NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT B

DRAWING SET

(ARCHITECTURAL, CIVIL AND LANDSCAPE)

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

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NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT C

PHOTOMETRIC ANALYSIS

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
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McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

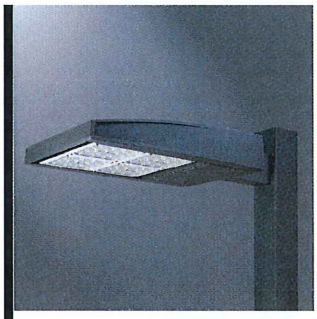
Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

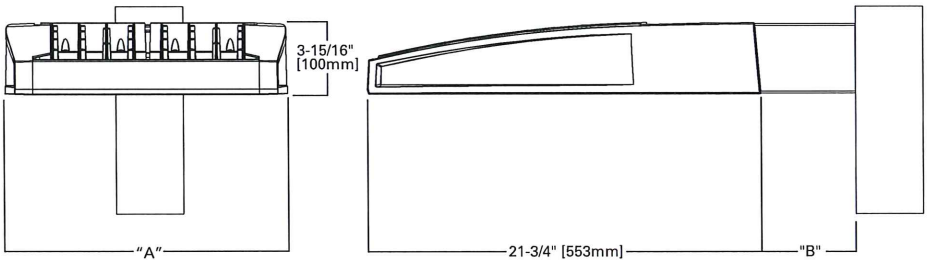


GLEON
GALLEON LED

1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

DIMENSIONS



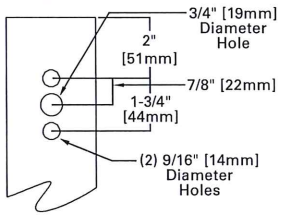
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. **2.** EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



CERTIFICATION DATA
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

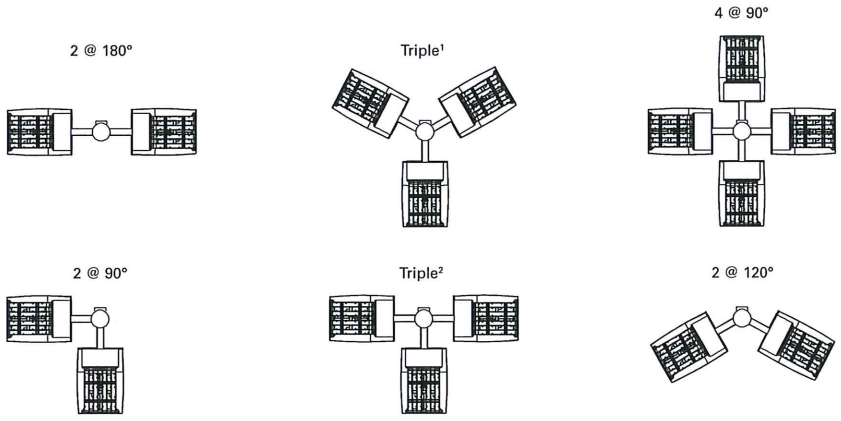
ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

*www.designlights.org

Powering Business Worldwide

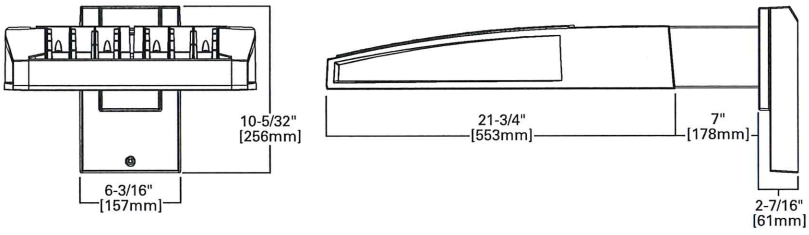
ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AF-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

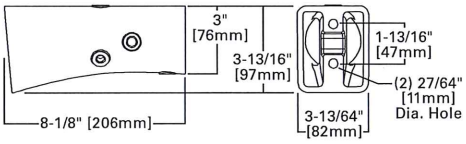


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°.

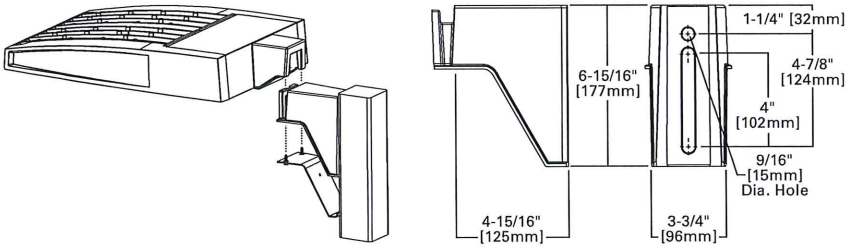
STANDARD WALL MOUNT



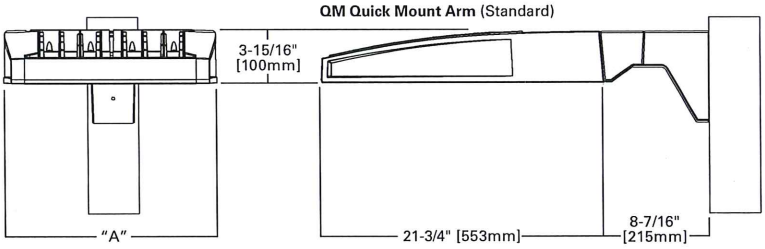
MAST ARM MOUNT



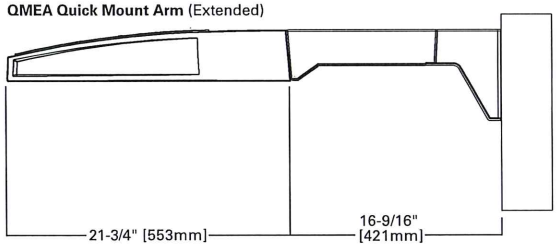
QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QM Quick Mount Arm (Standard)



QMEA Quick Mount Arm (Extended)

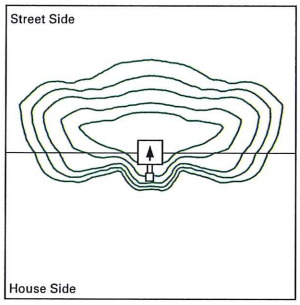


QUICK MOUNT ARM DATA

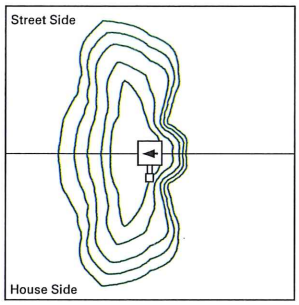
Number of Light Squares [1,2]	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 [3]	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	59 (26.82 kgs.)	

NOTES: 1 QM option available with 1-8 light square configurations. **2** QMEA option available with 1-6 light square configurations. **3** QMEA arm to be used when mounting two fixtures at 90° on a single pole.

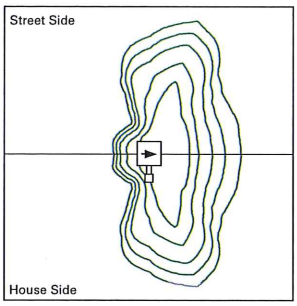
OPTIC ORIENTATION



Standard



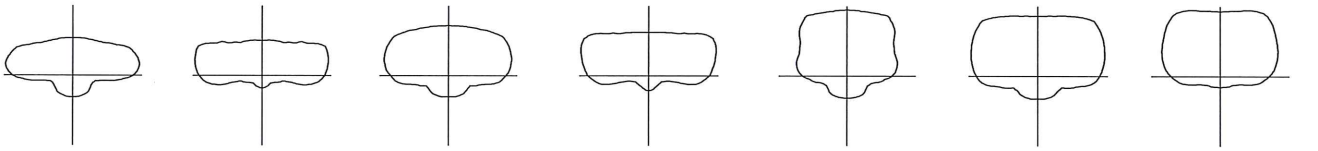
Optics Rotated Left @ 90° [L90]



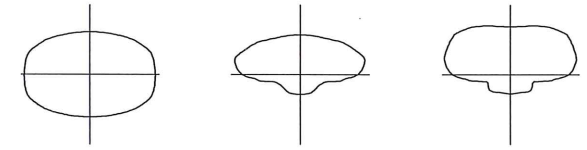
Optics Rotated Right @ 90° [R90]

OPTICAL DISTRIBUTIONS

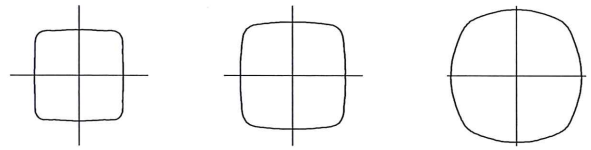
Asymmetric Area Distributions



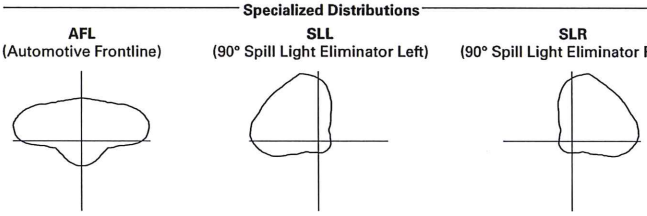
Asymmetric Roadway Distributions



Symmetric Distributions

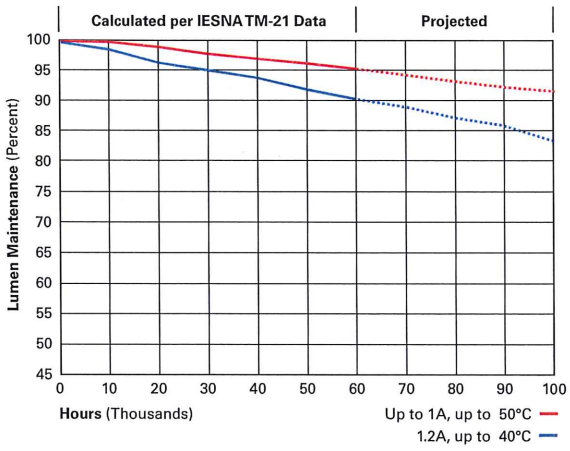


Specialized Distributions



LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	416,000
1.2A	Up to 40°C	> 90%	205,000



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

Powering Business Worldwide

Eaton
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting

NOMINAL POWER LUMENS (1.2A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K/5000K Lumens	6,709	13,111	19,562	25,848	32,026	38,325	45,324	51,355	57,286	63,424
	3000K Lumens	5,939	11,606	17,316	22,881	28,349	33,925	40,121	45,459	50,710	56,143
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	7,122	13,919	20,769	27,442	34,000	40,687	48,117	54,519	60,816	67,333
	3000K Lumens	5,939	11,606	17,316	22,881	28,349	33,925	40,121	45,459	50,710	56,143
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,838	13,363	19,939	26,346	32,642	39,062	46,196	52,343	58,388	64,646
	3000K Lumens	6,053	11,829	17,650	23,321	28,895	34,578	40,893	46,334	51,685	57,225
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,990	13,660	20,382	26,931	33,368	39,930	47,223	53,506	59,686	66,081
	3000K Lumens	6,188	12,092	18,042	23,839	29,537	35,346	41,802	47,364	52,834	58,495
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,878	13,440	20,055	26,499	32,832	39,289	46,464	52,646	58,726	65,020
	3000K Lumens	6,088	11,897	17,753	23,457	29,063	34,779	41,130	46,602	51,984	57,556
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,789	13,267	19,795	26,156	32,408	38,781	45,864	51,967	57,968	64,180
	3000K Lumens	6,010	11,744	17,523	23,153	28,688	34,329	40,599	46,001	51,313	56,812
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,697	13,088	19,529	25,804	31,970	38,259	45,245	51,267	57,186	63,315
	3000K Lumens	5,928	11,585	17,287	22,842	28,300	33,867	40,051	45,382	50,621	56,046
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,837	13,361	19,936	26,342	32,639	39,057	46,189	52,336	58,380	64,636
	3000K Lumens	6,052	11,827	17,647	23,318	28,892	34,573	40,887	46,328	51,678	57,216
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,496	12,695	18,943	25,029	31,011	37,110	43,886	49,727	55,470	61,414
	3000K Lumens	5,750	11,238	16,768	22,156	27,451	32,850	38,848	44,018	49,102	54,364
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	7,052	13,781	20,564	27,171	33,664	40,285	47,641	53,981	60,215	66,669
	3000K Lumens	6,242	12,199	18,203	24,052	29,799	35,660	42,172	47,784	53,302	59,015
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	7,182	14,034	20,942	27,671	34,284	41,027	48,518	54,975	61,323	67,896
	3000K Lumens	6,358	12,423	18,538	24,494	30,348	36,317	42,948	48,664	54,283	60,102
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	7,201	14,073	20,998	27,744	34,375	41,136	48,648	55,121	61,487	68,077
	3000K Lumens	6,374	12,457	18,587	24,559	30,429	36,414	43,063	48,793	54,428	60,262
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	6,009	11,741	17,519	23,148	28,681	34,321	40,589	45,990	51,301	56,798
	3000K Lumens	5,319	10,393	15,508	20,491	25,388	30,381	35,929	40,710	45,412	50,278
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
RW	4000K/5000K Lumens	6,989	13,657	20,378	26,925	33,360	39,921	47,211	53,494	59,672	66,066
	3000K Lumens	6,187	12,089	18,039	23,834	29,530	35,338	41,791	47,353	52,822	58,482
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	7,014	13,706	20,452	27,023	33,481	40,066	47,383	53,688	59,888	66,306
	3000K Lumens	6,209	12,133	18,104	23,921	29,637	35,466	41,943	47,525	53,013	58,694
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (1A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.6	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	1.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K/5000K Lumens	6,116	11,951	17,833	23,563	29,195	34,937	41,317	46,814	52,221	57,817
	3000K Lumens	5,414	10,579	15,786	20,858	25,843	30,926	36,574	41,440	46,226	51,180
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	6,493	12,688	18,932	25,015	30,994	37,090	43,863	49,699	55,439	61,380
	3000K Lumens	5,748	11,231	16,759	22,143	27,436	32,832	38,828	43,994	49,075	54,334
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,234	12,181	18,176	24,017	29,756	35,609	42,111	47,715	53,225	58,930
	3000K Lumens	5,518	10,783	16,089	21,260	26,340	31,521	37,277	42,237	47,115	52,165
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,372	12,453	18,580	24,550	30,418	36,400	43,048	48,776	54,409	60,239
	3000K Lumens	5,640	11,023	16,447	21,732	26,926	32,221	38,106	43,177	48,163	53,324
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,270	12,252	18,282	24,156	29,929	35,815	42,356	47,992	53,534	59,271
	3000K Lumens	5,550	10,845	16,183	21,383	26,493	31,703	37,494	42,483	47,388	52,467
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,189	12,094	18,045	23,844	29,543	35,352	41,809	47,372	52,843	58,506
	3000K Lumens	5,479	10,706	15,973	21,107	26,151	31,294	37,009	41,934	46,777	51,790
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,105	11,931	17,803	23,522	29,144	34,877	41,245	46,734	52,130	57,717
	3000K Lumens	5,404	10,561	15,759	20,822	25,798	30,873	36,510	41,369	46,145	51,091
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,233	12,180	18,174	24,013	29,753	35,604	42,106	47,708	53,218	58,921
	3000K Lumens	5,517	10,782	16,088	21,256	26,337	31,517	37,272	42,231	47,109	52,157
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	5,922	11,572	17,268	22,816	28,269	33,829	40,006	45,330	50,566	55,984
	3000K Lumens	5,242	10,244	15,286	20,197	25,024	29,945	35,413	40,126	44,761	49,557
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	6,429	12,563	18,746	24,768	30,688	36,723	43,429	49,208	54,891	60,775
	3000K Lumens	5,691	11,121	16,594	21,925	27,165	32,507	38,443	43,559	48,590	53,798
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	6,547	12,794	19,090	25,224	31,253	37,400	44,228	50,114	55,902	61,893
	3000K Lumens	5,795	11,325	16,898	22,328	27,665	33,106	39,151	44,361	49,484	54,788
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	6,564	12,828	19,141	25,291	31,336	37,499	44,347	50,248	56,051	62,058
	3000K Lumens	5,810	11,355	16,944	22,388	27,739	33,194	39,256	44,480	49,616	54,934
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	5,478	10,703	15,970	21,102	26,145	31,286	37,001	41,924	46,765	51,777
	3000K Lumens	4,849	9,474	14,137	18,679	23,144	27,694	32,753	37,111	41,396	45,833
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	6,371	12,449	18,576	24,544	30,411	36,392	43,037	48,764	54,396	60,225
	3000K Lumens	5,640	11,020	16,443	21,726	26,920	32,214	38,096	43,166	48,151	53,311
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	6,394	12,494	18,644	24,634	30,521	36,524	43,194	48,942	54,593	60,444
	3000K Lumens	5,660	11,060	16,504	21,806	27,017	32,331	38,235	43,323	48,326	53,505
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (800MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K/5000K Lumens	4,941	9,656	14,408	19,038	23,588	28,227	33,382	37,823	42,191	46,713
	3000K Lumens	4,374	8,547	12,754	16,852	20,880	24,987	29,550	33,481	37,347	41,350
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	5,246	10,251	15,296	20,211	25,041	29,966	35,439	40,154	44,791	49,592
	3000K Lumens	4,644	9,074	13,540	17,891	22,166	26,526	31,371	35,544	39,649	43,899
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3	4000K/5000K Lumens	5,037	9,842	14,685	19,404	24,041	28,770	34,024	38,551	43,003	47,612
	3000K Lumens	4,459	8,712	12,999	17,176	21,281	25,467	30,118	34,125	38,066	42,146
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	5,148	10,061	15,011	19,835	24,576	29,409	34,780	39,408	43,959	48,669
	3000K Lumens	4,557	8,906	13,288	17,558	21,755	26,033	30,787	34,884	38,913	43,082
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	5,066	9,899	14,770	19,516	24,181	28,936	34,221	38,774	43,252	47,888
	3000K Lumens	4,484	8,763	13,074	17,276	21,405	25,614	30,292	34,323	38,287	42,390
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	5,000	9,771	14,579	19,264	23,869	28,562	33,779	38,274	42,694	47,269
	3000K Lumens	4,426	8,649	12,905	17,052	21,129	25,283	29,901	33,880	37,793	41,843
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	4,933	9,639	14,383	19,005	23,547	28,178	33,324	37,758	42,118	46,632
	3000K Lumens	4,367	8,532	12,732	16,823	20,844	24,943	29,498	33,423	37,283	41,279
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	5,036	9,841	14,683	19,401	24,039	28,766	34,019	38,546	42,997	47,605
	3000K Lumens	4,458	8,711	12,997	17,174	21,279	25,464	30,114	34,121	38,061	42,140
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	4,784	9,350	13,951	18,434	22,840	27,332	32,323	36,624	40,854	45,232
	3000K Lumens	4,235	8,277	12,349	16,318	20,218	24,194	28,612	32,420	36,164	40,039
	BUG Rating	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	5,194	10,150	15,145	20,011	24,794	29,670	35,088	39,757	44,349	49,102
	3000K Lumens	4,598	8,985	13,406	17,714	21,948	26,264	31,060	35,193	39,258	43,465
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	5,290	10,337	15,424	20,380	25,250	30,217	35,734	40,489	45,165	50,006
	3000K Lumens	4,683	9,150	13,653	18,040	22,351	26,748	31,632	35,841	39,980	44,265
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	5,304	10,365	15,465	20,434	25,318	30,297	35,830	40,597	45,286	50,139
	3000K Lumens	4,695	9,175	13,690	18,088	22,411	26,819	31,717	35,936	40,087	44,383
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	4,426	8,648	12,903	17,049	21,124	25,278	29,894	33,872	37,784	41,832
	3000K Lumens	3,918	7,655	11,422	15,092	18,699	22,376	26,462	29,983	33,446	37,030
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	5,147	10,058	15,009	19,830	24,570	29,402	34,771	39,399	43,949	48,658
	3000K Lumens	4,556	8,903	13,286	17,554	21,749	26,027	30,779	34,876	38,904	43,072
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
AFL	4000K/5000K Lumens	5,166	10,095	15,063	19,903	24,659	29,509	34,898	39,542	44,108	48,835
	3000K Lumens	4,573	8,936	13,334	17,618	21,828	26,121	30,892	35,003	39,044	43,229
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (600MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K/5000K Lumens	4,029	7,874	11,749	15,525	19,235	23,019	27,222	30,844	34,406	38,093
	3000K Lumens	3,566	6,970	10,400	13,743	17,027	20,376	24,097	27,303	30,456	33,720
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	4000K/5000K Lumens	4,278	8,360	12,474	16,482	20,421	24,437	28,900	32,745	36,527	40,441
	3000K Lumens	3,787	7,400	11,042	14,590	18,077	21,632	25,582	28,986	32,334	35,798
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	4000K/5000K Lumens	4,107	8,026	11,976	15,824	19,605	23,461	27,746	31,438	35,068	38,827
	3000K Lumens	3,636	7,105	10,601	14,007	17,354	20,768	24,561	27,829	31,042	34,370
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T3R	4000K/5000K Lumens	4,198	8,205	12,242	16,175	20,041	23,982	28,363	32,137	35,848	39,689
	3000K Lumens	3,716	7,263	10,837	14,318	17,740	21,229	25,107	28,448	31,733	35,133
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	4,131	8,072	12,045	15,915	19,719	23,597	27,907	31,620	35,272	39,052
	3000K Lumens	3,657	7,145	10,662	14,088	17,455	20,888	24,703	27,990	31,223	34,569
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	4,077	7,968	11,889	15,710	19,465	23,292	27,546	31,212	34,816	38,547
	3000K Lumens	3,609	7,053	10,524	13,906	17,230	20,618	24,384	27,629	30,819	34,122
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL2	4000K/5000K Lumens	4,022	7,861	11,729	15,498	19,202	22,979	27,175	30,791	34,347	38,028
	3000K Lumens	3,560	6,959	10,383	13,719	16,998	20,341	24,055	27,256	30,404	33,662
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL3	4000K/5000K Lumens	4,106	8,025	11,974	15,821	19,603	23,458	27,742	31,433	35,064	38,821
	3000K Lumens	3,635	7,104	10,599	14,005	17,353	20,765	24,557	27,824	31,039	34,364
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	3,902	7,624	11,377	15,033	18,626	22,289	26,359	29,867	33,316	36,886
	3000K Lumens	3,454	6,749	10,071	13,307	16,488	19,730	23,333	26,438	29,491	32,651
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	4,236	8,277	12,351	16,319	20,219	24,196	28,614	32,422	36,166	40,042
	3000K Lumens	3,750	7,327	10,933	14,446	17,898	21,418	25,329	28,700	32,014	35,445
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	4,314	8,429	12,578	16,619	20,591	24,641	29,141	33,019	36,832	40,779
	3000K Lumens	3,819	7,461	11,134	14,711	18,227	21,812	25,796	29,228	32,604	36,098
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	4,325	8,452	12,611	16,664	20,646	24,707	29,219	33,106	36,930	40,888
	3000K Lumens	3,828	7,482	11,163	14,751	18,276	21,871	25,865	29,305	32,690	36,194
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	4000K/5000K Lumens	3,609	7,052	10,522	13,903	17,226	20,613	24,378	27,622	30,812	34,114
	3000K Lumens	3,195	6,242	9,314	12,307	15,248	18,247	21,579	24,451	27,275	30,198
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	4,197	8,202	12,239	16,171	20,036	23,977	28,356	32,129	35,839	39,680
	3000K Lumens	3,715	7,260	10,834	14,315	17,736	21,224	25,101	28,441	31,725	35,125
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	4000K/5000K Lumens	4,213	8,232	12,284	16,230	20,109	24,064	28,459	32,246	35,969	39,824
	3000K Lumens	3,729	7,287	10,874	14,367	17,800	21,301	25,192	28,544	31,840	35,252
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

CONTROL OPTIONS

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (P, R and PER7)
Optional button-type photocontrol (P) and photocontrol receptacles (R and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

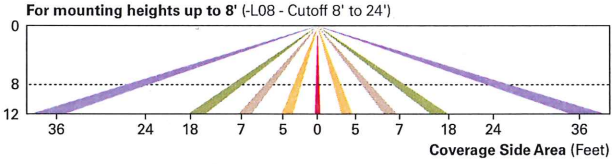
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

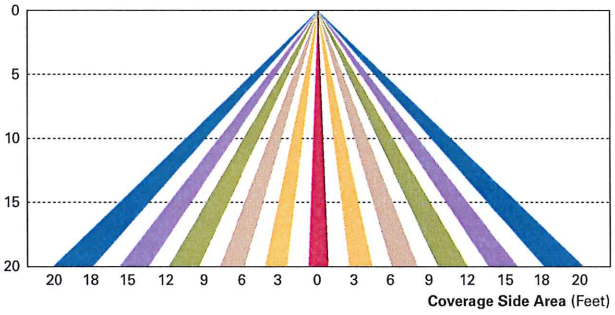
These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for "dusk-to-dawn" control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters.

A variety of sensor lens are available to optimize the coverage pattern for mounting heights from 8'-40'.

