City of Tualatin

www.tualatinoregon.gov

"NECESSARY PARTIES" MARKED BELOW

NOTICE OF APPLICATION SUBMITTAL

☐ ANNEXATION ☐ CONDITIONAL USE PERMIT ☐ PLAN TEXT AMENDMENT
☒ ARCHITECTURAL REVIEW ☐ PLAN MAP AMENDMENT ☐ OTHER:

CASE/FILE: AR-15-07 (Community Development Dept.: Planning Division)

PROPOSAL	To construct at the northeast rear corner of the developed Thermal Modification Technologies (f.k.a. Beaver Heat Treating) site an additional building in the form of a pre-fabricated shed of 9,855 square feet (sq ft) to house a furnace for metal treatment.

PROPERTY	**Name of Application**	THERMAL MODIFICATION TECHNOLOGIES ADDITIONAL BUILDING			
☐ n/a	**Street Address**	19830 SW Teton Ave			
	Tax Map and Lot No(s).	2S1 23CC 01300			
	Planning District	General Manufacturing (MG)	**Overlays** ☐	**NRPO** ☐	**Flood Plain** ☐
	Previous Applications	AR-72-03, AR-98-07	**Additional Applications:** none		**CIO** COMMERCIAL

DATES	**Receipt of application**	3/27/2015	**Deemed Complete**	4/15/2015	**CONTACT**	**Name:** Colin Cortes
	Notice of application submittal			4/17/2015		**Title:** Assistant Planner
	Project Status / Development Review meeting			5/07/2015		**E-mail:** ccortes@ci.tualatin.or.us
	Comments due for staff report			5/1/2015		**Phone:** 503-691-3024
	Public meeting: ☐ **ARB** ☐ **TPC** ☒ **n/a**					**Notes: You may view the application materials through this City web page: www.tualatinoregon.gov/projects**
	City Council (CC) ☒ **n/a**					

City Staff
- ☒ City Manager
- ☒ Building Official
- ☒ Chief of Police
- ☒ City Attorney
- ☒ City Engineer
- ☒ Community Dev. Director
- ☒ Community Services Director
- ☒ Economic Dev. liaison
- ☒ Engineering Associate*
- ☒ Finance Director
- ☒ GIS technician(s)
- ☒ IS Manager
- ☒ Operations Director*
- ☒ Parks and Recreation Coordinator
- ☒ Planning Manager
- ☒ Street/Sewer Supervisor
- ☒ Water Supervisor

Neighboring Cities
- ☐ Durham
- ☐ King City Planning Commission
- ☐ Lake Oswego
- ☐ Rivergrove PC
- ☐ Sherwood Planning Dept.
- ☐ Tigard Community Dev. Dept.
- ☐ Wilsonville Planning Div.

***Paper Copies**

Counties
- ☐ Clackamas County Dept. of Transportation and Dev.
- ☒ Washington County Dept. of Land Use and Transportation (AR's)
- ☐ Washington County LRP (Annexations)

Regional Government
- ☐ Metro

School Districts
- ☐ Lake Oswego School Dist. 7J
- ☐ Sherwood SD 88J
- ☒ Tigard-Tualatin SD 23J (TTSD)
- ☐ West Linn-Wilsonville SD 3J

State Agencies
- ☐ Oregon Dept. of Aviation
- ☐ Oregon Dept. of Land Conservation and Development (DLCD) (via proprietary notice)
- ☐ Oregon Dept. of State Lands: Wetlands Program
- ☒ Oregon Dept. of Transportation (ODOT) Region 1
- ☐ ODOT Maintenance Dist. 2A
- ☐ ODOT Rail Div.

Utilities
- ☒ Republic Services
- ☒ Clean Water Services (CWS)
- ☒ Comcast [cable]*
- ☒ Frontier Communications [phone]
- ☒ Northwest Natural [gas]
- ☒ Portland General Electric (PGE)
- ☒ TriMet
- ☒ Tualatin Valley Fire & Rescue (TVF&R)
- ☒ United States Postal Service (USPS) (Washington; 18850 SW Teton Ave)
- ☐ USPS (Clackamas)
- ☒ Washington County Consolidated Communications Agency (WCCCA)

Additional Parties
- ☒ Tualatin Citizen Involvement Organization (CIO)
- ☐

☐ *1.032: Burden of Proof*

☐ *31.071 Architectural Review Procedure*

☐ *31.074 Architectural Review Application Review Process*

☐ *31.077 Quasi-Judicial Evidentiary Hearing Procedures*

☐ *Metro Code 3.09.045 Annexation Review Criteria*

☐ *32.030 Criteria for Review of Conditional Uses*

☐ *33.020 Conditions for Granting a Variance that is not a Sign or a Wireless Communication Facility*

☐ *33.022 Criteria for Granting a Sign Variance*

☐ *33.024 Criteria for Granting a Minor Variance*

☐ *33.025 Criteria for Granting a Variance*

☐ *34.200 Tree Cutting on Private Property without Architectural Review, Subdivision or Partition Approval, or Tree Removal Permit Prohibited*

☐ *34.210 Application for Architectural Review, Subdivision or Partition Review, or Permit*

☐ *34.230 Criteria (tree removal)*

☐ *35.060 Conditions for Granting Reinstatement of Nonconforming Use*

☐ *36.160 Subdivision Plan Approval*

☐ *36.230 Review Process (partitioning)*

☐ *36.330 Review Process (property line adjustment)*

☐ *37.030 Criteria for Review (IMP)*

☐ *40.030 Conditional Uses Permitted (RL)*

☐ *40.060 Lot Size for Conditional Uses (RL)*

☐ *40.080 Setback Requirements for Conditional Uses (RL)*

☐ *41.030 Conditional Uses Permitted (RML)*

☐ *41.050 Lot Size for Conditional Uses (RML)*

☐ *41.070 Setback Requirements for Conditional Uses (RML)*

☐ *42.030 Conditional Uses Permitted (RMH)*

☐ *42.050 Lot Size for Conditional Uses (RMH)*

☐ *42.070 Setback Requirements for Conditional Uses (RMH)*

☐ *43.030 Conditional Uses Permitted (RH)*

☐ *43.060 Lot Size for Conditional Uses (RH)*

☐ *43.090 Setback Requirements for Conditional Uses (RH)*

☐ *44.030 Conditional Uses Permitted (RH-HR)*

☐ *44.050 Lot Size for Conditional Uses (RH-HR)*

☐ *44.070 Setback Requirements for Conditional Uses (RH-HR)*

☐ *49.030 Conditional Uses (IN)*

☐ *49.040 Lot Size for Permitted and Conditional Uses (IN)*

☐ *49.060 Setback Requirements for Conditional Uses (IN)*

☒ *50.020 Permitted Uses (CO)*

☐ *50.030 Central Urban Renewal Plan – Additional Permitted Uses and Conditional Uses (CO)*

☐ *50.040 Conditional Uses (CO)*

☐ *52.030 Conditional Uses (CR)*

☐ *53.050 Conditional Uses (CC)*

☐ *53.055 Central Urban Renewal Area – Conditional Uses (CC)*

☐ *54.030 Conditional Uses (CG)*

☐ *56.030 Conditional Uses (MC)*

☐ *56.045 Lot Size for Conditional Uses (MC)*

☐ *57.030 Conditional Uses (MUCOD)*

☐ *60.040 Conditional Uses (ML)*

☐ *60.041 Restrictions on Conditional Uses (ML)*

☐ *61.030 Conditional Uses (MG)*

☐ *61.031 Restrictions on Conditional Uses (MG)*

☐ *62.030 Conditional Uses (MP)*

☐ *62.031 Restrictions on Conditional Uses (MP)*

☐ *64.030 Conditional Uses (MBP)*

☐ *64.050 Lot Size for Permitted and Conditional Uses (MBP)*

☐ *64.065 Setback Requirements for Conditional Uses (MBP)*

☐ *68.030 Criteria for Designation of a Landmark*

☐ *68.060 Demolition Criteria*

☐ *68.070 Relocation Criteria*

☐ *68.100 Alteration and New Construction Criteria*

☐ *68.110 Alteration and New Construction Approval Process*

☐ *73.130 Standards*

☒ *73.160 Standards*

☐ *73.190 Standards – Single-Family and Multi-Family Uses*

☐ *73.220 Standards*

☐ *73.227 Standards*

☒ *73.230 Landscaping Standards*

☐ *73.300 Landscape Standards – Multi-Family Uses*

☒ *73.310 Landscape Standards – Commercial, Industrial, Public and Semi-Public Uses*

☐ *73.320 Off-Street Parking Lot Landscaping Standards*

☐ *73.470 Standards*

☐ *73.500 Standards*

City of Tualatin

www.tualatinoregon.gov

APPLICATION FOR ARCHITECTURAL REVIEW

Direct Communication to:		
Name: Steve Mason		Title: Special Projects Manager
Company Name: Integrated Facility Services, LLC		
Current address: PO Box 216		
City: Oceanside	State: OR	ZIP Code: 97134
Phone: 503.345.0334	Fax: 503.246.9066	Email: stevem@intfac.com
Applicant		
Name: Steve Mason		Company Name: Integrated Facility Services LLC
Address: PO Box 216		
City: Oceanside	State: OR	ZIP Code: 97134
Phone: 503.345.0334	Fax: 503.246.9066	Email: stevem@intfac.com
Applicant's Signature:		Date: 03/16/15
Property Owner		
Name: Teton Place LLC		
Address: 19830 SW Teton AVE		
City: Tualatin	State: OR	ZIP Code: 97062
Phone: 503.654.6511	Fax: 503.653.1217	Email: cori@thermalmodtech.com
Property Owner's Signature:		Date
(Note: Letter of authorization is required if not signed by owner)		
Architect		
Name: DMS Architects, Inc. - Dave Spitzer		
Address: 2325 NE 19th AVE		
City: Portland	State: OR	ZIP Code: 97212
Phone: 503.335.9040	Fax:	Email: dave@dmsarchitects.com
Landscape Architect		
Name:		
Address:		
City:	State:	ZIP Code:
Phone:	Fax:	Email:
Engineer		
Name: Sisul Engineering - Joe Egner		
Address: 375 Portland AVE		
City: Gladstone	State: OR	ZIP Code: 97027
Phone: 503.657.0188	Fax: 503.657.5779	Email: joeegner@sisulengineering.com
Project		
Project Title: TMT Expansion Project		
Address: 19830 SW Teton AVE		
City: Tualatin	State: OR	ZIP Code: 97062
Brief Project Description: Construction of new free-standing prefabricated metal building		
Proposed Use: House a furnace for the heat treating of metal		

Value of Improvements: $670,000

AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION ABOVE, ON THE FACT SHEET, AND THE SURROUNDING PERTY OWNER MAILING LIST IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.

Applicant's Signature:	Date: 03/16/15

Office Use		
Case No:	Date Received:	Received by:
Fee: Complete Review ($115-$5040):	Receipt No:	
Application Complete as of:	ARB hearing date (if applicable):	
Posting Verification:	6 copies of drawings (folded)	
1 reproducible 8 ½" X 11" vicinity map	1 reproducible 8 ½" X 11" site, grading, LS, Public Facilities plan	
Neighborhood/Developer meeting materials		

GENERAL INFORMATION	
Site Address:	19830 SW Teton AVE, Tualatin
Assessor's Map and Tax Lot #:	2S123CC01300
Planning District:	MG
Parcel Size:	3.32 acres
Property Owner:	Teton Place LLC
Applicant:	Integrated Facility Services / Steve Mason
Proposed Use:	To house a furnace for the heat treating of metal

ARCHITECTURAL REVIEW DETAILS	
☐ Residential ☐ Commercial	☒ Industrial
Number of parking spaces:	48
Square footage of building(s):	9,855
Square footage of landscaping:	1,407
Square footage of paving:	
Proposed density (for residential):	

For City Personnel to complete:

Staff contact person:

CITY OF TUALATIN FACT SHEET

General

Proposed use: To house a furnace for the heat treating of metal			
Site area:	3.32 acres	Building footprint:	9,855 sq. ft.
Development area:	.23 acres 9,855 Sq. ft.	Paved area:	9,855 sq. ft.
		Development area coverage:	100 %

Parking

Spaces required (see TDC 73.400) *(example: warehouse @ 0.3/1000 GFA)* 5,940 @ 2.7 /1000 GFA = 16 Office 47,310 @ 1.6 /1000 GFA = 76 Manufacturing 9,855 @ 1.6 /1000 GFA = 16 New Manufact. Total parking required: 108 spaces Handicapped accessible = 5 Van pool = 4 Compact = *(max. 35% allowed)* = 38 Loading berths = 3	Spaces provided: Total parking provided: 48 spaces Standard = 44 Handicapped accessible = 2 Van pool = Compact = 2 Loading berths = 3 See parking explanation

Bicycles

Covered spaces required: 8	Covered spaces provided: 8

Landscaping

Landscaping required: 15 % of dvpt. area 1,478 Square feet	Landscaping provided: 14.3 % of dvpt. area 1,410 Square feet
Landscaped parking island area required: %	Landscaped parking island area provided: %

Trash and recycling facility

Minimum standard method: square feet
Other method:_____ square feet

For commercial/industrial projects only

Total building area: 63,105 sq. ft. Main building: 53,250 sq. ft. New building: 9,855 sq. ft.	2nd floor: sq. ft. 3rd floor: sq. ft. 4th floor: sq. ft.

