

## Exhibit A – Project Schedule

## Exhibit A: Project Schedule

<b>Activity</b>	<b>Date</b>
Start Preparation of Final Environmental Impact Statement	Mar-04
FTA Approval to Start Preliminary Engineering	Mar-04
Commence Preliminary Engineering on I-205 Segment	Apr-04
FTA New Start Rating Submittal for Preliminary Engineering	Aug-04
Complete Preliminary Engineering	Oct-04
FTA Issues Final Environmental Impact Statement	Dec-04
FTA Issues Record of Decision	Feb-05
Final Design Rating by FTA	Feb-05
FTA Risk Assessment	May-05
FTA Approval to Start Final Design, and Letter of No Prejudice	Oct-05
Final Design 100% Complete	Dec-06
Full Funding Grant Agreement Executed by FTA	June-07
Construction Starts	Jan-07
Construction Complete	May-09
Operations Starts	Sep-09

Exhibit B – Permit Matrix

	PERMIT	PAID BY
	DEQ - NPDES / 1200 c (erosion control)	SCC Provisional
	DEQ - Underground injection wells	No Cost
	ODOT ROW - Fiber Optic	TM IGA
	ODOT ROW - Construction Staging Areas	TM IGA
	ODOT ROW - General	TM IGA
	ODOT ROW - 82nd Ave at Otty	TM IGA
	ODOT ROW - Powell Blvd	TM IGA
	ODOT ROW - Park & Ride Lots	TM IGA
	ODOT ROW - Bridges	TM IGA
	ODOT ROW - Construction of Access Roads	TM IGA
	ODOT ROW - Utility Permits	No Cost
	ODOT ROW - Traffic Signal Modifications	SCC Provisional
	ODOT ROW - Temp Traffic Control	SCC Provisional
	ODOT ROW - Stormwater & Drainage	SCC Provisional
	PDOT Street Opening Permits for ODOT utilities	SCC Provisional
	PDOT Street Opening Permits for BES and BWW utilities	TM IGA
	Portland City Engineer's ROW Permit PDOT, BES, BWW	TM IGA
	Park Bureau Non-park use of Park Property	SCC Provisional
	BDS Building Permit - Flavel Sig/com building	SCC Provisional
	BDS Building Permit - Hollywood Fred Meyer Substation building	SCC Provisional
	BDS Site Development Permit - Johnson Creek Flavel EN Area	SCC Provisional
	BDS Site Development Permit - Main St ramps & bike	SCC Provisional
	BDS Site Development Permit - Powell Blvd Park & Ride Access Road	SCC Provisional
	BDS Building Permit - Foster Rd Operators building	SCC Provisional
	BDS Zoning Permit - Holgate St Park & Ride lot	SCC Provisional
	BDS Zoning Permit - Main Street Park & Ride lot	SCC Provisional
	BDS Zoning Permit - Powell Blvd Park & Ride lot	SCC Provisional
	BDS Trade Permits	SCC Provisional

## South Corridor 1-205 Project Permit Payment Matrix Based on PR 4.1.C.2

CC Building Permit - Fuller Sig/Com Bldg		SCC Provisional
CC Building Permit - Fuller Substation		SCC Provisional
CC ROW Permit - Monterey Rd		TM IGA
CC Street Construction & Encroachment Permit SC&E - Fuller Park & Ride Lot and accompanying improvements		TM IGA
CC Utility Permit - 24" Clackamas River Water District line in Monterey		SCC Provisional
CC Building Permit - Monterey Substation		SCC Provisional
CC ROW Permit - multi-use path in Fuller Rd ROW		TM IGA
Clackamas River Water District 24" line in Monterey Bvd & ODOT ROW		SCC Provisional
CC Trade Permits		SCC Provisional
Structural Retaining Wall permits		SCC Provisional
UPRR - Encroachment Permt		SCC Provisional
UPRR - Crossing Permit		SCC Provisional