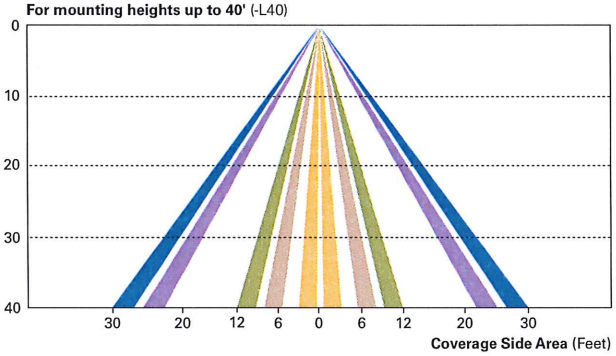
For mounting heights up to 8' (-L08 - Cutoff 8' to 24')



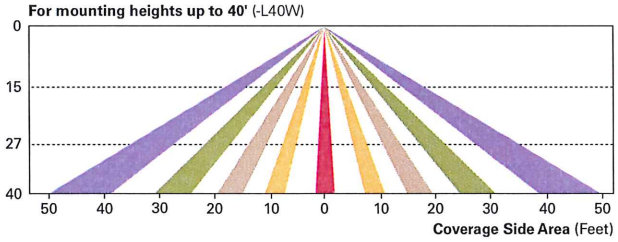
For mounting heights up to 20' (-L20)



For mounting heights up to 40' (-L40)



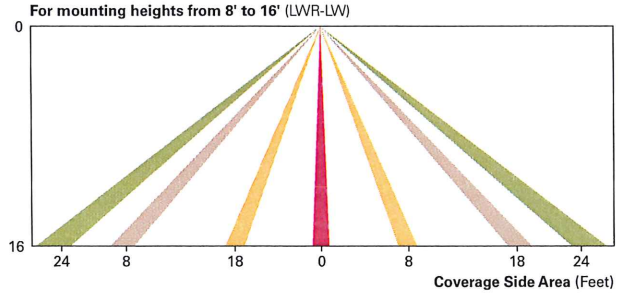
For mounting heights up to 40' (-L40W)



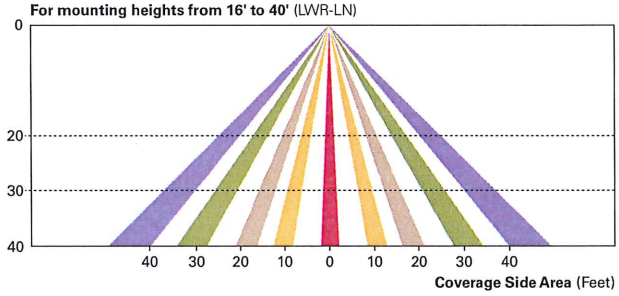
LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The LumaWatt Pro system is a peer-to-peer wireless network of luminaire-integral sensors for any sized project. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication. The end-user can securely create and manage sensor profiles with browser-based management software. The software will automatically broadcast to the sensors via wireless gateways for zone-based and individual luminaire control. The LumaWatt Pro software provides smart building solutions by utilizing the sensor to provide easy-to-use dashboard and analytic capabilities such as improved energy savings, traffic flow analysis, building management software integration and more.

For additional details, refer to the LumaWatt Pro product guides.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



ORDERING INFORMATION

Sample Number: GLEON-AF-04-LED-E1-T3-GM-QM

Product Family [1,2]	Light Engine	Number of Light Squares [3]	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	**AF**=1A Drive Current	**01**=1 **02**=2 **03**=3 **04**=4 **05**=5 [4] **06**=6 **07**=7 [5] **08**=8 [5] **09**=9 [6] **10**=10 [6]	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [7] **480**=480V [7,8]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]

Options (Add as Suffix)

7030=70 CRI 3000K [13]
8030=80 CRI 3000K [14]
7050=70 CRI 5000K [13]
7060=70 CRI 6000K [13]
600=Drive Current Factory Set to Nominal 600mA [15]
800=Drive Current Factory Set to Nominal 800mA [15]
1200=Drive Current Factory Set to Nominal 1200mA [15,16]
F=Single Fuse (120, 277 or 347V. Must Specify Voltage)
FF=Double Fuse (208, 240 or 480V. Must Specify Voltage)
2L=Two Circuits [17,18]
DIM=External 0-10V Dimming Leads [19,20]
P=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Volatage) [21]
PER7=NEMA 7-PIN Twistlock Photocontrol Receptacle [21]
R=NEMA Twistlock Photocontrol Receptacle [21]
AHD145=After Hours Dim, 5 Hours [22]
AHD245=After Hours Dim, 6 Hours [22]
AHD255=After Hours Dim, 7 Hours [22]
AHD355=After Hours Dim, 8 Hours [22]
HA=50°C High Ambient [23]
MS/DIM-L08=Motion Sensor for Dimming Operation, Maximum 8' Mounting Height [24,25]
MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24,26]
MS/DIM-L40=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [22,25]
MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height (Wide Range) [24,28]
MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height [24,25,29]
MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24,26,29]
MS/X-L40=Bi-Level Motion Sensor, 21' - 40' Mounting Height [22,27,29]
MS/X-L40W=Bi-Level Motion Sensor, 21' - 40' Mounting Height (Wide Range) [24,28,29]
MS-L08=Motion Sensor for ON/OFF Operation, Maximum 8' Mounting Height [24,25]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24,26]
MS-L40=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24,27]
MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height (Wide Range) [24,28]
LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [30]
LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [30]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Factory Installed Mesh Top
TH=Tool-less Door Hardware
LCF=Light Square Trim Plate Painted to Match Housing [31]
HSS=Factory Installed House Side Shield [32]
CE=CE Marking [33]

Accessories (Order Separately)

OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1013=Photocontrol Shorting Cap
OA/RA1014=120V Photocontrol
MA1252=10kV Surge Module Replacement
MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon
MA1037-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon
MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1191-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon
MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon
MA1192-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon
MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1194-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [24]
GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares
GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares
GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares
GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares
GLEON-QM=Quick Mount Arm Kit [10]
GLEON-QMEA=Quick Mount Extended Arm Kit [11]
LS/HSS=Field Installed House Side Shield [32,34]

NOTES:
1. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
2. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
3. Standard 4000K CCT and minimum 70 CRI.
4. Not compatible with MS/4-LXX or MS/1-LXX sensors.
5. Not compatible with extended quick mount arm (QMEA).
6. Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA).
7. Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A.
8. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
9. May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
10. Factory installed.
11. Maximum 8 light squares.
12. Maximum 6 light squares.
13. Extended lead times apply. Use dedicated IES files for 3000K, 5000K and 6000K when performing layouts. These files are published on the Galleon luminaire product page on the website.
14. Extended lead times apply. Use dedicated IES files for 3000K, 5000K and 6000K when performing layouts. These files are published on the Galleon luminaire product page on the website.
15. 1 Amp standard. Use dedicated IES files for 600mA, 800mA and 1200mA when performing layouts. These files are published on the Galleon luminaire product page on the website.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in AF-02 through AF-04 requires a larger housing, normally used for AF-05 or AF-06. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table.
18. Not available with LumaWatt Pro wireless sensors.
19. Cannot be used with other control options.
20. Low voltage control lead brought out 18" outside fixture.
21. Not available if any "MS" sensor is selected. Motion sensor has an integral photocell.
22. Requires the use of P photocontrol or the PER7 or R photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. 50°C lumen maintenance data applies to 600mA, 800mA and 1A drive currents.
24. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information.
25. Approximately 22' detection diameter at 8' mounting height.
26. Approximately 40' detection diameter at 20' mounting height.
27. Approximately 60' detection diameter at 40' mounting height.
28. Approximately 100' detection diameter at 40' mounting height.
29. Replace X with number of Light Squares operating in low output mode.
30. LumaWatt Pro wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information.
31. Not available with house side shield (HSS).
32. Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected.
33. CE is not available with the LWR, MS, MS/X, MS/DIM, P, R or PER7 options. Available in 120-277V only.
34. One required for each Light Square.

TWR1 LED
LED Wall Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

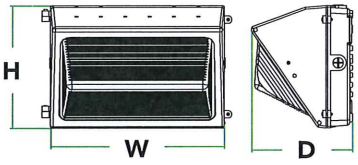
Specifications

Width: 12-15/16" *(32.9 cm)*

Height: 9" *(22.9 cm)*

Depth: 7-1/2" *(19 cm)*

Weight: 11.95 lbs *(5.42kg)*



Introduction

The popular TWR1 luminaire is now available with long-lasting, energy-efficient LED technology. Featuring a classic dayform, the TWR1 LED offers a traditional appearance and is powered by advanced LEDs.

The TWR1 LED luminaire is powerful yet energy efficient, capable of replacing up to a 320W metal halide luminaire while saving up to 80% in energy costs. Offering an expected service life of more than 20 years, the TWR1 LED eliminates frequent lamp and ballast replacements associated with traditional technologies.

Ordering Information

EXAMPLE: TWR1 LED 2 50K MVOLT

TWR1 LED

Series	Performance Package	Color Temperature	Voltage	Controls	Finish
TWR1 LED	1 2,100 lumens 2 3,500 lumens 3 4,900 lumens	40K 4000 K[1] 50K 5000 K[1]	MVOLT[2]	(blank) No controls PE[3] MVOLT Photo Control	(blank) Dark bronze

NOTES

1 Correlated color temperature (CCT) shown is nominal per ANSI C78, 377-2008. Except TWR1 LED 1 50K which is 5400 CCT.

2 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).

3 Photo control not available with 4000 K.

FEATURES & SPECIFICATIONS

INTENDED USE

The TWR1 LED combines traditional wall pack design with high-output LEDs to provide an energy-efficient, low maintenance LED wall pack suitable for replacing up to 320W MH fixtures. The traditional shape helps maintain building aesthetics when replacing only a portion of your building's wall packs. TWR1 LED is ideal for outdoor applications such as carports, loading areas, driveways and parking areas.

CONSTRUCTION

Rugged cast-aluminum housing with bronze polyester powder paint for lasting durability. Door is hinged on the side so door swings out of the way during installation and service. Castings are sealed with a one-piece gasket to inhibit the entrance of external contaminants. MVOLT driver operates on any line voltage from 120-277V (50/60Hz). TWR1 LED 1 has 6kV surge protection. TWR1 LED 2 and 3 have 10kV protection. Rated for outdoor installations, -40°C minimum ambient.

OPTICS

High-performance LEDs maintain up to 87% of light output at 100,000 hours of service life (L87/100,000 hours). Prismatic glass lens designed for superior lighting distribution, uniformity and fixture spacing. See Lighting Facts label and photometry reports for specific fixture performance.

INSTALLATION

Designed for wall mounting above four feet from ground. Housing is configured for mounting directly over a standard 4" outlet box (by others) or for surface wiring via any of three convenient 1/2" threaded conduit entry hubs.

LISTINGS

UL Listed to U.S. and Canadian safety standards for wet locations. Tested in accordance with IESNA LM-79 and LM-80 standards.

WARRANTY

Five-year limited warranty. Full warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

LITHONIA LIGHTING

One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • Fax: 770.918.1209 • www.lithonia.com

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts.

Fixture Model Number	CCT	Drive Current	System Watts	Lumens	B	U	G	LPW	CRI
TWR1 LED 1 40K MVOLT	4000 K	960mA	33W	2,161	0	3	2	66	75
TWR1 LED 1 50K MVOLT	5000 K	960mA	35W	2,126	0	3	2	62	70
TWR1 LED 2 40K MVOLT	4000 K	530mA	39W	3,497	1	3	3	90	73
TWR1 LED 2 50K MVOLT	5000 K	530mA	41W	3,527	1	3	3	86	66
TWR1 LED 3 40K MVOLT	4000 K	530mA	55W	4,966	1	3	3	91	73
TWR1 LED 3 50K MVOLT	5000 K	530mA	59W	4,875	1	3	3	83	66

Electrical Load

Fixture Model Number	Drive Current	System Watts	Current Load (A) @ 120V	208V	240V	277V
TWR1 LED 1 40K MVOLT	960mA	33W	0.31	0.18	0.15	0.13
TWR1 LED 1 50K MVOLT	960mA	35W	0.34	0.20	0.17	0.15
TWR1 LED 2 40K MVOLT	530mA	39W	0.36	0.21	0.18	0.16
TWR1 LED 2 50K MVOLT	530mA	41W	0.40	0.23	0.20	0.17
TWR1 LED 3 40K MVOLT	530mA	55W	0.51	0.29	0.25	0.22
TWR1 LED 3 50K MVOLT	530mA	59W	0.56	0.32	0.28	0.24

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.03
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	0.99
40°C	104°F	0.98

Projected LED Lumen Maintenance

Data references the extrapolated performance projections in a **40°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	60,000	100,000
LM Factor TWR1 LED 1	1.0	.93	.88	.86	.79
LM Factor TWR1 LED 2	1.0	.94	.91	.90	.86
LM Factor TWR1 LED 3	1.0	.94	.92	.91	.87

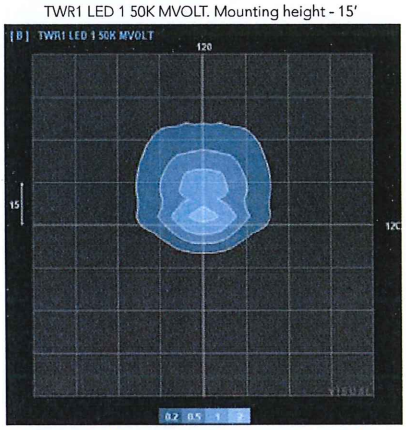
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting TWR1 LED homepage. Tested in accordance with IESNA LM-79 and LM-80 standards

LEGEND

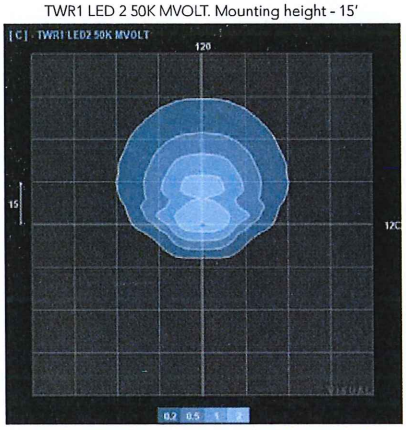
- 0.2 fc
- 0.5 fc
- 1.0 fc
- 2.0 fc

TWR1 LED 1 50K MVOLT. Mounting height - 15'



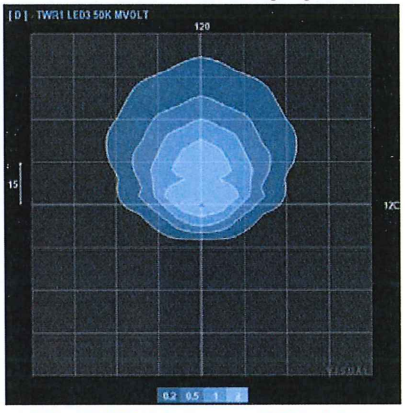
Test No. LTL22697 tested in accordance with IESNA LM-79-08.

TWR1 LED 2 50K MVOLT. Mounting height - 15'



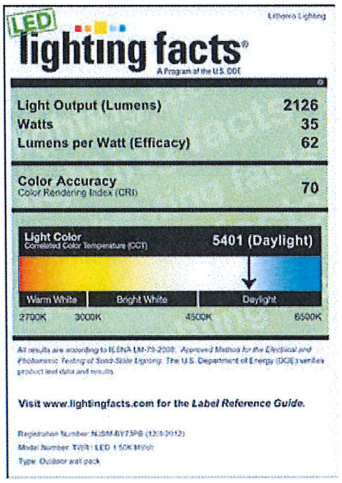
Test No. LTL22696 tested in accordance with IESNA LM-79-08.

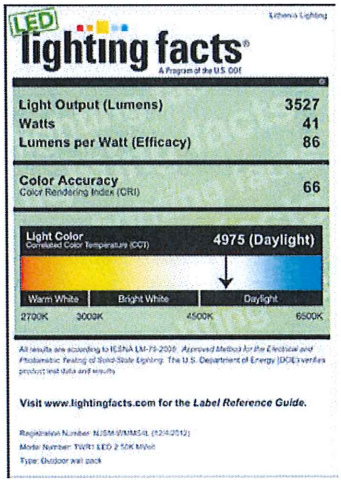
TWR1 LED 3 50K MVOLT. Mounting height - 15'

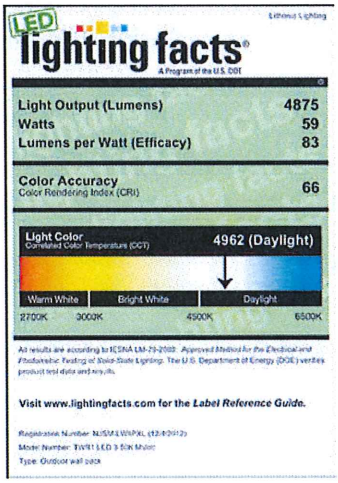


Test No. LTL22695 tested in accordance with IESNA LM-79-08.

Lighting Facts Labels







NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT D

IMPACT STUDY

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

NW Natural Resource Center
Impact Study
July 2, 2020

The intent of this report is to analyze the impact to public facilities related to the proposed NW Natural Resource Center in Warrenton, Oregon. The proposed facility consists of an Office Building for NW Natural response crews, Vehicle Storage and Warehouse Building for storeroom of tools, spare gas meters, spare pipe parts, truck wash equipment room and storage of temperature sensitive vehicles, Enclosed Vehicle Storage Garage for freeze protection of (vacuum truck and vapor extraction vehicle), Spoils bins (gravel, sand, cold patch), the Decant bin manages received wet soils material consisting of solids and water from vactor trucks; excavated spoil materials consisting of dirt, rock, site materials and hydro-excavation mud are deposited into this bin. The decant is a sediment pit designed to separate soils and liquid (to settle and separate by gravity). The facility also has a 3-sided metal shed that houses storage racks for spare polyethylene (yellow) pipes and an above ground fueling tank (gas / diesel) for NW Natural company fleet vehicle use.

The proposed development is a low impact use on this industrially zoned property. General impact factors related to the NW Natural development are:

Number of staff:	9 - 5-day work week average
Public Visitors:	Not open to customers or the public
# of Large Trucks:	1 delivery every 2 weeks
Truck Wash:	Estimated usage is 5 times per week

Below are the key public facilities and services as outlined in the Warrenton development code:

Transportation System

Vehicle Road System - SE Dolphin Avenue is a local road per the Warrenton TSP and was designed with a road structure to handle industrial vehicles. The planned roadway will be 32-36' wide upon full improvement. SE Dolphin Avenue ties into Highway 101 to the North and Perkins Lane to the South. Perkins Lane also connects to Highway 101 which provides two points of access to the property from Highway 101, the primary route in the area. NW Natural will improve the east half of SE Dolphin Road along the frontage of their property.

With only 9 staff generating a total of 30 trips per day and no public access, the daily trip rate is estimated to be less than 100 trips per day. See Exhibit G for Trip Generation Report. Average

daily trip rates for industrial uses generally fall between 50-100 trips per acre. This 5.32 acre industrial site would allocate between 266 and 532 average daily trips. Therefore, the average daily trips generated from the NW Natural operations are far lower than allocated so there is no adverse effect on the public street system. In addition, there is only 1 large truck that delivers to the site every two weeks. This will also have no adverse impact on the public road system.

Bicycle System - There are currently no bike lanes on SE Dolphin Avenue, which is classified as a local road on the TSP. However, the width of the street ranges from 32'-36' wide, which provides room outside the normal travel path for bikes to safely ride. Since this is an industrial development that is not open to the public, there will be little to no bicycle riders associated with this project. Therefore, there will be no adverse effect on the public bicycle system.

Pedestrian System – Currently there is not a consistent public sidewalk or path along the entire length of SE Dolphin Road. NW Natural will be improving the east side of the public roadway adjacent to the property, which includes the construction of a 5-foot wide public sidewalk. Therefore, this development will improve the public pedestrian system.

Storm Drainage System

The historic drainage pattern for the property involves collecting the run-off from the undeveloped property and routing all to west of SE Dolphin Avenue in existing open drainage ways. It was determined during the pre-application meeting with City staff that there are existing capacity issues downstream of the project. This requires either the developer to fix the offsite facilities or provide detention within the development.

The site plan has been designed to include a large detention facility and flow control structure to limit the peak flow leaving the site to pre-development peak flow rate. A stormwater report has been prepared with detailed calculations showing how this facility has been designed to process the 100-year storm event.

Therefore, this proposed development will have no additional impact on the storm drainage system nor cause any safety issues to the general public.

Parks System

This development is industrial and will employ local residents that currently work at their existing facility. Therefore, there is no impact on the existing and/or planned park system in the City of Warrenton.

Water System

There is an existing 12" water line adjacent to the property within the SE Dolphin Avenue right of way. It is assumed this existing public water line was sized to service a typical user located in the industrial zoning on the property. Typical water forecasting for industrial zoning is:

# of persons = 5-15 per acre Most likely planned for a minimum 40 employees

Avg Use = 26 gal/person day Most likely designed for approximately 1,040 gal/day

Total weekly use would be approximately 7,280 gallons

The water uses related to the proposed development would be for restroom fixtures to serve the 9 staff, fixtures related to a break room (sink, dishwasher) and the proposed truck wash. Per NW Natural, the truck wash is only used about 5 times during a typical week.

Therefore, the estimated water use related to the development is:

Staff use: (9 employees) * (26 gal/person day) = 234 gal/day = 1,170 gal/wk (5 days)

Truck wash: (5 uses per week) * (80 gallons / wash) = 400 gallon per week

Total actual weekly use is estimated to be = 1,570 gallons

Therefore, the actual water demand for the NW Natural Resource Center is far less than was planned for this parcel. The proposed development will not have an adverse impact on the City water system.

Wastewater System

The Warrenton School District is constructing an 8" gravity wastewater line along the entire frontage of the NW Natural property in summer, 2020. This is the public line that the development will tie into. This line is routed to an existing pump station location south west of the development.

The pump station was designed to service this site as an industrial development. The NW Natural plan has a very low discharge to the wastewater system as follows:

Office / Warehouse - The wastewater fixtures will be restrooms for employees and a break room. This will have very low flow entering the public system.

Truck Wash - The effluent water from the vehicle wash area will be pre-treated using a commercial "Landa" (i.e. "Water Maze") and recycled as a secondary source of water for washing additional vehicles in order to keep the effluent volumes to a minimum. This water will be collected and routed to the onsite wastewater system. Prior to entering the public system, the water will be routed through an oil/water separator prior to leaving the site. This will remove materials that would be detrimental to the wastewater system and will have no adverse effect on the public system.

Fuel Area - This water will be collected and routed to the onsite wastewater system. Prior to entering the public system, the water will be routed through an oil/water separator prior to

leaving the site. This will remove materials that would be detrimental to the wastewater system and will have no adverse effect on the public system. There will be very little flow from this portion of the site since it is covered with a canopy.

Decant Bin – A "soil dewatering" area. The effluent water from the decant will be pretreated via a surface settling area, then routed through a sedimentation manhole, and then the water will be routed through an oil / water separator prior to leaving the site. This will remove materials that would be detrimental to the wastewater system and will have no adverse effect on the public system.

Given the above narrative, the NW Natural site will have less flow entering the public wastewater system than a normal industrial development would have. Therefore, there will be no overall adverse effect on the public wastewater system related to this development.

Noise Impact From Development

The proposed new Resource Center is anticipated to create very little noise. Equipment and vehicle servicing will occur off site at NW Natural's Sherwood location (Eco-Biz certified location). The business activity or processes conducted at this facility are natural gas transmission / distribution maintenance support center (non-production) related. The proposed facility is "service" based and will not be "producing" or "storing" any products / chemicals / hazardous materials. The new building will have a total of 9 occupants generating a total of 30 trips per day. No additional trips to the site are anticipated. Employees arrive early in the morning, pick-up work assignments for the day, leave in a company fleet vehicle and arrive back on the site around 3pm. Typically, large trucks make 1 delivery every 2 weeks. Vactor trucks typically make 2-3 daily trips to the spoil and decant bins. This development will have no adverse noise impact on the surrounding properties.

NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT E

PRELIMINARY STORMWATER REPORT

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

A & O Engineering, LLC

Storm Water Design Report

Project:	NW Natural Resource Center
Location:	SE Dolphin Road – Warrenton, OR
Date:	June 19, 2020
Prepared by:	Scott Morris, PE
Reviewed by:	Kyle Morris, PE
Type of Project:	Industrial

Project Overview

The applicant is proposing to construct a NW Natural resource center on an approximate 4 acres property. The development area proposed is approximately 2.5 acres. The development will include office and storage structures, fuel facility and associated parking. The site plan also shows a future gravel area east of the proposed development area.

The property is located in the City of Warrenton, Oregon jurisdiction, and currently drains into a drainage ravine at the southwest corner of the property and into the existing public system within the Dolphin Road right of way.

Proposed Destination

The proposed destination for storm water run-off from this development is an existing drainage ravine at the southwest corner of the property. There is an existing 30 inch public culvert under SE Dolphin right of way that routes the stormwater run-off to the west.

There is approximately 2,880 square feet of the entry drive that will be tied directly into the existing storm line in SE Dolphin right of way due to grade issues. This storm line is routed to the same drainage channel at the south end of the property that heads west to historic drainage path.

In discussion with City staff, there are downstream capacity issues with this system. Because of this downstream issue, the City of Warrenton requirements include providing detention on the site to limit the peak post-construction run-off rate to no more than the pre-development rate. The city also requires the storm drainage calculations to be based on the 100 year storm event, listed in the Oregon State Hydraulics Manual.

There is one detention pond proposed for the site to meet these design constraints located on the south end of the site. This will include a flow control structure to limit the peak post-construction flow rate into the drainage ravine to pre-development peak flow.

Since the development site is not encompassing the entire site, only the developed portion is used to determine the pre-development peak flow rate. The attached Hydrocad report shows the calculation for the existing run-off from the site.

Q_e = 1.78 cfs (100 Year Event)

This becomes the baseline peak flow rate that controls the peak outflow from the site post-development.

Detention Pond Design / Analysis

The detention facility for the project is located at the south end of the development area, just east of the existing ravine. All but two impervious areas will be routed to this detention pond. There will be a flow control outlet structure located at the west end of the facility that outflows to the existing drainage ravine at the southwest corner of the property. The storm water is then routed through an existing 30" culvert under Dolphin Road to the historic drainage path to the west.

There are two small areas of driveway at the two access points that cannot be drained to the detention pond due to grade. These areas will be collected and routed to the existing catch basins in Dolphin Road which drain to the same 30" culvert to the historic path.

Detention Pond Drainage Area - Impervious (roof & hardscape) =109,902 square feet (2.523 ac)

Access Areas not directed to Drainage Pond = 2,880 square feet

I_{100} = 6.0 Inches in 24 Hours (Oregon Climate Service)
Storm Type = Type 1A

CN = 98 for all impervious areas (roof areas, Paving, Sidewalks, Pond Surface)

Pond Characteristics		
Length	90 Feet	Bottom Area
Width	14 Feet	Bottom Area
Depth	4 Feet	
Side Slopes	3 to 1	

Conclusion

The calculations show the storm management system as designed will adequately serve the development and meet City of Warrenton code requirements.

