

# **APPENDIX B**

2012 Civil Engineering Narratives

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## D E S I G N M E M O R A N D U M

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**DATE:** 9/13/11  
**TO:** Josh Kolberg - PKA  
**FROM:** Adam Roth  
**RE:** Providence Willamette Falls Medical Center – Master Plan – Civil Narrative  
**PROJECT NO.:** 311083

The purpose of this memorandum is to provide responses to the applicable civil-related sections in the Master Plan chapter of the Oregon City Municipal Code for the subject project.

Oregon City Municipal Code Section:

17.65.050.A.1

i. Infrastructure facilities and capacity, including the following items.

- (1) Water,
- (2) Sanitary sewer,
- (3) Stormwater management, and
- (4) Easements.

**(1) Water**

*Domestic Water*

Existing water mains are located in the streets bounding the Providence Willamette Falls (PWF) Hospital site as well as traversing the site in utility easements. There are 8-inch mains in Trillium Park Drive to the north, Davis Road to the west and Gilman Drive to the east. Division Street to the south contains a 10-inch main in the vicinity of PWF which transitions to a 6-inch main east of the Master Plan boundary near the entrance of the Mountain View nursing home. There are two public water mains running east-west across the campus in utility easements connecting the mains in Division Street and Trillium Park Drive. The northern of the two is located in the access road between the Medical Plazas and the Birthing Center. It is 6 inches in diameter from Division Street to the southern edge of Medical Plaza 2 where it transitions to 8 inches until it reaches Trillium Park Drive. The southern main runs north in the driveway to the Mountain View Nursing Home, jogs to the northeast between the main hospital building and the nursing home and heads back to the east to Trillium Park Drive. These two mains are connected near the eastern edge of the site with another 8-inch main in a utility easement. A 6 inch water main

was installed in Penn Lane as part of improvements associated with the Children’s Center of Clackamas County project. A 10-inch water main exists in 16<sup>th</sup> Street while a 6-inch main exists in 15<sup>th</sup> Street.

There is no evidence of capacity issues with the existing water system serving the campus. Pressure testing completed at fire hydrants surrounding the campus resulted in static and residual pressures ranging from 80 to 100 pounds per square inch (psi). Water system pressures and flows will need to be verified during the design of each phase.

Domestic water services to the existing PWF buildings are shown in the Table below.

<b>Existing Building</b>	<b>Domestic Service Size</b>	<b>Main Providing Service</b>
Main Hospital Building	6 inches	Division Street (10 inch)
Medical Plaza 1	3 inches	Davis Road (8 inch)
Medical Plaza 2	3 inches	Division Street (10 inch)
Parking Structure	NA	NA

Table 1 – Existing PWF Domestic Services

*Fire Protection*

Fire hydrants exist around and within the site and are fed from the public water main network described in the Domestic Water section. Fire protection service to existing building sprinkler systems is also served by the existing water mains. The location of existing fire hydrants is provided in Map C2.0. Table 2 below shows the existing fire protection services for PWF buildings.

<b>Existing Building</b>	<b>Domestic Service Size</b>	<b>Main Providing Service</b>
Main Hospital Building	4 inches 6 inches	Southern main through site (8-inch) Southern main through site (8-inch)
Medical Plaza 1	6 inches	Davis Road (8-inch)
Medical Plaza 2	4 inches	Davis Road (8-inch)
Parking Structure	FDC with 6-inch line from structure	Davis Road (8 inch)

Table 2 – Existing PWF Fire Protection Services

**(2) Sanitary Sewer**

Separated public sanitary sewer mains exist in the streets adjacent to the PWF site. Sanitary flows from the Medical Plaza 2 building, the parking structure and portions of the main hospital drain to the east to

8-inch mains in Trillium Park Drive, Bean Court and Canyon Court and eventually connect to the existing 18-inch sewer trunk line in the Cascade Highway (213) right-of-way. Medical Plaza 1 and the remainder of the main hospital building drain to the west to 8-inch mains in Division Street and 14<sup>th</sup> Street respectively. Existing 8-inch mains also exist in both 16<sup>th</sup> and 15<sup>th</sup> streets draining to the west. A short extension of 8-inch gravity sewer was installed in Penn Lane with the improvements associated with the Children's Center of Clackamas County project. Force mains from the Children's Center and a residence near the east end of Penn Lane connect to this main. The PWF site area draining to the west was included in the 12<sup>th</sup> Street Basin of the City of Oregon City Sanitary Sewer Master Plan dated December 2003. For build out conditions in this basin, no future improvements were recommended in the Sanitary Sewer Master Plan. The area draining to the east was not included in this study.

### **(3) Stormwater Management**

According to the City of Oregon City Public Works Stormwater and Grading Design Standards dated December 17, 1999, the site lies within both the Abernethy and Newell drainage basin boundaries.