Exhibit C - I-205 Light Rail Project Staffing Plan

Exhibit B - IGA staffing

	Final Engineering 10/06 - 12/06 Proj 37509			CONSTRUCTION 1/07 - 9/09 Proj 37566			CLEAN-UP / CLOSEOUT 10/09 - 6/10 Proj 37557			TOTAL LIFE TO DATE 10/6 - 6/10		
	hours	rate	total	hours	rate*	total	hours	rate*	total	hours	total	
<b>PDOT</b>												
<b>Project Management</b>												
Teresa Boyle	220	63.93	14,065	363	67.66	24,561	117	71.26	8,337	700	46,962	
<b>Project Management Subtotal</b>	<b>220</b>	<b>\$ 63.93</b>	<b>\$ 14,065</b>	<b>363</b>	<b>\$ 67.66</b>	<b>\$ 24,561</b>	<b>117</b>	<b>\$ 71.26</b>	<b>\$ 8,337</b>	<b>700</b>	<b>\$ 46,962</b>	
<b>Transportation Planning</b>												
Steve Iwata	40	66.76	2,670	60	70.66	4,239				100	6,910	
Roger Geller	20	53.52	1,070	40	56.64	2,266				60	3,336	
Courtney Duke	20	53.52	1,070	20	56.64	1,133				40	2,203	
April Bertelsen	20	53.52	1,070	10	56.64	566				30	1,637	
Others	0	0.00	0	0	0.00	0				0	0	
<b>Transportation Planning Subtotal</b>	<b>100</b>	<b>\$ 0.00</b>	<b>\$ 5,882</b>	<b>130</b>	<b>\$ 0.00</b>	<b>\$ 8,204</b>				<b>230</b>	<b>\$ 14,086</b>	
<b>Traffic Investigations</b>												
Cliff Bolling	20	44.16	883	40	46.74	1,869	10	49.22	492	70	3,245	
Other Traffic Investigations	0	0.00	0	0	0.00	0	0	0.00	0	0	0	
<b>Traffic Investigations Subtotal</b>	<b>20</b>	<b>\$ 44.16</b>	<b>\$ 883</b>	<b>40</b>	<b>\$ 46.74</b>	<b>\$ 1,869</b>	<b>10</b>	<b>\$ 49.22</b>	<b>\$ 492</b>	<b>70</b>	<b>\$ 3,245</b>	
<b>Street Lighting</b>												
Steve Spitulski	40.0	52.99	2,120	84.0	56.08	4,711	42	59.06	2,500	166	9,330	
Other Street Lighting	0	0.00	0	0	0.00	0	0	0.00	0	0	0	
<b>Street Lighting Subtotal</b>	<b>40.0</b>	<b>\$ 0.00</b>	<b>\$ 2,120</b>	<b>84</b>	<b>\$ 56.08</b>	<b>\$ 4,711</b>	<b>42.3</b>	<b>\$ 0.00</b>	<b>\$ 2,500</b>	<b>166</b>	<b>\$ 9,330</b>	
<b>Traffic Signals</b>												
Lisa Elbert	80.0	55.21	4,417	40.0	58.43	2,337	0	61.54	10,000	120	16,754	
Dave Hatch	200.0	55.17	11,034	200.0	58.39	11,678	40	61.49	10,000	440	32,712	
Other Signals	0	0.00	0	0.0	0.00	0	0.0	0.00	0	0	0	
<b>Traffic Signal Subtotal</b>	<b>280.0</b>	<b>\$ 0.00</b>	<b>\$ 15,451</b>	<b>240</b>	<b>\$ 58.43</b>	<b>\$ 14,015</b>	<b>40</b>	<b>\$ 0.00</b>	<b>\$ 20,000</b>	<b>560</b>	<b>\$ 49,466</b>	
<b>Parking</b>												
<b>Parking Subtotal</b>							<b>0</b>	<b>\$ -</b>	<b>-</b>	<b>0</b>	<b>\$ -</b>	
<b>Civil Design</b>												
Linda Williams - Permits	220	52.32	11,510	780	55.37	43,191	117	58.31	6,823	1,117	61,524	
Other Civil Design	0	0.00	0	0	0.00	0	0	0.00	0	0	0	
<b>Civil Design Subtotal</b>	<b>220</b>	<b>\$ 0.00</b>	<b>\$ 11,510</b>	<b>780</b>	<b>\$ 55.37</b>	<b>\$ 43,191</b>	<b>117</b>	<b>\$ 58.31</b>	<b>\$ 6,823</b>	<b>1,117</b>	<b>\$ 61,524</b>	
<b>Traffic Design &amp; Engineering</b>												
Lewis Wardrip	550	57.63	31,697	484	60.99	29,520	40	64.23	2,569	1,074	63,786	
Other Traffic Design	0	0.00	0	10	0.00	0	0	0.00	0	10	0	
<b>Traffic Design Subtotal</b>	<b>550</b>	<b>\$ 0.00</b>	<b>\$ 31,697</b>	<b>494</b>	<b>\$ 60.99</b>	<b>\$ 29,520</b>	<b>40</b>	<b>\$ 0.00</b>	<b>\$ 2,569</b>	<b>1,084</b>	<b>\$ 63,786</b>	
<b>Construction Inspection</b>												
Gary Hopkins	80	56.26	4,501	346	59.54	20,602	0	62.71	0	426	25,102	
Other Construction Inspection	100	44.97	4,497	484	47.59	23,035	0	50.12	0	584	27,532	
<b>Construction Inspection Subtotal</b>	<b>180</b>	<b>\$ 44.97</b>	<b>\$ 8,998</b>	<b>830</b>	<b>\$ 47.59</b>	<b>\$ 43,637</b>	<b>0</b>	<b>\$ 50.12</b>	<b>\$ -</b>	<b>1,010</b>	<b>\$ 52,635</b>	

Exhibit B - IGA staffing

<b>Bridges and Structures</b>										
Steve Yates	400	55.57	22,228	300	58.81	17,644	700	39,872		
Other Structures	0	0.00	0	0	0.00	0	0	0		
<b>Structures Subtotal</b>	<b>400</b>	<b>\$ 22,228</b>	<b>\$ 22,228</b>	<b>300</b>	<b>\$ 17,644</b>	<b>\$ 17,644</b>	<b>700</b>	<b>\$ 39,872</b>		
<b>Right of Way</b>										
Right of Way Personnel	0	0.00	18,000	0	0.00	0	0	18,000		
Other Right of Way	0	0.00	0	0	0.00	0	0	0		
<b>Right of Way Subtotal</b>	<b>0</b>	<b>\$ 18,000</b>	<b>\$ 18,000</b>	<b>0</b>	<b>\$ -</b>	<b>\$ -</b>	<b>0</b>	<b>\$ 18,000</b>		
<b>Materials &amp; Services</b>										
Misc. M&S			500			1,000	0	2,000		
Bureau of Maintenance - general			1,000			5,000	0	7,000		
<b>M&amp;S Total</b>			<b>1,500</b>			<b>6,000</b>	<b>0</b>	<b>9,000</b>		
<b>PDOT SUBTOTAL</b>			<b>\$ 132,333</b>			<b>\$ 193,362</b>	<b>5,637</b>	<b>\$ 367,905</b>		
<b>Overhead</b>										
	FY05/06	FY07-FY10								
Overhead Rate for PDOT (except BOM)	25.47%	25.00%								
Overhead Rate for BOM	24.47%	25.00%								
<b>PDOT SUBTOTALS PER PHASE</b>			<b>\$ 166,028</b>			<b>\$ 241,690</b>		<b>\$ 460,494</b>		
<b>PDOT TOTAL</b>			<b>\$ 460,494</b>			<b>\$ 52,777</b>		<b>\$ 92,588</b>		