For residential projects only

Number of buildings:	Total sq. ft. of buildings: sq. ft.
Building stories:	

ARCHITECTURAL REVIEW
CERTIFICATION OF SIGN POSTING

NOTICE

ARCHITECTURAL REVIEW AR-[YY]-__

For more information call 503-691-3026 or visit www.tualatinoregon.gov

18”

24”

The applicant shall provide and post a sign pursuant to Tualatin Development Code (TDC) 31.064(2). Additionally, the 18” x 24” sign must contain the application number, and the block around the word “NOTICE” must remain **primary yellow** composed of the **RGB color values Red 255, Green 255, and Blue 0.** Additionally, the potential applicant must provide a flier (or flyer) box on or near the sign and fill the box with brochures reiterating the meeting info and summarizing info about the potential project, including mention of anticipated land use application(s). Staff has a Microsoft PowerPoint 2007 template of this sign design available through the Planning Division homepage at < www.tualatinoregon.gov/planning/land-use-application-sign-templates>.

NOTE: For larger projects, the Community Development Department may require the posting of additional signs in conspicuous locations.

As the applicant for the TMT Expansion project, I hereby certify that on this day, a sign~~(s)~~ was~~/were~~ posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Department - Planning Division.

Applicant's Name: Steve Mason
(PLEASE PRINT)

Applicant's Signature: _____

Date: _____

Clean Water Services

August 14, 2014
SPL expires on August 13, 2016

INTEGRATED FACILITY SERVICES LLC
PO BOX 216
OCEANSIDE OR 97134

RE: Commercial Addition
CWS file 14-002188 (Tax map 2S123CC Tax lot 01300)

Clean Water Services has received your Sensitive Area Certification for the above referenced site. District staff has reviewed the submitted materials including site conditions and the description of your project. Staff concurs that the above referenced project will not significantly impact the existing Sensitive Areas found near the site. In light of this result, this document will serve as your Service Provider letter as required by Resolution and Order 07-20, Section 3.02.1. All required permits and approvals must be obtained and completed under applicable local, state, and federal law.

This letter does NOT eliminate the need to protect Sensitive Areas if they are subsequently identified on your site.

If you have any questions, please feel free to call me at (503) 681-3639.

Sincerely,

Laurie Harris

Laurie Harris
Environmental Plan Review

Attachment (1)

2550 SW Hillsboro Highway • Hillsboro, Oregon 97123
Phone: (503) 681-3600 • Fax: (503) 681-3603 • cleanwaterservices.org

Expansion Project
Neighborhood / Developer Meeting Packet

Contents

Mailing

- Affidavit of Mailing
- Notarized Affidavit of Mailing
- Mailing List – Exhibit “A”
- Copy of Notice – Exhibit “B”
- E-mail Notification of City and CIOs

Sign Posting

- Affidavit of Posting
- Posted Flyer

Meeting

- Sign-in Sheet of Participants
- Affidavit in Lieu of Meeting Notes

Appendix

- Mailing Buffer Map
- Map / List Receipt

Integrated Facility Services, LLC
PO Box 216
Oceanside, OR 97134

October 19, 2014

TUALATIN CITY OF
18880 SW MARTINAZZI AVE
TUALATIN, OR 97062-7092

RE: Thermal Modification Technologies Expansion
Additional Building to Accomodate Growth
19830 SW Teton AVE
Tualatin, OR 97062

Dear Property Owner:

You are cordially invited to attend a meeting on November 5, 2014 at 5:30 PM in the Thermal Modification Technologies (TMT) conference room at 19830 SW Teton AVE. This meeting shall be held to discuss a proposed project located at this address, between SW Tualatin-Sherwood RD and SW Avery ST. The proposal is to submit for Architectural Review of an additional industrial building on the TMT site.

The purpose of this meeting is to provide a means for the applicant and surrounding property owners to meet and discuss this proposal and identify any issues regarding this proposal.

Regards,

Steve Mason
Special Projects Manager
Integrated Facility Services, LLC
503.345.0334
stevem@intfac.com

As the applicant for the TMT Expansion project, I hereby certify that on October 19, 2014, notice of the Neighborhood / Developer meeting was mailed in accordance with the requirements of the Tualatin Development Code and the Community Development Department - Planning Division.

Applicant: Steve Mason Date: 3/10/15

NEIGHBORHOOD/DEVELOPER MEETING
AFFIDAVIT OF MAILING

STATE OF OREGON)
) SS
COUNTY OF WASHINGTON)

I, Steve Mason, being first duly sworn, depose and say:

That on the 19th day of October, 2014, I served upon the persons shown on Exhibit "A," attached hereto and by this reference incorporated herein, a copy of the Notice of Neighborhood/Developer meeting marked Exhibit "B," attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses shown on said Exhibit "A" are their regular addresses as determined from the books and records of the Washington County and/or Clackamas County Departments of Assessment and Taxation Tax Rolls, and that said envelopes were placed in the United States Mail with postage fully prepared thereon.

Signature

SUBSCRIBED AND SWORN to before me this 11th day of March, 2015.

OFFICIAL SEAL
KATARZYNA P AULER
NOTARY PUBLIC - OREGON
COMMISSION NO. 478464
MY COMMISSION EXPIRES MAY 21, 2017

Notary Public for Oregon
My commission expires: May 21st, 2017

RE: Thermal Modification Technologies Expansion Project

AR-15-07

To lessen the bulk of the notice of application and to address privacy concerns, this sheet substitutes for the photocopy of the mailing labels. A copy is available upon request.

Exhibit "B"

Integrated Facility Services, LLC
PO Box 216
Oceanside, OR 97134

October 19, 2014

TUALATIN CITY OF
18880 SW MARTINAZZI AVE
TUALATIN, OR 97062-7092

RE: Thermal Modification Technologies Expansion
Additional Building to Accomodate Growth
19830 SW Teton AVE
Tualatin, OR 97062

Dear Property Owner:

You are cordially invited to attend a meeting on November 5, 2014 at 5:30 PM in the Thermal Modification Technologies (TMT) conference room at 19830 SW Teton AVE. This meeting shall be held to discuss a proposed project located at this address, between SW Tualatin-Sherwood RD and SW Avery ST. The proposal is to submit for Architectural Review of an additional industrial building on the TMT site.

The purpose of this meeting is to provide a means for the applicant and surrounding property owners to meet and discuss this proposal and identify any issues regarding this proposal.

Regards,

Steve Mason
Special Projects Manager
Integrated Facility Services, LLC
503.345.0334
stevem@intfac.com

Steve Mason

From: Steve Mason
Sent: Sunday, October 19, 2014 10:08 PM
To: lsanford@ci.tualatin.or.us; gkirby@ci.tualatin.or.us
Cc: AfamHouse@gmail.com; Alan.jo@frontier.com; alex.simshaw@gmail.com; atasaedi@hotmail.com; cjben5915@hotmail.com; cphill9@comcast.net; doug_ulmer@comcast.net; erik@johannesfamily.com; famtunstall1@frontier.com; Gannett@oregonrn.org; jan.giunta@gmail.com; jbcgmag@comcast.net; jmakarowsky@comcast.net; jodiskis@gmail.com; john.howorth@3j-consulting.com; jon@tualatinlife.com; jraikoglo@aol.com; jrpride@frontier.com; kaydix@comcast.net; lloop@klcorp.com; rachelcarpenterrealty@gmail.com; rfco@earthlink.com; robertekellogg@yahoo.com; roy@rueckco.com; s.caporale@comcast.net; sander5389 @comcast.net; scottm@capacitycommercial.com; stefan@feuerherdtlaw.com; tualatincommercialcio@gmail.com; tualatinindustrialcio@gmail.com; willie.fisher@gmail.com
Subject: Notice of Neighborhood/Developer Meeting – 19830 SW Teton AVE
Attachments: Neighborhood Meeting Letter Rev02.pdf

Hello –

Attached please find a copy of one of the letters we have mailed to provide notice of our upcoming Neighborhood / Developer Meeting on November 5, 2014. The proposal is to submit for Architectural Review of an additional industrial building on the site of Thermal Modification Technologies - 19830 SW Teton AVE.

Regards –

Steve

Steve Mason
Integrated Facility Services, LLC
www.theintegratedcompanies.com
503.345.0334
503.793.6415 cell
503.246.9066 fax

NEIGHBORHOOD / DEVELOPER MEETING
CERTIFICATION OF SIGN POSTING

NOTICE

NEIGHBORHOOD / DEVELOPER MEETING

11/5/2014 5:30 p.m.
19830 SW Teton AVE
503-345-0334

As the applicant for the

Thermal Modification Technologies Expansion Project project, I

hereby certify that on this day, October 20, 2014 sign(s) was/were posted on the

subject property in accordance with the requirements of the Tualatin Development Code

and the Community Development Department - Planning Division.

Applicant's Name: Jeffrey B. Mason
(PLEASE PRINT)

Applicant's Signature: JMason

Date: March 20, 2015

Thermal Modification Technologies

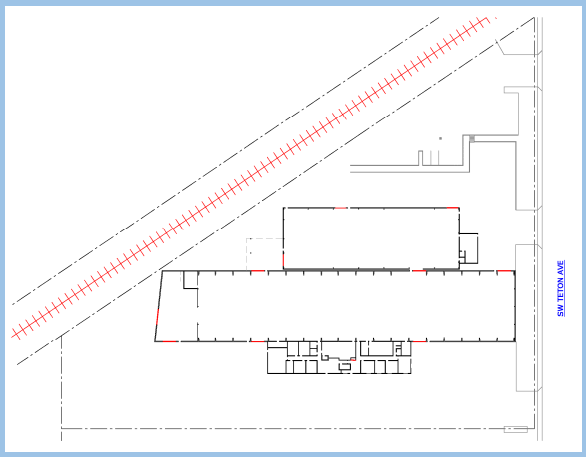
Proposed Expansion to Accommodate Growth

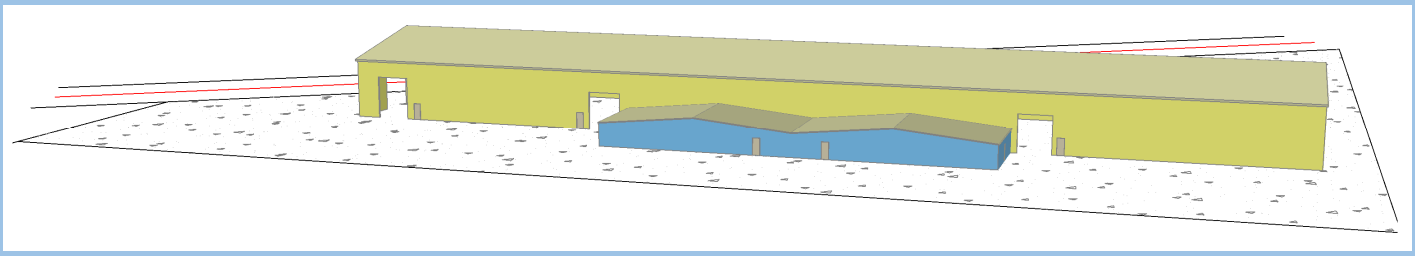
+/- 10,000 SF new standalone building at 19830 SW Teton

Proposal to submit for Architectural Review

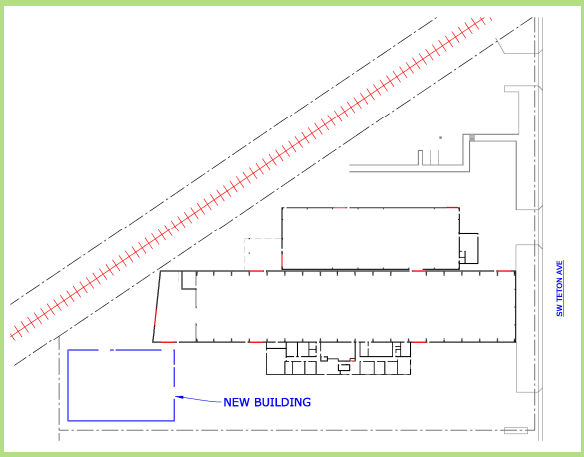
Neighborhood / Developer Meeting ▪ November 5, 2014 ▪ 5:30 PM ▪ 19830 SW Teton AVE

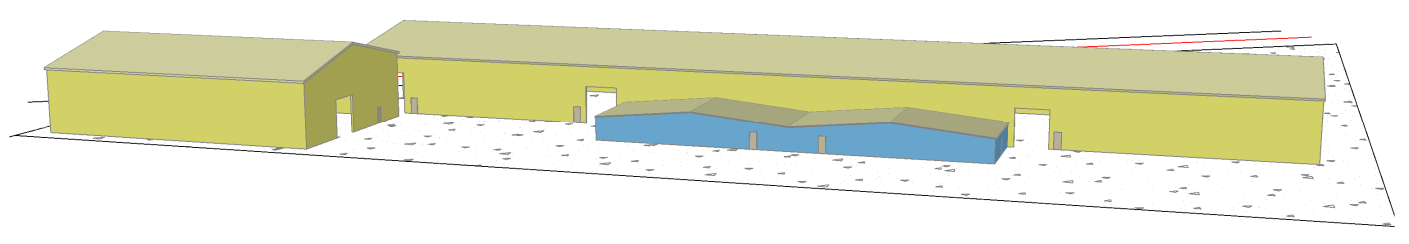
As-Is





With New Building





Thermal Modification Technologies

Proposed Expansion to Accommodate Growth

+/- 10,000 SF new standalone building at 19830 SW Teton

Proposal to submit for Architectural Review

Neighborhood / Developer Meeting ▪ November 5, 2014 ▪ 5:30 PM ▪ 19830 SW Teton AVE

Meeting Sign-in Sheet

Name		Company	Contact Info (if desired)
First	Last		
MARK	MANNING	[redacted]	
Cori	Baustian		
Karen	Tobin		
STEVE	MASON		

Expansion Project

Neighborhood / Developer Meeting – November 5, 2014 – 5:30 PM

Affidavit in Lieu of Meeting Minutes

The TMT Team assembled for the meeting on November 5th, 2014 at approximately 5:00 PM. At approximately 6:15 PM, the meeting was declared closed. Since all four of the attendees were employees or agents of TMT, no issues were discussed and no minutes were taken.