The post-development peak flow rate for the 100 year storm event is adequately controlled to keep the rate lower than the existing run-off condition.

The detention pond wholly contains the 100 year storm event to prevent damage to the public.

Attachments

1. HydroCAD Report
2. OCS – 24-hour 100 year Precipitation, Oregon

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	28R	32.00	31.00	65.0	0.0154	0.013	12.0	0.0	0.0

Summary for Subcatchment 15S: Q3 Drainage Basin

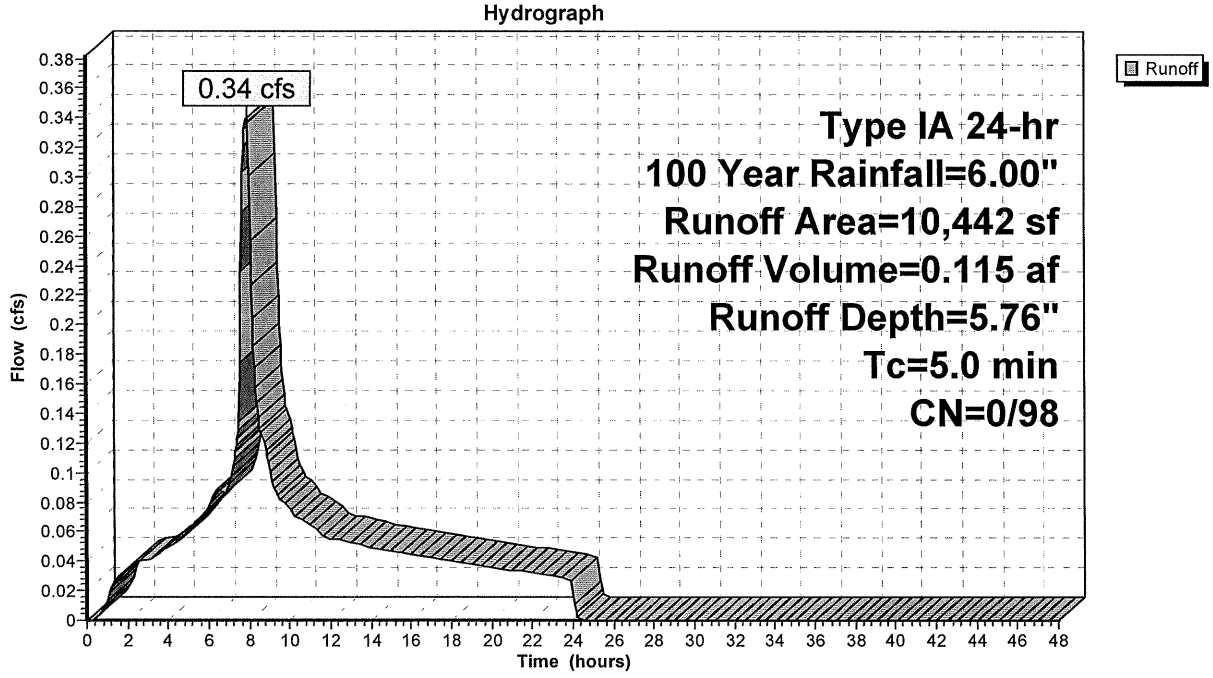
Runoff = 0.34 cfs @ 7.89 hrs, Volume= 0.115 af, Depth= 5.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100 Year Rainfall=6.00"

Area (sf)	CN	Description
10,442	98	Paved roads w/curbs & sewers, HSG C
10,442	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 15S: Q3 Drainage Basin



Summary for Subcatchment 17S: Q5 Drainage Basin

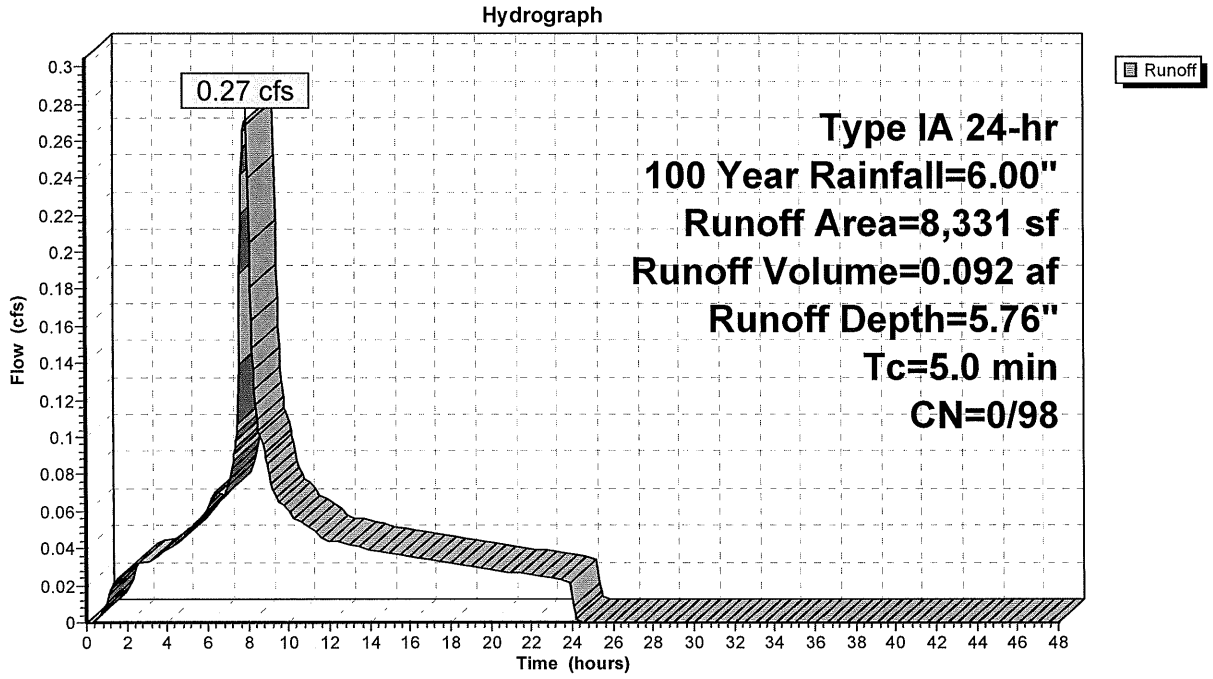
Runoff = 0.27 cfs @ 7.89 hrs, Volume= 0.092 af, Depth= 5.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100 Year Rainfall=6.00"

Area (sf)	CN	Description
8,331	98	Paved parking, HSG C
8,331	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 17S: Q5 Drainage Basin



Summary for Subcatchment 19S: Q14 Drainage Basin

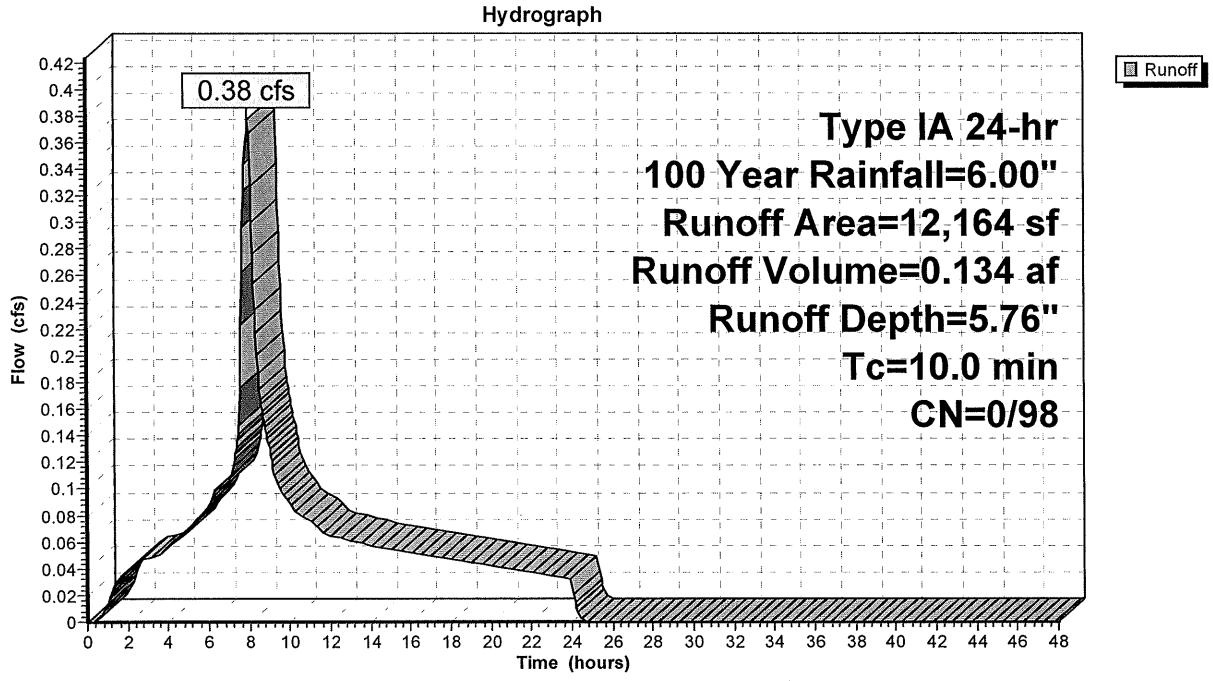
Runoff = 0.38 cfs @ 7.98 hrs, Volume= 0.134 af, Depth= 5.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100 Year Rainfall=6.00"

Area (sf)	CN	Description
6,164	98	Unconnected roofs, HSG C
6,000	98	Water Surface, HSG C
12,164	98	Weighted Average
12,164	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Storage Roof**

Subcatchment 19S: Q14 Drainage Basin



Summary for Subcatchment 21S: Q6 Drainage Area

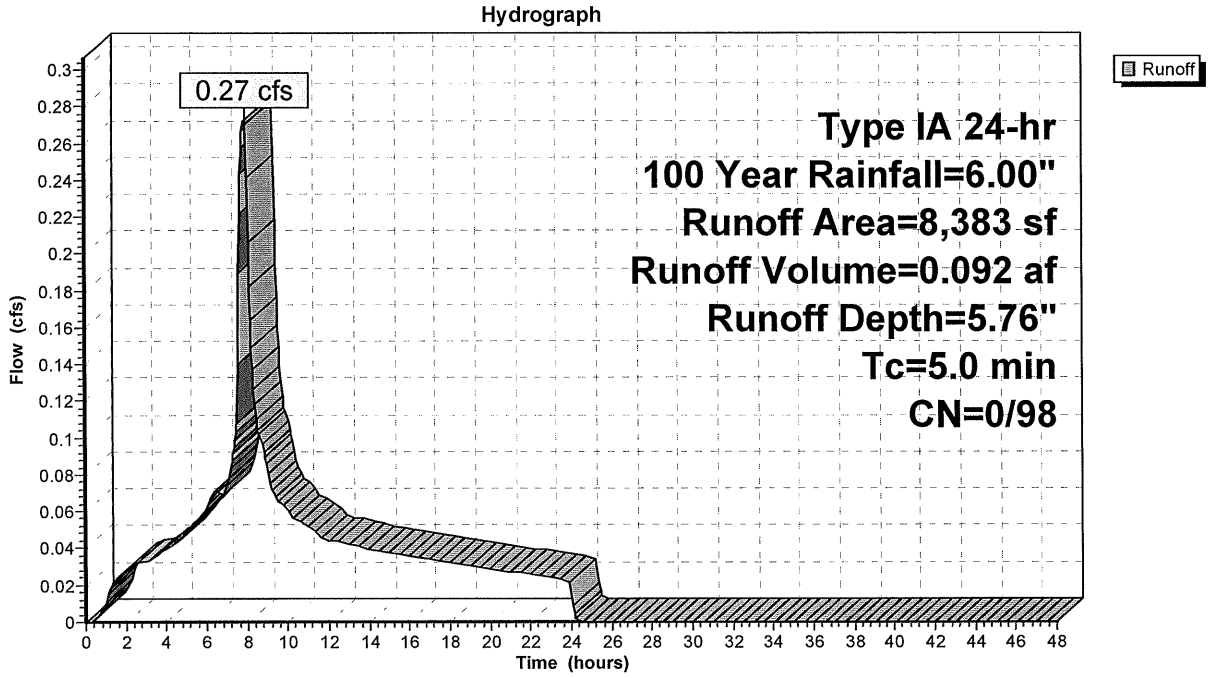
Runoff = 0.27 cfs @ 7.89 hrs, Volume= 0.092 af, Depth= 5.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100 Year Rainfall=6.00"

Area (sf)	CN	Description
8,383	98	Paved parking, HSG C
8,383	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 21S: Q6 Drainage Area



Summary for Subcatchment 23S: Q8 Drainage Area

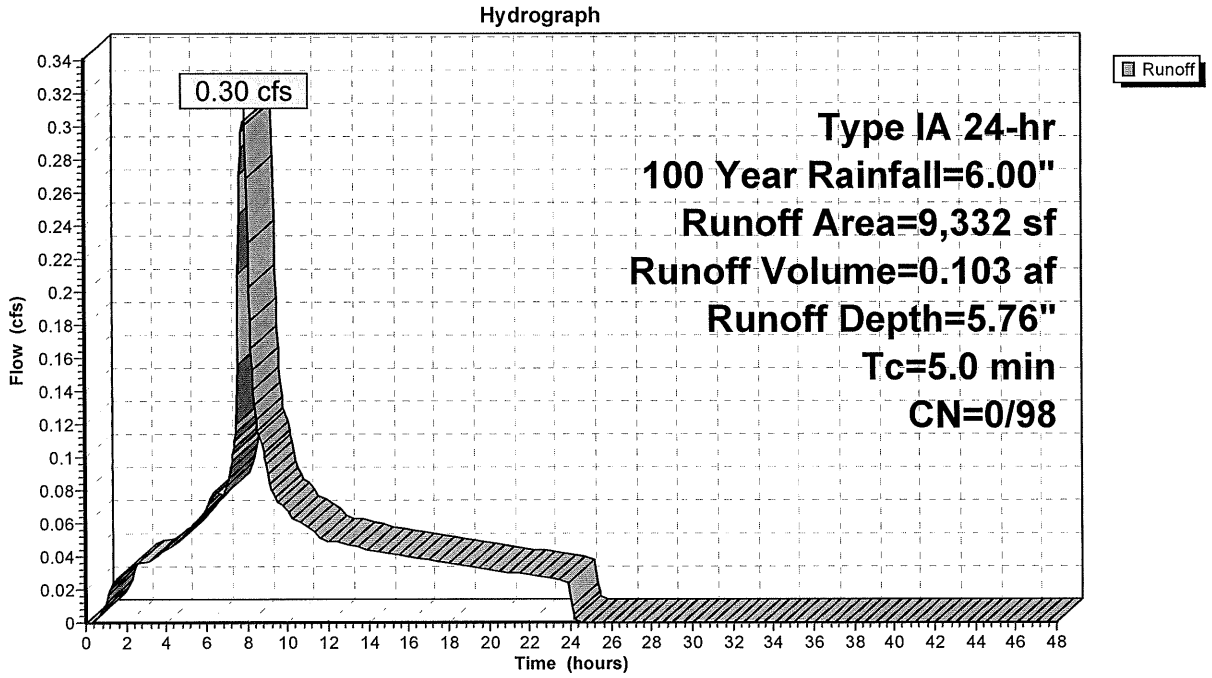
Runoff = 0.30 cfs @ 7.89 hrs, Volume= 0.103 af, Depth= 5.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100 Year Rainfall=6.00"

Area (sf)	CN	Description
9,332	98	Paved parking, HSG C
9,332	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 23S: Q8 Drainage Area



Summary for Subcatchment 25S: Access Areas Not Directed to Pond

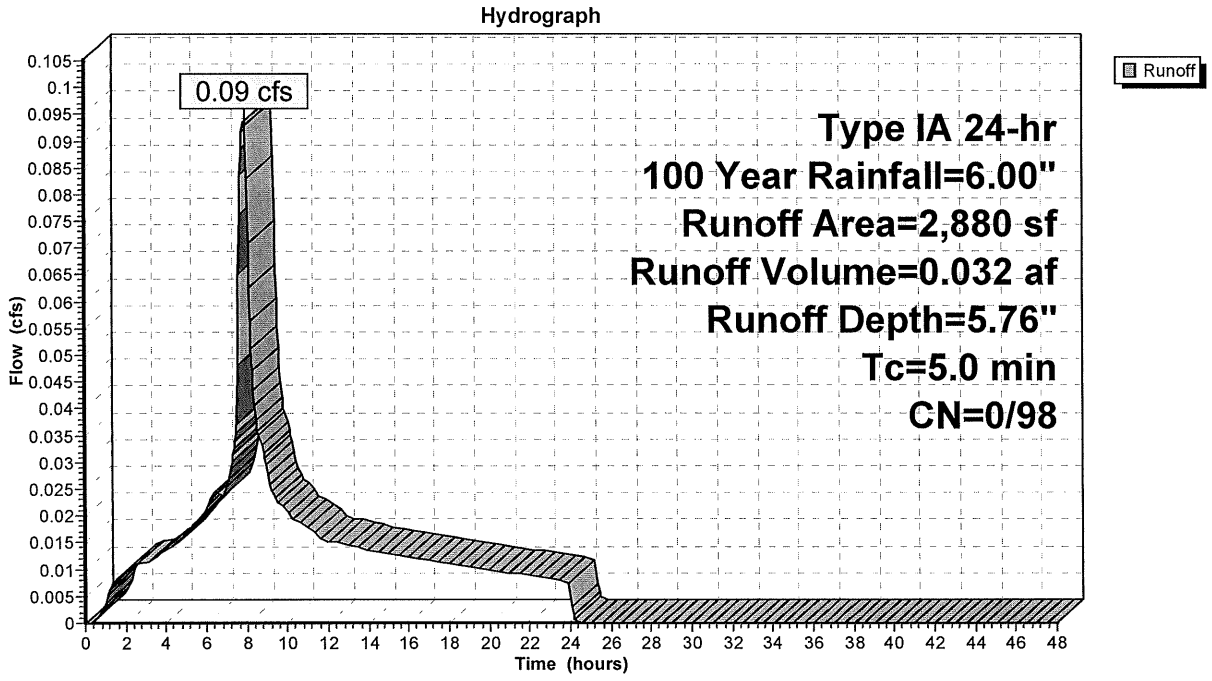
Runoff = 0.09 cfs @ 7.89 hrs, Volume= 0.032 af, Depth= 5.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100 Year Rainfall=6.00"

Area (sf)	CN	Description
2,880	98	Paved parking, HSG C
2,880	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 25S: Access Areas Not Directed to Pond



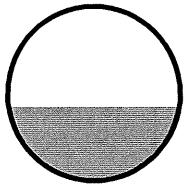
Summary for Reach 28R: 12" Outlet Pipe

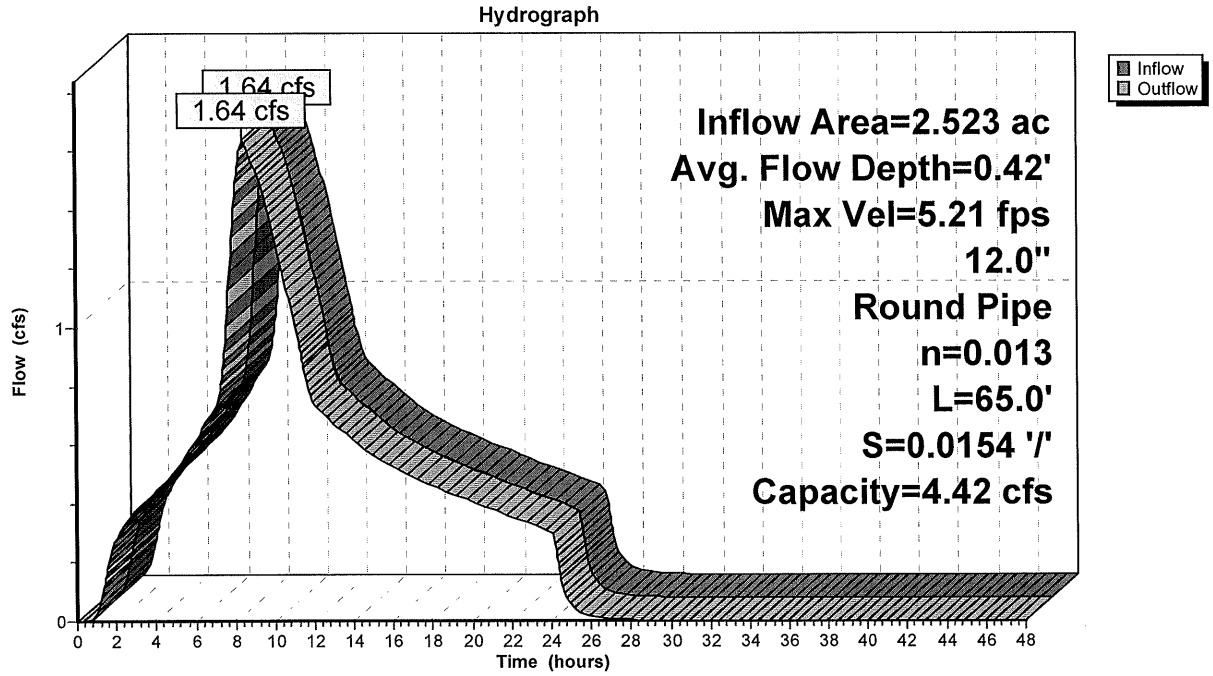
Inflow Area = 2.523 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 1.64 cfs @ 8.44 hrs, Volume= 1.212 af
Outflow = 1.64 cfs @ 8.44 hrs, Volume= 1.212 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.21 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 0.5 min

Peak Storage= 20 cf @ 8.44 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.42 cfs

12.0" Round Pipe
n= 0.013
Length= 65.0' Slope= 0.0154 '/'
Inlet Invert= 32.00', Outlet Invert= 31.00'





Summary for Pond 3P: Catch Basin #2

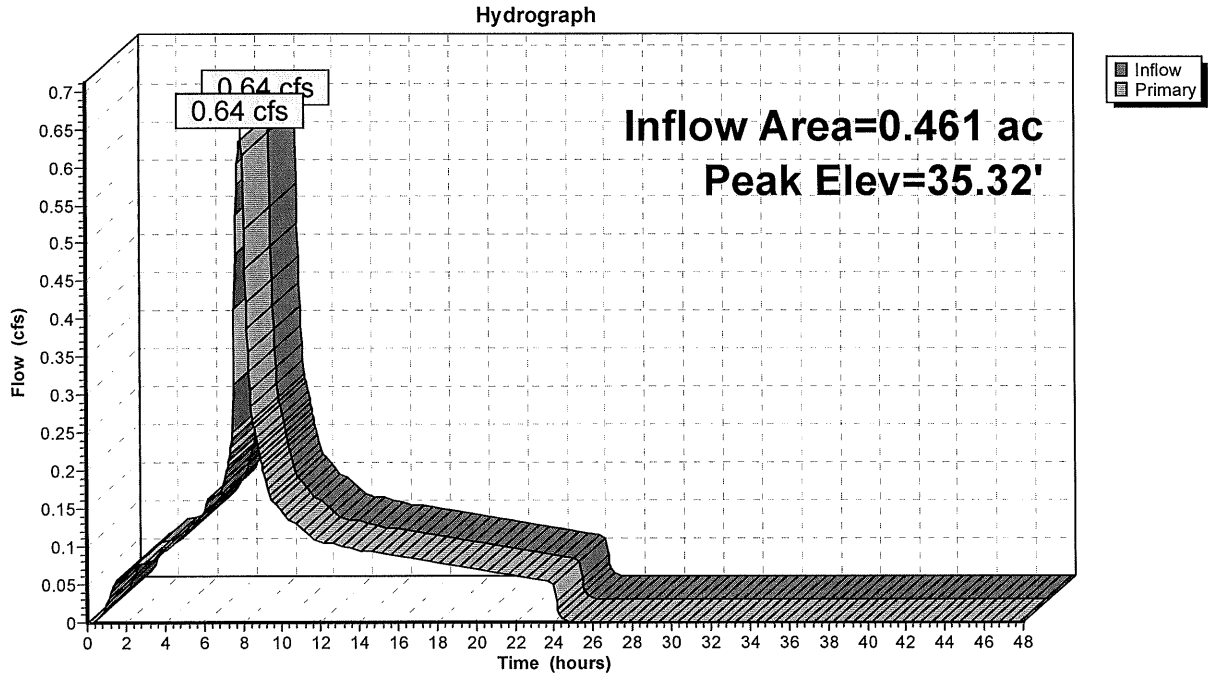
Inflow Area = 0.461 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 0.64 cfs @ 7.94 hrs, Volume= 0.221 af
Outflow = 0.64 cfs @ 7.94 hrs, Volume= 0.221 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 7.94 hrs, Volume= 0.221 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.32' @ 8.52 hrs
Flood Elev= 35.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.23'	**10.0" Vert. 10" Outlet** C= 0.600

Primary OutFlow Max=0.00 cfs @ 7.94 hrs HW=34.56' TW=34.67' (Dynamic Tailwater)
└**1=10" Outlet** (Controls 0.00 cfs)