\* Assuming 3% inflation / year on wage rates  
Overhead rate for outyears is approximate

FE 10/05 - 12/06      15 months      275 productive days      2200 productive hrs  
 CON 1/07 - 9/09      33 months      605 productive days      4840 productive hrs  
 CLOSEOUT 10/09 - 6/10      9 months      165 productive days      1320 productive hrs

181955

Exhibit C

I-205 Light Rail Extension  
 Project Staffing Plan  
 BES Project # 8189

EXHIBIT C  
 181955

BES Employee	Design Phase			Construction Phase			Employee Totals
	Hours	Rate*	Totals	Hours	Rate*	Totals	
Dave Nunamaker	50	\$50.77	\$2,538.50	15	\$50.77	\$761.55	\$3,300.05
Joe Dvorak	10	55.94	559.40	10	55.94	559.40	1,118.80
Brad Huard	30	55.94	1,678.20	100	55.94	5,594.00	7,272.20
Sr. Inspector	20	46.94	938.80	20	46.94	938.80	1,877.60
Inspector I	30	41.96	1,258.80	350	41.96	14,686.00	15,944.80
Erik Durshepek	25	41.75	1,043.75	40	41.75	1,670.00	2,713.75
James Allison	20	44.00	880.00				880.00
John O'Donovan	10	55.94	559.40	5	55.94	279.70	839.10
Jen Berry	30	43.86	1,315.80	10	43.86	438.60	1,754.40
<b>Contract/Invoices</b>							
Construction Mgmt.			\$1,000.00			\$2,000.00	\$3,000.00
Mat'l Testing Lab						5,000.00	5,000.00
BES Revegetation						47,000.00	47,000.00
Sump Aband. Lab Wk.			1,200.00				1,200.00
<b>Totals</b>	<b>225</b>		<b>\$12,972.65</b>	<b>550</b>		<b>\$78,928.05</b>	<b>\$91,900.70</b>
<b>Total w/o OH</b>			<b>\$91,900.70</b>				
<b>Total w/ OH **</b>			<b>\$99,462.11</b>				

\* Labor + Benefits + Leave Accrual

\*\* BES Federal Indirect Rate for FY 2007 @ 21.18%



I-205 Light Rail Extension  
 Project Staffing Plan  
 Parks Bureau

Employee	Design Phase			Construction Phase			Closeout Phase			Employee Totals
	Hours	Rate*	Totals	Hours	Rate*	Totals	Hours	Rate*	Totals	
Gregg Everhart	8	\$57.72	\$461.76	32	\$57.72	\$1,847.04	8	\$57.72	\$461.76	\$2,770.56
Mart Hughes	0	47.58	0.00	70	47.58	3,330.60	8	47.58	380.64	3,711.24
Robi Potter	0	47.58	0.00	18	47.58	856.44	0	47.58	0.00	856.44
Joe Hintz	0	57.88	0.00	17.2	57.88	995.54	0	57.88	0.00	995.54
<b>Totals</b>	<b>8</b>		<b>\$461.76</b>	<b>137.2</b>		<b>\$7,029.62</b>	<b>16</b>		<b>\$842.40</b>	<b>\$8,333.78</b>
Total w/o OH			\$8,333.78							
Total w/ OH **			\$10,629.73							