The majority of the stormwater runoff from the existing PWF site drains via a private system of roof drains, catch basins and conveyance piping to a stormwater detention pond located between Medical Plazas 1 and 2 on the south side of Davis Road. This pond was installed in conjunction with the Medical Plaza 2 project in 2003 and is located in a public easement. The east side of the Division Street right-of-way adjacent to the site as well as approximately 500 feet of Davis Road east of Division Street is also tributary to the pond. The runoff from Division Street is conveyed in a 6-inch public main that connects to a 12-inch main in Davis Street before discharging to the pond. The pond also detains runoff from the paved portion of the Division Street Parking Lot. Stormwater outflow from the pond is routed to the north through a flow control structure to a public 18-inch culvert under Davis Road. The culvert outfalls to an existing tributary of Newell Creek in a water quality resource area (WQRA) on the north side of Davis Road. The City believes this drainage way is then intercepted by another culvert and routed under private property before discharging at the east end of the improved Penn Lane right-of-way.

According to the City's comments in the Pre Application Conference Notes dated July 13, 2011, the pond may be undersized and is discharged in an unapproved pipe across private property before flowing into the tributary of Newell Creek north of Davis Road. The drainage report for the design of the existing detention pond was prepared by Hopper Dennis Jellison dated January 14, 2002. According to the report, the pond was designed using the guidelines set forth in the current City of Oregon City Public Works Stormwater and Grading Design Standards dated December 17, 1999. The report also indicates that the pond and flow control structure was sized to detain runoff from 13.41 acres of public and private property which over-estimates the actual tributary area to the pond. As explained by PWF Facilities personnel recent flooding issues occurring in the area of the pond were due to root intrusion into conveyance piping and were not based on pond sizing. The root intrusion problem has been remedied by Providence and there is no indication that the pond is currently undersized.

Upstream of this pond, water quality is provided for the improvements associated with the Medical Plaza 2 and Parking Structure projects in an underground sand filter located between Davis Road and the building and a water quality manhole.

Runoff from the recent Penn Lane improvements north of Division Street and the gravel portion of the Division Street Parking Lot is conveyed in a new 12-inch diameter storm main to a pond outlet structure at the east end of the right-of-way. The pond outlet discharges into another tributary of Newell Creek within the same WQRA mentioned above. Water quality from the street runoff is provided at the downstream end of the paved improvements in two CONTECH StormFilter Catch Basin devices upstream of the outfall. The storm drainage report for the Penn Lane Improvements prepared by HDJ Design Group dated October 6, 2010 indicates that topographic constraints prohibited the installation of a detention system for the roadway improvements. The report mentions runoff from the proposed Division Street Parking Lot shall be over-detained to account for the un-detained areas of Penn Lane. The Penn Lane improvements project was completed in 2011.

The remainder of the currently developed PWF site drains to the east to two streams in another WQRA east of Trillium Lake Drive. Runoff from portions of the main hospital building's roof as well as from the parking areas in the south and east portions of the site is routed through two separate underground detention tanks with flow control structures. Downstream of the detention systems, 15-inch and 12-inch culverts convey the flows across Trillium Park Drive in public facilities that discharge into the creeks on the east side of the road.

An existing 10-inch main and 6-inch main exist in 16<sup>th</sup> and 15<sup>th</sup> Streets respectively just west of Division Street. Division Street generally delineates the top of the drainage conveyance system heading to the west down 16<sup>th</sup> and 15<sup>th</sup> Streets. These main lines would be used to convey stormwater runoff from the Phase 3 Medical Office Building Project on the west side of Division Street.

#### **(4) Easements**

Existing easements affecting the properties encompassing the Master Plan development area are shown on plan C2.3. Known easements affecting the Master Plan development include storm drainage, sanitary sewer, water and other utilities as well as access and maintenance.

Oregon City Municipal Code Section:

17.65.050.B.1.f

- (3) Public facilities impacts (sanitary sewer, water and stormwater management) both within the development boundary and on city-wide systems;

### **Water**

#### *Domestic Water*

The PWF Master Plan developments will create additional demand on the City's public water system. The proposed Phase 2 building additions, expansions and remodels will either re-use existing building services or require new services. The Phase 3 new Medical Office Buildings will require new domestic water services from existing public mains. The exact demands and resulting service sizes will be determined during the Detailed Development Plan process for each project. The City indicates in the Pre Application Conference Notes dated July 13, 2011 that a portion of the water system in Division Street has been upgraded but there is more to be completed. City staff has indicated that the intent in the future is to extend the 10-inch main in Division Street from the south edge of PWF property to the 8-inch main in Gilman Drive. Further coordination with City staff has determined that no other public water utility improvements will be required for projects associated with this Master Plan and that these public improvements will be part of a currently unscheduled public works project. Any work on water lines associated with the Master Plan development will be per the current City of Oregon City Public Works Water Standards Manual.

#### *Fire Protection*

New fire hydrants will be placed as required for each of the projects associated with this Master Plan. New fire protection service connections will be made and/or relocated as necessary to feed future building sprinkler systems. The final location of the fire hydrants shall be approved by Clackamas County Fire Department and shall be evaluated by the Oregon Fire Code (OFC), Appendix C. Fire flows shall meet the requirements listed under Appendix B of the OFC.