As the applicant for the TMT Expansion project, I hereby certify that the above is the true account of the meeting.

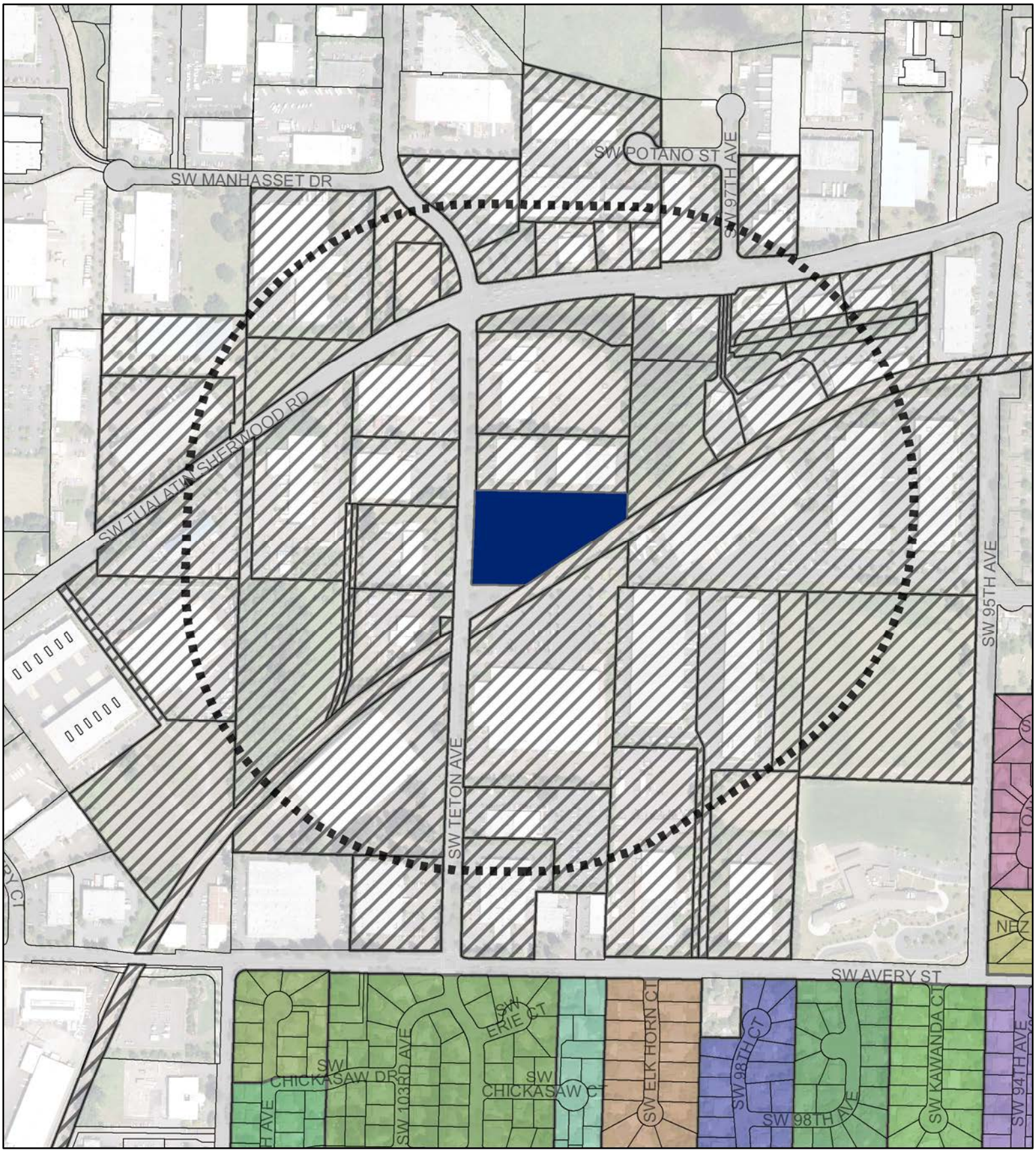
Applicant: Steve Mason

Signed:

Date: 3/10/15

Mailing List - 19830 SW Teton Ave

TUALGIS



1000' Buffer

Selected Taxlots

N
W
E
S

TUALGIS

Job Name: Jeffrey Mason - Integrated Facility Services

Date: 9/29/2014

Labor

Time (hours):	0.5		
Cost:		$	27.50

Materials

Ink (ml):	0	$	-
Paper (sq. ft.):	0	$	-
Misc: CD	0	$	-
Cost:		$	-

Total Map Cost: $ 27.50

Thank You!

Tualatin GIS
18880 SW Martinazzi Ave
Tualatin, OR 97062
ph: 503-691-3017
web: http://www.tualatinoregon.gov/

TMT Expansion Project
LEGAL DESCRIPTION

MAR 18 1992

EXHIBIT A

Description:

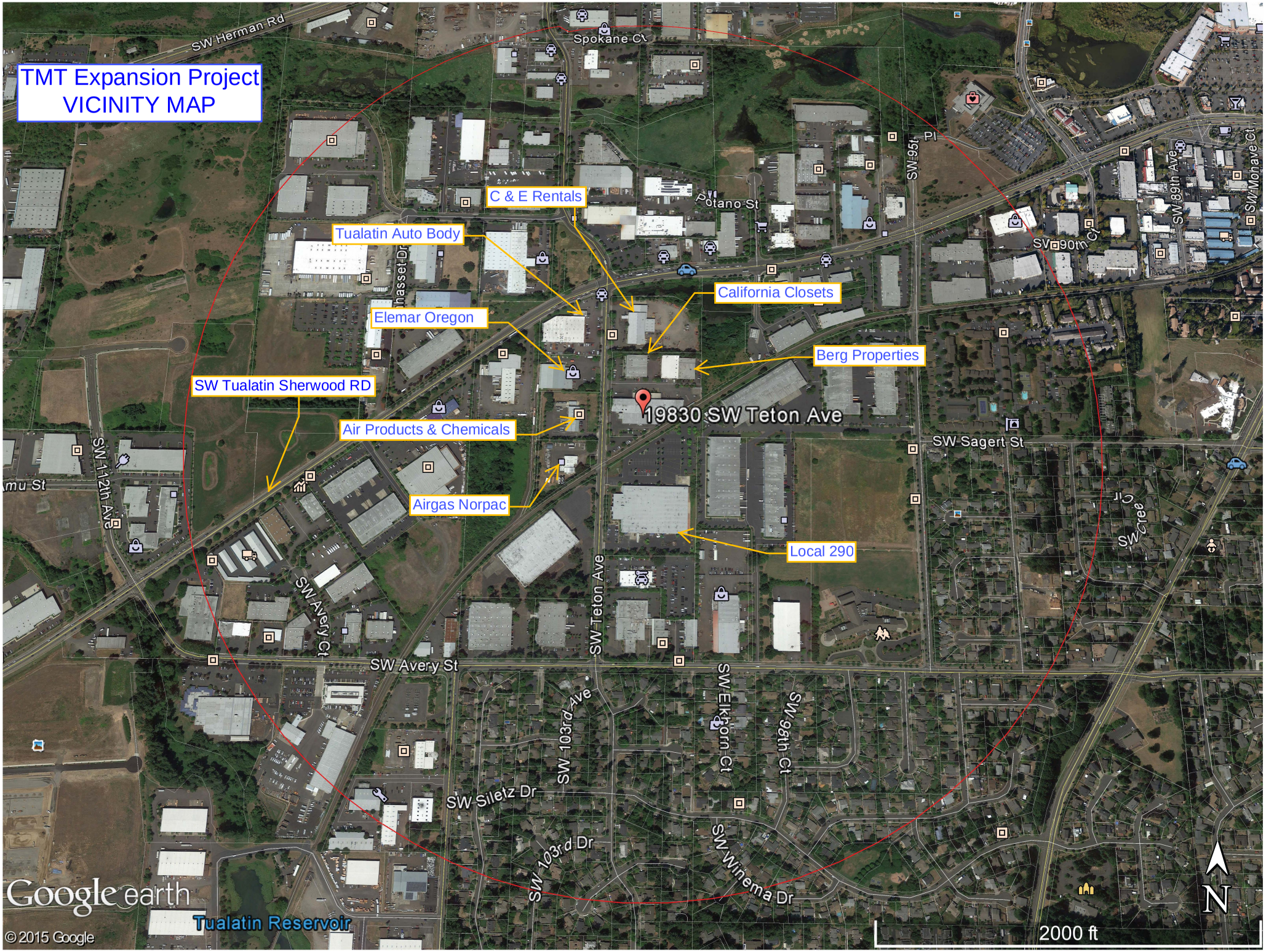
A tract of land situated in the Southwest one-quarter of Section 23, and the Northwest one-quarter of Section 26, Township 2 South, Range 1 West of the Willamette Meridian, in the City of Tualatin, County of Washington and State of Oregon, more particularly described as follows:

Commencing at a 2-inch iron pipe marking the Southwest corner of said Section 23; thence North 0°04'41" West tracing the West line of said Section 23, a distance of 479.73 feet to a point in the Southeasterly right of way line of S.W. Tualatin-Sherwood Road No. 492; thence North 55°25'50" East along said right of way line, 772.64 feet to an angle point in said right of way; thence North 62°52'00" East along said right of way line, 188.91 feet to an angle point in said right of way; thence North 77°37'00" East 6.02 feet to a point; thence South 0°09'47" West along the Easterly right of way line of a 60-foot road, 477.18 feet to the point of beginning of the tract herein to be described; thence continuing South 0°09'47" West 647.14 feet to the Northerly line of the Spokane, Portland & Seattle Railroad right of way; thence North 56°06'32" East 662.93 feet along the Northerly line of the railroad right of way; thence North 0°09'47" East 275.91 feet to the Southwest corner of that 5-acre tract conveyed to Hugh D. Allison, et al, by deed recorded October 27, 1969 in Book 760, Page 956, Washington County Deed Records; thence North 89°50'13" West along the Southerly line of the Allison tract, 549.24 feet to the point of beginning.

EXCEPTING THEREFROM that portion thereof dedicated to the public as a public way, street and road, by Street Dedication recorded July 20, 1970 in Book 786, Page 775, Washington County Records.

ALSO EXCEPTING THEREFROM the North 198.5 feet thereof, the South line of said 198.5 foot parcel being parallel with and 198.5 feet distant from, when measured at right angles to, the North line thereof.

Title Data, Inc. SW POR10393 WN 92016942.003


TMT Expansion Project
VICINITY MAP
C & E Rentals
Tualatin Auto Body
California Closets
Elemar Oregon
Berg Properties
SW Tualatin Sherwood RD
19830 SW Teton Ave
Air Products & Chemicals
Airgas Norpac
Local 290
SW Herman Rd
Spokane Ct
Potano St
SW 95th Pl
SW 90th Ct
SW 89th Ave
SW Mohave Ct
SW Sagert St
SW 112th Ave
SW Avery Ct
SW Avery St
SW Teton Ave
SW 103rd Ave
SW Elkhorn Ct
SW 98th Ct
SW Siletz Dr
SW 103rd Dr
SW Winema Dr
Tualatin Reservoir
Google earth
© 2015 Google
2000 ft
N

REPUBLIC SERVICES
10295 SW Ridder Road, Wilsonville, OR 97070
O: 503.570.0626 F: 503.982.9307 republicservices.com

Steve Mason
Integrated Facility Services, LLC

Re: Thermal Modifications Technologies

Dear Steve;

Thank you, for sending me your site plans for the building addition in Tualatin for TMT.

My Company: Republic Services of Clackamas & Washington Counties has the franchise agreement to service this area with the City of Tualatin. We provide complete commercial waste removal and recycling services as needed on a weekly basis for this location.

It looks like the new building will not affect our ability to safely service the containers that are presently located at this site.

Thank you Steve; for your help and concerns for our services prior to this project being developed.