\* Labor + Benefits + Leave Accrual

\*\* Parks Federal Indirect Rate for FY 2007 @ 27.55%

Staff

RU Org #	Org Title/ Functional Units	Functional Unit Rates	Design Phase			Design/Construction Phase			Construction Phase		
			FY 2005-06	FY 2006-07	FY 2007-08	Regular Hours	Overtime Hours	Total Dollars	Regular Hours	Overtime Hours	Total Dollars
<b>Design Management Team</b>											
	Vill Villanueva - Project Manager	\$ 87.87	100	80	20	\$ 8,800	\$ 7,000	\$ 1,800	100	20	\$ 6,700
	Steve Yeung - Project Manager	\$ 66.76	120	200	120	\$ 8,000	\$ 13,400	\$ 6,700	100	100	\$ 6,700
	Lloyd Miller - Capital Construction Manager	\$ 79.87	90	120	20	\$ 7,200	\$ 9,600	\$ 1,600	20	20	\$ 1,600
<b>Construction Management Team</b>											
	Nanci Snyder - Construction Manager	\$ 81.14	20	200	200	\$ 1,600	\$ 17,600	\$ -	160	-	\$ 14,100
	Walt Lewandowski - Construction Manager	\$ 87.87				\$ -	\$ -	\$ -			\$ -
	Roy Martinez - Inspector Supervisor	\$ 79.27		52	20	\$ -	\$ 4,100	\$ 1,600	20	40	\$ 2,700
	Dave Browning - Senior Inspector	\$ 67.67		104	520	\$ -	\$ 8,700	\$ 2,700	200	20	\$ 13,700
	BWW Inspector	\$ 60.87		520		\$ -	\$ 35,500	\$ -			\$ -
<b>Operations Engineering &amp; Maintenance Team</b>											
	Tim Grandle - Sandy River Station Supervisor	\$ 69.30	8	20	20	\$ 600	\$ 1,400	\$ -			\$ -
	Tim Kading - Operations Supervisor	\$ 76.17				\$ -	\$ 1,500	\$ -			\$ -
	Jeffrey Fyre - SE District Operations Engineer	\$ 56.77	8	128	128	\$ 500	\$ 16,100	\$ -			\$ -
	Operations Engineer	\$ 56.77	8	128	128	\$ 500	\$ 16,100	\$ -			\$ -
	Operations Engineer	\$ 56.77	8	128	128	\$ 500	\$ 16,100	\$ -			\$ -
	Bill Vass - Conduit Inspector	\$ 56.23	16	128	128	\$ 900	\$ 16,000	\$ -			\$ -
	Rod Allen - Senior Engineer (Operations)	\$ 87.34	16	64	64	\$ 1,400	\$ 5,600	\$ -			\$ -
	Control Room - Operations Engineer	\$ 56.77		64	128	\$ -	\$ 12,500	\$ -			\$ -
<b>Construction Crew Costs</b>											
											\$ 82,700
<b>Total Costs</b>											\$ 388,000

\* Cost includes 37.09% overhead.

TriMet Contract # GH050355TL

Exhibit D – Memorandum of Understanding with Bureau of Environmental Services

EXHIBIT C

MEMORANDUM OF UNDERSTANDING

DATED: March 2, 2007

AMONG: THE TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON (TriMet)

AND: THE CITY OF PORTLAND, BY AND THROUGH ITS BUREAU OF ENVIRONMENTAL SERVICES (BES)

RECITALS

The Tri-County Metropolitan Transportation District of Oregon (TriMet) owns and operates the public mass transit system serving the Portland Metropolitan area through the City of Portland.

The City of Portland is a municipal corporation of the state of Oregon. The Bureau of Environmental Services (BES) is a bureau within the City of Portland, organized under Chapter 11 of the City of Portland Charter and Title 3 of the City of Portland Code.

BES's facilities are located in public streets, and relocations including protection are eligible for reimbursement under the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, and according to 49 CFR Part 24 and Federal Transit Authority (FTA) Circular 5010.1 C.

TriMet and the City of Portland have entered into an I-205/Mall Light Rail Project Intergovernmental Grant Agreement having the effective date of July 1, 2004, which establishes the intergovernmental cooperation and local funding component for what is known as the I-205/Mall Light Rail Project ("Project"), including the I-205 Segment of the Project (the "I-205 Project").

During the Preliminary Engineering Phase of the Project, the parties identified certain areas where I-205 Project construction and/or operations will or may impact the existing storm and sanitary sewer system facilities of BES.

This Memorandum of Understanding (MOU) is intended to document the understandings with respect to the shared obligations that will ultimately be included in the Design and Construction Management Services intergovernmental agreement that is under negotiation between the City of Portland and TriMet relating to the I-205 Project.

## UNDERSTANDINGS

TriMet and BES understand that:

1. The I-205 Project will or may impact the existing sewer line facilities of BES in the areas shown in the preliminary engineering plans dated September 30, 2004 and the 50% Final Design plans dated February 10, 2006.
2. Relocation of BES sewer line facilities is necessary to resolve physical conflicts with construction and to provide adequate protection. Relocation is intended to provide the same functional level of service after construction that exists before construction, and to replace existing facilities to current industry standards, the BES standards, and City Code.
3. Betterments are defined as sewer system upgrades as requested by BES, including but not limited to main extensions outside of the I-205 Project limits, installing a new main where one did not exist before, and increasing pipe diameter beyond existing pipe diameter. Betterment work may be performed as part of TriMet's Design/Build contract for the I-205 Project or be done by BES personnel, as determined by BES.
4. The I-205 Project will be responsible for the actual cost of sewer system modifications and relocations based upon the agreed-upon scope, and exclusive of Betterments.
5. BES and TriMet shall amend this MOU to memorialize the agreed-upon scope of work as soon as is reasonably feasible.
6. BES and TriMet shall establish a project management partnership that is responsible for implementing the agreed-upon work scope within the I-205 Project schedule and budget requirements.
  - a. BES and TriMet shall establish a project management team with joint overall responsibility for all aspects of the I-205 Project including dispute resolution. BES has assigned Dave Nunamaker and TriMet has assigned Simon Cooper as project managers of the technical work. In the event of any disputes between BES and TriMet, the dispute shall be referred for resolution as follows:
    - 1) Refer the dispute to Lana Danaher at BES and Dan Blocher at TriMet, who shall make a good faith effort to resolve it;
    - 2) If unresolved, refer it to BES's Chief Engineer and to TriMet's Executive Director of Capital Projects and Facilities Division;
    - 3) If unresolved, refer it to the City's Commissioner-in-Charge of BES and TriMet's General Manager;
    - 4) If unresolved, refer it to City Council.