Pond 3P: Catch Basin #2



Summary for Pond 5P: Catch Basin #4

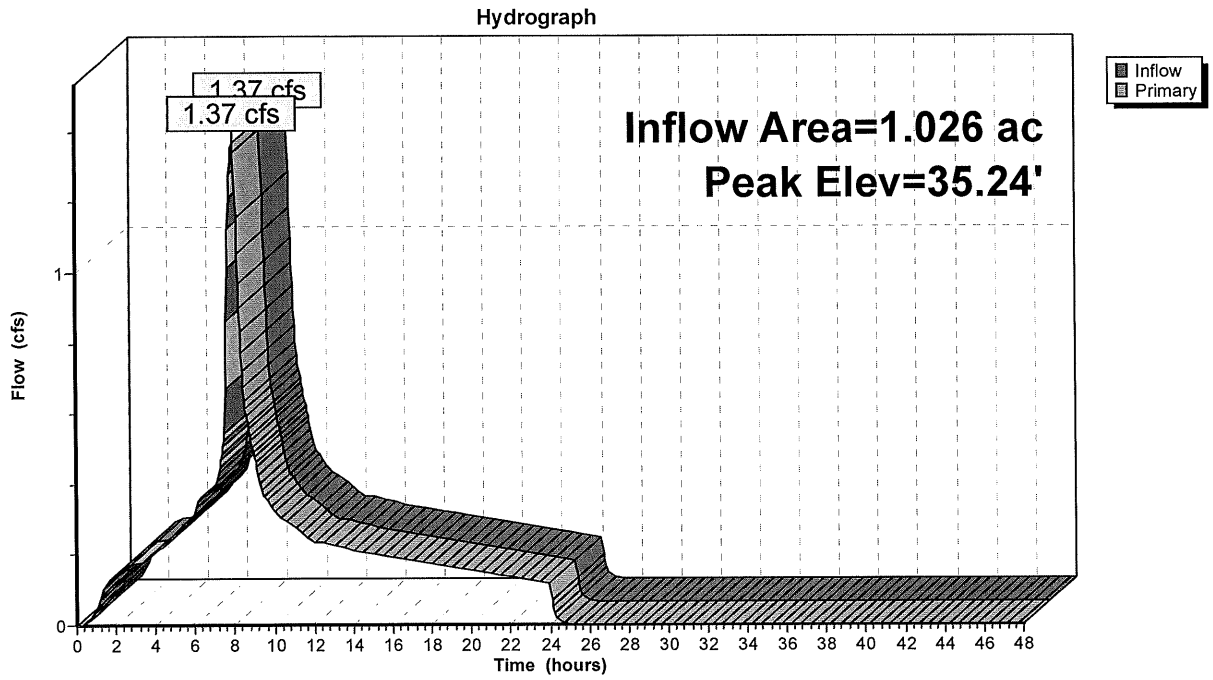
Inflow Area = 1.026 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 1.37 cfs @ 7.96 hrs, Volume= 0.493 af
Outflow = 1.37 cfs @ 7.96 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min
Primary = 1.37 cfs @ 7.96 hrs, Volume= 0.493 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.24' @ 8.43 hrs
Flood Elev= 36.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	32.54'	**12.0" Vert. 12" Outlet** C= 0.600

Primary OutFlow Max=0.41 cfs @ 7.96 hrs HW=34.86' TW=34.85' (Dynamic Tailwater)
↑**1=12" Outlet** (Orifice Controls 0.41 cfs @ 0.52 fps)

Pond 5P: Catch Basin #4



Summary for Pond 7P: Catch Basin #6

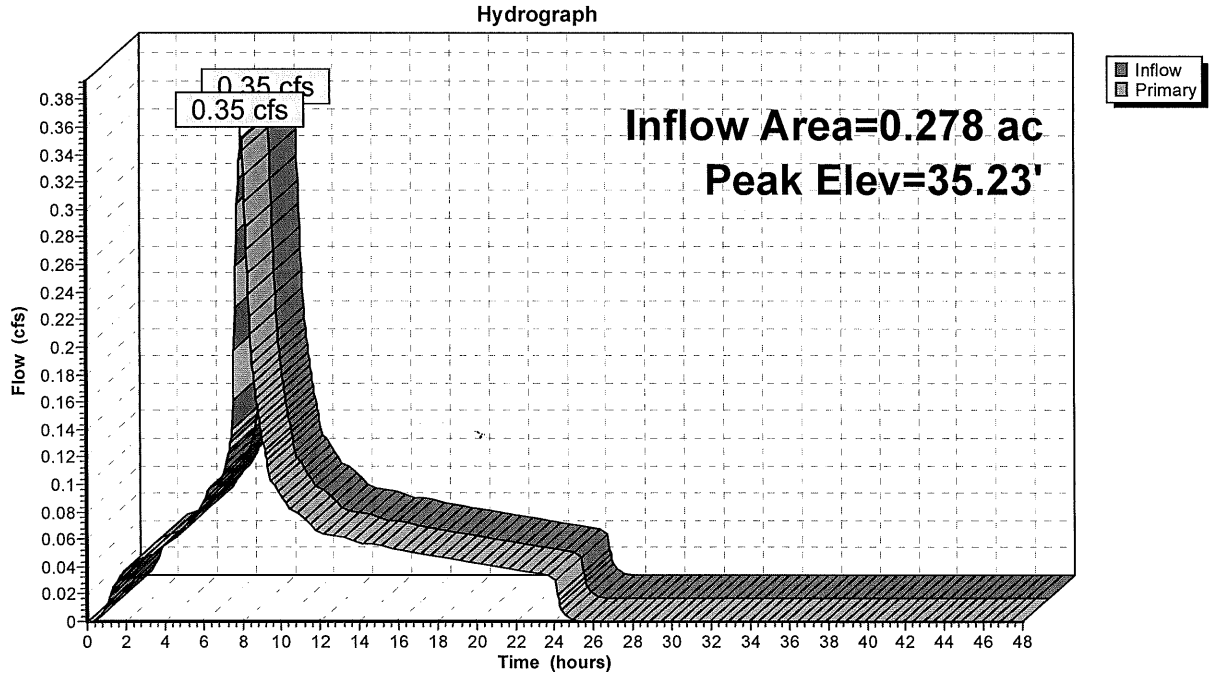
Inflow Area = 0.278 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 0.35 cfs @ 8.00 hrs, Volume= 0.134 af
Outflow = 0.35 cfs @ 8.00 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 8.00 hrs, Volume= 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.23' @ 8.50 hrs
Flood Elev= 35.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	32.80'	**10.0" Vert. 10" Outlet** C= 0.600

Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=34.76' TW=34.87' (Dynamic Tailwater)
↑—**1=10" Outlet** (Controls 0.00 cfs)

Pond 7P: Catch Basin #6



Summary for Pond 9P: Catch Basin #8

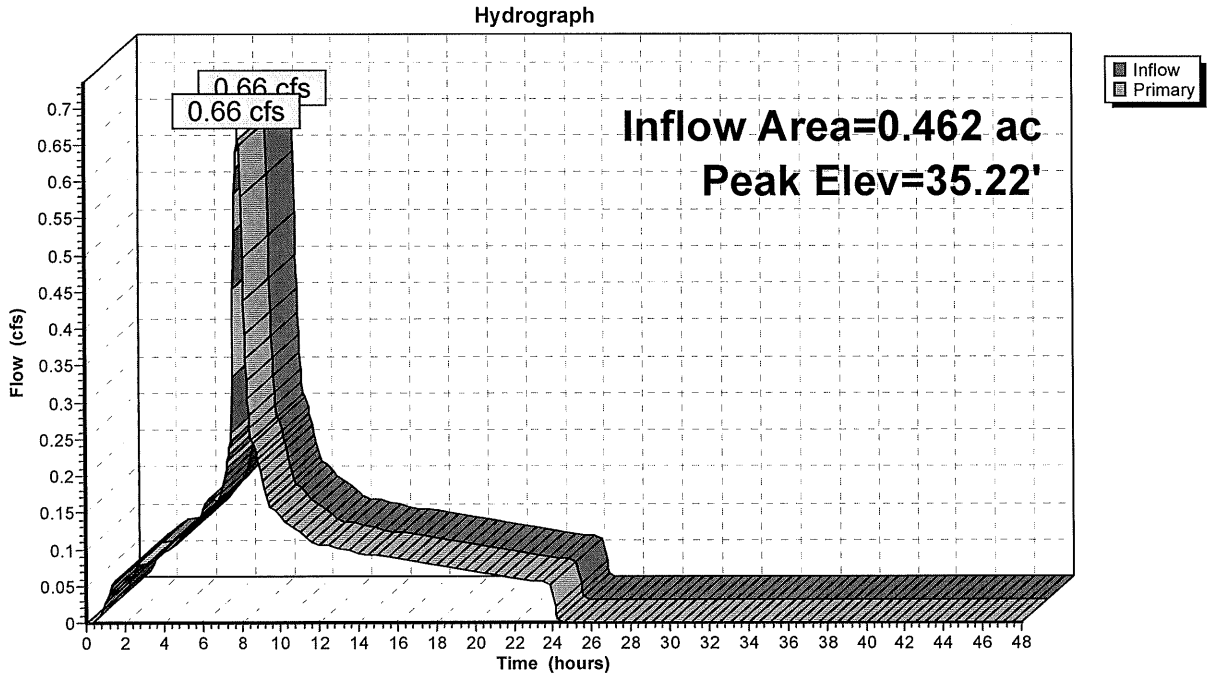
Inflow Area = 0.462 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 0.66 cfs @ 7.89 hrs, Volume= 0.222 af
Outflow = 0.66 cfs @ 7.89 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 7.89 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.22' @ 8.46 hrs
Flood Elev= 35.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	32.36'	**10.0" Vert. 10" Outlet** C= 0.600

Primary OutFlow Max=0.00 cfs @ 7.89 hrs HW=34.62' TW=34.69' (Dynamic Tailwater)
↑—**1=10" Outlet** (Controls 0.00 cfs)

Pond 9P: Catch Basin #8



Summary for Pond 11P: Storm Manhole #1

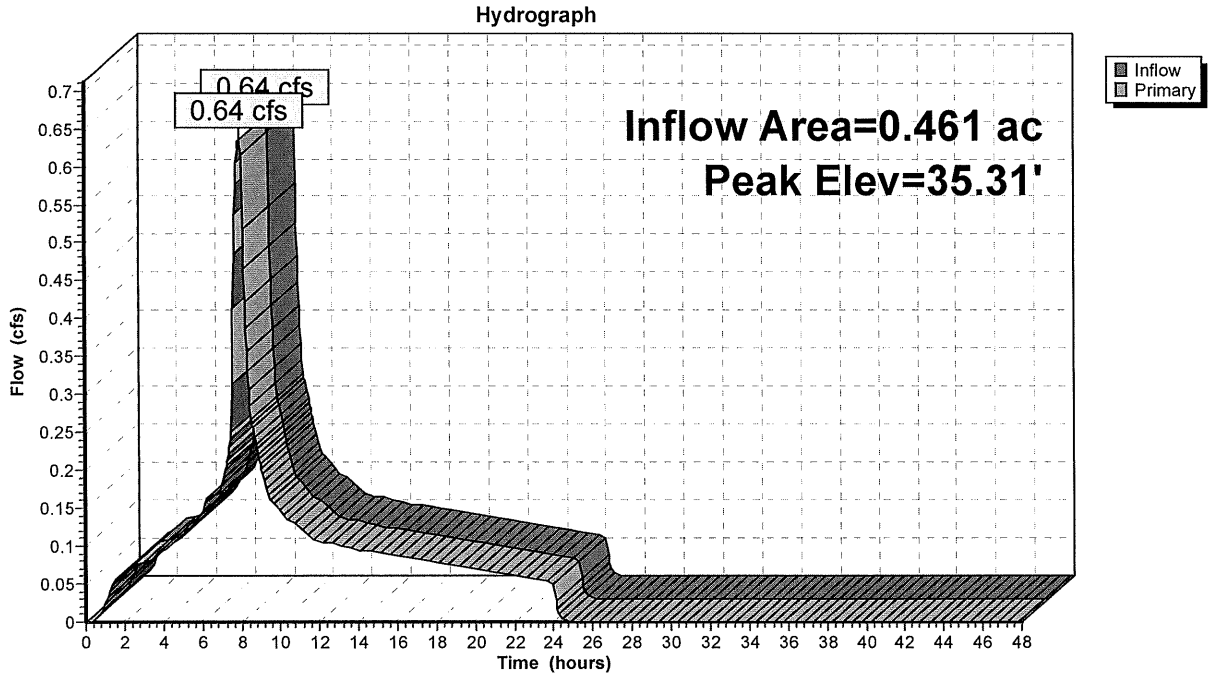
Inflow Area = 0.461 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 0.64 cfs @ 7.94 hrs, Volume= 0.221 af
Outflow = 0.64 cfs @ 7.94 hrs, Volume= 0.221 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 7.94 hrs, Volume= 0.221 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.31' @ 8.48 hrs
Flood Elev= 36.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	**10.0" Vert. Storm MH #1** C= 0.600

Primary OutFlow Max=0.00 cfs @ 7.94 hrs HW=34.67' TW=34.77' (Dynamic Tailwater)
└**1=Storm MH #1** (Controls 0.00 cfs)

Pond 11P: Storm Manhole #1



Summary for Pond 13P: Storm Manhole #3

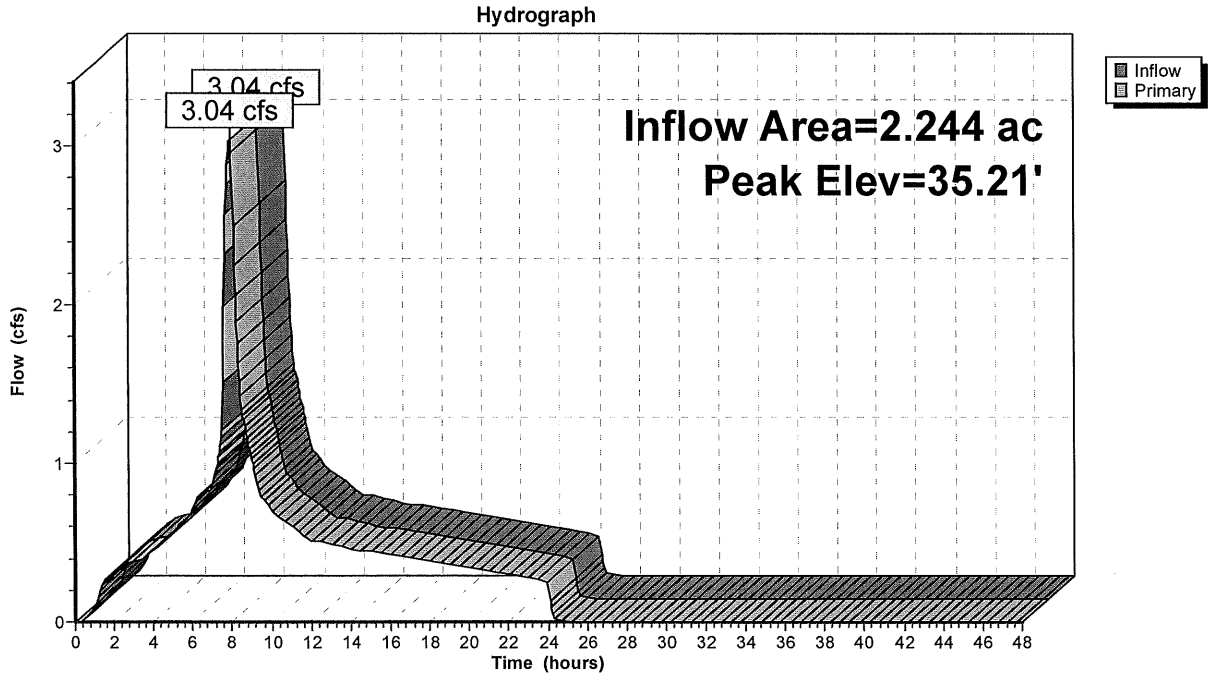
Inflow Area = 2.244 ac,100.00% Impervious, Inflow Depth = 5.76" for 100 Year event
Inflow = 3.04 cfs @ 7.94 hrs, Volume= 1.078 af
Outflow = 3.04 cfs @ 7.94 hrs, Volume= 1.078 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 7.94 hrs, Volume= 1.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.21' @ 8.42 hrs
Flood Elev= 36.26'

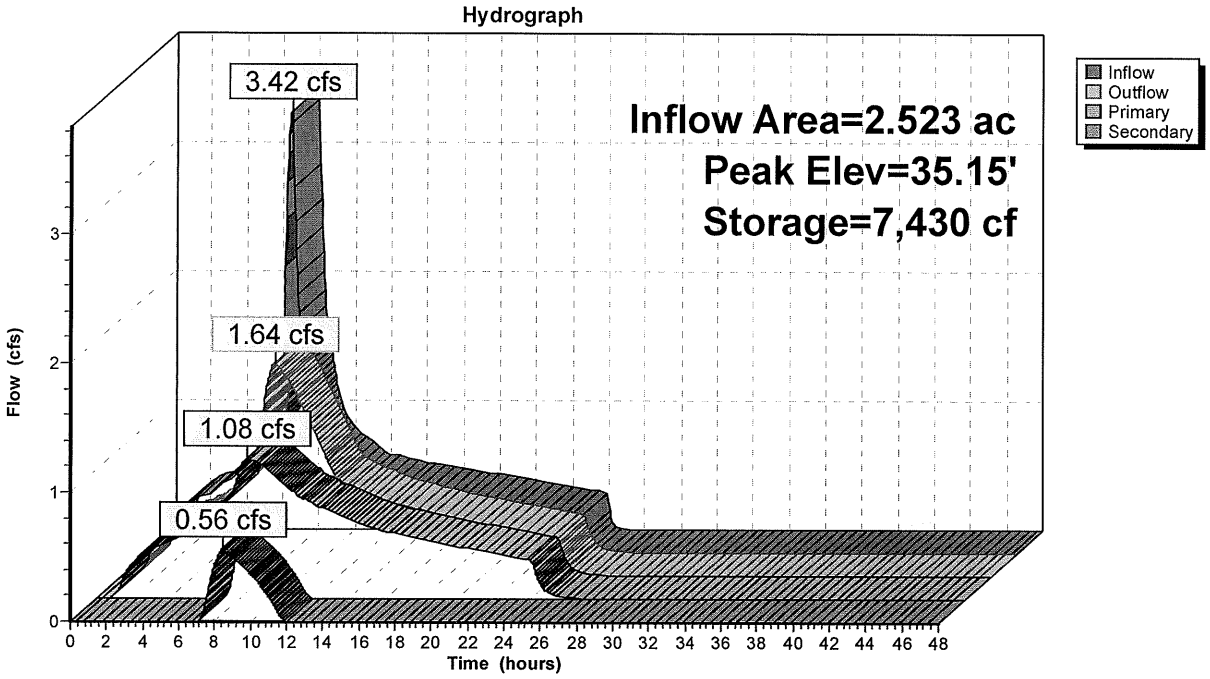
Device	Routing	Invert	Outlet Devices
#1	Primary	32.41'	**15.0" Vert. 15" Outlet** C= 0.600

Primary OutFlow Max=2.27 cfs @ 7.94 hrs HW=34.80' TW=34.65' (Dynamic Tailwater)
↑**1=15" Outlet** (Orifice Controls 2.27 cfs @ 1.85 fps)

Pond 13P: Storm Manhole #3



Pond 27P: Dry Detention Pond



NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT F

GEOTECHNICAL REPORT

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

Table 1: Infiltration Test Results.

Test #	Depth (feet)	% Fines	Soil Description	% Moisture	Infiltration Rate (inches/hour)*
IT-1	5	94	Silt	79	12
IT-2	5	100	Silt	48	19
IT-3	5'	96	Silt	44	3

*No safety factors have been provided in the rates above.

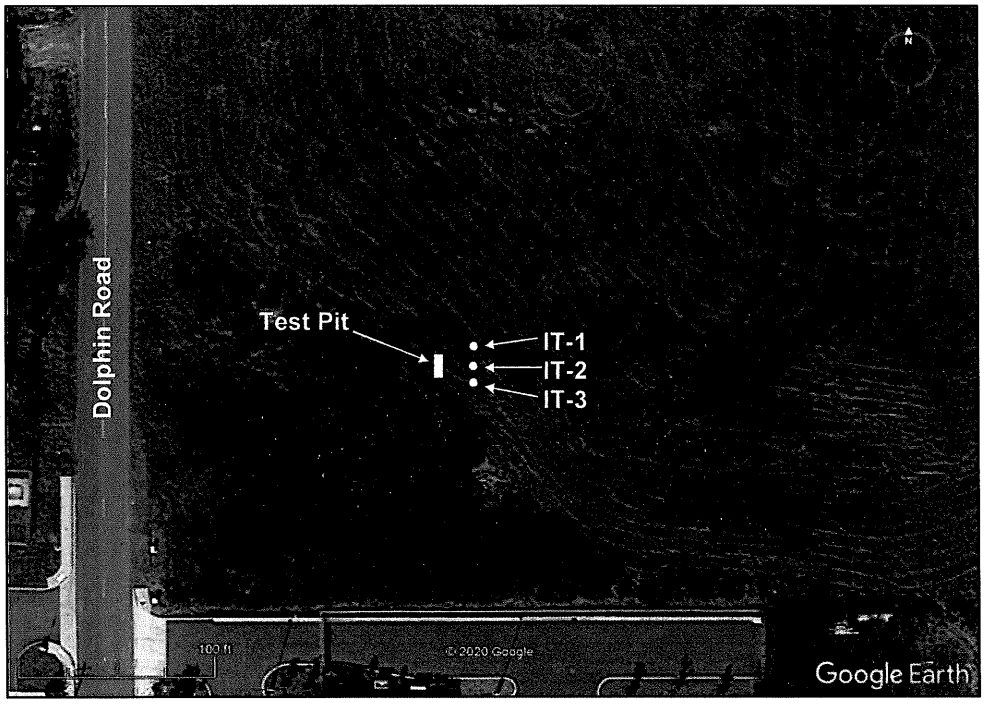


Figure 1: Infiltration Test Location

EEI rep. departed at about 5:00 PM.

Attachment: Exploration Location Plan

Distribution:
Wayne Pipes, NW Natural (wayne.pipes@nwnatural.com)
Mary Fierros-Bower, LRS Architects(mfierrosbower@lrsarchitects.com)
Scott Morris, A&O Engineering (scottmorris@ao-engr.com)

Field Staff Name: Ken Andrieu, R.G.	Report Reviewed By: Troy Hull, P.E., G.E.
Field Staff Signature:	Copy of Handwritten Report Left on Site: No

NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT G

TRIP GENERATION REPORT

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

NWN WARRENTON RESOURCE

Traffic Profile

SPECIALTY TRADE CONTRACTOR – NO CUSTOMERS

PROPOSED RESOURCE CENTER

6 WORKERS X 4 TRIPS / DAY = 24 TRIPS

3 WORKERS X 2 TRIPS / DAY = 6 TRIPS

TOTAL = 30 TRIPS / DAY

...

NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT H

PRE-APPLICATION MEETING NOTES

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

May 20, 2020

To: Mary Fierros Bower, Project Manager, LRS Architects
From: Kevin A. Cronin, AICP, Assistant City Manager/Community Development Director
Re: Pre-application Conference Notes | NW Natural Offices/Service Center | SE Dolphin Ave

The purpose of this memo is to summarize the notes and discussion of a pre-application conference held on May 13, 2020 at City Hall and online through Zoom. The subject property is 5.32 acres, vacant, and with direct access to SE Dolphin adjacent to the new SE Warrior Way. The area is zoned for General Industrial (I-1). The proposed use of a utility facility is consistent with the zone. The facility will not have customer or general public access. Future development would require extension of city utilities and improvement of the SE Dolphin frontage. The following comments were discussed at the meeting.

In general, the proposed layout of the offices, warehouse, parking, service bays, and location of off street parking conforms to the Code. Please provide percentages of all required standards such as parking and landscaping, and buildings.

The final layout will be evaluated using the site design review standards and applicable criteria identified below:

Warrenton Municipal Code Chapters & Sections:

- I-1 General Industrial Zone Development Standards (16.60.040)
- Design Standards: Access & Circulation (16.120)
- Design Standards: Landscaping, Street Trees, Fences, and Walls (16.124)
- Design Standards: Vehicle & Bicycle Parking (16.128)
- Design Standards: Clear Vision Areas (16.132)
- Public Facilities Standards (16.136)
- Stormwater & Surface Water Management Standards (16.140)
- Site Design Review Application & Review Procedures (16.212)
- Large Scale Development (16.192)
- A public facilities impact study is required for Type 3 applications. A preliminary stormwater report is required. Applicant is encouraged to coordinate public improvements with Warrenton School District's new campus.

- *Development Standards:* Setbacks, lot coverage, height, and buffering standards are found in the General Industrial Zone.

- *Commercial Design Standards:* City staff is developing revised design standards for new commercial/industrial buildings that will apply if the standards are adopted as drafted. However, there is no immediate timeline or deadline for adoption.

- *Streets:* A half street improvement is required on SE Dolphin. There are no other public streets to connect directly to unless SE Warrior Way becomes available. Minimum access standard for spacing from SE Warrior Way is 25 feet. Driveway approaches and pedestrian access standards are located in Section 16.120. At a minimum, a crosswalk is required across the driveway approach.

- *Landscaping*: Street trees are required on SE Dolphin. New plants are non-invasive and all invasives shall be removed.

- *Parking:* The off street parking standard for this proposal is: *1 space per 2 employees on the largest shift, plus 1 space per company vehicle; a minimum of 2 spaces is required.* There is no maximum required. There are also reduction standards to allocate land for other purposes. Fleet only parking can be designated separately from day to day employee parking. Bike parking is required. Please refer to specific design standards.

- *Procedure*: The site design review will be reviewed as a Type III quasi-judicial application which can be found in WMC 16.208.050. After completeness, agency and public notice will be submitted by the City and a public hearing scheduled before the Planning Commission. The performance standard for the Department is 6-8 weeks for a significant application of this nature.

- Fire and Public Works Department comments, if any, are delivered separately.
- If a temporary construction trailer is needed, a temporary use permit can be processed concurrently with site design review.
- A sign permit is required for any new signage and can be applied for separately from site design review.
- As new information is provided or learned independently, additional studies may be required.

City staff is committed to streamlining the development review process to support the economic development and redevelopment objectives of the area and looks forward to seeing the revisions requested.

Written responses to the pre-application notes are required as part of the submittal and completeness review checklist that was provided via email.

If you have any additional questions, please contact me.

Estimate of Land Use Fees & SDCs

Land Use Fees

Site Design Review:	$ 750
Temporary Use Permit	$ 300
Total	**$ 850**

System Development Charges Estimate

SDC estimates are provided as a courtesy and for project budget purposes only. Actual amounts are determined at building permit stage.