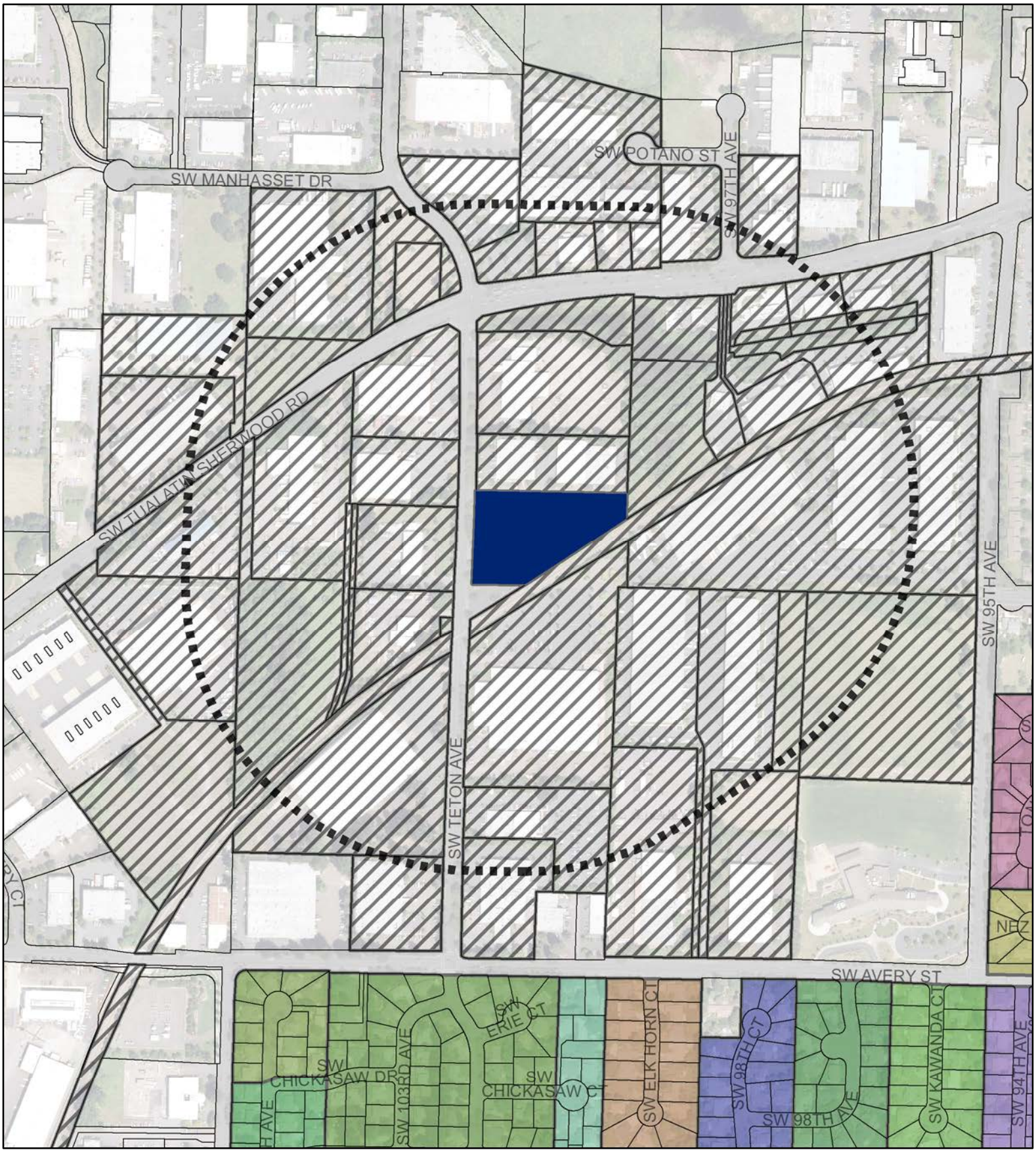
Sincerely,

Frank J. Lonergan

Frank J. Lonergan
Operations Manager
Republic Services Inc.

Mailing List - 19830 SW Teton Ave

TUALGIS



1000' Buffer

Selected Taxlots

N
W
E
S

BUILDING INFORMATION

PROJECT OWNER:
TETON PLACE LLC
19830 SW TETON AVE
TUALATIN, OR 97062
CONTACT– CORI BAUSTIAN
503.654.6511

ARCHITECT:
DMS ARCHITECTS
2325 NE 19TH AVENUE
PORTLAND, OR 97212
CONTACT– DAVE SPITZER
503.335.9040

PROJECT COORDINATOR:
INTEGRATED FACILITY SERVICES, LLC
PO BOX 216
OCEANSIDE, OR 97134
CONTACT– JEFF MASON/STEVE MASON
503.228.4800

PROJECT ADDRESS:
19830 SW TETON AVE
TUALATIN, OR 97062
STATE I.D.– 2S123CC01300

COUNTY:
WASHINGTON

ZONING DESIGNATION:
MG

PROJECT SUMMARY

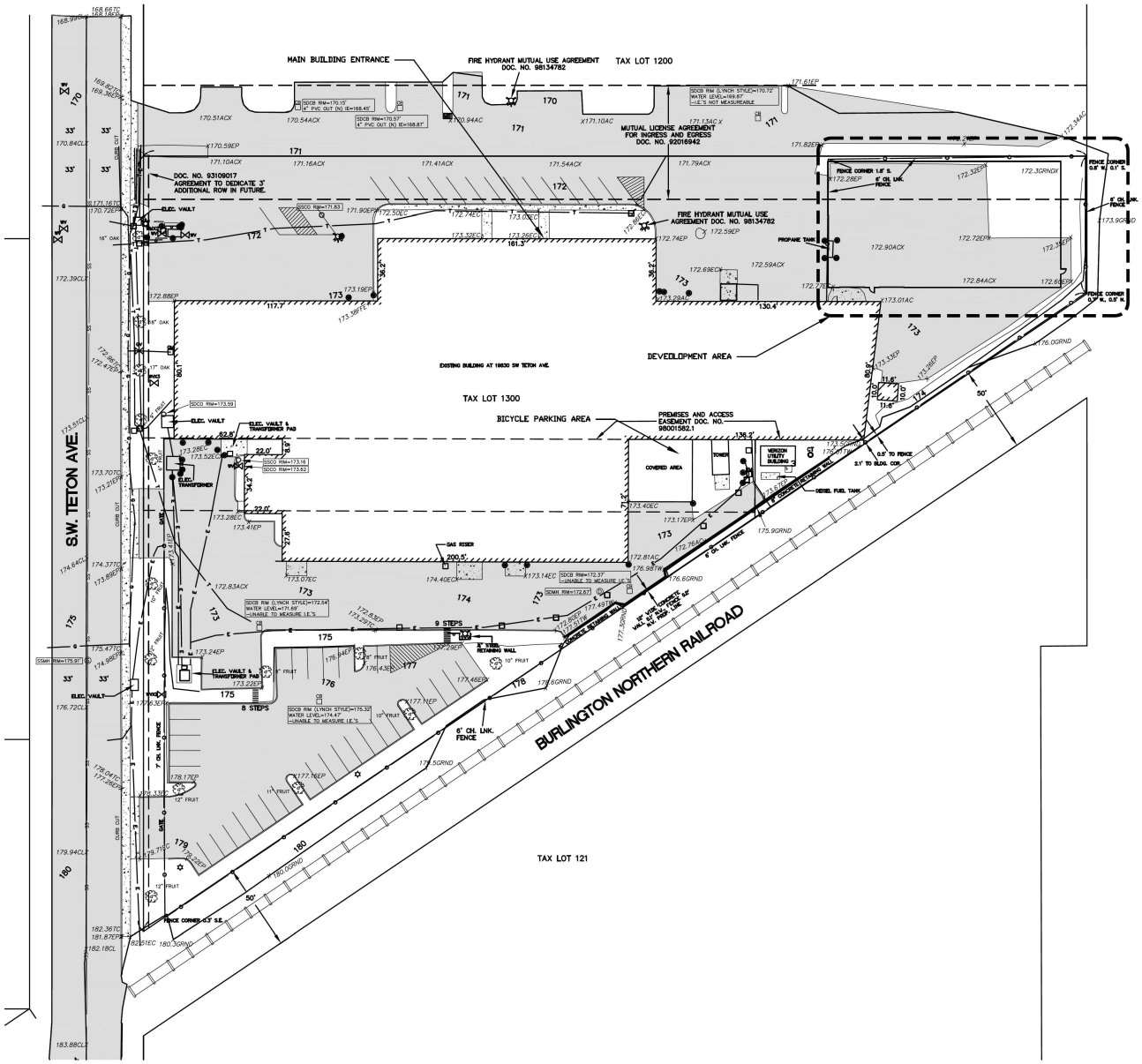
CONSTRUCT NEW 73' x 135' (9,855 SF) METAL STORAGE BUILDING OVER NEW CONCRETE FOUNDATION FOR THE HEAT TREATING OF METAL. SPACE WILL NOT BE HEATED OR COOLED.

SITE DATA

SITE AREA:	3.32 ACRES 144,619 SF
DEVELOPMENT AREA:	9,855 SF

PARKING

STANDARD:	44
COMPACT:	2
DISABILITY:	2



1 AR1 SITE PLAN & PUBLIC FACILITIES PLAN

DMS ARCHITECTS
2325 NE 19TH AVE
PORTLAND, OR 97212
OFFICE 503 335 9040
FAX 503 335 5850
DAVE@DMSARCHITECTS.COM

Integrated Facility Services, LLC
PO Box 216
Oceanside, Oregon 97134
Ph/503.228.4800
Fax/503.246.9066

Thermal Modification Technologies
19830 SW TETON AVE
TUALATIN, OR 97062

SHEET CONTENT
SITE PLAN
PUBLIC FACILITIES PLAN

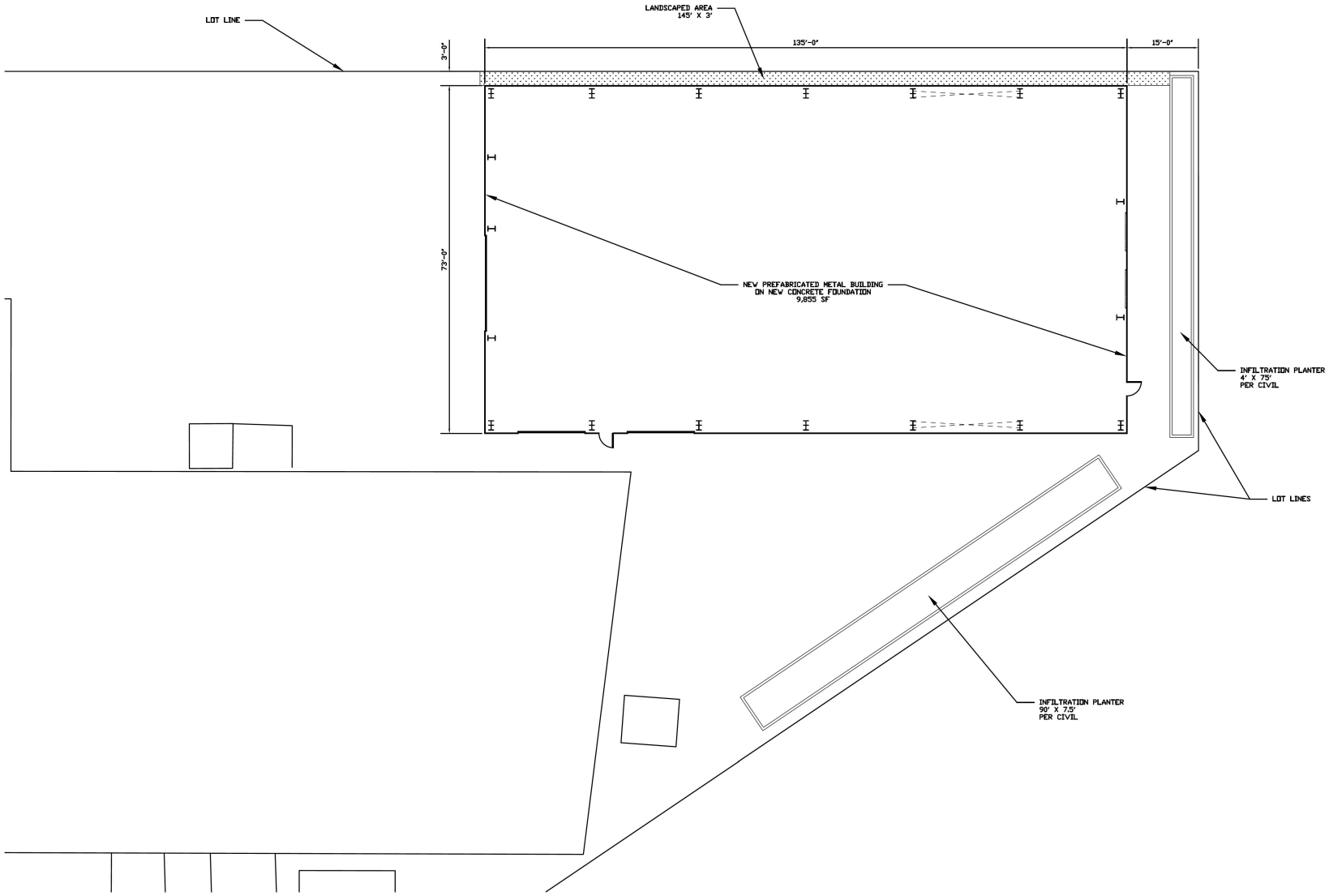
JOB No. 000016

DRAWN SAM
CHECKED DMS

DATE 3.24.15

REVISIONS

SHEET AR1 OF 3



1 AR2 DEVELOPMENT AREA & LANDSCAPE PLAN

1" = 10'

D.M.S ARCHITECTS
2325 NE 19TH AVE
PORTLAND, OR 97212
OFFICE 503 335 9040
FAX 503 335 5850
DAVE@DMSARCHITECTS.COM

Integrated Facility Services., LLC
PO Box 216
Oceanside, Oregon 97134
Ph/503.228.4800
Fax/503.246.9066
FACILITY INTEGRATED SERVICES