- b. BES agrees to fund the design and construction costs related to any Betterments that BES includes in the I-205 Project. If the Betterments are added to TriMet's Design/Build contract, BES will reimburse TriMet the actual cost of the Betterments, upon receipt of invoice from TriMet and supporting documentation (progress payment request from Contractor, bid item quantity calculations, contractor invoices, etc.). There are no Betterments currently identified.
- c. TriMet and BES will ensure that their design staff or consultants clearly separate out design Betterment work on all time sheets or pay requests. The cost to be borne by BES shall be based on the ratio of the Betterment costs to the total sewer system modification cost, using actual bid pricing when available or if not available, using estimates prepared by BES and agreed to by TriMet. Supporting documentation will be included with all pay requests.
- d. TriMet will pay the cost of adding new facilities solely for TriMet's benefit, such as new services or mains where no line currently exists. Any new connections to BES sanitary or combined sewers shall be subject to system development charges for which TriMet will be billed separately.
- e. Final design of the sewer system improvements will be performed by TriMet's Design/Build contractor. TriMet will submit 60% final design, permit submittal, and Issued For Construction (IFC) drawings and specifications to BES for review and comment. BES will have 15 working days to review and comment on each document set following receipt of same from TriMet.
- f. TriMet will provide surveying, base maps and CAD support that meets TriMet's I-205 Project requirements and BES CAD standards for layering and symbols for drawings and as-built records.
- g. The IFC final design drawings and specifications for sewer system modifications shall be incorporated into the I-205 Project's civil construction package, as appropriate for a Design/Build contract.
- h. The Design/Build contractor may self-perform or subcontract work related to BES sewer facilities, except work specifically identified as being done by BES.
- i. TriMet and BES shall work together to identify all I-205 Project related improvements that require application of the BES Stormwater Management Manual.
- j. BES shall provide construction management of sewer system modifications, inspection services and engineering support services. BES shall review and approve submittals, field orders, and requests for information. BES and TriMet shall approve progress payments and change orders for the sewer system modifications. BES will provide final inspection and acceptance of sewer


system modifications. Any disputes between BES construction staff and TriMet construction staff will be referred to TriMet and BES management per Paragraph 6.a.

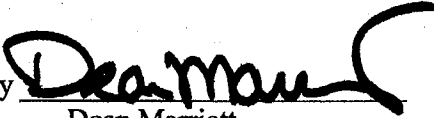
- k. BES is the Owner of all documents, property, etc., related to the sewer system. In circumstances where TriMet needs original documentation to meet federal requirements, duplicate originals shall be maintained so that BES and TriMet each have an original set.
  - l. BES will perform the following work at Project required water quality planters: planting design, soil amendment, tree and plant procurement, installation of 4 TriMet furnished trees, plant install, and 2-years of establishment maintenance (including truck watering).
7. TriMet will submit monthly to BES for payment, upon receipt from the Design/Build contractor, invoices of actual incurred Betterment construction costs. BES payment for construction Betterments shall be made directly to TriMet who, in turn, will pay the Design/Build contractor for its costs as part of the monthly progress payment process. Supporting documentation will be included with all pay requests.
  8. TriMet will submit to BES for review and approval all Design/Build contractor calculations, invoices for actual incurred costs, progress payment requests, change order requests, and submittals for any work related to the sewer system Betterments.
  9. As of this date, the I-205 Project has not received a Full Funding Grant Agreement (FFGA) from the federal government. Although an FFGA is anticipated in early 2007, the I-205 Project is not likely to be constructed in the absence of an FFGA.
  10. Until such time as an FFGA is executed with the federal government, the parties will cooperate and proceed to develop the final design in accordance with the I-205 Project schedule.
  11. TriMet and BES will enter into a Maintenance Agreement, in accordance with provisions of this MOU.
  12. Although this MOU is legally non-binding by itself, the parties shall incorporate this MOU into a legally binding intergovernmental agreement between TriMet and the City of Portland, and at that time, said MOU shall become legally binding as part of the intergovernmental agreement.

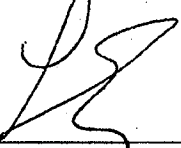
13. The parties have executed and delivered this MOU to be effective on the \_\_\_\_\_ day of \_\_\_\_\_, 2007.

TRI-COUNTY METROPOLITAN  
TRANSPORTATION DISTRICT OF  
OREGON

CITY OF PORTLAND, BY AND  
THROUGH THE BUREAU OF  
ENVIRONMENTAL SERVICES

By   
Neil McFarlane, Executive  
Director

By   
Dean Marriott  
Director, Bureau of  
Environmental Services

By   
Lance Erz  
Assistant General Counsel

By   
City Attorney



Exhibit E- Memorandum of Understanding with Portland Water Bureau

MEMORANDUM OF UNDERSTANDING

DATED: OCTOBER 18, 2007

AMONG: THE TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT  
OF OREGON (TriMet)

AND: THE CITY OF PORTLAND, BY AND THROUGH THE PORTLAND  
WATER BUREAU (PWB)

RECITALS

The Tri-County Metropolitan Transportation District of Oregon (TriMet) owns and operates the public mass transit system serving the Portland Metropolitan area through the City of Portland.

The City of Portland is a municipal corporation of the state of Oregon. The Portland Water Bureau (PWB) is a bureau within the City of Portland, organized under Chapter 11 of the City of Portland Charter and Title 21 of the City of Portland Code.

PWB's Chief Engineer is responsible for determining the specifications for water mains in the City's water system. PWB is responsible for all work involving the public water systems, including main installation, main connections, service meter adjustments, valve and hydrant adjustments, service taps to the public system, and abandonment of existing mains.