Water (1 inch meter)	$3,264
Sewer	$3,262
Stormwater (108,136 SF impervious)	$8,381
Transportation (General Office)	$10,081
Total	**$24,988**

Commercial development is not assessed for Parks SDCs.

Public Works Department

Pre-Application Memorandum

To: Kevin Cronin, Community Development Director
From: Collin Stelzig, Public Works Director
Cc:
Date: May 13, 2020
Re: NW Natural PEMB Resource Center- SE Dolphin Avenue - 810340002300

Public Works understands that a new commercial development is proposed on Tax Lot 810340002300. With this information, public works staff has provided the following items that will need to be addressed in your planning documents and design documents:

1. The developer is required to follow the City of Warrenton Development Standards. These standards can be found in Title 16 of the Warrenton Municipal Code. Please provide documentation showing how this development will meet that standards set forth in the development code. Below is a link to the Development Code http://qcode.us/codes/warrenton/view.php?topic=16&frames=on
2. The developer must follow the City's Water and Sewer Regulations. These regulations are included under Title 13 of the Warrenton Municipal Code. Please provide documentation showing how this development will meet that standards set forth in the development code. Below is a link to the Title 13 of our Code: http://qcode.us/codes/warrenton/view.php?topic=13&frames=on
3. The developer is required to follow the Engineering Standards & Design Criteria Manual. Please provide documentation showing how the development meets the standards set forth in this manual. This manual can be found at the http://www.ci.warrenton.or.us/publicworks/page/engineering-specifications-design-guide
4. Sewer services for commercial projects shall be a minimum of 6" diameter.
5. Water meter(s), the kind or make of said meter(s) to be approved or designated by the Public Works Department and service connections will be installed by the owner/contractor. Long water services to water meters will not be allowed. Water meters and backflow devises shall be installed as close to the existing water main as possible.
6. All commercial property shall have a backflow device at the meter for premise isolation.

7. Street lights are required for all new developments. Show proposed street light locations on planning documents.
8. Please work with the Fire Chief to determine appropriate Fire hydrant spacing for this development.
9. All on-site driveways, parking areas, aisles and turn-a-rounds shall have on-site collection or infiltration of surface waters to eliminate sheet flow of such waters onto public rights-of-way and abutting property. Surface water facility plans shall be prepared by a qualified person and constructed in accordance with City standards. Provide documentation that the existing stormwater system is designed to have adequate capacity for this development.
10. There is an advanced financing agreement for connection to the pump station which may require contribution.
11. Half street improvements with sidewalks are necessary on the frontage of SE Dolphin Avenue.
12. All street improvements will need to meet City standards
13. All non-street access routes will need to be a minimum of 24' for garbage truck access. Fire Department may require additional width.
14. Provide estimated water and sewer flows for the proposed development with planning documents.
15. The City has design standards for refuse enclosures that include the required turning radius and access standards. The City will need a key code or key to access the refuse location if located behind a locked gate.
16. Both fuel area and wash area will need to be completely covered and all water entering the sewer system will need to be treated before entering the public sewer system. In addition, the property owner will be required to apply for a discharge permit for each location. The discharge permit will include discharge limits and required testing.

Answer to Applicants Engineering Questions:

1. There is no water sleeve crossing SE Dolphin Avenue
2. A stormwater report will be required as part of this project. The outfall may be riprap, but it must be designed for the calculated flow and velocity to prevent erosion.
3. Sewer laterals will be constructed as part of the wastewater improvements on SE Dolphin Avenue. The developer should look into the City's advanced financing of public improvements in our municipal code. This code section can be found here: http://qcode.us/codes/warrenton/view.php?topic=3-3_16&showAll=1&frames=on . This code section provides a way for the developer to be reimbursed as other properties connect to the new sewer system. We also suggest that the developer coordinate with the Warrenton School District as they are in the process of designing this same sewer line. This would be a good time to discuss cost sharing for this sewer main with the school.
4. Half street improvements are necessary on your side of the SE Dolphin Avenue. The improvements will need to line up with the three existing catch basins and will include street lights.
5. A stormwater report is necessary for this development. Stormwater detention may not be necessary if downstream infrastructure can safely pass 100-year flows.

6. It is not clear what this item is asking.
7. Fire hydrant locations will be determined by the fire department.

Earth Engineers, Inc.

2411 Southeast 8th Avenue • Camas • WA 98607
Phone: 360-567-1806 • Fax: 360-253-8624
www.earth-engineers.com

July 13, 2018

Northwest Natural
220 Northwest 2nd Avenue
Portland, Oregon 97209
Attention: Wayne Pipes

Phone: 503-721-2496
E-mail: wayne.pipes@nwnatural.com

Subject: **Preliminary Geotechnical Investigation and Seismic Site Hazard Report**
Proposed Resource Center
Vacant Lot North of 2320 Southeast Dolphin Avenue
Warrenton, Clatsop County, Oregon
Tax Lot 2300 – Range 8, Township 10W, Section 34
EEI Report No. 18-113-1

Dear Mr. Pipes:

Earth Engineers, Inc. (EEI) is pleased to transmit our Preliminary Geotechnical Investigation and Seismic Site Hazard Report for the above referenced project. This report includes the results of our field investigation, an evaluation of geotechnical factors that may influence the proposed construction, a seismic site hazard study, a detailed liquefaction study, and preliminary geotechnical recommendations for building foundations, pavement design, as well as general site development.

We appreciate the opportunity to perform this geotechnical study and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office at 360-567-1806.

Sincerely,
Earth Engineers, Inc.

Travis Willis, P.E.
Principal Geotechnical Engineer

Reviewed by:

Troy Hull, P.E., G.E.
Principal Geotechnical Engineer

Distribution: Addressee (1 electronic copy)
Larry Atchison – Urban Resources Inc. (larry@urbanresourcesinc.com)

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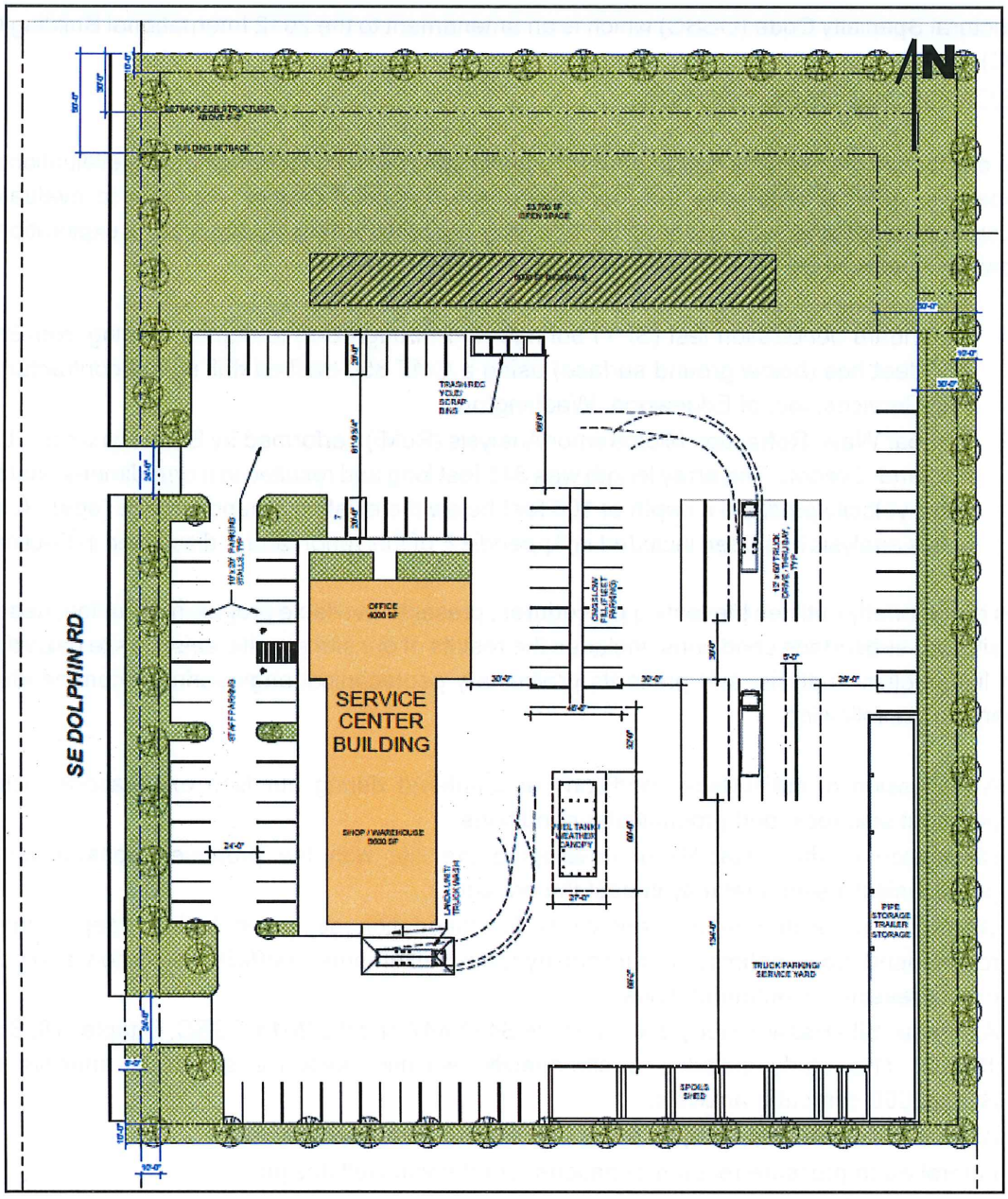

Figure 1: Site plan "Option A" showing the proposed development – prepared by LRS Architects.

Since the project is still within the early stages (feasibility), we have not been provided any foundation loading or grading information. For the purposes of this report, we have preliminarily assumed maximum column and wall loads of 75 kips and 4 kips per linear foot, respectively. We have also assumed that maximum cuts and fills to achieve final design grades will not exceed about 3 feet.

Finally, we understand that Northwest Natural wishes to construct the development (or at least some of the buildings) as an "essential facility"; a Risk Category IV in accordance with the 2014 Oregon

exploration logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. An environmental assessment is typically advisable.

Photo 2: Bottom of the existing ravine/swale looking east.

In terms of existing vegetation, the site was predominately vegetated with grasses and weeds. However, fairly tall shrubs (scotch-broom) was located around the drainage feature discussed immediately above.

2.2 Mapped Soils and Geology

The subject property is located on an alluvial terrace on the east side of the Skipanon River, about 3 miles south of the Columbia River, in the southeast portion of the Clatsop Plains. The Clatsop Plains are a large coastal lowland region that extends from mouth of the Columbia south to Seaside and east along the south side of Young's Bay. The region has been built up with marine and dune sands overlying older marine sedimentary deposits. In the vicinity of the subject property, the geology is mapped as Quaternary alluvial terrace deposits[1]. These consist of massive to faintly bedded, buff to gray, silt and clay deposits. They are often less than 20 feet thick but may be up to 50 feet thick. They are underlain by marine terrace deposits and marine sedimentary deposits.

The surface soils in the vicinity of the subject property are mapped as Walluski silt loam, 0 to 7 percent slopes[2]. The Walluski silt loam is a moderately well-drained soil formed on fluviomarine and stream terraces from mixed alluvium and/or fluviomarine deposits derived from sedimentary rock.

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[1] Schlicker, H.G., Beaulieu, J.D., Olcott, G.W. and Deacon, R.J., 1972, Environmental Geology of the Coastal Region of the Tillamook and Clatsop Counties, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 74, scale 1:62,500.

[2] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ accessed 7/3/2018.

The sample in B-4 at 30 feet also included light grey lenses less than 2mm thick, possible diatomaceous earth was found in B-7 at 30', and in B-9 clayey gravel extended throughout the upper 8 feet of the mudstone. We believe this mudstone to be the upper reaches of the terrace deposits outlined in Section 2.2. It should be noted that the strength of the rock was found to be highly variable – N_{60} values throughout the stratum ranged from 13 to 90.

As noted above, a ReMi test was also performed by Earth Dynamics and the report is attached as Appendix F and discussed in further detail in Section 3.5. The shear wave velocities obtained from this study gave an average shear wave velocity for the upper 100 feet of 895 feet per second. This translates into an average seismic Site Class D as defined by Table 20.3-1 of ASCE 7-10, which was adopted by the 2014 OSSC. The shear wave profile was used in our SHAKE computer program analysis.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The exploration logs included in the Appendix should be reviewed for specific information at specific locations. These records include soil and rock descriptions, stratifications, and locations of the samples. The stratifications shown on the logs represent the conditions only at the actual exploration locations. Given that the site has been worked in the past and structures have existed and still exist on the project site, it should be assumed that variable soil/fill conditions may occur and should be expected between locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on these logs. The samples that were not altered by laboratory testing will be retained for 60 days from the date of this report and then will be discarded.

2.4 Groundwater Information

Due to the drilling method used, mud-rotary, we were not able to obtain groundwater levels while drilling. However, at the locations listed below, the drilled borings were flushed with water at the time of completion and groundwater readings were obtained after leaving the hole open after 24 hours. The results as well as the elevations at the ground surface (based on the referenced topographic mapping) at those locations have been included in the table below. Again, the surveyed boring locations can be found in Appendix B.

Table 1: Measured Depth to Groundwater Table After 24 Hours

Boring #	Depth to Groundwater (feet and inches)	Surface Elevation Above MSL (feet)
B-1	3' 10"	33.5
B-2	6' 7"	36.0
B-5	8' 8"	39.5
B-7	3' 11"	38.0
B-9	5' 2"	35.5

It should be noted that the water table elevation can fluctuate seasonally, especially during periods of extended wet or dry weather.

seating it at least 6-inches into the bottom of a borehole. Samples were taken from the bottom of the trial locations and returned to our laboratory for testing - testing included moisture content tests, fines content analysis, and a single Atterberg Limits test. After seating the pipes, roughly 2-inches of clean gravel was placed in the bottom of the pipes to prevent scouring when water was added. 12-inches of water was then placed into the pipes and allowed to drain. Since the water did not drain completely away in the first 10-minutes, the holes required a presoak period and were left to soak overnight.

After the overnight pre-soak, we placed 12-inches of clean water in each of the pipes and timed the fall of the water until consistent results were observed. The results of our infiltration tests are shown in Table 2 below. **The results should be considered ultimate values and do not include a factor of safety. Given the variability in the rates below, we recommend that during construction a field verification test be performed to ensure the infiltration rates during construction are consistent with the values shown below in Table 2.**

Table 2: Infiltration Test Results by Trial.

Test #	Depth (feet)	% Fines	Soil Description	% Moisture	Infiltration Rate (inches/hour)*
IT-1	5	59%	Tan elastic silt with rust mottling	61%	13.00
IT-2	5	90%		42%	0.88
IT-3	5	94%		42%	3.25

*No safety factors have been provided in the rates above.

The Atterberg Limits test resulted in a liquid limit of 50, a plastic limit of 30, and a plasticity index of 20 from the sample obtained from IT-3.

As stated in Section 2.3, the average seismic shear wave velocity (according to the ReMi analysis) when considering the upper 100 feet of soil and rock is 895 feet per second. Per the 2014 Oregon Structural Specialty Code, this site has a seismic Site Class of "D".

3.6 Regional, Geologic, Tectonic and Seismic Settings

3.6.1 Regional Geologic Setting

Refer to section 2.2 of this report for the regional geologic setting.

3.6.2 Regional Tectonic and Seismic Setting

Oregon's position at the western margin of the North American Plate and its position relative to the Pacific and Juan de Fuca plates has had a major impact on the geologic development of the state. The interaction of the three plates has created a complex set of stress regimes that influence the tectonic activity of the state. The western part of Oregon is heavily impacted by the influence of the active subduction zone formed by the Juan de Fuca Oceanic Plate converging upon and subducting beneath the North American Continental Plate off the Oregon coastline. The Columbia Plateau, further to the east, is associated with north-south compression created by the interaction of the Pacific plate with the North American plate[3]. In Oregon, three principal types of earthquakes characterize tectonic earthquake source mechanisms:

1. **Cascadia Subduction Zone (CSZ), or "Interface" earthquakes** occur on the seismogenic part of the interface between the North American plate and the Juan de Fuca plate as a result of convergence of the two plates. According to the Probabilistic Seismic Hazard Deaggregation on the USGS website, the Cascadia Subduction Zone is located approximately 25 kilometers from the site. This is a potential source of earthquakes large enough to cause ground shaking at the subject site. Research over the last several years has shown that this offshore fault zone has repeatedly produced large earthquakes every 300 to 700 years. It is generally understood that the last great CSZ earthquake occurred about 300 years ago, in 1700AD. Although researchers do not agree on the likely magnitude, it is widely believed that earthquakes of at least moment magnitude (M_w) 8.5 to 9.5 are possible. The duration of ground shaking could last several minutes.

2. Relatively deep **"Intraslab" earthquakes** occur 30 to 50 kilometers beneath the surface, within the seismogenic part of the subducting Juan de Fuca plate. Intraslab earthquakes originate from within the subducting Juan de Fuca Oceanic Plate. These earthquakes occur no less than 30 kilometers beneath the surface and are not usually associated with visible faults. It has only been possible to distinguish intraslab earthquakes in western Oregon for the past few decades. Numerous small intraslab earthquakes have been recorded beneath western Oregon beneath the Coast Range. An estimated magnitude 6.7 earthquake near the coastal town of Port Orford in 1873

[3] Geomatrix Consultants, January 1995. "Seismic Design Mapping, State of Oregon" prepared for Oregon Department of Transportation.

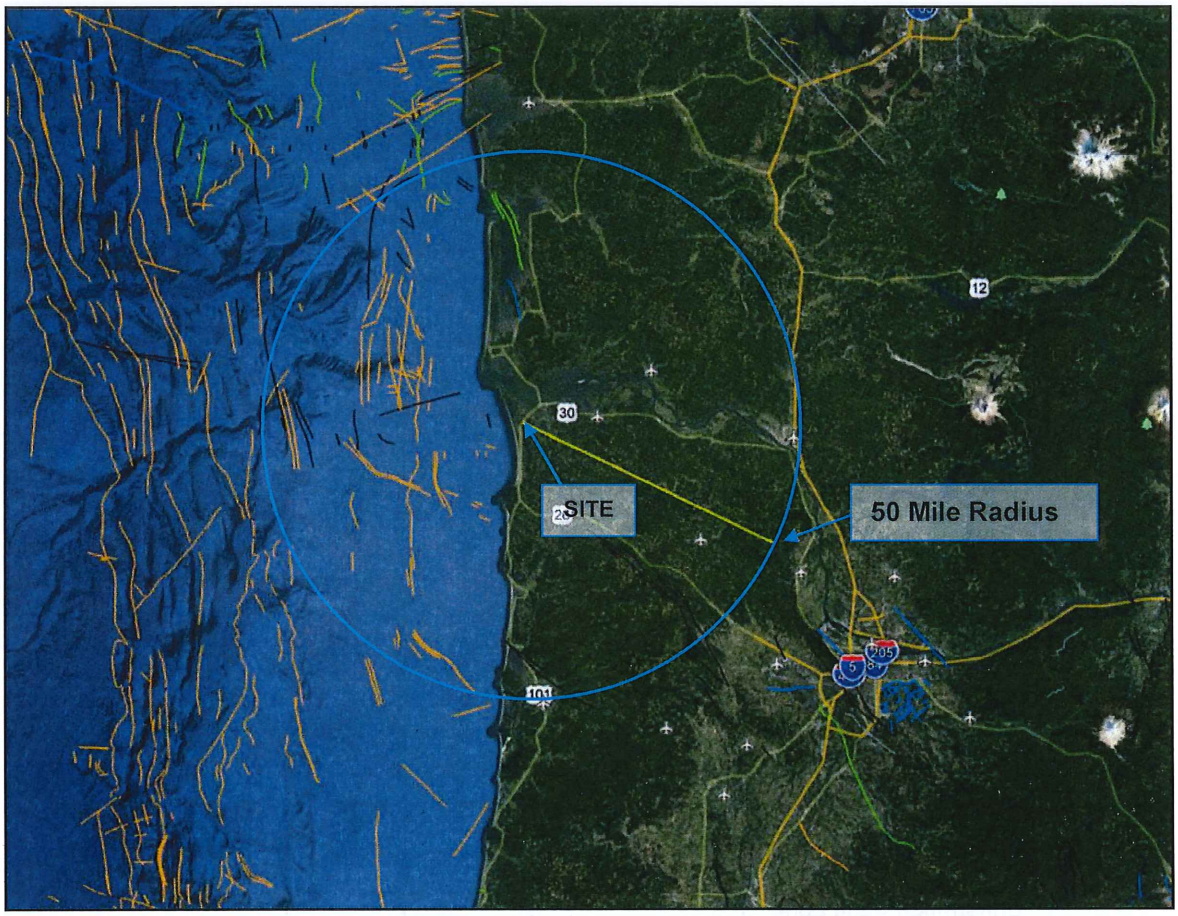


Figure 2: Quaternary Faults.

Oregon since the 1940's, although the density and quality of seismometers was poor for much of that time. Given the above limitations, there are large uncertainties in predicting future earthquakes based on past history. It is very likely that we don't have a complete understanding of earthquake location, frequency and magnitude that could affect this site.

Based on the limited database of actual earthquake records, it is our opinion that the probabilistic data available from the 2014 USGS national probabilistic seismic hazard model is a good measure of likelihood of earthquake activity in the future. The USGS website (https://earthquake.usgs.gov/hazards/interactive/) provides a deaggregation of the principal sources that contribute to seismic hazard at a specified site. Appendix G shows the deaggregation for seismic hazards that could impact this site. The deaggregation charts indicate the most influential seismic activity is located within about 35 km of the site. The larger seismic activity (i.e. higher magnitude) is interpreted to be associated with the Cascadia Subduction Zone. It is our opinion that Cascadia Subduction Zone earthquakes are the most likely major earthquake threats for the project site considering the 2,475 year event.

3.8.2 Design Earthquake Recommendations

As discussed in this report, the site has potentially liquefiable soils which would put the Site Class as F. However, there is a code allowance that permits use of the Site Class determined in accordance with Table 20.3-1 of the ASCE 7-10 if the building's fundamental period is not greater than 0.5 seconds. The general assumption is that a structure's fundamental period may be estimated based on multiplying 0.1 seconds times the number of stories. Given that the tallest structure suggested for the site is a 2-story building, we estimate the fundamental building period will be no greater than about 0.2 seconds. Therefore, we recommend a Site Class D (i.e. stiff soil profile) for this site when considering the average of the upper 100 feet of soil. The Structural Engineer should determine the actual fundamental building period and notify us if it is greater than 0.5 seconds.

Inputting our recommended Site Class as well as the site latitude (46.13941) and longitude (-123.91971) into the USGS Seismic Design Maps Application (updated March 19, 2018) computer program, we obtained the seismic design parameters shown in Table 4 below. The return interval for these ground motions is 2 percent probability of exceedance in 50 years.

Table 5: Summary of Selected Earthquake Records

Earthquake	Recording Station	Magnitude	Distance (km)	Measured Peak Horizontal Ground Acceleration (g)
Loma Prieta (shallow crustal event)	Anderson Dam Downstream, 360, USGS Station #1652)	6.9	Approx. 30	0.26
Northridge, 1/17/94 (shallow crustal event)	Montebello Bluff (USC Station)	6.7	45	0.16
Whittier Narrows, 10/1/1987 (shallow crustal event)	CDMG Station 2400	5.9	14	0.61
El Salvador, 1/13/2001 (deep subduction event)	Observatorio	7.6	91	0.42
Michoacan, Mexico, 9/19/1985 (deep subduction event)	La Union	8.1	15	0.17
Valparaiso, Chile, 3/3/1985 (deep subduction event)	U.F.S.M	8.0	101	0.17

Our subsurface model used in SHAKE analysis to develop a site specific response spectrum was based on our SPT boring logs and ReMi test included in Appendices C and F.

Our site response analysis was completed using Shake2000 computer software by Geomotions. The time histories listed in Table 5 above were scaled using Shake2000 in accordance with Section 16.1.3.1 of ASCE 7-10, which states that the ground motions should be scaled such that the average value of the 5 percent damped response spectra for the suite of motions is not less than the design response spectrum for the site for the natural period of the structure (T) ranging between 0.2T and 1.5 T. For this project, we assumed T was about 0.1 seconds.. The scaled 5% damped psuedospectral accelerations for Site Class B are summarized graphically in Appendix H. The scaled 5% damped psuedospectral accelerations were then used to compute the design acceleration response spectra for the Site Class D. Figure 3 below represents the average of the six ground motions and the code based design spectra for Site Class D. The project Structural Engineer may use our calculated site specific response spectra shown in Figure 3 below. Referring to Figure 3 below, for a period less than about 0.8 seconds, the code-based response spectrum should be used. For periods greater than about 0.8 seconds, our site-specific response spectrum may be used. However, where our site-specific response spectrum is used in the structural design, the reduced spectral acceleration is not permitted to be any less than 80 percent of the code-based response spectrum value. For example, at a period of 2 seconds, the code-based spectral acceleration is about 0.3g and our site-specific spectral acceleration is about 0.09 seconds. To

3.9.2 Earthquake Induced Ground Subsidence

Based on the fact that the site is underlain by soft (loose) to medium stiff (medium dense) silty sand and silts with a relatively high ground water table around 3 feet below the existing ground surface, the risk of earthquake induced ground subsidence is considered moderate to high. Given the depth of the potentially liquefiable soils at approximately 3 to 37 feet (B-4), any ground subsidence due to earthquake shaking is anticipated to directly affect the ground elevations at the site (generally non-uniform across the site with high differential settlements). As such, we recommend the use of a deep foundation system to mitigate the anticipated dynamic settlement and the installation of flexible utility connections where the utilities come into the buildings/structures (if the site settles and the building doesn't, utilities could become unusable).

3.9.3 Liquefaction and Lateral Spread Hazard

For liquefaction, please refer to Section 2.6. Since the site does not border a relatively deep waterway and is relatedly flat, we consider the risk of lateral spread at the site to be low. We do not recommend any mitigation measures.