Thermal Modification Technologies
19830 SW TETON AVE
TUALATIN, OR 97062

SHEET CONTENT
DEVELOPMENT AREA
LANDSCAPING PLAN

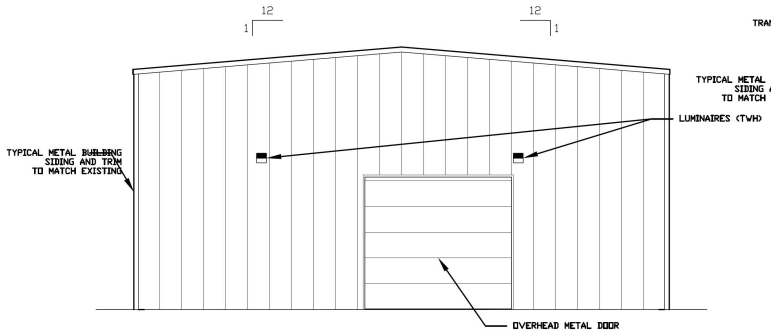
JOB No. 000016

DRAWN SAM
CHECKED DMS

DATE 3.24.15

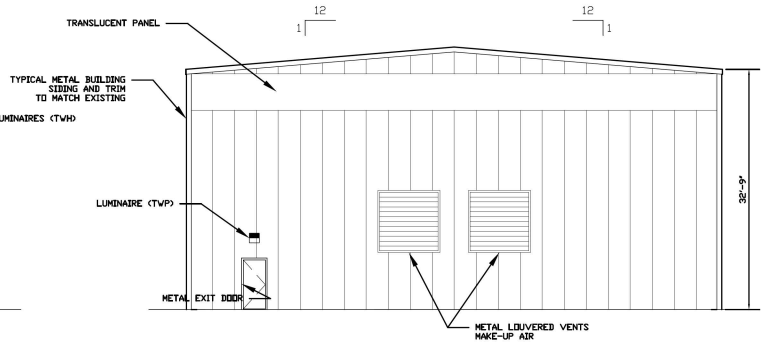
REVISIONS

SHEET AR2 OF 3



1 / AR3 WEST ELEVATION

1/8" = 1'-0"



2 / AR3 EAST ELEVATION

1/8" = 1'-0"

3 / AR3 SOUTH ELEVATION (NORTH SIM. W/ NO DOORS OR TRANSLUCENT PANELS)

1/8" = 1'-0"

DMS ARCHITECTS
2325 NE 19TH AVE
PORTLAND, OR 97212
OFFICE 503 335 9040
FAX 503 335 5850
DAVE@DMSARCHITECTS.COM

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Fax/503.246.9066
FACILITY INTEGRATED SERVICES

Thermal Modification Technologies
19830 SW TETON AVE
TUALATIN, OR 97062

SHEET CONTENT
ELEVATIONS

JOB No. 000016

DRAWN SAM
CHECKED DMS

DATE 3.24.15

REVISIONS

SHEET AR3 OF 3

Parking Explanation

Of the 3 categories for industrial uses in TDC 37.370(2), TMT's non-office operations would likely be classified as manufacturing. However, their manufacturing processes are atypical in that they require very large pieces of equipment and often treat very large parts. Generally, the equipment footprints and working envelopes approach 50% of the building space. Further, the cycle times between loading and unloading of the equipment are long, typically hours and even days instead of minutes. Consequently, TMT's operations require relatively few employees per square foot of area.

For instance, the proposed building at 9,855 SF would require 16 parking spaces when we calculate under manufacturing. In reality, the building will house two major pieces of equipment capable of handling parts up to 45 feet long - the number of employees in the building to operate this equipment will be three (3). If each requires a parking space, this calculates to 0.304/1000 SF, close to the rate for warehousing.

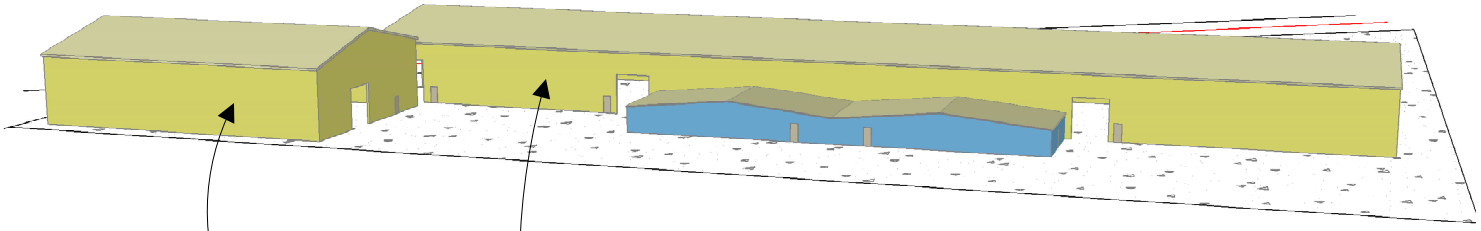
TMT currently has 52.5 employees and this number is not anticipated to change with the new building as some off-site employees will be moving from Portland to Tualatin (NW Front Ave). They are never all there at the same time, as the breakdown below shows:

TMT Employee Count			
	All	**Business Hours**	**Max**
Office, day shift only	9	9	9
Shop, day shift	18	18	18
Shop, swing	8		8
Shop, graveyard	4		
Shop, weekend day	6		
Shop, weekend night	6		
NW Front Ave	1.5	1.5	1.5
Total	52.5	28.5	36.5

The "Business Hours" column shows that during normal business hours, fewer than 30 employees are on site. And the "Max" column allows for the possible overlap at the change between the two largest shifts. Even if 37 employees require a parking space - some ride bikes and/or take mass transit - that leaves over 10 spaces for visitors, customers, etc.

Finally, if TMT were allowed to calculate their parking at warehousing rates, the number required would be 33. All told, we believe the existing 48 parking spaces to be adequate and reasonable for the site and proposed use.

Materials



New building to match existing

Typical metal building panels and trim

TWH LED
LED Wall Luminaire

Catalog Number

Notes

Type

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

Introduction

The popular TWH luminaire is now available with LED technology. Cast in a traditional dayform, the TWH LED offers a classic appearance and is powered by advanced LEDs.

The new TWH LED luminaire is powerful yet energy efficient, capable of replacing up to a 400W metal halide luminaire while saving up to 77% in energy costs. Offering an expected service life of more than 20 years, the TWH LED eliminates frequent lamp and ballast replacements associated with traditional technologies.

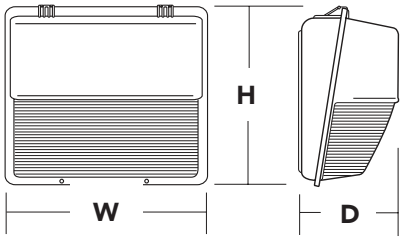
Specifications

Width: 16-1/4″ *(41.3 cm)*

Height: 15-3/4″ *(40.0 cm)*

Depth: 8″ *(20.3 cm)*

Weight: 28 lbs *(12.7 kg)*



Ordering Information

EXAMPLE: TWH LED 30C 1000 50K T3M MVOLT DDBXD

TWH LED								
Series	**LEDs**	**Drive current**	**Color temperature**	**Distribution**	**Voltage**	**Control Options**	**Other Options**	**Finish** *(required)*
TWH LED	10C 10 LEDs (one engine) 20C 20 LEDs (two engines) 30C 30 LEDs (one engine)	1000 1000 mA (1 A)	50K 5000K (standard) 40K 4000K (optional)	T3M Type III Medium	MVOLT [1] 120 [1] 208 [1] 240 [1] 277 [1] 347 [2] 480 [2]	**Shipped installed** DMG 0-10V dimming driver (no controls) PER NEMA twist-lock receptacle only (no controls) PE Photoelectric cell, button type [3]	**Shipped installed** SF Single fuse (120, 277, 347V) [4] DF Double fuse (208, 240, 480V) [4] TP Tamper proof screws NOM NOM Certified SPD Separate surge protection [5] ELSW Emergency battery backup (standard 0°C) [6] ELCW Emergency battery backup (cold weather -20°C) [6] **Shipped separately** VG Vandal guard [7] WG Wire guard [7]	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

Stock configurations are offered for shorter lead times:

Standard Part Number	Stock Part Number
TWH LED 10C 1000 50K T3M MVOLT DDBXD	**TWH LED 10C 50K**
TWH LED 20C 1000 50K T3M MVOLT DDBXD	**TWH LED 20C 50K**
TWH LED 30C 1000 50K T3M MVOLT DDBXD	**TWH LED 30C 50K**

Accessories

Ordered and shipped separately.

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [8]
DLL347 1.5 CUL JU	Photocell - SSL twist-lock (347V) [8]
DLL480 1.5 CUL JU	Photocell - SSL twist-lock (480V) [8]
SC U	Shorting cap [8]
TWHVG U	Vandal guard accessory [9]
TWHWG U	Wire guard accessory [9]

For more control options, visit *DTL* and *ROAM* online.

NOTES

1. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options) or photocontrol (PE).
2. Not available with 10C option.
3. Must specify voltage; not available with MVOLT.
4. Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.
5. See the electrical section on page 2 for more details.
6. Not available with 30C, 347, 480, PER, or SPD. Emergency mode IES files located on product page at www.lithonia.com. ELSW and ELCW warranty is 3-year period.
7. Also available as a separate accessory; see Accessories information at left.
8. Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item.
9. Requires field modification (only when ordered as a separate accessory).

LITHONIA LIGHTING

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

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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. Contact factory for performance data on any configurations not shown here.

LEDs	Drive Current (mA)	Performance Package	System Watts	Dist. Type	40K (4000K, 70 CRI)					50K (5000K, 65 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
10C (10 LEDs)	1000	10C 1000 --K	39 W	T3M	2445	0	3	2	63	2559	0	3	2	66
20C (20 LEDs)	1000	20C 1000 --K	72 W	T3M	4683	1	3	3	65	5562	1	3	3	77
30C (30 LEDs)	1000	30C 1000 --K	104 W	T3M	6391	1	3	3	61	6728	1	3	3	65

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	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.98

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the **TWH LED 30C 1000** platform in a **25°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	100,000
Lumen Maintenance Factor	1.0	0.95	0.92	0.87

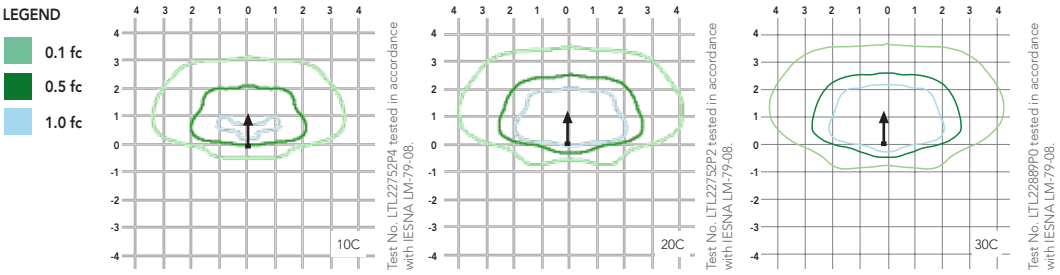
Electrical Load

LEDs	Drive Current (mA)	System Watts	Current (A)					
			120	208	240	277	347	480
10C	1000	39 W	0.36	0.21	0.18	0.16	-	-
20C	1000	72 W	0.67	0.38	0.33	0.29	0.23	0.17
30C	1000	104 W	0.96	0.56	0.48	0.42	0.33	0.24

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's TWH LED homepage.

Isofootcandle plots for the TWH LED --- 1000 50K T3M. Distances are in units of mounting height (15').



FEATURES & SPECIFICATIONS

INTENDED USE
The energy savings, long life and easy-to-install design of the TWH LED make it the smart choice for building-mounted doorway and pathway illumination for nearly any facility.

CONSTRUCTION
Die-cast aluminum housing has an impact-resistant, tempered glass lens that is fully gasketed. Modular design allows for ease of maintenance. The LED driver is mounted to the front casting to thermally isolate it from the light engine for low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in textured and non-textured finishes.

OPTICS
Protective glass lens covers the light engine's precision-molded proprietary acrylic lenses. Light engines are available in 5000K (65 min. CRI) configurations.

ELECTRICAL
Light engine(s) consist of 10 or 30 high-efficacy LEDs mounted to a metal-core circuit board and integral aluminum heat sink to maximize heat dissipation and promote long life (L87/100,000 hrs at 25°C). The electronic driver has a power factor of >90%, THD <20%, and a minimum 2.5 KV surge rating. When ordering the SPD option, a separate surge protection device is installed within the luminaire which meets a minimum Category C low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Back housing is separated from front housing, eliminating ballast weight and promoting easy handling. Top 3/4" threaded wiring access. Back access through removable 3/4" knockout. Feed-thru wiring can be achieved by using a condulet tee. Mount on any vertical surface. Not recommended in applications where a sprayed stream of water can come in direct contact with glass lens.

LISTINGS
UL listed for wet locations. Rated for -40°C minimum ambient. Luminaire is IP55 rated.

WARRANTY
Five year limited warranty. Complete 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.

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TWP LED
LED Wall Luminaire

Catalog Number

Notes

Type

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

Introduction

The popular TWP luminaire is now available with LED technology. Cast in a traditional dayform, the TWP LED offers a classic appearance and is powered by advanced LEDs. A one-piece polycarbonate cover delivers enhanced durability and is vandal resistant, making the TWP LED ideal for lower mounting heights or high-traffic areas.

The new TWP LED luminaire is powerful yet energy efficient, capable of replacing up to a 250W metal halide luminaire while saving up to 77% in energy costs. Offering an expected service life of more than 20 years, the TWP LED eliminates frequent lamp and ballast replacements associated with traditional technologies.