### **Sanitary Sewer**

In general sanitary sewer flows generated from the projects associated with the PWF Master Plan development will either be routed to existing sanitary sewer laterals or require the installation of new sewer laterals connecting to existing public sanitary sewer mains. New or relocated sewer laterals will be designed and installed per the current City of Oregon City Public Works Sanitary Sewer Design Standards. Any existing private sewer laterals affected by the proposed construction will be re-routed as needed.

As mentioned in the analysis of the existing sanitary sewer conditions, the PWF site area draining to the west was included in the 12<sup>th</sup> Street Basin of the City of Oregon City Sanitary Sewer Master Plan dated

December 2003. For build out conditions in this basin, no future improvements were recommended in the Sanitary Sewer Master Plan. The City has not indicated that specific public sanitary sewer improvements associated with this Master Plan development are required. The City's comments in the Pre Application Conference Notes dated July 13, 2011 indicate that a sanitary sewer master plan update is scheduled to be completed within the next couple of budget years.

### **Stormwater Management**

In general, the strategy for managing stormwater for the projects associated with this Master Plan will include both utilizing existing facilities and installing new facilities. City staff mentioned in the Pre Application meeting that an update to the current drainage standards with a focus on LID design techniques will be released soon. PWF's goal is to implement low impact development (LID) techniques when possible. Stormwater infrastructure will be designed using the most current City of Oregon City Public Works Stormwater and Grading Design Standards at the time of permitting.

The projects associated with Phases 1 and 3 are isolated properties with their own associated stormwater management facilities. Phase 2 projects are located on the main hospital site and will use existing stormwater management facilities when possible. The goal for managing stormwater for all phases is to limit impacts to downstream public stormwater infrastructure and Water Quality Resource Areas (WQRA) including streams, creeks and rivers. Below is a brief discussion on stormwater impacts from each phase.

#### *Phase 1 – Division Street Parking Lot*

Stormwater management for this project is shown in the Detailed Development Plan concurrently submitted with this Master Plan. In order to maximize parking space and provide future flexibility when designing the adjacent Phase 3 Medical Office Building, water quality will be provided by proprietary treatment devices and detention is provided in underground tanks. Flows leaving the site will be conveyed to the public 12-inch storm main in Penn Lane before discharging to the tributary of Newell Creek in the existing WQRA. Runoff from the existing paved portion of this site which is currently being detained in the detention pond on the south side of Davis Street will be rerouted to the proposed stormwater management facilities described above. This will relieve the pond of flows from approximately 8,300 square feet of impervious area, thereby providing for a portion of the on-site Phase 2 improvements.

As mentioned in the existing conditions section, Providence encumbrances to over-detain runoff from this parking lot project to account for flow attenuation that was not provided for the recent Penn Lane Improvements. PWF proposes to meet this requirement over the course of the full build out of the Master Plan development using excess capacity created in the existing detention pond or by over-sizing new detention systems required. Because Penn Lane and the Phase 1 and 2 Master Plan areas drain to the same WQRA, the City indicated in the Pre-Application Meeting that the burden of over-detaining the entire Penn Lane Improvements project during the Division Street Parking Lot project is not required.

### *Phase 2 – Hospital Additions and Remodels*

This Phase includes projects that are all located on the main hospital site, the majority of which drain to the existing detention pond. The remainder of the site drains to two underground detention pipe systems in the eastern parking areas. The projects associated with this phase will increase impervious area by approximately 23,540 square feet from existing conditions. PWF plans to utilize the excess capacity in the existing detention pond created during Phase 1 to manage as much of this area as possible. Additional detention facilities may be required as described below if modifications to the other existing, on-site detention facilities are not feasible. Below is a more specific analysis of the individual projects included in Phase 2.

It is anticipated that runoff from the New Front Entry and the Birthplace Expansion projects will be routed to and detained in the existing detention pond.

Runoff from the Central Utility Plant and Outpatient Surgery Expansion projects will be routed to the existing detention tank systems on the east side of the site. The existing flow control structures will be modified and/or additional storage capacity will be added to the tanks to accommodate the increase in-flow rates. If these modifications prove infeasible during detailed development design, new detention systems will be proposed per City standards.

The Second Floor Patient Room and Pharmacy Remodel project and the Second Floor Shell Space Tenant Improvements will not increase or replace impervious area and will not be required to provide additional stormwater management facilities.

New stormwater treatment (water quality) facilities will be provided per City standards for all new impervious areas created with each project in this Phase. As mentioned elsewhere, these will be provided in the form of LID techniques wherever feasible.

The City would like to explore possible retrofit options for the downstream conveyance of the existing detention pond. During the design of the first Phase 2 project with area tributary to the pond, additional coordination will be required with the City.

### *Phase 3 – Medical Office Buildings*

In general, new, stand-alone stormwater management facilities will be designed and installed per current City standards for these projects.