3.9.4 Earthquake-Induced Landslide Hazard

Given the flat site topography, we consider the risk of earthquake-induced landslide hazard at the site to be low. We do not recommend any mitigation measures.

3.9.5 Tsunami and Seiche Hazards

A tsunami, or seismic sea wave, is produced when a fault under the ocean floor shifts vertically, displacing the seawater above it. A seiche is a periodic oscillation of a body of water that results in a change of water levels. Seiche is not considered to be hazards at this site because the site is not adjacent to large body of water. Additionally, tsunami is not considered a hazard, because according to the interactive tsunami evacuation map available via the State of Oregon's Department of Geology and Mineral Industries (http://www.oregongeology.org/gis/) the site is outside of the known tsunami hazard zone, see Figure 4 below.

4.0 EVALUATION AND FOUNDATION RECOMMENDATIONS

4.1 Geotechnical Discussion

The primary factors influencing the proposed construction include:

1. **The presence of potentially liquefiable soils.** Our analysis of the subsurface soils included a detailed liquefaction analysis using Liquefy Pro. We have determined that the soils encountered in our explorations between approximately 3 and 37 feet are potentially liquefiable. This liquefaction could result in as much as 6 to 6.5 inches of total dynamic settlement. We estimate differential settlement could be as much as 75 percent of the total settlement. We recommend mitigating the liquefiable soils through the installation of a deep foundation system. Floor slabs should also be structural (i.e. not supported by the subgrade). Any structure not supported on a deep foundation system should be considered sacrificial, as it may not be able to withstand greater than normal total and differential dynamic settlement cause by liquefaction during an earthquake.

   Additionally, given the depth to the potentially liquefiable soils (3 feet), there is a high risk that any structures founded upon typical shallow foundations could experience a temporary loss of soil support during a design level earthquake. This means that the structure could literally sink into the ground, preventing access both to and from the structure.

2. **Fine-grained soils in a wet condition near the surface in the planned parking areas and drive lanes.** Based on our SPT borings, it appears that the near surface soils are typically wet—the strength of the soils typically ranged from medium stiff to stiff in upper 2.5 feet. Fine-grained soils which have moisture contents more than about 2 percentage points above the optimum moisture are generally prone to softening when dynamic loads such as those generated by the wheels of construction equipment are imposed upon them even if the soils exhibited substantial strength in an undisturbed state. After disturbance, these fine-grained soils typically rut and deflect significantly and do not provide adequate subgrade support for floor slabs, foundations, pavements, or fill placement. This may result in the need for deep undercutting and replacement of the disturbed soils. The owner may want to consider an allowance in the construction budget to cover this condition.

3. **The presence of uncontrolled fill.** As stated in Section 2.1, pieces of charcoal were found within the fine-grained soils up to a depth of 31 feet bgs in B-3 – this is not uncommon for coastal sites. Additionally, signs of tilling were found in B-4 through B-6, which could indicate past grading activities took place on site. While no identifiable deep fill or tilling zones were encountered, it should be noted that any structures bearing on fill or tilled soil may encounter excessing differential settlement. The deep foundation system proposed to mitigate the liquefiable soils, will also prevent the development from issues associated with uncontrolled fill and loose tilled soil.

slopes will need to be protected from erosion during the wetter winter months with either grass seeding or jute mat.

Finally, since we anticipate that the fine-grained soils on this site will be difficult to work with during wet weather conditions, the contractor may also need to construct temporary construction roads.

4.3 Structural Fill

Structural fill materials should be free of organic or other deleterious materials, have a maximum particle size generally less than 3 inches, be relatively well graded, and have a liquid limit less than 45 and plasticity index less than 25. In our professional opinion, the on-site soils would not be appropriate for use as structural fill as their liquid limit is in excess of 45. However, they could be used as structural fill if chemically amended through the addition of cement.

We recommend fill be moisture conditioned to within 3 percentage points below and 2 percentage points above optimum moisture as determined by ASTM D1557 (Modified Proctor). If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Fill should be placed in a relatively uniform horizontal lift on the approved subgrade. Each loose lift should be no greater than about 1-foot. The type of compaction equipment used will ultimately determine the maximum lift thickness. Structural fill should be compacted to at least 95 percent of Modified Proctor maximum dry density as determined by ASTM Designation D 1557. Each lift of compacted engineered fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts. The fill should extend horizontally outward beyond the exterior perimeter of buildings and pavement at least 5 and 3 feet, respectively.

4.4 Preliminary Foundation Recommendations

As stated above, the recommendations should be considered preliminary until more development plans are known. However, based on the results of our field work, laboratory evaluation and our engineering analysis, it is our opinion that the proposed resource center and supplemental structures should be supported on a deep foundation system that penetrates into the underlying soft rock stratum. Mudstone was first encountered at depths ranging from 19 feet to 35 feet in our explorations. It should also be noted that the competency of the rock was found to be highly variable, making it difficult to anticipate the pile lengths needed.

We considered a number of deep foundation options, including driven steel pipe piles, driven steel H-piles, driven grout piles, reinforced concrete drilled piers, and reinforced concrete auger-cast piles. We have assumed since driven steel piles are likely the least expensive, and the site is not located within a residential area, that these would be the type of pile likely considered. **At this point we are assuming that the project is proceeding with an open-ended, driven steel pipe pile option, in particular a 12-inch pipe pile due to the fact that pipe piles are less expensive than H-piles and will have a higher axial capacity considering the on-site soils. Note that if the building will have relatively high lateral loading requirements, then H-piles may be more efficient than pipe piles.**

4.6 Pavement Recommendations

The following pavement recommendations are presented as preliminary for your consideration. The Civil Engineer for the project may have more traffic and project design data available than is presently known and may wish to modify and refine our pavement section thickness recommendations. We are available, upon request, to provide a more detailed pavement design if more definitive traffic plans are available. Additionally, this design is based off of an assumed CBR value; as indicated above, a project specific CBR test is in progress and the pavement design detailed below will be altered to reflect those results once the test has been completed. The updated design will be submitted under a different cover.

The thickness recommendations presented below are considered typical and minimum for the assumed parameters. We understand that budgetary considerations sometimes warrant thinner pavement sections than those presented. However, the client, the owner, and the project principals should be aware that thinner pavement sections might result in increased maintenance costs and lower than anticipated pavement life.

Prior to placing the base or leveling course, paving surfaces should be prepared as discussed in Section 4.2 of this report. Areas found to be soft by the Geotechnical Engineer during the proof-rolling activities (i.e. deflecting/rutting more than about 1-inch under the weight of the truck) after the native soils have been recompacted, should be overexcavated and replaced with structural fill as defined by Section 4.3 of this report.

Asphalt pavement base course material should consist of a well-graded, 1½-inch or ¾-inch-minus, crushed rock, having less than 5 percent material passing the No. 200 sieve. The base course and asphaltic concrete materials should conform to the requirements set forth in the latest edition of the State of Oregon's Standard Specifications for Highway Construction. Base course material should be moisture conditioned to within ± 2 percent of optimum moisture content, and compacted to a minimum of 95 percent of the material's maximum dry density as determined in accordance with ASTM D1557 (Modified Proctor). Fill materials should be placed in layers that, when compacted, do not exceed about 8 inches. Asphaltic concrete material should be compacted to at least 91 percent of the material's theoretical maximum density as determined in accordance ASTM D2041 (Rice Specific Gravity).

Based on the results of a CBR test completed for this project, we have assumed the subgrade soils will be prepared to a California Bearing Ratio (CBR) of at least 4. This CBR value is based on the assumption that the roadway beds will be prepared as discussed above. We have also assumed a pavement life of 20 years, a terminal serviceability of 2.0 (poor condition), and traffic loading of 5 ESALS for car parking and 40 ESALS for the main drive lanes. The project Civil Engineer should review our traffic loading assumptions and notify us if they need to be revised. Making these assumptions, it is possible to use a locally typical "standard" pavement section consisting of the following:

5.0 CONSTRUCTION CONSIDERATIONS

EEI should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. EEI cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the foundations if not engaged to also provide construction observation for this project.

5.1 Moisture Sensitive Soils/Weather Related Concerns

The upper soils encountered at this site are expected to be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

5.2 Drainage and Groundwater Considerations

Water should not be allowed to collect in the foundation excavations or on prepared subgrades for the floor slab during construction. Positive site drainage should be maintained throughout construction activities. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff.

The site grading plan should be developed to provide rapid drainage of surface water away from the building areas and to inhibit infiltration of surface water around the perimeter of the building and beneath the floor slab. The grades should be sloped away from the building area. Roof and driveway runoff should be piped (tightlined) to either an approved system or to an existing storm sewer. Alternately, it can be discharged upon a paved surface adjacent to the building where the water is allowed to sheet flow away from the building.

5.3 Excavations

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document and subsequent updates were issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of

6.0 REPORT LIMITATIONS

As is standard practice in the geotechnical industry, the conclusions contained in our report are considered preliminary because they are based on assumptions made about the soil, rock, and groundwater conditions exposed at the site during our subsurface investigation. A more complete extent of the actual subsurface conditions can only be identified when they are exposed during construction. Therefore, EEI should be retained as your consultant during construction to observe the actual conditions and to provide our final conclusions. If a different geotechnical consultant is retained to perform geotechnical inspection during construction then they should be relied upon to provide final design conclusions and recommendations, and should assume the role of geotechnical engineer of record.

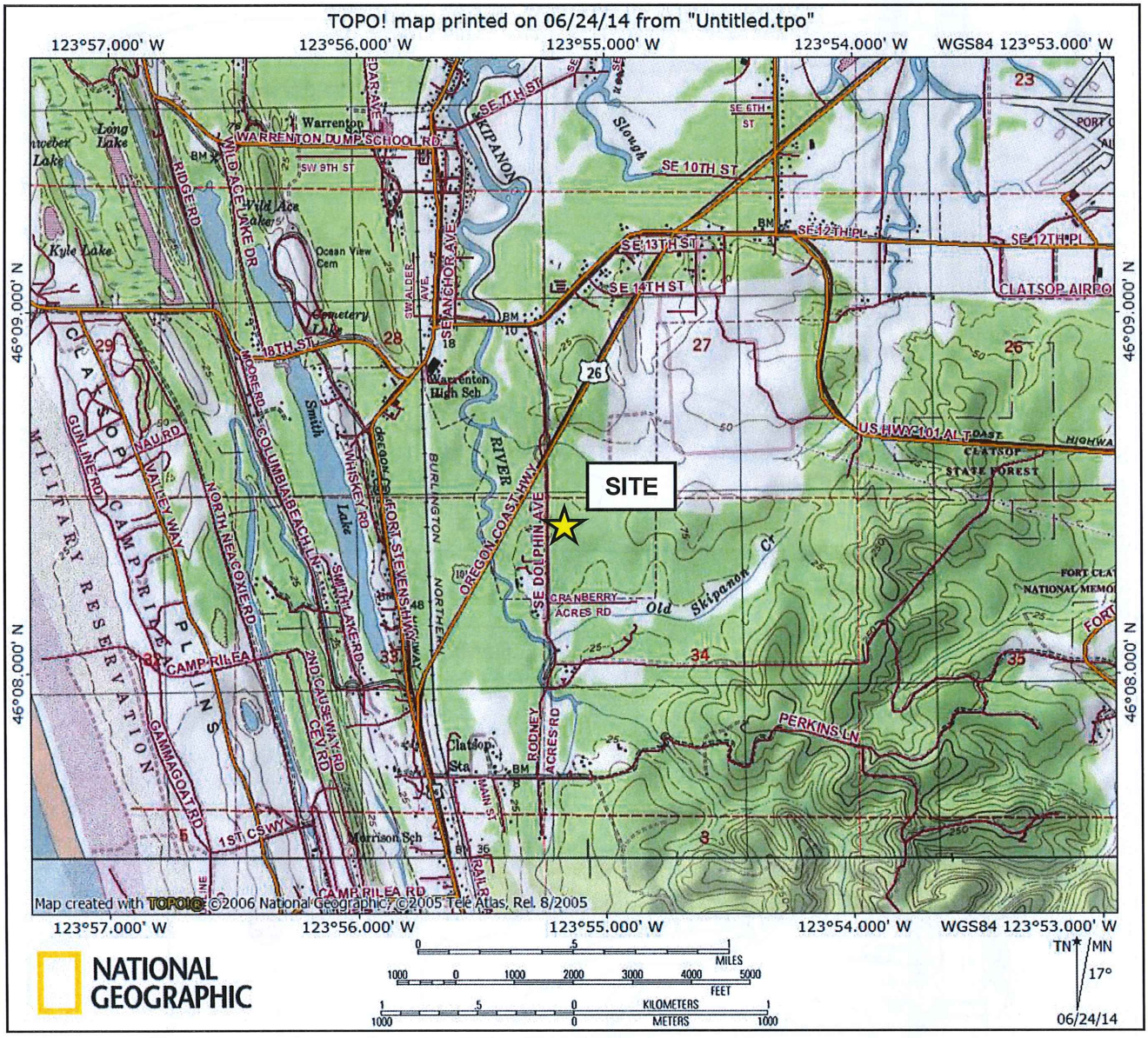
The geotechnical recommendations presented in this report are based on the available project information, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform EEI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. EEI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Once construction plans are finalized and a grading plan has been prepared, EEI should be retained to review those plans, and modify our existing recommendations related to the proposed construction, if determined to be necessary.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

This report has been prepared for the exclusive use of Northwest Natural for the specific application to the proposed Northwest Natural Resource Center to be constructed on the vacant lot north of 2320 Southeast Dolphin Avenue. EEI does not authorize the use of the advice herein nor the reliance upon the report by third parties without prior written authorization by EEI.

APPENDIX A – SITE LOCATION PLAN



Earth Engineers, Inc.	**Proposed Northwest Natural Resource Center** **Vacant Lot North of 2320 Southeast Dolphin Avenue** **Warrenton, Clatsop County, Oregon** **Tax Lot 2300 – Range 8, Township 10W, Section 34**	**Report No. 18-113-1** **July 13, 2018**

APPENDIX C: BORING B-1

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 33.5 feet msl
DATE DRILLED: 6/20/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)								
			ELASTIC SILT (MH) - tan with rust mottling, wet, stiff								
	SPT-1			2 3 3	9				38	2.50	
5			becomes wet with some sand	2					41	1.25	
	SPT-2		**SILTY SAND (SM)** - tan with rust mottling, wet, loose	2 3	7				38		
	SPT-3		becomes medium dense	2 5 3	12				30		
10											
	SPT-4			4 3 4	10				44		
			ELASTIC SILT (MH) - gray, wet, very soft, with sand								soft drilling
15											
	SPT-5			0 0 0	0				64	<0.25	
20			**POORLY GRADED SAND (SP)** - gray, wet, loose	2					61		
	SPT-6		**MUDSTONE** - gray, laminated, friable, very soft rock	3 13	23				37	2.50 4.50+	hard drilling
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-2

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 36 feet msl
DATE DRILLED: 6/20/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	3							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, stiff	4 4	12				54	2.00	
			becomes tan with rust mottling, medium stiff	1							
	SPT-2			2 2	6				50	1.00	
5											
	SPT-3			1 2 3	7				47	1.50	
			SILTY SAND - tan, rust mottled, wet, loose	1							
	SPT-4			2 2	6				35		
10											
	SPT-5		becomes medium dense	3 6 7	19				37		
			ELASTIC SILT (MH) - gray, wet, very soft with sand								soft drilling gray cuttings
15											
	SPT-6			0 0 1	1				65	<0.25	
20											
	SPT-7			1 1 1	3				41		
											End Soft Drilling at 23'
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-3

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 34 feet msl
DATE DRILLED: 6/22/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	2							
	SPT-1		**ELASTIC SILT (MH)** - brown, some roots and wood, some charcoal, crumbly (potentially tilled)	2 3	7				65		
			ELASTIC SILT (MH) - brown, wet, stiff								
	SPT-2			2 4 5	13				55	2.00	
5											
			becomes soft	1							
	SPT-3			2	4				53	1.25	
			some sand at 6'	1							
	SPT-4			0 0 2	3				43	0.50	
10			**SILTY SAND** - tan, rust mottled, wet, medium dense								
	SPT-5			5 6 8	20				33		
			ELASTIC SILT (MH) - gray silt with trace sand, wet, very soft								soft drilling
15											
	SPT-6			0 0 0	0				68	<0.25	
20											
	SPT-7			0 0 0	0				56	<0.25	
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-4

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 39 feet msl
DATE DRILLED: 6/21/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	1							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, stiff (potentially tilled)	3 3	9				85	0.50	
			ELASTIC SILT (MH) - orangeish brown and rust mottled, wet, medium stiff								
	SPT-2			1 3 2	7				56	0.75	
5											
	SPT-3		contains scattered black sand and rust veins, wet, soft	1 1 1	3				98	0.75	
	SPT-4		Becomes tan with rust mottling, medium stiff with sand	0 2 2	6	84			47	0.75	
10											
	SPT-5		**SILTY SAND (SM)** - tan silty sand, rust mottled, wet, loose dark gray at 11'	5 2 2	6	48			45		
15											
	SPT-6		becomes medium dense with some organics	4 4 4	12	31			49		
			ELASTIC SILT (MH) - gray, wet, very soft								soft drilling
20											
	SPT-7			0 0 2	3	90			59	0.00	
											end of soft drilling
			SILTY SAND (SM) - dark gray, wet, medium dense								
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-5

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 39.5 feet msl
DATE DRILLED: 6/20/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	1							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, stiff, with trace roots (potentially tilled)	3 3	9				65	1.50	
			ELASTIC SILT (MH) - brown with tan nodules, wet, medium stiff	1							
	SPT-2		becomes tan with rust mottling at 3.5'	2 3	7				67	1.25	
5											
	SPT-3		some sand, trace charcoal flecks, moist to wet, becomes soft	1 1 2	4				81	0.50	
	SPT-4		becomes medium stiff	2 3 3	9				57	1.25	
10											
	SPT-5		same with 1"-2" lenses of tan/rust silty sand, wet	1 2 2	6				43	0.25	
			SILTY SAND (SM) - dark gray, wet, medium dense, medium grained								soft drilling gray cuttings
15											
	SPT-6			7 9 4	19				35		
20											
	SPT-7		**ELASTIC SILT (MH)** - gray, wet, very soft, trace fine sand	0 0 0	0				58	<0.25	
			becomes more competent								firm drilling
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-6

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 38 feet msl
DATE DRILLED: 6/22/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	2							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, stiff with trace roots (potentially tilled)	2 2	6				54		
			ELASTIC SILT (MH) - brown, wet, medium stiff								
	SPT-2		becomes tan with rust mottling	1 2 3	7				58	1.00	
5											
	SPT-3		becomes soft	1 1 2	4				60	0.75 to 2.00	
	SPT-4		contains a more significant amount of sand, wet at 8.5'	0 0 2	3	84			48	1.00	
10											
	SPT-5			1 2 1	4	63			46	0.75	
15											
	SPT-6		becomes medium stiff	3 2	6			11	34	<0.25	
			ELASTIC SILT (MH) - gray, wet, soft	2					57		soft drilling
20											
	SPT-7		becomes very soft	0 0 0	0	95			64	<0.25	
25											end of soft drilling

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-7

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 38 feet msl
DATE DRILLED: 6/21/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	2							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, stiff with trace roots	3 4	10				51	2.50	
	SPT-2		becomes tan with rust mottling, wet, medium stiff	1 2 2	6				62	0.75	
5	SPT-3			1 2 2	6				49	1.00	
	SPT-4		**SILTY SAND (SM)** - tan with rust mottling, wet, loose	0 2 2	6				46 38		
10	SPT-5		becomes gray	0 1 2	4				48		
15	SPT-6			4 2	4				46	0.00	
			ELASTIC SILT (MH) - gray, wet, soft, with some sand	1					63		soft drilling
20	SPT-7			0 1 1	3				50	<0.25	end soft drilling
			MUDSTONE - gray very soft rock/hard clay, fractured, wet								
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-8

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 37.5 feet msl
DATE DRILLED: 6/21/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick with 1" red bark mulch)	2							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, medium stiff	2 2	6				47	1.50	
			becomes rust mottled.	2						0.75	
	SPT-2			2 3	7				59	to 2.00	
5											
	SPT-3		becomes tan with rust mottling.	1 2 3	7				49	2.00	
	SPT-4		**SILTY SAND (SM)** - tan with rust mottling, wet, loose	1 2 1	4				48	0.75	gray clay in shoe
10			**ELASTIC SILT (MH)** - gray, wet, soft, with sand and some small organics								
	SPT-5			1 1 2	4				46		
			becomes very soft								soft drilling
15											
	SPT-6			0 0 1	1				64	0.00	
											end of soft drilling
20			**MUDSTONE** - gray and brown, very soft rock, weathered, fractured, moist								
	SPT-7			3 12 17	42				41	4.50+	
25											

EARTH ENGINEERS, Inc.

APPENDIX C: BORING B-9

CLIENT: Northwest Natural	EARTH ENGINEERS, INC. REPORT NO.: 18-113-1
PROJECT: Proposed Resource Center	EQUIPMENT: CME 850 Tracked Drill Rig with Mud Rotary
LOCATION: See Appendix B	APPROXIMATE ELEVATION: 35.5 feet msl
DATE DRILLED: 6/21/2018	LOGGED BY: K. Andrieu

DEPTH (ft)	SAMPLE NO.	SAMPLE	SOIL DESCRIPTION	BLOWS PER 6 INCHES	N60 VALUE	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT (%)	POCKET PEN. (t.s.f.)	REMARKS
			TOPSOIL - brown silt with roots (4 inches thick)	2							
	SPT-1		**ELASTIC SILT (MH)** - brown, wet, stiff	2 4	9				44	2.50	
			becomes tan with rust mottling	2							
	SPT-2			3 4	10				40	1.75	
5											
			becomes wet	2							
	SPT-3			3 3	9				44	2.50	
			becomes sandy	1							
	SPT-4			1 2	4				45	0.75	
10											
				0							
	SPT-5			0 3	4				43	0.00	
15											
			ELASTIC SILT (MH) - gray, wet, very soft	0							soft drilling
	SPT-6			0 0	0				66	0.00	
20											
			includes <2" sandy lenses	0							
	SPT-7			0 0	0				60		
											end of soft drilling
			MUDSTONE - gray, very soft rock, fractured, clayey gravel, wet								
25											

EARTH ENGINEERS, Inc.

Earth Engineers, Inc.

APPENDIX D: LAB TEST RESULTS
REPORT OF ATTERBERG LIMITS
ASTM D 4318

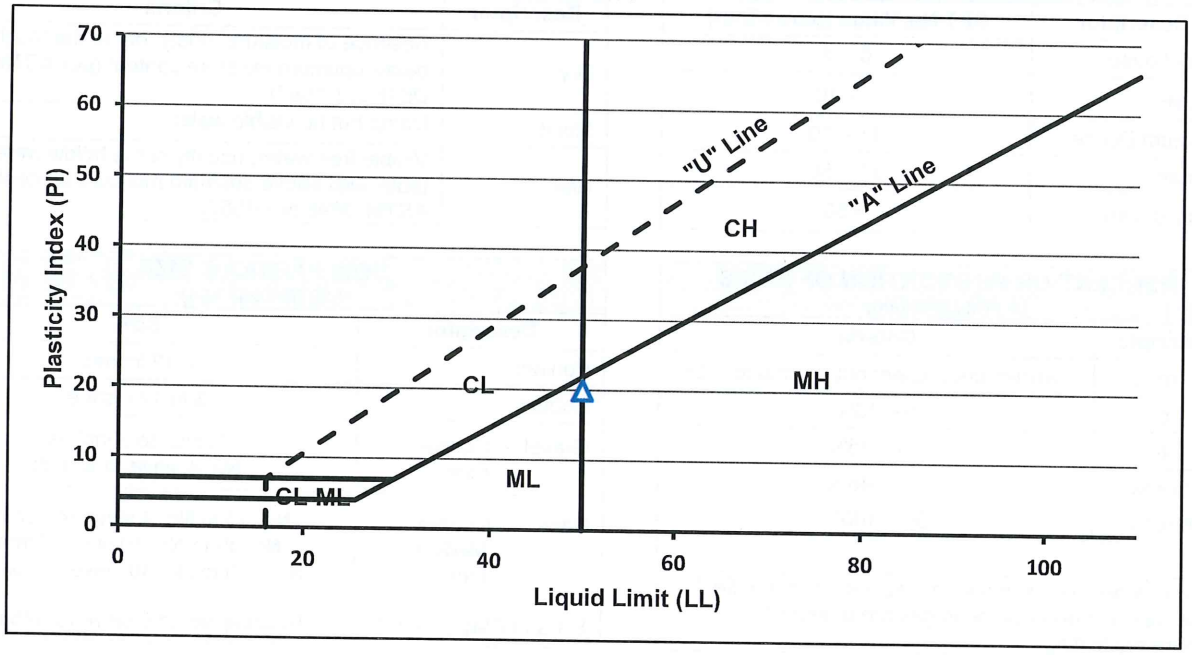
TESTED FOR: Northwest Natural
220 Northwest 2nd Avenue
Portland, Oregon 97209
Attention: Wayne Pipes

PROJECT: Proposed Resource Center
North of 2320 SE Dolphin Ave.
Warrenton, Oregon
Tax Lot 2300 - R8, 10W, Sect. 34

DATE: 7/13/2018

OUR REPORT NO.: 18-113-1

TEST DATA



Location	Depth (feet)	Description (USCS)	Moisture Content, %	% Passing #200 Sieve	Atterberg Limits		
					LL	PL	PI
△ IT-3	5'	Tan elastic silt with rust mottling	42	90	50	30	20

Remarks:

Lab Technician: AB

USCS Classification per ASTM D 2487
Moisture Content per ASTM D 2216
Percent Passing #200 Sieve per ASTM D 1140
Atterberg Limits per ASTM D 4318

Respectfully Submitted,
Earth Engineers, Inc.