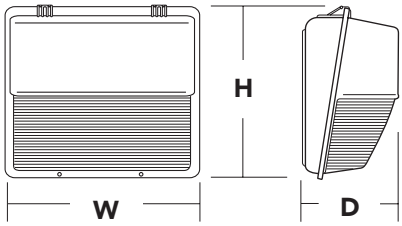
Specifications

Width: 16-1/8" *(41.0 cm)*

Height: 15-1/2" *(39.4 cm)*

Depth: 7-3/4" *(19.7 cm)*

Weight: 15 lbs *(6.8kg)*



Ordering Information

EXAMPLE: TWP LED 30C 700 50K T3M MVOLT DDBXD

TWP LED						
Series	**Performance Package**	**Distribution**	**Voltage**	**Control Options**	**Other Options**	**Finish** *(required)*
TWP LED	**LEDs** 10C 10 LEDs (one engine) 20C 20 LEDs (two engines) 30C 30 LEDs (one engine) **Drive current** 700 700 mA **Color temperature** 50K 5000K (standard) 40K 4000K (optional)	T3M Type III Medium	MVOLT [1] 120 [1] 208 [1] 240 [1] 277 [1] 347 [2] 480 [2]	**Shipped installed** DMG 0-10V dimming driver (no controls) PE Photoelectric cell, button type [3]	**Shipped installed** SF Single fuse (120, 277, 347V) [4] DF Double fuse (208, 240, 480V) [4] TP Tamper proof screws NOM NOM Certified SPD Separate surge protection [5] **Shipped separately** WG Wire guard [6]	DDBXD Dark bronze DBLXD Black DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DWHGXD Textured white

Stock configurations are offered for shorter lead times:

Standard Part Number	Stock Part Number
TWP LED 10C 700 50K T3M MVOLT DDBXD	**TWP LED 10C 50K**
TWP LED 20C 700 50K T3M MVOLT DDBXD	**TWP LED 20C 50K**
TWP LED 30C 700 50K T3M MVOLT DDBXD	**TWP LED 30C 50K**

Accessories

Ordered and shipped separately.

TWPWG U Wire guard accessory [7]

NOTES

1. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options) or photocontrol (PE).
2. Not available with 10C option.
3. Must specify voltage; not available with MVOLT or 480 voltage options.
4. Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.
5. See the electrical section on page 2 for more details.
6. Also available as a separate accessory; see Accessories information at left.
7. Requires field modification (only when ordered as a separate accessory).

LITHONIA LIGHTING

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

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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. Actual wattage may differ by +/- 8% when operating between 120-480V +/- 10%. Contact factory for performance data on any configurations not shown here.

LEDs	Drive Current (mA)	Performance Package	System Watts	Dist. Type	40K (4000K, 70 CRI)					50K (5000K, 65 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
10C (10 LEDs)	700	10C 700 --K	26 W	T3M	1478	0	3	2	57	1614	0	3	2	62
20C (20 LEDs)	700	20C 700 --K	45 W	T3M	2877	0	3	3	64	3149	0	3	3	70
30C (30 LEDs)	700	30C 700 --K	67 W	T3M	4157	0	3	3	62	4377	0	3	3	65

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	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.98

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the **TWP LED 30C 700** platform in a **25°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	100,000
Lumen Maintenance Factor	1.0	0.97	0.96	0.94

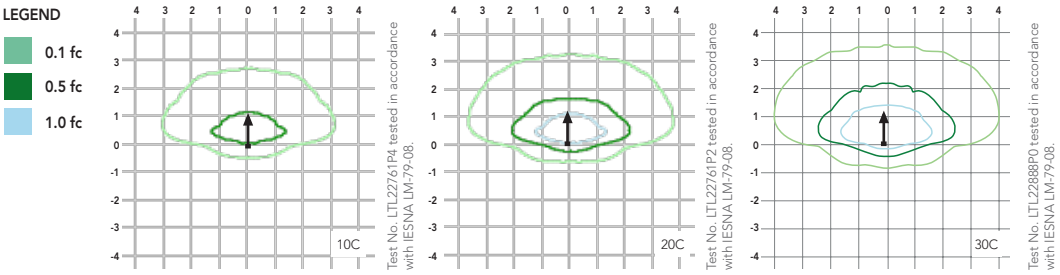
Electrical Load

LEDs	Drive Current (mA)	System Watts	Current (A)					
			120	208	240	277	347	480
10C	700	26 W	0.24	0.14	0.12	0.10	-	-
20C	700	45 W	0.42	0.24	0.21	0.18	0.14	0.10
30C	700	67 W	0.62	0.36	0.31	0.27	0.21	0.16

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's TWP LED homepage.

Isofootcandle plots for the TWP LED --- 700 50K T3M. Distances are in units of mounting height (15').



FEATURES & SPECIFICATIONS

INTENDED USE
The energy savings, long life and easy-to-install design of the TWP LED make it the smart choice for building-mounted doorway and pathway illumination for nearly any facility.

CONSTRUCTION
Die-cast aluminum rear housing has an impact-resistant, UV-stabilized polycarbonate front housing and refractor that is fully gasketed. Modular design allows for ease of maintenance. The LED driver is mounted to the front casting to thermally isolate it from the light engine for low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in textured and non-textured finishes.

OPTICS
Protective polycarbonate lens covers the light engine's precision-molded proprietary acrylic lenses. Light engines are available in 5000K (65 min. CRI) configurations.

ELECTRICAL
Light engine(s) consist of 10 or 30 high-efficacy LEDs mounted to a metal-core circuit board and integral aluminum heat sink to maximize heat dissipation and promote long life (L94/100,000 hrs at 25°C). The electronic driver has a power factor of >90%, THD <20%, and a minimum 2.5 KV surge rating. When ordering the SPD option, a separate surge protection device is installed within the luminaire which meets a minimum Category C low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Top 3/4" threaded wiring access. Back access through removable 3/4" knockout. Feed-thru wiring can be achieved by using a condulet tee. Mount on any flat, vertical surface.

LISTINGS
CSA certified to U.S. and Canadian standards. Rated for -40°C minimum ambient.

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

Note: Specifications subject to change without notice.

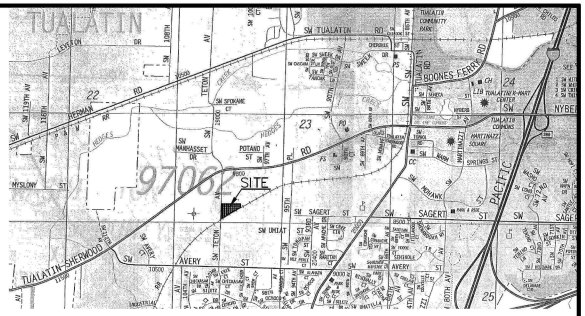
© 2012-2013 Acuity Brands Lighting, Inc. All rights reserved.

ATTENTION: Oregon law requires you to follow the rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR-952-001-0010 through OAR-952-001-0090. You may obtain copies of the rules by calling the center. (Note: the number for the Oregon Utility Notification Center is (503) 232-1987).

NOTE: THE UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE FROM UTILITY LOCATE PAINT MARKS AND AS BUILT PLANS. ACTUAL LOCATION AND DEPTH SHALL BE FILED VERIFIED PRIOR TO CONSTRUCTION AND CONNECTION TO THE EXISTING UTILITIES.

SURVEY NOTES:

1. ELEVATION DATUM IS NGVD29 AS DERIVED FROM NAVD88 ELEVATION GIVEN ON GPS OPUS REPORT. A CONVERSION FACTOR OF, NGVD29 ELEVATION = NAVD88 ELEVATION – 3.52 FT, WAS USED.

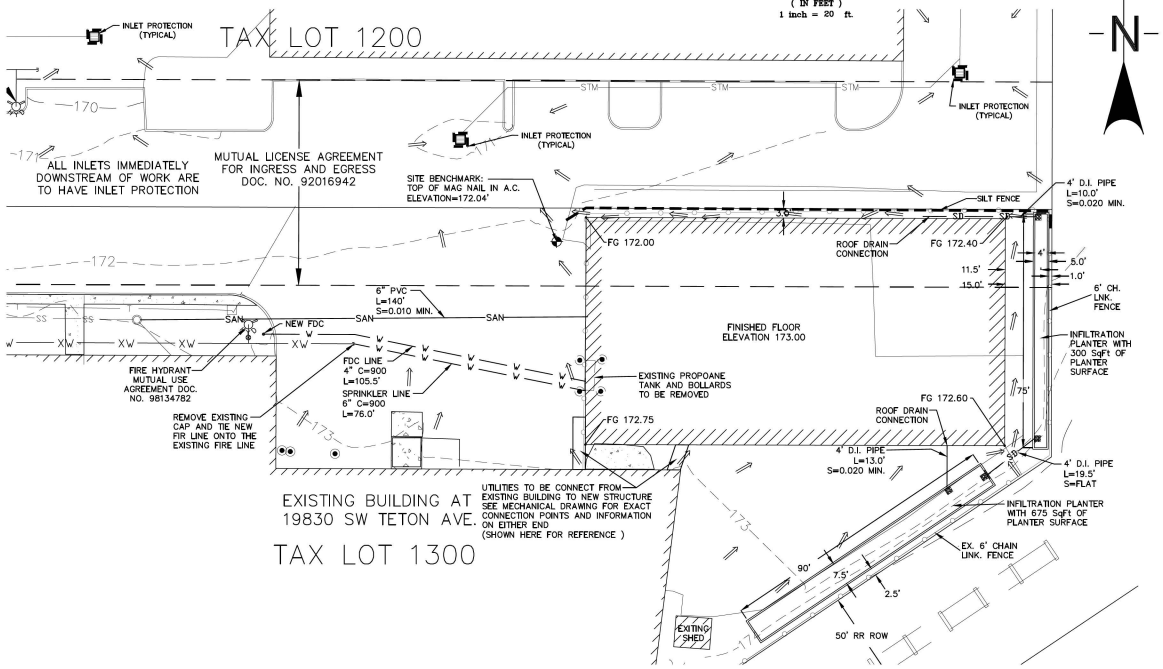


GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

N



SEDIMENT FENCE:

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST, OR OVERLAP 2 INCH x 2 INCH POSTS AND ATTACH AS SHOWN ON DETAIL SHEET 4-2A OF THE EROSION CONTROL MANUAL.
2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS WHERE FEASIBLE. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
3. THE FILTER FABRIC SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM FILTER FABRIC FENCE INSTALLATION, SHALL BE BACKFILLED AND COMPACTED ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY FILTER FABRIC FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCH x 2 INCH POST INSTALLATION. STITCHED LOOPS SHALL BE INSTALLED ON THE UP HILL SIDE OF THE SLOPED AREA.
5. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THE HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED.
6. FILTER FABRIC FENCES SHALL BE INSPECTED BY APPLICANT/CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
7. AT NO TIME SHALL MORE THAN 1" OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SILT FENCING.

EROSION CONTROL:

A. APPROVAL OF THIS EROSION, SEDIMENT AND POLLUTION CONTROL PLAN (ESPCP) DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES,. RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.)
B. THE IMPLEMENTATION OF THIS ESPCP AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND. UPGRADING OF THESE ESPCP FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
C. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
D. THE ESPCP FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
E. THE ESPCP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESPCP FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.
F. THE ESPCP FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
G. THE ESPCP FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A WEEK OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
H. STABILIZED CONSTRUCTION ENTRANCES PER DETAIL 4.1A SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
I. 24 HOUR EROSION CONTROL CONTACT:

Private Water Supply Notes:

1. Waterline facilities are private improvements.
2. All 4" and larger private waterline shall be PVC C-900 pipe conforming to AWWA C151 Class 52. Where the fire line enters the building and within 2-feet of the building the fire waterline shall be ductile iron pipe conforming to AWWA C151 Class 52. All joints to be push-on joints. Fittings shall be ductile iron and have mechanical joint ends.
3. All 4" and larger water lines shall be a minimum of 36" below finish grade surface elevation.
4. All pipe shall be bedded with crushed aggregate backfill (3/4-0"). Backfill in paved areas shall be granular backfill compacted to 95% of maximum dry density per AASHTO T-99 test method. Backfill in unpaved areas may be native material and shall be compacted to 85% of the in place dry density of the surrounding soil.
5. Waterline and appurtenances are to conform to materials, installation and testing requirements of the 2011 Oregon State Plumbing Specialty Code, City of Tualatin Building/Plumbing Department and the Oregon Health Division Administrative Rules, Chapter 333.
6. Check mechanical plans for water connection points.

Private Sanitary Sewer Notes:

1. Sanitary sewer pipe located more than (5) five feet from any structure shall be PVC sewer pipe conforming to ASTM D3034-SDR 35 with joints being elastometric gasket conforming to ASTM 3212. Sanitary sewer pipe installed within (5) five feet of any building shall be Schedule 40 PVC DWV pipe or schedule 40 ABS DWV pipe.
2. All pipe shall be bedded with crushed aggregate backfill (3/4-0"). Backfill in paved areas shall be granular backfill compacted to 95% of maximum dry density per AASHTO T-99 test method. Backfill in unpaved areas may be native material and shall be compacted to 85% of the in place dry density of the surrounding soil.
3. Testing on the sanitary sewer system may be required at the discretion of the Engineer, the Owner or the local authorities having jurisdiction. Testing shall conform with Section 712.0 of the 2011 Oregon State Plumbing Specialty Code.
4. All materials, installations, tests and inspections to be made in strict accordance with the 2011 Oregon State Plumbing Specialty Code and the City of Tualatin Building/Plumbing Department.

Private Storm Drain Notes:

1. Storm drain pipe installed more than (2) two feet from any building, shall be PVC pipe conforming to ASTM D3034-SDR 35 or HDPE pipe shall conform to AASHTO M-294s (with watertight gaskets). Pipe installed within (2) two feet of any building shall be Schedule 40 PVC DWV pipe or schedule 40 ABS DWV pipe.
2. All pipe shall be bedded and backfilled to surface with crushed aggregate backfill (3/4-0"). Crushed aggregate backfill shall be compacted to 95% of maximum dry density per ASTM D-1557 test method..
3. All materials, installation, tests and inspections to be made in strict accordance with the 2011 Oregon State Plumbing Specialty Code and the City of Tualatin Building/Plumbing Department.