PWB's facilities are located in public streets, and relocations including protection are eligible for reimbursement under the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, and according to 49 CFR Part 24 and Federal Transit Authority (FTA) Circular 5010.1 C.

TriMet and the City of Portland have entered into an I-205/Mall Light Rail Project Intergovernmental Grant Agreement having the effective date of July 1, 2004, which establishes the intergovernmental cooperation and local funding component for what is

TriMet / PWB MOU  
I-205 LRT

known as the I-205/Mall Light Rail Project ("Project"), including the I-205 Segment of the Project (the "I-205 Project").

During the Preliminary Engineering Phase of the Project, the parties identified certain areas where I-205 Project construction and/or operations will or may impact the existing water system facilities of PWB.

TriMet and the City propose to enter an additional intergovernmental agreement for I-205 light rail project Design And Construction Management Services that, among other things, will establish joint and separate obligations of the parties to relocate, protect, and re-establish water system facilities affected by the I-205 Project.

This Memorandum of Understanding (MOU) is intended to document the understandings with respect to the shared obligations that will ultimately be included in the Design Construction Management Services intergovernmental agreement that is under negotiation between the City of Portland and TriMet relating to the I-205 Project.

The parties intend that this MOU shall be incorporated into and become and be enforceable as part of the Design Construction Management Services intergovernmental agreement.

#### UNDERSTANDINGS and AGREEMENTS

TriMet and PWB understand and agree as follows:

1. General Understandings:

- a. The I-205 Project will or may impact the existing water line facilities of PWB in the areas shown in the preliminary engineering plans dated September 30, 2004.
- b. Relocation of PWB waterline facilities is necessary to resolve physical conflicts with construction and to provide adequate protection that ensures integrity and safety of the public water system. Relocation is intended to provide the same functional level of service after construction that exists before construction, and to replace existing facilities to current industry standards, the PWB standards, and City Code.

c. PWB has many waterline facilities within the I-205 Project limits. The water system consists of cast iron pipe, ductile iron pipe, concrete cylinder and steel pipe. Because the Federal Transit Administration does not address expired life (FTA Circular 5010) and PWB considers the system to be in good condition, no expired life credit will be applied to the water system relocations.

d. The I-205 Project will be responsible for the actual cost of water system modifications and relocations based upon the agreed-upon scope as described herein, exclusive of Betterments.

2. Scope of Work: Design and Mapping and Contracting

- a. The parties will cooperate and proceed to develop the final design in accordance with the I-205 Project schedule.
- b. Final design of the water system improvements will be performed by TriMet's Design/Build contractor. TriMet will submit 50% final design, permit review submittal, 100% final design, and Issued For Construction (IFC) drawings and specifications as well as a permit submittal to PWB for review and comment. PWB will have 15 working days to review and comment on each document set following receipt from TriMet.
- c. The IFC final design drawings and specifications for water system modifications shall be incorporated into the Project's civil construction package, as appropriate for a Design/Build contract.
- d. TriMet will provide surveying, base maps and CAD support that meet TriMet's I-205 Project requirements for layering and symbols for drawings and as-built records.
- e. The Design/Build contractor may self-perform or subcontract work related to PWB water facilities, except work specifically identified as being done by PWB, such as service transfers, connections to the public system, and installation of isolation valves. Contractors and subcontractors performing any work on the water system

modifications shall be prequalified by PWB in Category 11 Water Mains, per City standards.

- f. TriMet will submit to PWB for review and approval all Design/Build contractor submittals for any work related to the water system modifications. If betterment work occurs, TriMet will submit invoices for actual incurred costs and progress payment requests for such work to PWB.
  - g. PWB is the Owner of all documents, property, etc., related to the water system. In circumstances where TriMet needs original documentation to meet federal requirements, duplicate originals shall be maintained so that PWB and TriMet each have an original set.
3. Scope of Work: Stray Current Protection

TriMet and PWB agree to the following scope of work for the monitoring of stray current and the protection of the water system from stray current:

- a. TriMet shall incorporate electrical isolation into the light rail track design. The construction contract specifications shall require a track to earth resistance per 1000 feet of single track as follows:
  - 1) Ballasted track: 500 ohms
  - 2) Direct fixation track: 500 ohms
- b. Testing for acceptance will utilize test methods acceptable to PWB and TriMet. PWB will be present and participate in the testing. The track design and test procedures shall require that the track line is segmented into sections of track that can be electrically isolated, and that each completed section of isolated track shall be tested upon completion. In the event that the measured resistances do not meet the specified levels, TriMet will exercise all reasonable and feasible means to determine the cause of the lower reading and effect correction of the cause. If correction is not feasible, TriMet will consult with PWB and seek appropriate remedy from the contractor. At the completion of construction, the electrical isolation will be tested to establish the "Baseline Resistance Level".