Travis Willis

Travis Willis, PE
Project Manager

APPENDIX E: ROCK CLASSIFICATION LEGEND

WEATHERING DESCRIPTORS FOR INTACT ROCK (USBR, 2001)

Descriptor	Chemical Weathering-Discoloration-Oxidation		Mechanical Weathering and Grain Boundary Conditions	Texture and Solutioning		General Characteristics
	Body of Rock	Fracture Surfaces		Texture	Solutioning	
Fresh	No discoloration, not oxidized	No discoloration or oxidation	No separation, intact (tight)	No change	No solutioning	Hammer rings when crystalline rocks are struck
Slightly Weathered	Discoloration or oxidation limited to surface or short distance from fractures; some feldspar crystals are dull	Minor or complete discoloration or oxidation of most surfaces	No visible separation, intact (tight)	Preserved	Minor leaching of some soluble minerals may be noted	Hammer rings when crystalline rocks are struck; body of rock not weakened
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy"	All fracture surfaces are discolored or oxidized	Partial separation of boundaries visible	Generally preserved	Soluble minerals may be mostly leached	Hammer does not ring when rock is struck; body of rock is slightly weakened
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent or chemical alteration produces in-situ disaggregation	All fracture surfaces are discolored or oxidized; surfaces are friable	Partial separation; rock is friable; granitics are disaggregated in semi-arid conditions	Altered by chemical disaggregation such as via hydration or argillation	Leaching of soluble minerals may be complete	Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow; rock is significantly weakened
Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay		Complete separation of grain boundaries (disaggregation)	Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete		Can be granulated by hand; resistant minerals such as quartz may be present as "stringers" or "dikes"

RELATIVE STRENGTH OF INTACT ROCK

Descriptor	Uniaxial Compressive Strength (psi)
Extremely Strong	> 30,000
Very Strong	14,500 – 30,000
Strong	7,000 – 14,500
Medium Strong	3,500 – 7,000
Weak	700 – 3,500
Very Weak	150 – 700
Extremely Weak	< 150

BEDDING SPACING (modified USBR, 2001)

Descriptor	Thickness or Spacing
Massive	> 10 feet
Very thickly bedded	3 to 10 feet
Thickly bedded	1 to 3 feet
Moderately bedded	3-5/8 inches to 1 foot
Thinly Bedded	1-1/4 inches to 3-5/8 inches
Very thinly bedded	3/8 inch to 1-1/4 inches
Laminated	< 3/8 inch

CORE RECOVERY CALCULATION (%)

$$= \frac{\text{length of recovered core pieces}}{\text{total length of core run}} \times 100\%$$

RQD CALCULATION (%)

$$= \frac{\text{length of intact core pieces} > 4 \text{ in}}{\text{total length of core run (inches)}} \times 100\%$$

Earth Engineers, Inc.

ROCK HARDNESS (modified USBR, 2001)

Descriptor	Criteria
Extremely hard	Cannot be scratched with pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows
Very hard	Cannot be scratched with pocket knife or sharp pick; breaks with repeated heavy hammer blows
Hard	Can be scratched with pocket knife or sharp pick with heavy pressure, heavy hammer blows required to break specimen
Moderately hard	Can be scratched with pocket knife or sharp pick with light or moderate pressure; breaks with moderate hammer blows
Moderately soft	Can be grooved 1/16 inch with pocket knife or sharp pick with moderate or heavy pressure; breaks with light hammer blow or heavy hand pressure
Soft	Can be grooved or gouged with pocket knife or sharp pick with light pressure; breaks with light to moderate hand pressure
Very soft	Can be readily indented, grooved, or gouged with fingernail, or carved with pocket knife; breaks with light hand pressure

Report on Shear Wave Refraction Microtremor Analysis (ReMi) SE Dolphin Avenue Warrenton, Oregon

Report Date: June 26, 2018

Prepared for:

Earth Engineers Inc.
2411 SE 8th Ave
Camas, WA 98607

Prepared by:

EARTH DYNAMICS LLC
2284 N.W. Thurman St.
Portland, OR 97210
(503) 227-7659
Project No. 18205

Data reduction is completed in two steps. First, the time versus amplitude seismic records are transformed into spectral energy shear wave frequency versus shear wave velocity (or slowness). The data are graphically presented in what is commonly termed a p-f plot. The interpreter determines a dispersion curve from the p-f plot by selecting the lower bound of the spectral energy shear wave velocity versus frequency trend. The second phase of the analysis consists of fitting the measured dispersion curve with a theoretical dispersion curve that is based upon a model of multiple layers with various shear wave velocities. The model velocities and layer thicknesses are adjusted until a 'best fit' to the measured data is obtained. This type of interpretation does not provide a unique model. Interpreter experience and knowledge of the existing geology is important to provide a realistic solution. The data are presented as one-dimensional velocity profiles that represent the average shear wave velocities of the subsurface layers over the length of the geophone array.

4.0 RESULTS

The approximate location of the ReMi array is shown in Figure 1. The results of ReMi analysis for the ReMi line are summarized in Figure 2. Figure 2 contains the p-f plot, the dispersion curve and the derived velocity versus depth model that best fits the geology of the site and the dispersion curve for the array.

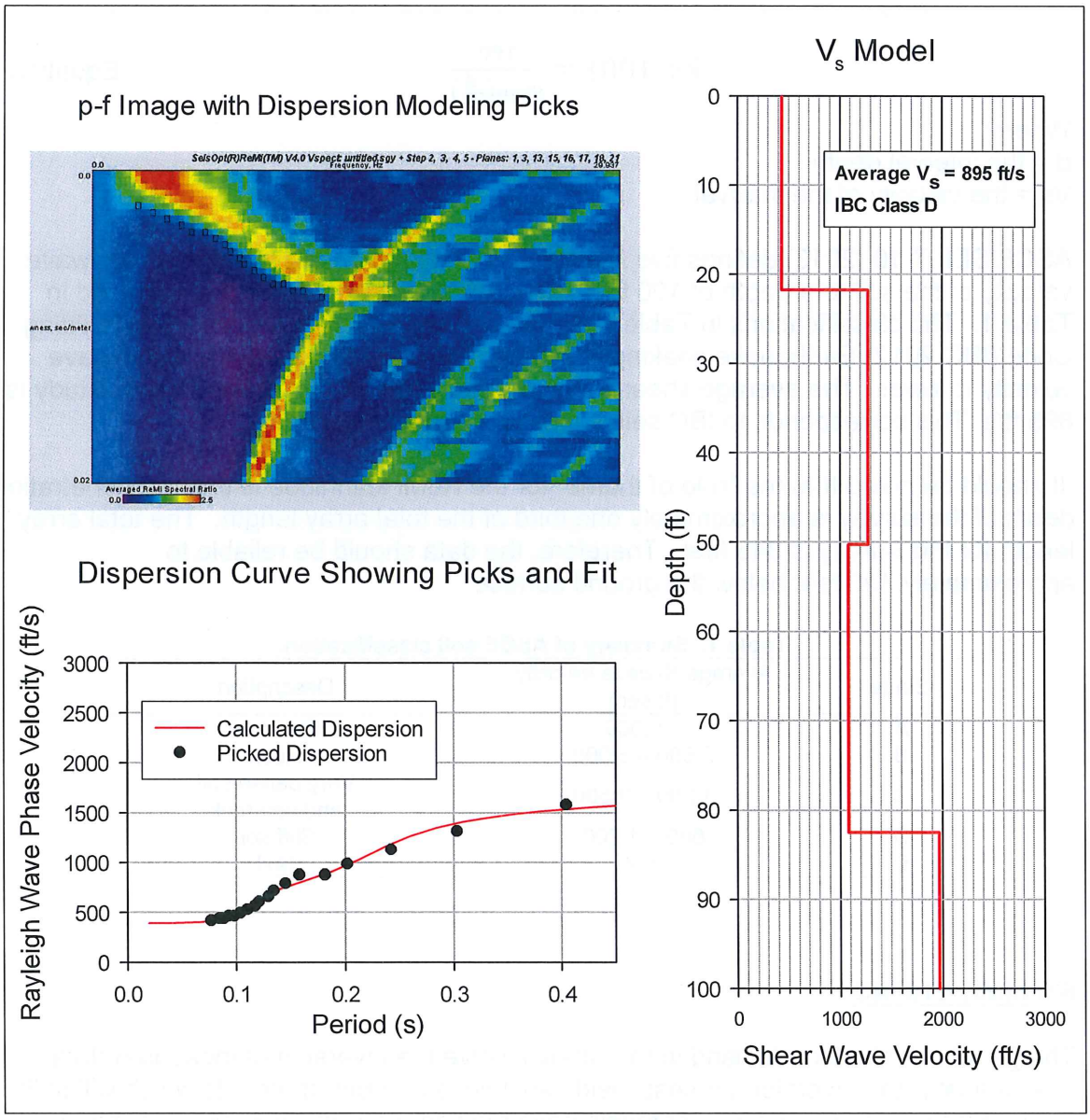


Figure 2. ReMi Data.

5.0 DISCUSSION

Boring data indicate that the site is underlain by silts and sandy silts to a depth of approximately 20 to 30 feet below ground surface (bgs). The silts are underlain by siltstone bedrock. The calculated dispersion fit to the picked dispersion is very good and appears to correlate well with the boring log data. The ReMi model indicates that the site has an average shear wave velocity $V_s(100)$ of 895 ft/s. $V_s(100)$ is calculated using Equation 1.

7.0 REFERENCES

ASCE/SEI 7-10 (2013), Minimum Design Loads for Buildings and other Structures, American Society of Civil Engineers, Structural Engineering Institute, Reston, VA.

Louie, J.N. (2001). "Faster, better: shear-wave velocity to 100 meters depth from refraction microtremor arrays", Bull. Seism. Soc. Am., 91, 347-364.

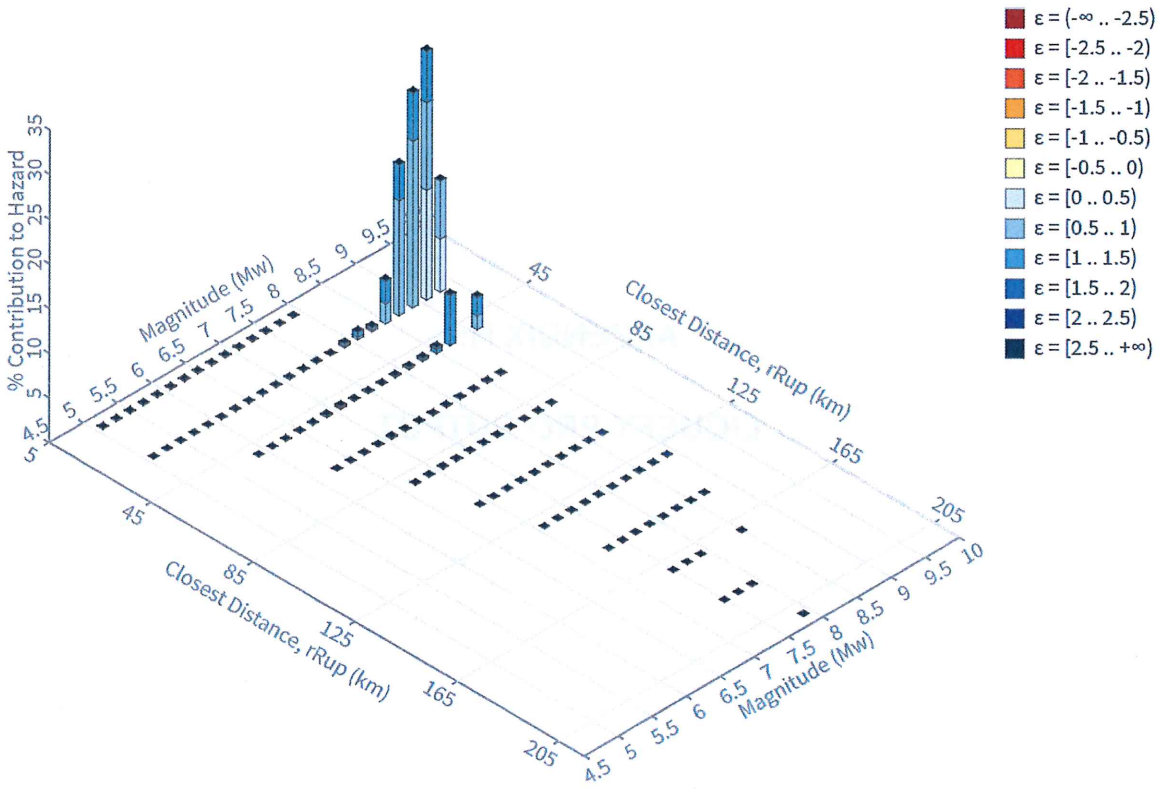
Nazarian, S., and Stokoe II, K.H., (1984), "In situ shear-wave velocities from spectral analysis of surface waves", Proceedings for the World Conference on Earthquake Engineering Vol. 8, San Francisco, Calif., July 21-28, v.3, 31-38.

IBC (2012) 2012 International Building Code , International Code Council, Washington D.C.

RESPECTFULLY SUBMITTED
EARTH DYNAMICS LLC

Daniel Lauer
Senior Geophysicist

APPENDIX G: Seismic Hazard Deaggregation



Summary statistics for, Deaggregation: Total

Deaggregation targets	Recovered targets	Totals	Mean (for all sources)
Return period: 2475 yrs	**Return period:** 2471.0209 yrs	**Binned:** 100 %	**r:** 31.56 km
Exceedance rate: 0.0004040404 yr^{-1}	**Exceedance rate:** 0.00040469103 yr^{-1}	**Residual:** 0 %	**m:** 8.87
PGA ground motion: 0.98115753 g		**Trace:** 0.63 %	**ε_0:** 0.8 σ

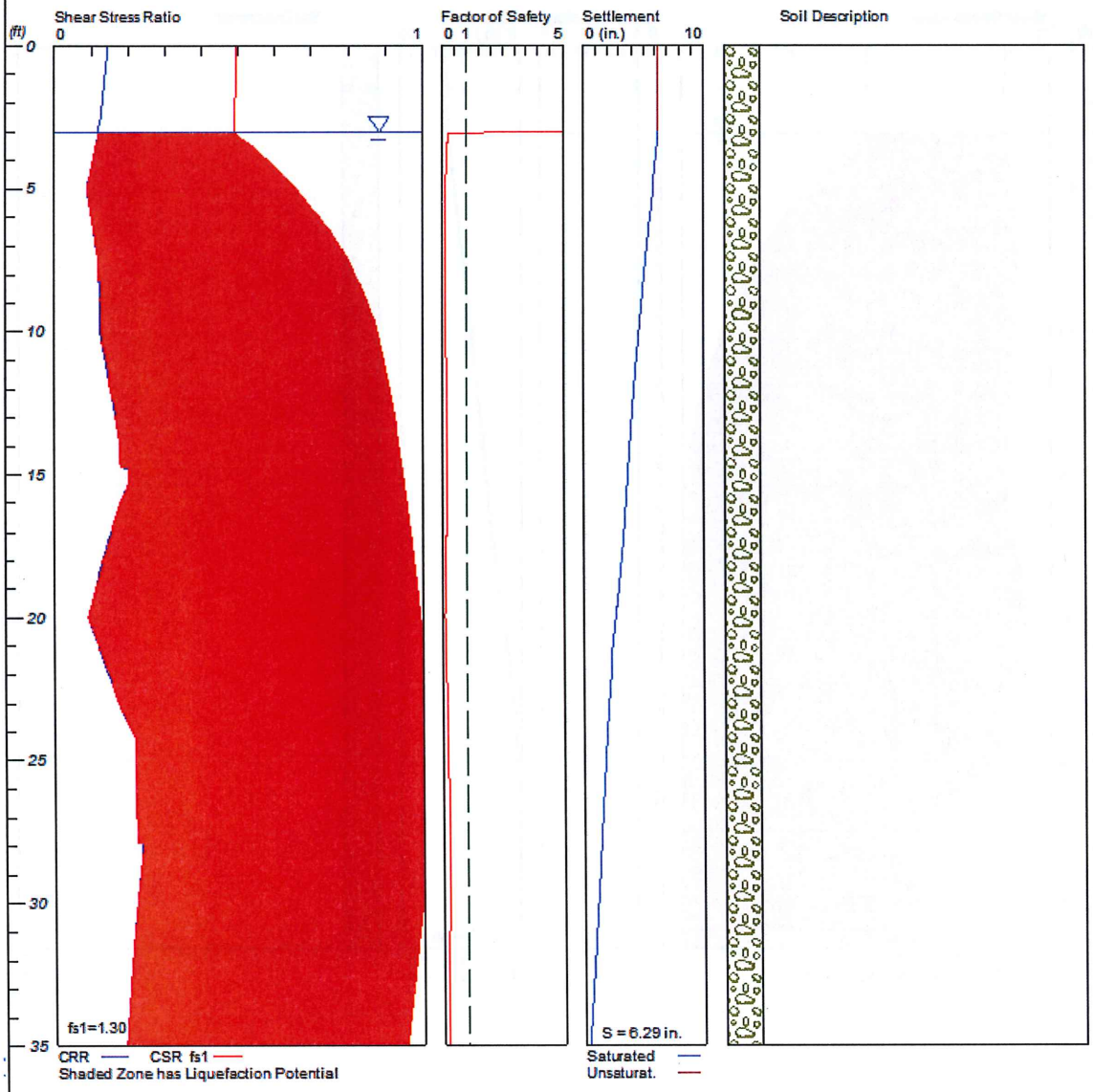
Mode (largest r-m bin)	Mode (largest ε_0 bin)	Discretization	Epsilon keys
r: 29.25 km	**r:** 29.32 km	**r:** min = 0.0, max = 1000.0, Δ = 20.0 km	**ε0:** [-∞ .. -2.5)
m: 9.08	**m:** 8.83	**m:** min = 4.4, max = 9.4, Δ = 0.2	**ε1:** [-2.5 .. -2.0)
ε_0: 0.65 σ	**ε_0:** 0.69 σ	**ε:** min = -3.0, max = 3.0, Δ = 0.5 σ	**ε2:** [-2.0 .. -1.5)
Contribution: 27.85 %	**Contribution:** 18.67 %		**ε3:** [-1.5 .. -1.0)
			ε4: [-1.0 .. -0.5)
			ε5: [-0.5 .. 0.0)
			ε6: [0.0 .. 0.5)
			ε7: [0.5 .. 1.0)
			ε8: [1.0 .. 1.5)
			ε9: [1.5 .. 2.0)
			ε10: [2.0 .. 2.5)
			ε11: [2.5 .. +∞]

LIQUEFACTION ANALYSIS

NW Natural Resource Center

Hole No.=B-4 Water Depth=3 ft Surface Elev.=39

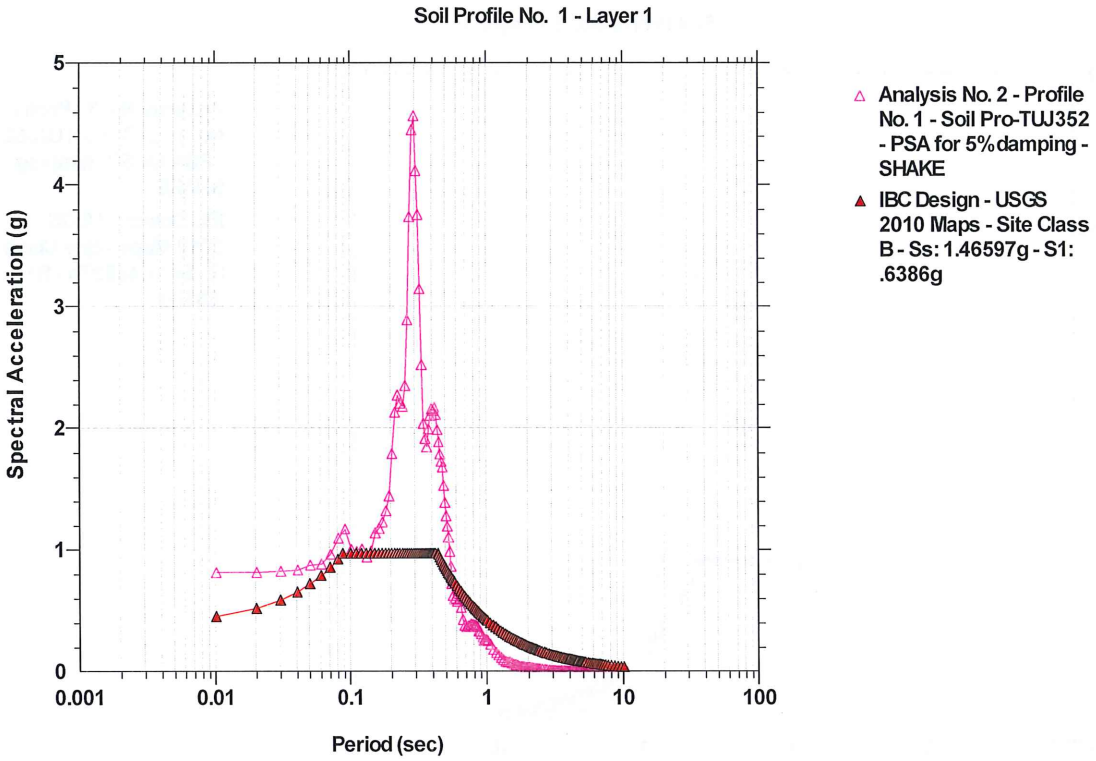
Magnitude=8.5
Acceleration=0.588g



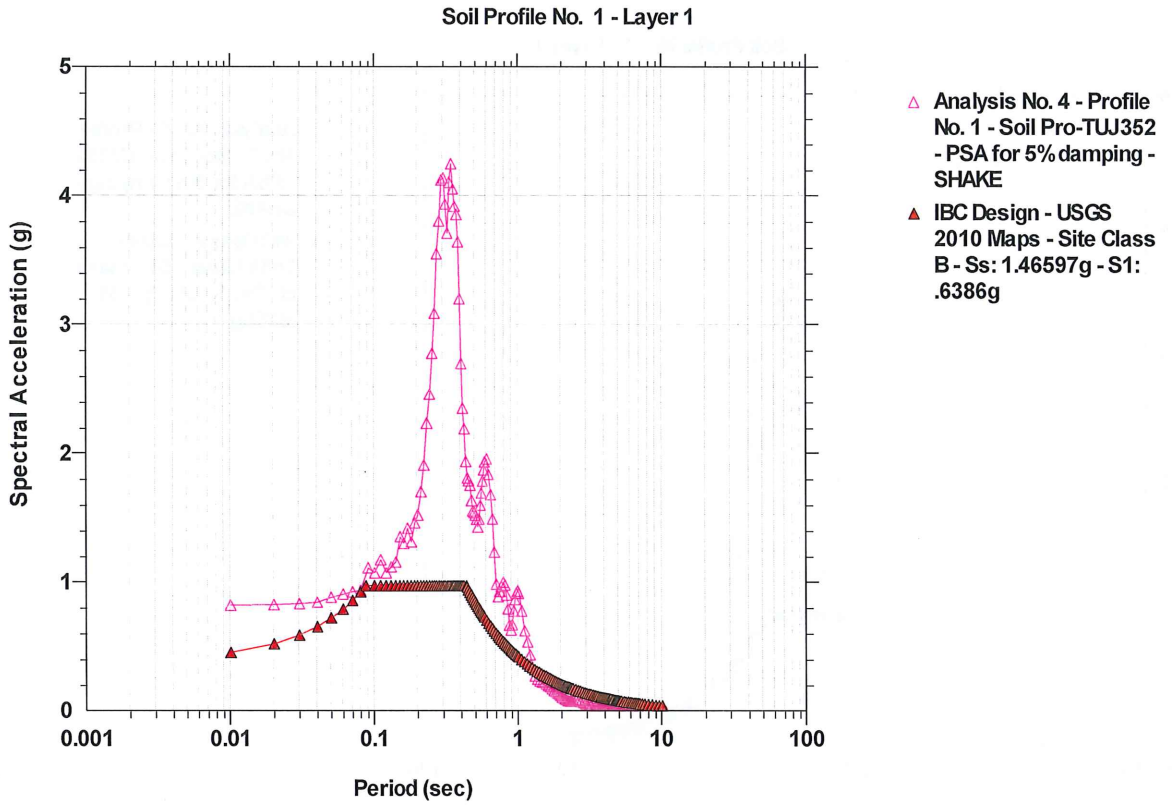
APPENDIX I:

SCALED 5% DAMPED PSUEDOSPECTRAL ACCELERATION (PSA) SPECTRA

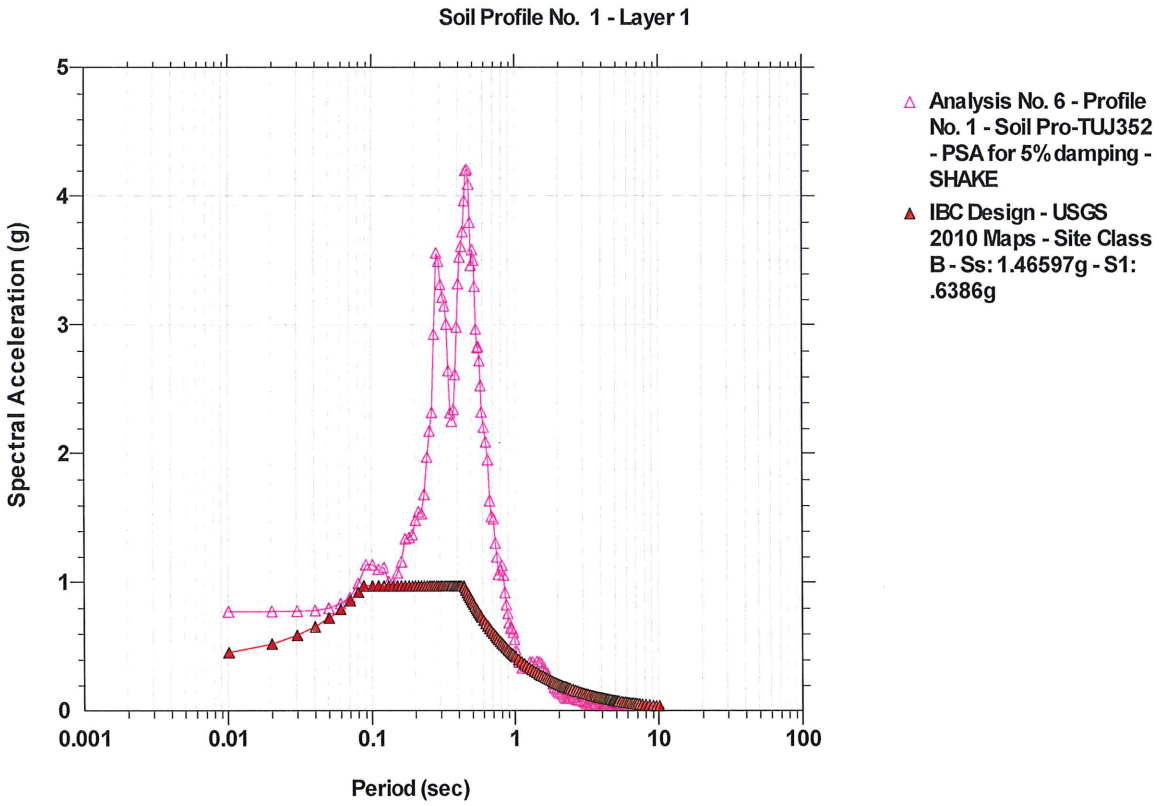
2. Northridge (scaling multiplication factor: 1.35)



4. El Salvador (scaling multiplication factor: 0.95)



Valparaiso (scaling multiplication factor: 1.55)



NWN WARRENTON RESOURCE

Traffic Profile

SPECIALTY TRADE CONTRACTOR – NO CUSTOMERS

PROPOSED RESOURCE CENTER

6 WORKERS X 4 TRIPS / DAY = 24 TRIPS

3 WORKERS X 2 TRIPS / DAY = 6 TRIPS

TOTAL = 30 TRIPS / DAY

...