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 21, 1998
JOSEPH E. EGNER
EXPIRES: 12/31/15

REVISIONS	BY

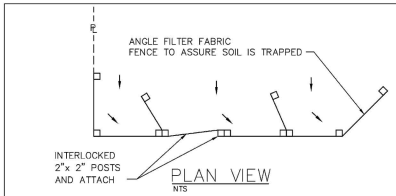
THERMAL MODIFICATION TECCHNOLOGIES, INC. 19830 SW TETON AVENUE

Utility, Grading & Erosioin Control Plan

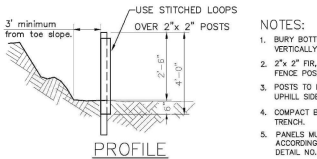
SISUL ENGINEERING
375 PORTLAND AVENUE
GLADSTONE, OREGON 97027
(503) 657-0188

DRAWING NAME: 15-011-SITE.DWG

DATE	MARCH 2015
SCALE	1" = 20'
DRAWN	JEE
JOB	SVA15-011
SHEET	C1
OF 2	SHEETS



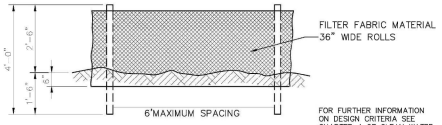
PLAN VIEW
NTS



PROFILE
NTS

NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.
5. PANELS MUST BE PLACED ACCORDING TO SPACING ON DETAIL NO.940



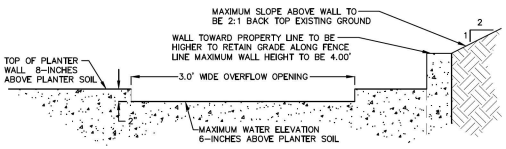
FRONT VIEW
NTS

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

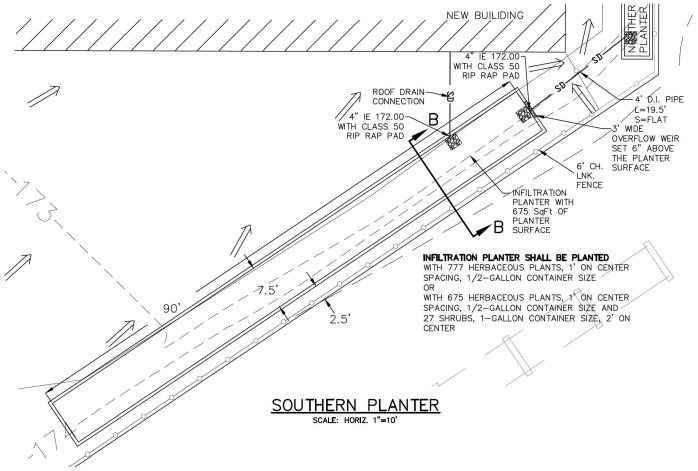
SEDIMENT FENCE

DRAWING NO. 875 REVISED 12-06

Clean Water Services
Our commitment is clear.

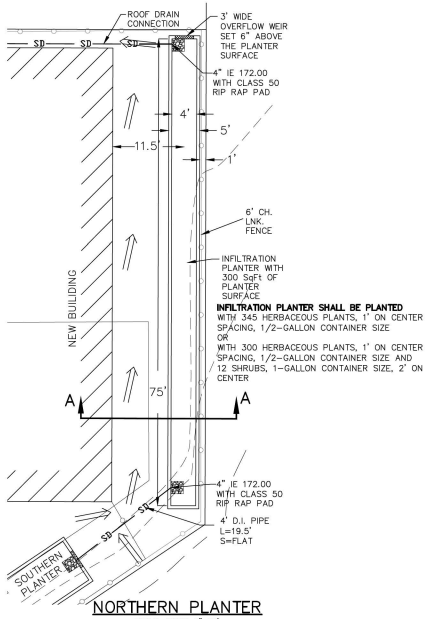


OVERFLOW WEIR DETAIL
NTS



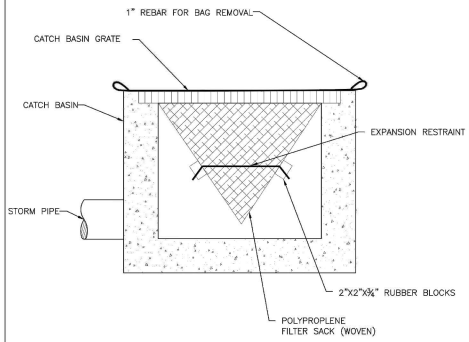
INFILTRATION PLANTER SHALL BE PLANTED
WITH 777 HERBACEOUS PLANTS, 1' ON CENTER SPACING, 1/2-GALLON CONTAINER SIZE
OR
WITH 675 HERBACEOUS PLANTS, 1' ON CENTER SPACING, 1/2-GALLON CONTAINER SIZE AND 27 SHRUBS, 1-GALLON CONTAINER SIZE, 2' ON CENTER

SOUTHERN PLANTER
SCALE: HORIZ. 1"=10'



INFILTRATION PLANTER SHALL BE PLANTED
WITH 345 HERBACEOUS PLANTS, 1' ON CENTER SPACING, 1/2-GALLON CONTAINER SIZE
OR
WITH 300 HERBACEOUS PLANTS, 1' ON CENTER SPACING, 1/2-GALLON CONTAINER SIZE AND 12 SHRUBS, 1-GALLON CONTAINER SIZE, 2' ON CENTER

NORTHERN PLANTER
SCALE: HORIZ. 1"=10'



WOVEN POLYPROPLENE SACK

NOTE:

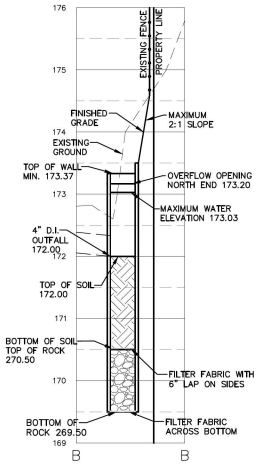
1. RECESSED CURB INLET CATCH BASINS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS. SIZE OF FILTER FABRIC INLET SACKS TO BE DETERMINED BY MANUFACTURER.

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

INLET PROTECTION
TYPE 5

DRAWING NO. 920 REVISED 12-06

Clean Water Services
Our commitment is clear.

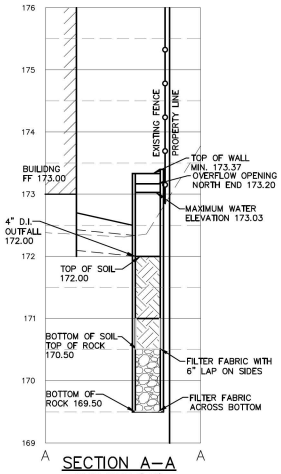


SECTION B-B
SCALE: HORIZ. 1"=10'
VERT. 1"=1'

INFILTRATION PLANTER NOTES:
PLANTINGS SHALL BE EITHER 115 HERBACEOUS PLANTS PER 100 SQUARE FEET
OR
100 HERBACEOUS PLANTS AND 4 SHRUBS PER 100 SQUARE FEET.

GROWING MEDIUM SHALL BE COMPOSED OF EQUAL PARTS OF ORGANIC COMPOST, GRAVELY SAND AND TOPSOIL. COMPOST IS TO BE WEED-FREE, DECOMPOSED, NON-WOODY PLANT MATERIAL; ANIMAL WASTE IS NOT ALLOWED. CHECK WITH CITY OF TUALATIN OR CLEAN WATER SERVICES FOR SEAL OF TESTING APPROVAL PROGRAM COMPOST PROVIDERS.

FILTER FABRIC SHALL BE NON-WOVEN GEOTEXTILE CONFORMING TO ODOT TYPE ii VARIATION OR APPROVED EQUAL.



SECTION A-A
SCALE: HORIZ. 1"=10'
VERT. 1"=1'

INFILTRATION PLANTER NOTES:
PLANTINGS SHALL BE EITHER 115 HERBACEOUS PLANTS PER 100 SQUARE FEET
OR
100 HERBACEOUS PLANTS AND 4 SHRUBS PER 100 SQUARE FEET.

GROWING MEDIUM SHALL BE COMPOSED OF EQUAL PARTS OF ORGANIC COMPOST, GRAVELY SAND AND TOPSOIL. COMPOST IS TO BE WEED-FREE, DECOMPOSED, NON-WOODY PLANT MATERIAL; ANIMAL WASTE IS NOT ALLOWED. CHECK WITH CITY OF TUALATIN OR CLEAN WATER SERVICES FOR SEAL OF TESTING APPROVAL PROGRAM COMPOST PROVIDERS.

FILTER FABRIC SHALL BE NON-WOVEN GEOTEXTILE CONFORMING TO ODOT TYPE ii VARIATION OR APPROVED EQUAL.

REVISIONS	BY

THERMAL MODIFICATION
TECCHNOLOGIES, INC.
19830 SW TETON AVENUE

Planter & Erosion
Control Details

SISUL ENGINEERING
375 PORTLAND AVENUE
GLADSTONE, OREGON 97027
(503) 657-0188

DRAWING NAME: 15-011-SITE.DWG

DATE	MARCH 2015
SCALE	AS NOTED
DRAWN	JEE
JOB	SVA15-011
SHEET	C2
OF 2	SHEETS

Thermal Modification Technologies, Inc. Building Addition

Tualatin, OR

J.O. SVA15-011

March 9, 2015

STORM WATER CALCULATIONS

SISUL ENGINEERING

A Division of Sisul Enterprises, Inc.

375 Portland Avenue

Gladstone, OR 97027

phone: (503) 657-0188

fax: (503) 657-5779

REGISTERED PROFESSIONAL ENGINEER 50422 OREGON JULY 21, 1992 JOSEPH E. EGAN

Expires 12/31/15

Thermal Modification Technologies: (SVA15-011)

Existing Site:

This site is fully developed already, with a large existing building and associated parking lot including paved loading areas. The total site is already fully developed and mostly building or already paved. The existing site, 3.3 total acres has a total impervious area currently of 2.9 acres. The northern parking and loading areas currently sheet flow to the north where they drain through the neighboring parcels storm water facilities to the existing wetlands to the northeast of the site on Tax Lot 1700. The runoff from the site to the neighboring parcel is currently dealt with by Neighborhood Storm Water System Agreement, Washington County Document 92016943, that grants a general storm drain easements to all lands involved (see attached document). Because there is no Public Storm facilities close to the site and that we have been informed that we cannot use this agreement for the release of the redeveloped site so we will look to infiltrate the 100-year event so we will have no runoff.

Areas:

EXISTING SITE: Total Site 3.3 Acres

Impervious Area - Existing roof, parking lot & sidewalks = **2.9 acres**

Pervious Area – Existing Landscape areas = **0.4 acres**

Per CWS Chapter 4 since there is between 0.5 Acres and 5.0 Acres, and we are redeveloping more than 1,000 SqFt but less than 25% of the existing impervious. Table 4-1 tells us that the area that is required to be treated is the redeveloped area and 25% of the existing impervious area. The site is required to have 0.73 acres (2.9*.25) and the redeveloped area, 10,000 treated to meet this CWS requirement.

The existing roofs and the southern parking lots, 2.0 Acres, are currently handled by drywells and will remain unchanged with this project. This shows that 69% of the existing impervious surface is treated and we will use Infiltration planters to deal with the runoff from the redeveloped impervious areas. We will be replacing a paved area with a new building, storm facilities and landscaping. The new building roof area is what we will consider as the redeveloped impervious area that we will need to deal with. The new building area is 10,000 SqFt the rest of the work proposed is the infiltration planter to deal with the stormwater from the roof area.

Design Goal:

We are going to deal with the runoff from the redeveloped roof area by using an infiltration planter. The infiltration planter will have to be sized to fully infiltrate a 100 year event since there is no available public storm system to the site. The infiltration planter will deal with both water quantity and water quality in the same facility. Per the attached soils report the on site soils have a measured infiltration rate of 2.5 inches per hour. We will use a factor of safety of 2 giving us a design infiltration rate of 1.25 inches per hour.

We will deal with the new building as a whole even though there will be two basins. The basins will be set at the same elevations and connected with a pipe so they will function as one unit. We will use a 100 year, 4.50 inch 24 hour storm event to size the facility.

Total Roof Area = 10,000 SqFt (0.230 Acres)

We will use a CN_{PERV} = 89 & CN_{IMPERV} = 89 and the minimum T_C = 5.0 Minutes

We will use the King County Hydrograph Program to develop the event and look at its infiltration requirements.

100-Year Developed Event for Runoff Rate:

The post developed Hydrographs were developed using KING COUNTY DEPARTMENT OF PUBLIC WORKS Surface Water Management Division HYDROGRAPHS PROGRAMS (version 4.21B).