## TriMet / PWB MOU

## I-205 LRT

- c. TriMet shall develop and submit to the City for review and comment prior to March 2009 a written program for the monitoring of stray current and repair and maintenance of water facilities damaged by stray current. The program shall include regular testing so that the measured track-to-earth resistance can be compared against the Baseline Resistance Level. TriMet will also periodically monitor stray current (i.e., diode DC ground return) at all traction power substations and provide resulting data to PWB and TriMet.
  - d. TriMet shall hereafter maintain conditions of electrical isolation so that levels of stray current generated due to light rail operations do not cause damage to PWB facilities. TriMet shall, moreover, be responsible to repair or replace any water facilities damaged by the light rail system, but only to the extent such damage is caused by the light rail system.
  - e. Subsequent to the approval of this MOU, but prior to the completion of the I-205 project, TriMet and the City of Portland will enter into a Maintenance Agreement in accordance with provisions of this MOU to manage stray current monitoring program, to protect the water system, and to insure timely repair and replacement of any water facilities damaged by the light rail system, from whatever cause.
4. Scope of Work: Water System Modifications and Relocations.
- a. Except as provided in Section 4.d. below, TriMet or its contractors shall relocate, isolate and cathodically protect all water facilities that are 15 feet or less from the centerline of the nearest track way (skin-to-skin). When parallel to the track, water facilities shall be designed and constructed to maintain a minimum of 10 feet clearance from the outer most edge of the nearest track slab to the outer edge of the pipe. Exceptions to this criteria are defined in the following section (b) Large Water Line Crossings.
  - b. TriMet or its contractors shall isolate and cathodically protect all water facilities that are relocated within 50 feet of the centerline of the nearest track way.
  - c. Main Casing near Duke St. (Stn. 1203+60): Existing 12" main casing shall be

extended under the LRT tracks, per PWB crossing criteria. Prior to construction of new 12" DI main & casing, PWB will cut and plug existing 12" main on each side of the I-205 Expressway and a verification hydrostatic test will be performed on the existing pipe crossing across I-205. After completion of the new 12" DI main and casing, PWB will connect it back into the existing water system.

- d. The existing PWB water mains and other facilities located at NE 97<sup>th</sup> Avenue from Burnside to Glisan St need not be relocated, isolated, and cathodically protected. In consideration for this reduction in the scope of work, TriMet agrees to be responsible and to hold PWB harmless for any future costs of repair or replacement of these facilities due to damage caused by stray current generated by light rail operations.

#### 5. Scope of Work: Large Water Line Crossings

- a. The proposed light tracks as shown on the drawings crosses over five (5) existing large diameter water supply lines at the following locations:
  - 1) SE Taylor St., 48" – NE Supply Line;
  - 2) SE Mill St., 57" – Conduit No. 4;
  - 3) SE Division St., 52" – Conduit No. 2;
  - 4) SE Powell Blvd., 50" - Conduit No. 3; and
  - 5) SE Holgate Blvd., 60" – Washington County Supply Line
- b. Except for the 50" main at SE Powell Blvd, TriMet or its contractors shall in all cases provide for each pipeline crossing beneath light rail tracks an encasement around the pipe that withstands a positive internal water pressure and provides protection from train live load and must also be provided cathodic protection. For the existing 50" supply main at SE Powell Blvd, TriMet shall provide cathodic protection, but need not supply encasement as long as the light rail line is carried over the pipe on a bridge, as currently planned.
- c. Encasement Requirements: Encasement must be of a structurally sound material designed to withstand ground surface impacts and soil loading. Encasement must extend a minimum of 10' beyond the outside-most rail. Encasement shall

## TriMet / PWB MOU

## I-205 LRT

completely enclose pipe to allow for water containment under the track. Encasement must allow for future removal and replacement of the interior carrier pipe.

End seals must be provided at the ends of the encasement so as to keep out intrusive elements, but allow pressurized water to be released.

Encasement must protect the pipeline from corrosion caused by stray currents and damage from other excavation work. Repair any damage to pipe and coating identified during construction of encasement.

Design intent is to construct a concrete saddle to support the existing pipe in place and to construct a concrete box over the pipe and saddle.

Use of the existing pipeline as a casing and downsizing the carrier pipe via slip lining is not acceptable.

- d. Casing design option at Holgate and Division, large main crossings: The casing length criteria may be modified as approved by PWB to avoid impact to Oregon Department of Transportation (ODOT) ramps if casing functionality is maintained. This requires the casing to extend to a point under the ramp barrier and adding an end wall around the casing, so that in the future, crews can remove the water line from ODOT ROW without impact to the concrete barrier and light rail transit (LRT) operations.
- e. Corrosion Protection: Each supply main will be protected from corrosion by individual impressed current systems. The system will be designed to provide 20 amps of current and protect the water supply main 1,000 ft from the centerline of the tracks.
- f. Construction Scheduling: PWB will permit work on one of the five (5) large diameter supply lines at any given time between November 1st and March 31<sup>st</sup>. PWB will throttle down or partially shutdown any one of these lines as scheduled for limited periods as approved by PWB Operations. Allowable length of pipe exposed at one time must be calculated by the designer and approved by PWB



## TriMet / PWB MOU

## I-205 LRT

regarding structural engineering, constructability and risk. Compaction around encasement may be accomplished with Controlled Low Density Material (CLDM). Settlement monitoring must be provided. PWB reserves the right to stop the contractor's work around its pipelines and restore full flow to its pipelines at any time. The contractor will submit a work plan submittal, for review and approval by PWB prior to commencing any work.

6. Scope of Work: Specific Main Abandonments by PWB

PWB shall, at TriMet expense, conduct the following work

a. Abandonment of Water line near Woodstock (Stn 1194+75 to 1201+10): Water line will be cut, plugged and abandoned by PWB crews. The PWB work also includes transferring a property service from SE 94<sup>th</sup> Ave to SE Henry St.

b. Cut and Plug at Stark St. (Stn. 1045+20): PWB will cut and plug 8" main prior to construction of structure. PWB will restore main to service after structure is completed. The new LRT structure shall provide a min. of 5' cover to accommodate water main restoration.

c. Prior to construction of new 12" DI main & casing near Duke Street (Stn. 1203-60) by TriMet (see Item 4c above), PWB will cut and plug existing 12" main on each side of the I-205 Expressway and a verification hydrostatic test will be performed on the existing pipe crossing across I-205.