NW NATURAL WARRENTON RESOURCE CENTER

SITE PLAN DESIGN REVIEW APPLICATION
TYPE III

EXHIBIT H

PRE-APPLICATION MEETING NOTES

LRS ARCHITECTS
720 NW DAVIS STREET • SUITE 300 • PORTLAND, OREGON 97209
503.221.1121 • WWW.LRSARCHITECTS.COM

May 20, 2020

To: Mary Fierros Bower, Project Manager, LRS Architects
From: Kevin A. Cronin, AICP, Assistant City Manager/Community Development Director
Re: Pre-application Conference Notes | NW Natural Offices/Service Center | SE Dolphin Ave

The purpose of this memo is to summarize the notes and discussion of a pre-application conference held on May 13, 2020 at City Hall and online through Zoom. The subject property is 5.32 acres, vacant, and with direct access to SE Dolphin adjacent to the new SE Warrior Way. The area is zoned for General Industrial (I-1). The proposed use of a utility facility is consistent with the zone. The facility will not have customer or general public access. Future development would require extension of city utilities and improvement of the SE Dolphin frontage. The following comments were discussed at the meeting.

In general, the proposed layout of the offices, warehouse, parking, service bays, and location of off street parking conforms to the Code. Please provide percentages of all required standards such as parking and landscaping, and buildings.

The final layout will be evaluated using the site design review standards and applicable criteria identified below:

Warrenton Municipal Code Chapters & Sections:

- I-1 General Industrial Zone Development Standards (16.60.040)
- Design Standards: Access & Circulation (16.120)
- Design Standards: Landscaping, Street Trees, Fences, and Walls (16.124)
- Design Standards: Vehicle & Bicycle Parking (16.128)
- Design Standards: Clear Vision Areas (16.132)
- Public Facilities Standards (16.136)
- Stormwater & Surface Water Management Standards (16.140)
- Site Design Review Application & Review Procedures (16.212)
- Large Scale Development (16.192)
- A public facilities impact study is required for Type 3 applications. A preliminary stormwater report is required. Applicant is encouraged to coordinate public improvements with Warrenton School District's new campus.

- *Development Standards:* Setbacks, lot coverage, height, and buffering standards are found in the General Industrial Zone.

- *Commercial Design Standards:* City staff is developing revised design standards for new commercial/industrial buildings that will apply if the standards are adopted as drafted. However, there is no immediate timeline or deadline for adoption.

- *Streets:* A half street improvement is required on SE Dolphin. There are no other public streets to connect directly to unless SE Warrior Way becomes available. Minimum access standard for spacing from SE Warrior Way is 25 feet. Driveway approaches and pedestrian access standards are located in Section 16.120. At a minimum, a crosswalk is required across the driveway approach.

- *Landscaping*: Street trees are required on SE Dolphin. New plants are non-invasive and all invasives shall be removed.

- *Parking:* The off street parking standard for this proposal is: *1 space per 2 employees on the largest shift, plus 1 space per company vehicle; a minimum of 2 spaces is required.* There is no maximum required. There are also reduction standards to allocate land for other purposes. Fleet only parking can be designated separately from day to day employee parking. Bike parking is required. Please refer to specific design standards.

- *Procedure*: The site design review will be reviewed as a Type III quasi-judicial application which can be found in WMC 16.208.050. After completeness, agency and public notice will be submitted by the City and a public hearing scheduled before the Planning Commission. The performance standard for the Department is 6-8 weeks for a significant application of this nature.

- Fire and Public Works Department comments, if any, are delivered separately.
- If a temporary construction trailer is needed, a temporary use permit can be processed concurrently with site design review.
- A sign permit is required for any new signage and can be applied for separately from site design review.
- As new information is provided or learned independently, additional studies may be required.

City staff is committed to streamlining the development review process to support the economic development and redevelopment objectives of the area and looks forward to seeing the revisions requested.

Written responses to the pre-application notes are required as part of the submittal and completeness review checklist that was provided via email.

If you have any additional questions, please contact me.

Estimate of Land Use Fees & SDCs

Land Use Fees

Site Design Review:	$ 750
Temporary Use Permit	$ 300
Total	**$ 850**

System Development Charges Estimate

SDC estimates are provided as a courtesy and for project budget purposes only. Actual amounts are determined at building permit stage.

Water (1 inch meter)	$3,264
Sewer	$3,262
Stormwater (108,136 SF impervious)	$8,381
Transportation (General Office)	$10,081
Total	**$24,988**

Commercial development is not assessed for Parks SDCs.

Public Works Department

Pre-Application Memorandum

To: Kevin Cronin, Community Development Director
From: Collin Stelzig, Public Works Director
Cc:
Date: May 13, 2020
Re: NW Natural PEMB Resource Center- SE Dolphin Avenue - 810340002300

Public Works understands that a new commercial development is proposed on Tax Lot 810340002300. With this information, public works staff has provided the following items that will need to be addressed in your planning documents and design documents:

1. The developer is required to follow the City of Warrenton Development Standards. These standards can be found in Title 16 of the Warrenton Municipal Code. Please provide documentation showing how this development will meet that standards set forth in the development code. Below is a link to the Development Code http://qcode.us/codes/warrenton/view.php?topic=16&frames=on
2. The developer must follow the City's Water and Sewer Regulations. These regulations are included under Title 13 of the Warrenton Municipal Code. Please provide documentation showing how this development will meet that standards set forth in the development code. Below is a link to the Title 13 of our Code: http://qcode.us/codes/warrenton/view.php?topic=13&frames=on
3. The developer is required to follow the Engineering Standards & Design Criteria Manual. Please provide documentation showing how the development meets the standards set forth in this manual. This manual can be found at the http://www.ci.warrenton.or.us/publicworks/page/engineering-specifications-design-guide
4. Sewer services for commercial projects shall be a minimum of 6" diameter.
5. Water meter(s), the kind or make of said meter(s) to be approved or designated by the Public Works Department and service connections will be installed by the owner/contractor. Long water services to water meters will not be allowed. Water meters and backflow devises shall be installed as close to the existing water main as possible.
6. All commercial property shall have a backflow device at the meter for premise isolation.

7. Street lights are required for all new developments. Show proposed street light locations on planning documents.
8. Please work with the Fire Chief to determine appropriate Fire hydrant spacing for this development.
9. All on-site driveways, parking areas, aisles and turn-a-rounds shall have on-site collection or infiltration of surface waters to eliminate sheet flow of such waters onto public rights-of-way and abutting property. Surface water facility plans shall be prepared by a qualified person and constructed in accordance with City standards. Provide documentation that the existing stormwater system is designed to have adequate capacity for this development.
10. There is an advanced financing agreement for connection to the pump station which may require contribution.
11. Half street improvements with sidewalks are necessary on the frontage of SE Dolphin Avenue.
12. All street improvements will need to meet City standards
13. All non-street access routes will need to be a minimum of 24' for garbage truck access. Fire Department may require additional width.
14. Provide estimated water and sewer flows for the proposed development with planning documents.
15. The City has design standards for refuse enclosures that include the required turning radius and access standards. The City will need a key code or key to access the refuse location if located behind a locked gate.
16. Both fuel area and wash area will need to be completely covered and all water entering the sewer system will need to be treated before entering the public sewer system. In addition, the property owner will be required to apply for a discharge permit for each location. The discharge permit will include discharge limits and required testing.

Answer to Applicants Engineering Questions:

1. There is no water sleeve crossing SE Dolphin Avenue
2. A stormwater report will be required as part of this project. The outfall may be riprap, but it must be designed for the calculated flow and velocity to prevent erosion.
3. Sewer laterals will be constructed as part of the wastewater improvements on SE Dolphin Avenue. The developer should look into the City's advanced financing of public improvements in our municipal code. This code section can be found here: http://qcode.us/codes/warrenton/view.php?topic=3-3_16&showAll=1&frames=on . This code section provides a way for the developer to be reimbursed as other properties connect to the new sewer system. We also suggest that the developer coordinate with the Warrenton School District as they are in the process of designing this same sewer line. This would be a good time to discuss cost sharing for this sewer main with the school.
4. Half street improvements are necessary on your side of the SE Dolphin Avenue. The improvements will need to line up with the three existing catch basins and will include street lights.
5. A stormwater report is necessary for this development. Stormwater detention may not be necessary if downstream infrastructure can safely pass 100-year flows.

6. It is not clear what this item is asking.
7. Fire hydrant locations will be determined by the fire department.

THE CITY OF WARRENTON
OREGON
P.O. BOX 250 ▪ WARRENTON, OR 97146-0250 ▪ OFFICE: 503.861.2233 ▪ FAX: 503.861.2351

July 16, 2020

Mary Fierros Bower
LRS Architects
720 NW Davis Street, suite 300
Portland, OR 97209
mfierrosbower@lrsarchitects.com

Waynae Pipes
NW Natural Gas
250 SW Taylor Street
Portland, OR 97204-3038
Wayne.pipes@nwnatural.com

RE: NWN Warrenton Resource Center (File: SDR 20-05)

I have reviewed the above application for a Type 3 site design review and find all the required components included. The application is complete and the City can initiate the public notice and formal review. Please recognize that there may be requests for additional information as we review this application.

A hearing with the Planning Commission is tentatively scheduled for August 13, 2020, at 6:00 PM in Warrenton City Hall.

I look forward to working with you on this project.

Sincerely,

Mark Barnes
Interim City Planner

Additional Questions Re-app May 13

PRE-APPLICATION QUESTIONS

NW Natural Warrenton Resource Center

DATE

May 1, 2020

PROJECT

218113

NWN Warrenton

Resource Center

Building Questions

1. Building Permit Timeframe
   a. Site Improvements - ENG REVIEW 1ST, GRADE/FIL - 2 WKS
   b. Building - 10 WORKING DAYS FOR COMMENTS.
2. Project applicable building codes? 2019 OSSC OR 2018 IBC
3. Can the pre-engineered metal buildings be submitted as a deferred submittal? - BLDG LOADS ON FOOTINGS INCL. W/ STRUCT CALC DEFERRED FEES - # 750 EA
4. Review Gas / Diesel fueling tank code requirements NFPA 70, 30, 30A. OFC CH 57 & 23
5. Options to phase the project GRADE/FIL/FOUNDATION ONLY AVAILABLE -

Zoning Questions

1. The property is zoned I1 "general industrial" and the use is an "allowed use", are there are any overlay zones?
2. Site Design Review Type?
3. LUR Approval Timeframe?
4. Tree requirements?
5. Parking Zoning: Can fleet-only parking be considered exterior service yard storage area versus employee parking area?
6. Are there are other requirements that have changed to this site location since 2018, or have there have been any new design standards implemented since the last time we had conversations with Planning?
7. Previously, we had confirmed with Planning that:
   a. We do not have to follow the design standards, however it should not look like a bunker, it should have an inviting façade and yes, metal buildings are allowed in the industrial area.
   b. Also, it was indicated that there was a plan to implement new design standards by the end of the year which could impose design standards for the industrial area. Has this occurred?
8. Do you foresee the need for a traffic study at this site?
9. Do you foresee the need for an arborist report (the site does not have many trees)?

RECEIVED
MAY 05 2020
BY: CITY OF WARRENTON

Engineering Questions

1. Is there an existing water crossing sleeve of Dolphin Road? If so, is it in the same location as the wastewater sleeve? What size?
2. Does the City have any specific requirements for the outlet into the existing "ravine"? Can we just armor the slope below the outlet pipe with rip-rap?
3. Will we need to provide wastewater laterals to properties on the west side of Dolphin? Will there be a payback agreement with NW Natural when additional connections are made?
4. Public street improvements and on-site work requirements
5. Stormwater management design requirements
6. Existing site easements
7. Confirm existing fire hydrants are within adequate distances

Respectfully submitted by:

Mary Fierros Bower, Project Manager

AGREEMENT TO REIMBURSE PROFESSIONAL CONSULTING SERVICES EXPENSES RELATED TO DEVELOPMENT APPLICATION

The undersigned (Applicant) recognizes that the City of Warrenton may need to retain one or more professional consultants to assist City in review and evaluation of Applicant's land development application for compliance with state and City standards. Applicant acknowledges that such review benefits Applicant by making the land use review process quicker, more complete and more accurate.

City Resolution No. 2505 authorizes the Community Development Director to determine when professional services are appropriate and requires that Applicant reimburse City for such fees and related expenses in addition to the normal permit and plan review fees.

Resolution No. 2505 authorizes the Director to require at any time a deposit in an amount no greater than the estimated cost of the professional services. If the Director determines during the application completeness review that consulting services may be needed, submittal of the deposit shall be a component of a complete application. If the Director later determines that consulting services, or additional services are needed, the deposit shall be made within 5 days of notice from the Director. City will pay consultant from the deposit and refund any unused portion of the deposit, without interest, within 30 days of issuance of the final land use decision or withdrawal of the application.

Applicant hereby agrees and promises to pay to City the actual cost to City of professional consulting services retained by City in conjunction with review of Applicant's land development application. The full amount (beyond any deposit) shall be due and payable no later than the date of the final land use decision on the application or on withdrawal of the application by applicant. City, after 10 days' notice and opportunity to cure, shall be entitled to any and all remedies available under Oregon law to collect the full amount due, together with interest at 9% per annum from the date of such notice. The prevailing party in an action to enforce this Agreement shall be entitled to its reasonable attorney fees and costs, including on appeal.

Amount: **$1,200.00** *(GL # 001-000-220005)* Initial Deposit **X** or Additional Deposit _____

Project Name: **Northwest Natural Resource Center**

Applicant: **Northwest Natural** Date: **August 12, 2020**

Mailing Address: 250 SW Taylor Street, Portland OR 97204-3038

Phone Number: 503.226.4211 X2496

Title of person authorized to obligate Applicant: Wayne Pipes, Director Facilities

Signature of person authorized to obligate Applicant: _____

UPDATED 2/13/19

NOTICE OF PUBLIC HEARING

The Warrenton Planning Commission will conduct a public hearing at 6:00 PM, September 10, 2020, at the Warrenton City Hall, Commission Chambers to consider:

CUP 20-2, SDR 20-4, & VAR 20-1 Conditional Use Permit, Site Design Review, & Variance by Ryan Osburn for a new contractors office and warehouse on property located at 2219 SE Dolphin Avenue. This request will be reviewed under Warrenton Municipal Code sections 16.40 General Commercial Zone, Division 3 Design Standards, 16.220 Conditional Use Permit, 16.212 Site Design Review, 16.272 Variances, & 16.208.050 Type III Procedure (Quasi-Judicial Hearing). This hearing is continued from the Planning Commission's July 9 meeting.

SDR 20-05 and V20-04, Site Design Review and Variance for NW Natural Gas for a new regional service center on SE Dolphin Avenue, and a variance to the 6-foot maximum fence height to allow a 7-foot perimeter fence. The property is located at map/taxlot 8103402300, on the east side of SE Dolphin Avenue, immediately south of the Warrenton School District access road and north of the Oregon State Police facility. This request will be reviewed under Warrenton Municipal Code sections 16.60.040, I-1 General Industrial zone development standards; 16.120, Design Standards: Access & Circulation; 16.124, Design Standards: Landscaping, Street Trees, Fences, and Walls; 16.128, Design Standards: Vehicle & Bicycle Parking; 16.132, Design Standards: Clear Vision Areas; 16.136, Public Facilities Standards; 16.140, Stormwater & Surface Water Management Standards; 16.192, Large Scale Development; 16.212, Site Design Review Application & Review Procedures; 16.272 Variances; and 16.208.050 Type III Procedure (Quasi-Judicial Hearing).

SDR20-07, V20-02, V20-03, and SUB20-01, Site Design Review, Subdivision Preliminary Plat Approval for a 12-lot residential subdivision, and a variance to the minimum cut-slope setback and to the minimum toe-of-fill slope setback; all submitted by Gilbert Gramson. The subject property, taxlot 81021CB01599, is a 3.8 acre (approximately) parcel located on the east side of SW Juniper Avenue, approximately 1,000 feet north of SW 9th Street, and about 1,000 feet south of SW Kalmia Avenue. This request will be reviewed under the procedures, applicable standards and criteria in Warrenton Municipal Code 16.28 R10 zone; 16.112, Growth Management (GM) zone; 16.120 Access and Circulation; 16.124 Landscaping, Street Trees, Fences and Walls; 16.132 Clear Vision Areas;16.136 Public Facilities Standards; 16.140 Stormwater and Surface Water Management; 16.152, Grading, Excavating and Erosion Control Plans; 16.156 Wetland Development Standards; 16.188 Multi-family Housing Design Standards; 16.192, Large Scale Developments; 16.208.050 Type III Procedure -- Quasi-Judicial; 16.212 Site Design Review; 16.216 Land Divisions; and 16.272 Variances.

Anyone wishing to testify on any of these proposals may attend the public hearing and speak to the Planning Commission, or submit written materials, which must be received by the Warrenton Community and Economic Development Department no later than 5:00 P.M. on the day of the hearing. Written comments may be mailed to Mark Barnes, Community & Economic Development Department, P.O. Box 250, Warrenton Oregon, 97146-0250; or via email to cityplanner@ci.warrenton.or.us.

Anyone wishing to review and/or purchase copies of the proposals and/or staff report may do so at Warrenton City Hall, 225 South Main, or may contact Mark Barnes at 503-861-0920 or via email at cityplanner@ci.warrenton.or.us. The staff report will be available for review at no cost at least seven days before the hearing.

Published: The Columbia Press
Date: August 28, 2020

P.O.BOX 250 ▪ WARRENTON, OR 97146-0250 ▪ OFFICE: 503.861.2233 ▪ FAX: 503.861.2351

NOTICE OF PUBLIC HEARING

To: Adjacent Property Owners & Interested Parties

The Warrenton Planning Commission will hold a public hearing at 6:00 pm on Thursday, September 10, 2020, in the City Commission Chambers, Warrenton City Hall, 225 S Main Ave regarding land use application for site design review and a fence height variance submitted by NWNatural. The site design review is for about 22,434 square feet of office, warehouse, and storage buildings on a 5.3-acre site. The variance request would allow construction of a seven foot high fence, one foot higher than the maximum allowed by the City's Development Code. The subject property is located on the east side of SE Dolphin Avenue, to the north of the existing Oregon State Police facility, and to the south of the existing Oregon Department of Transportation facility. The subject property consists of taxlot 810340002300.

This application will be reviewed under the procedures, applicable standards and criteria in Warrenton Municipal Code Chapter 16.60 General Industrial District; Chapter 16.120 Access and Circulation; Chapter 16.124 Landscaping, Street Trees, Fences and Walls; Chapter 16.128 Vehicle and Bicycle Parking; Chapter 16.132 Clear Vision Areas; Chapter 16.136 Public Facilities Standards; Chapter 16.140 Stormwater and Surface Water Management; Chapter 16.144 Signs; Chapter 16.152, Grading, Excavating and Erosion Control Plans; Chapter 16.192, Large Scale Developments; Section 16.208.050 Type III Procedure –Quasi-Judicial; Chapter 16.212 Site Design Review; and Chapter 16.272 Variances.

Anyone wishing to participate in the above-noted public hearing may present testimony orally at the public hearing, or submit written testimony, which must be received by the Warrenton Planning and Building Department no later than 4:00 P.M. on the day of the hearing. Written comments may be mailed to the Warrenton Community Development Department, P.O. Box 250, Warrenton Oregon, 97146-0250. Failure to raise an issue on the record in person or by letter before the close of the record at the public hearing, or failure to provide statements or evidence sufficient to afford the decision-making body an opportunity to respond to the issue, will preclude appeal to the City Commission based on that issue.

A staff report will be available seven days before the public hearing. Anyone wishing to review and/or purchase copies of the application and/or staff report may make an appointment to do so by contacting Mark Barnes, Interim City Planner, at 503.861.0920 or cityplanner@ci.warrenton.or.us.

Notice to mortgagee, lienholder, vendor, or seller: the Warrenton Development Code requires that if you receive this notice it shall be promptly forwarded to the purchaser.

Mark Barnes, Interim City Planner

8/20/2020
Date

NOTICE OF PUBLIC HEARING

The Warrenton Planning Commission will conduct a public hearing at 6:00 P.M. August 13, 2020 at the Warrenton City Hall, Commission Chambers to consider:

CUP 20-2, SDR 20-4, & VAR 20-1 Conditional Use Permit, Site Design Review, & Variance by Ryan Osburn for a new contractors office and warehouse on property located at 2219 SE Dolphin Avenue. This request will be reviewed under Warrenton Municipal Code sections 16.40 General Commercial Zone, Division 3 Design Standards, 16.220 Conditional Use Permit, 16.212 Site Design Review, & 16.208.050 Type III Procedure (Quasi-Judicial Hearing). This hearing is continued from the Planning Commission's July 9 meeting.

SDR 20-05, Site Design Review for NW Natural Gas for a new regional service center on SE Dolphin Avenue. The property is located at map/taxlot 8103402300, on the east side of SE Dolphin Avenue, immediately south of the Warrenton School District access road. This request will be reviewed under Warrenton Municipal Code sections 16.60.040, I-1 General Industrial zone development standards; 16.120, Design Standards: Access & Circulation; 16.124, Design Standards: Landscaping, Street Trees, Fences, and Walls; 16.128, Design Standards: Vehicle & Bicycle Parking; 16.132, Design Standards: Clear Vision Areas; 16.136, Public Facilities Standards; 16.140, Stormwater & Surface Water Management Standards; 16.192, Large Scale Development; 16.212, Site Design Review Application & Review Procedures; and 16.208.050 Type III Procedure (Quasi-Judicial Hearing).

Anyone wishing to testify on either of these proposals may attend the public hearing and speak to the City Commission, or submit written materials, which must be received by the Warrenton Community and Economic Development Department no later than 5:00 P.M. on the day of the hearing. Written comments may be mailed to Mark Barnes, Community & Economic Development Department, P.O. Box 250, Warrenton Oregon, 97146-0250.

Anyone wishing to review and/or purchase copies of the proposed legislation and/or staff report may do so at Warrenton City Hall, 225 South Main, or may contact Mark Barnes at 503-861-0920 or via email at cityplanner@ci.warrenton.or.us. The staff report will be available for review at no cost at least seven days before the hearing.

Published: The Columbia Press Date: August 7, 2020

NOTICE OF PUBLIC HEARING

To: Adjacent Property Owners & Interested Parties

The Warrenton Planning Commission will hold a public hearing at 6:00 pm on Thursday, August 13, 2020, in the City Commission Chambers, Warrenton City Hall, 225 S Main Ave regarding a land use application for site design review submitted by NWNatural. The site design review is for about 22,434 square feet of office, warehouse, and storage buildings on a 5.3-acre site. The subject property is located on the east side of SE Dolphin Avenue, to the north of the existing PacificCorp facility, and to the south of the existing Oregon Department of Transportation facility. The subject property consists of taxlot 810340002300.

This application will be reviewed under the procedures, applicable standards and criteria in Warrenton Municipal Code Chapter 16.60 General Industrial District; Chapter 16.120 Access and Circulation; Chapter 16.124 Landscaping, Street Trees, Fences and Walls; Chapter 16.128 Vehicle and Bicycle Parking; Chapter 16.132 Clear Vision Areas; Chapter 16.136 Public Facilities Standards; Chapter 16.140 Stormwater and Surface Water Management; Chapter 16.144 Signs; Chapter 16.152, Grading, Excavating and Erosion Control Plans; Chapter 16.192, Large Scale Developments; Section 16.208.050 Type III Procedure –Quasi-Judicial; and Chapter 16.212 Site Design Review.

Anyone wishing to participate in the above-noted public hearing may present testimony orally at the public hearing, or submit written testimony, which must be received by the Warrenton Planning and Building Department no later than 4:00 P.M. on the day of the hearing. Written comments may be mailed to the Warrenton Community Development Department, P.O. Box 250, Warrenton Oregon, 97146-0250. Failure to raise an issue on the record in person or by letter before the close of the record at the public hearing, or failure to provide statements or evidence sufficient to afford the decision-making body an opportunity to respond to the issue, will preclude appeal to the City Commission based on that issue.

A staff report will be available seven days before the public hearing. Anyone wishing to review and/or purchase copies of the application and/or staff report may make an appointment to do so by contacting Mark Barnes, Interim City Planner, at 503.861.0920 or cityplanner@ci.warrenton.or.us.

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Mark Barnes, Interim City Planner

7-22-2020
Date