETS AASHTO DESIGNATIONS M274 AND M36), CORRUGATED OR SPIRAL RIB ALUMINUM PIPE, OR REINFORCED CONCRETE PIPE. CORRUGATED STEEL PIPE IS NOT ALLOWED.
4. FOOTING DRAINS SHALL NOT BE CONNECTED TO THE DETENTION SYSTEM.

DETENTION PIPE AND CONTROL STRUCTURE

SCALE: NTS (6)

Nick Bossoff Engineering, Inc.
191 NE Tarl Lane
Stevenson, WA 98648-4201
Phone: (425) 881-5904



EXPIRES 7/2/23

NO.	DATE	REVISION
1	08/20/21	PERMIT SUBMITTAL
2	07/14/22	CITY REVISIONS
3	01/24/23	DETENTION/PUMP ADDED

PROJECT MANAGER: N. BOSSOFF, P.E.
DESIGNED: NB
DRAWN: TKB
JOB NUMBER: SARC-2101
FILE NAME: SARC-2101pln.dwg

PLUMMER RESIDENCE
9212 SE 33RD PL
MERCER ISLAND WASHINGTON

TITLE: DETAILS

SHEET: C-5