7. Scope of Work—Supervisory and Facility Work by PWB

PWB shall, at TriMet expense, conduct the following work not performed by TriMet or its contractors:

a. Replace, isolate and cathodically protect all water facilities that are in physical conflict with I-205 Project construction and are not relocated by TriMet or its contractors. This work shall include, but is not necessarily limited to, relocation of hydrants, service meters and boxes, and service lines.

b. Include in the design and installation of the water system, isolation valves and associated connections along the route to accommodate I-205 Project construction and staging, and to minimize service disruptions.

c. Relocate and/or incorporate new fire hydrants in the design to provide fire protection coverage as required by the Fire Bureau, at the I-205 Project's cost. Preliminary engineering has identified the need for one new hydrant related to the I-205 Project, located on Ramona Street.

d. Make all connections to the public system and make all service transfers, unless otherwise specified in the I-205 Project plans. PWB will commit to having at least one (1) field crew available to make service transfers and public system tie-in connections to meet the I-205 Project schedule. Provided, however, that PWB reserves the right to pull and reschedule field crews to high priority work elsewhere on system as need arises.

e. Provide construction management of water system modifications, inspection services and engineering support services. PWB shall review and approve submittals, field orders, and requests for information for PWB facilities. TriMet shall approve progress payments and change orders for the water system modifications. PWB will provide final inspection and acceptance of water system modifications. Any disputes between PWB construction staff and TriMet construction staff will be referred to TriMet and PWB management per Paragraph 10c.

8. PWB General Authorities and Obligations

a. Bureau review: Final design of all public water system modifications and any field changes during construction are subject to PWB approval.

b. PWB will take measures to minimize the relocation costs as much as possible without compromising the water system integrity or safety.

9. Facilities for Water Service to TriMet

a. TriMet will pay the cost of adding new facilities solely for TriMet's benefit, such as new services or mains for fire protection where no line currently exists. These added facilities are subject to system development charges for which TriMet will be billed. TriMet must apply for new services and fire protection systems before they are installed. TriMet shall contact the PWB Water Permit Center for application and requirements. TriMet will be billed for these services separately.

b. Installation of new services, relocation of existing services and fire hydrants, and adjustments to existing water mains will be designed by TriMet and approved by PWB. PWB crews will install any new facilities following payment of appropriate System Development Charges and installation fees to the PWB Development Services.

c. Mt. Scott Blvd at Flavel Station – PWB will install approx 65-foot 4" DI main extension to the end of the Cul-de-Sac. Fees for this 4" main extension shall be submitted through PWB's Development Services.

10. Project Management

a. PWB and TriMet shall establish a project management partnership that is responsible for implementing the agreed-upon work scope within the I-205 Project schedule and budget requirements.

b. PWB and TriMet shall establish a project management team with joint overall responsibility for all aspects of the I-205 Project including dispute resolution. PWB has assigned Vill Villanueva and TriMet has assigned Simon Cooper as project managers of the technical work.

c. In the event of any disputes between PWB and TriMet, the dispute shall be referred for resolution as follows:

- 1) Refer the dispute to Stan VandeBergh or Mary Ellen Collentine at PWB and Simon Cooper at TriMet, who shall make a good faith effort to

- resolve it;
- 2) If unresolved, refer it to PWB's Chief Engineer and to Jeff Goodling at TriMet;
  - 3) If unresolved, refer it to the City's Commissioner-in-Charge of PWB and TriMet's Executive Director of Capital Projects and Facilities Division;
  - 4) If unresolved, refer it to City Council and TriMet's General Manager.

#### 11. Betterments

a. Betterments are defined as water system upgrades beyond work needed to address impacts of the I-205 Project as requested by PWB, including but not limited to main extensions outside of the I-205 Project limits, installing a new main where one did not exist before, and increasing pipe diameter beyond existing pipe diameter. Although there are no betterments included with the current Project design, betterment work may arise during implementation of the project. If so, it may be performed as part of TriMet's construction contract for the I-205 Project or be done by PWB personnel, as determined by the parties should the need arise.

b. In any case of betterment work, PWB agrees to fund the design and construction costs related to any Betterments. If the Betterments are added to TriMet's Design/Build contract, PWB will reimburse TriMet the actual cost of the Betterments, upon receipt of invoice from TriMet and supporting documentation (progress payment request from Contractor, bid item quantity calculations, contractor invoices, etc.).

The parties have executed and delivered this MOU to be effective on the \_\_\_\_\_ day of \_\_\_\_\_, 2007.

TRI-COUNTY METROPOLITAN  
TRANSPORTATION DISTRICT OF  
OREGON

CITY OF PORTLAND, BY AND  
THROUGH THE PORTLAND  
WATER BUREAU

By Fred Hansen  
FRED HANSEN  
TriMet General Manager

By David G. Shaff  
DAVID G. SHAFF  
Administrator, Portland Water  
Bureau

By Brian Playfair  
BRIAN PLAYFAIR  
General Counsel

By Linda Meng  
LINDA MENG  
City Attorney  
*Approved as to Form*