Half the Roof 100 year event Flows

```
******************* S.C.S. TYPE-1A DISTRIBUTION *******************
*********  100-YEAR  24-HOUR STORM  **** 4.50" TOTAL PRECIP. *********
ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO.  1
0,89,0.230,98,5.0

DATA PRINT-OUT:
  AREA(ACRES)     PERVIOUS     IMPERVIOUS    TC(MINUTES)
                  A     CN     A     CN
       .2          .0  89.0     .2  98.0         5.0

  PEAK-Q(CFS)    T-PEAK(HRS)     VOL(CU-FT)   100 Year Developed Event Flow for Roof Area
     .27            7.67            3560
ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
TMT.100
```

We will first look at a 975 square foot area straight up to find an initial storage volume needed to handle the event.

```
RESERVOIR ROUTING INFLOW/OUTFLOW ROUTINE
SPECIFY [d:][path]filename[.ext] OF ROUTING DATA
A.INF
 DISPLAY ROUTING DATA (Y or N)?
Y
ROUTING DATA:
STAGE(FT)    DISCHARGE(CFS)    STORAGE(CU-FT)    PERM-AREA(SQ-FT)
    .00            .00               .0             975.0
    .50            .00             487.5            975.0
   1.00            .00             975.0            975.0
   1.50            .00            1462.5            975.0
   2.00            .00            1950.0            975.0
   2.50            .00            2437.5            975.0
   3.00            .00            2925.0            975.0
   3.50            .00            3412.5            975.0
   4.00            .00            3900.0            975.0
AVERAGE PERM-RATE:  48.0 MINUTES/INCH
ENTER [d:][path]filename[.ext] OF COMPUTED HYDROGRAPH:
TMT.100
INFLOW/OUTFLOW ANALYSIS:
  PEAK-INFLOW(CFS)    PEAK-OUTFLOW(CFS)    OUTFLOW-VOL(CU-FT)
        .27                 .00                   0
  INITIAL-STAGE(FT)   TIME-OF-PEAK(HRS)    PEAK-STAGE-ELEV(FT)
      100.00              16.67                 101.33

  PEAK STORAGE:      1290 CU-FT  Required volume for 975 SqFt Area

  INFILTRATED VOLUME:      3385 CU-FT

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
TMT.D
```

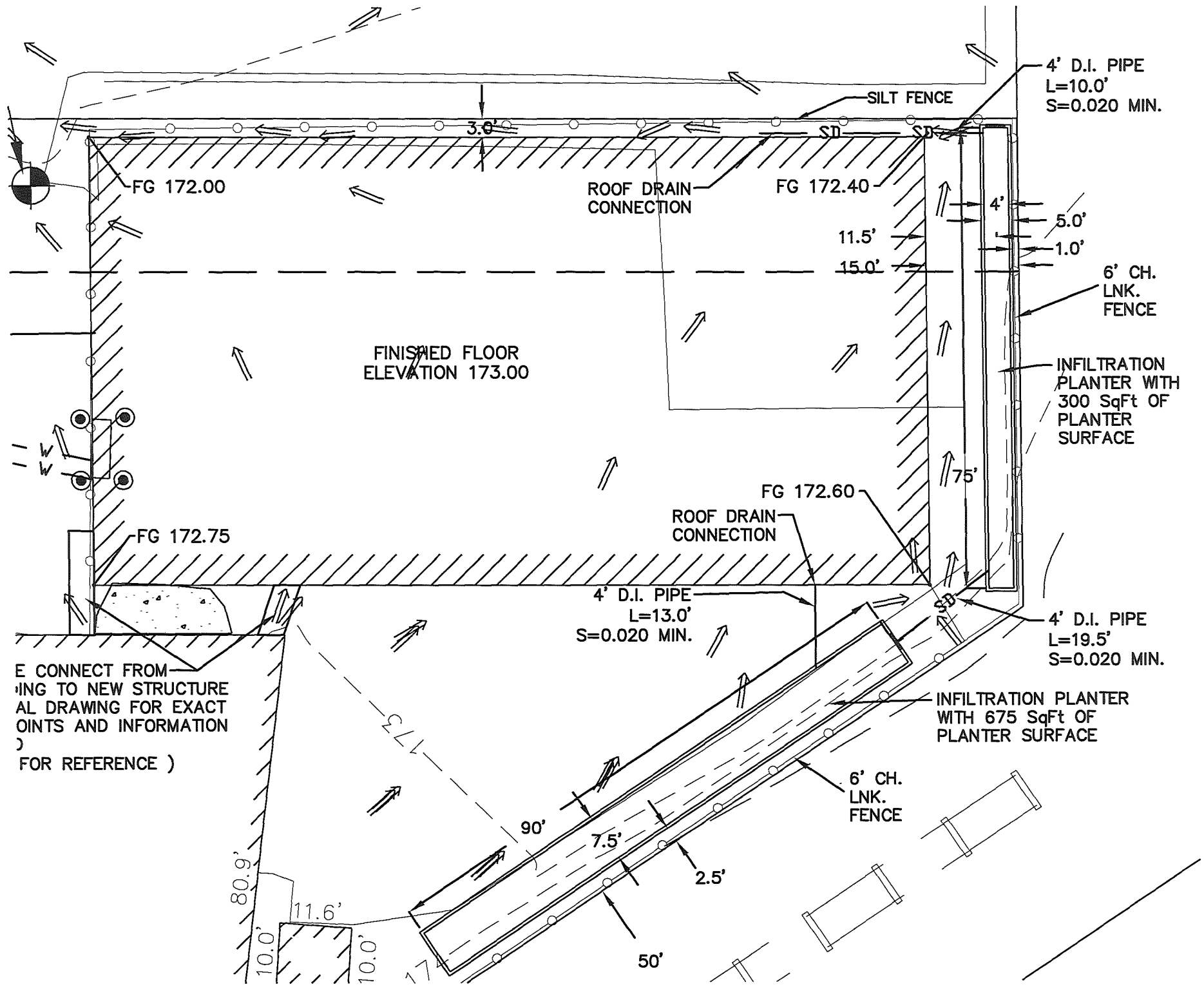
Now we will build a model of the Basin and use the infiltration rate to show that the basin will work as designed. We have built a simplified version in excel and entered the values into the Hydrograph program to route the 100 year event through.

```
RESERVOIR ROUTING INFLOW/OUTFLOW ROUTINE
SPECIFY [d:][path]filename[.ext] OF ROUTING DATA
TMT.INF
 DISPLAY ROUTING DATA (Y or N)?
Y
ROUTING DATA:
STAGE(FT)    DISCHARGE(CFS)    STORAGE(CU-FT)    PERM-AREA(SQ-FT)
    .00            .00                .0             975.0
    .50            .00             146.3             975.0
   1.00            .00             292.5             975.0
   1.50            .00             292.5             975.0
   2.00            .00             292.5             975.0
   2.50            .00             292.5             975.0
   3.00            .00             780.0             975.0
   3.50            .00            1267.5             975.0
   4.00            .00            1755.0             975.0
AVERAGE PERM-RATE:  48.0 MINUTES/INCH
ENTER [d:][path]filename[.ext] OF COMPUTED HYDROGRAPH:
TMT.100
INFLOW/OUTFLOW ANALYSIS:
  PEAK-INFLOW(CFS)    PEAK-OUTFLOW(CFS)    OUTFLOW-VOL(CU-FT)
        .27                 .00                    0
  INITIAL-STAGE(FT)   TIME-OF-PEAK(HRS)    PEAK-STAGE-ELEV(FT)
      169.50              16.67                 173.03

  PEAK STORAGE:      1290 CU-FT  Required volume for 975 SqFt Area

  INFILTRATED VOLUME:      3385 CU-FT

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
TMT.DD
```

Summary:

We believe that the water quantity and water quality requirements for this project will be met with the use of the 975 Square Foot infiltration planter. Both of the planters are designed at the same elevation with a pipe connection between them to function as one unit. They have been sized to full infiltrate a 100 Year event so no outside connection is required. In event of something creating an overflow the drainage will reach the same point that the site has historically released to. We believe that the designed system will meet or exceed the requirements of the City of Tualatin and Clean Water services.

Supporting Data


4' D.I. PIPE
L=10.0'
S=0.020 MIN.
SILT FENCE
3.0'
SD
SD
FG 172.00
ROOF DRAIN
CONNECTION
FG 172.40
4'
5.0'
11.5'
1.0'
15.0'
6' CH.
LNK.
FENCE
FINISHED FLOOR
ELEVATION 173.00
INFILTRATION
PLANTER WITH
300 SqFt OF
PLANTER
SURFACE
W
W
75'
FG 172.60
ROOF DRAIN
CONNECTION
FG 172.75
4' D.I. PIPE
L=13.0'
S=0.020 MIN.
SD
4' D.I. PIPE
L=19.5'
S=0.020 MIN.
E CONNECT FROM
ING TO NEW STRUCTURE
AL DRAWING FOR EXACT
OINTS AND INFORMATION
)
FOR REFERENCE)
INFILTRATION PLANTER
WITH 675 SqFt OF
PLANTER SURFACE
173'
6' CH.
LNK.
FENCE
90'
7.5'
2.5'
80.9'
11.6'
10.0'
10.0'
50'

24-HOUR RAINFALL DEPTHS

RECURRENCE INTERVAL (YEARS)	TOTAL PRECIPITATION DEPTH (INCHES)
2	2.50
5	3.10
10	3.45
25	3.90
50	4.20
100	4.50

24-HOUR RAINFALL DEPTHS

DRAWING NO. 1280

REVISED 12-06

Clean Water Services
Our commitment is clear.

975 Square Foot Basin for Volume:

Soils Infiltration Rate: 48 minutes/inch

Stage	Elevation (ft)	Area (sq.ft)	Volume (cu.ft.)
1	100.00	975.0	0
2	100.50	975.0	488
3	101.00	975.0	975
4	101.50	975.0	1463
5	102.00	975.0	1950
6	102.50	975.0	2438
7	103.00	975.0	2925
8	103.50	975.0	3413
9	104.00	975.0	3900

Planter Information:

Given:	Overflow Riser Dia:	12	inches
	Overflow elevation:	101.50	ft
	Soils Infiltration Rate:	1.25	inchs/hour
		0.02083	inchs/minute
		0.00003	feet/sec
		48	minutes/inch
	Rock Porosity:	0.30	

	Stage	Elevation (ft)	Area (sq.ft)	Volume (cu.ft.)	Out Rate (cu.ft./sec)
Bottom 1' of Rock	1	269.50	975.0	0.0	0.02821
	2	270.00	975.0	146.3	0.02821
	3	270.50	975.0	292.5	0.02821
1.5' of Soil	4	271.00	975.0	292.5	0.02821
	5	271.50	975.0	292.5	0.02821
	6	272.00	975.0	292.5	0.02821
Storage above the Topsoil	7	272.50	975.0	780.0	0.02821
	8	273.00	975.0	1267.5	0.02821
	9	273.50	975.0	1755.0	0.02821

92016943
Washington County
2

TUALATIN/SHERWOOD ROAD/TETON STREET (TSRTS)
NEIGHBORHOOD STORM WATER SYSTEM
AGREEMENT

To clarify and document their agreement and understanding regarding the parties' long-standing use of the existing neighborhood storm water drainage system, the undersigned parties, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, hereby affirm that they desire to retain the current neighborhood storm water drainage system and use it until such time as the City of Tualatin or Unified Sewage Agency develops a public system to which they may connect to when such public system becomes available.

To fulfill their intent, Leonard C. Pardue Jr. and Linda G. Pardue (see legal description set forth on Exhibit A) and Douglas V. Remnick and Sally Remnick (see legal description set forth on Exhibit B) on behalf of themselves, their legal representatives, heirs and assigns, hereby grant a perpetual nonexclusive appurtenant easement to use the existing neighborhood storm water drainage system to American Investment Co., an Oregon general partnership (see legal description set forth on Exhibit C). Such properties are identified within the boundary identified on the map attached hereto as Exhibit D.

This easement is granted subject to all prior easements or encumbrances of record except that this easement is intended to supersede all prior agreements between the undersigned parties regarding the neighborhood storm water drainage system.

In the event a Local Improvement District (LID) is formed under the City of Tualatin Ordinances or the laws of the State of Oregon, the parties agree that they will take all reasonable steps to bear the cost of any new system in the same proportion as their acreage bears to the total acreage within the boundary of such LID. Prior to the formation thereof, expenses of each property owner related to the storm water drainage system, shall be borne individually by that owner; or by adjoining owners if by written agreement between them.

This document may be signed in counterparts, each being deemed an original, but all of which constitute one document.

American Investment Company	General Partner	1-30-92 Date
Leonard C. Pardue Jr.	Signature	1/30/92 Date
Linda G. Pardue	Signature	1-30-92 Date
Douglas V. Remnick	Signature	APL-10-92 Date
Sally Remnick	Signature	2-5-92 Date

After recording return to: Gregory E. Harris
Ste 495 - 10300 SW Greenburg Rd
Ptld, OR 97223 - 5417

1-5

TRANSAMERICA TITLE INSURANCE 26293
16/7897

MAR 18 1992

STATE OF OREGON)
County of WASHINGTON) ss.

This instrument was acknowledged before me on JANUARY 30, 1992, by JIM KEUSEL as a General Partner of American Investment Co., an Oregon general partnership.

Notary Public for Oregon
My Commission Expires: 8/20/94

STATE OF OREGON)
County of WASHINGTON) ss.

This instrument was acknowledged before me on JANUARY 30, 1992, by Linda G. Pardue Jr.

OFFICIAL SEAL
CATHERINE BARTELL
NOTARY PUBLIC-OREGON
COMMISSION NO. 000077A
MY COMMISSION EXPIRES JULY 14, 1994

Notary Public for Oregon
My Commission Expires: 7/14/94

STATE OF OREGON)
County of WASHINGTON) ss.

This instrument was acknowledged before me on JANUARY 30, 1992, by Linda G. Pardue.

OFFICIAL SEAL
CATHERINE BARTELL
NOTARY PUBLIC-OREGON
COMMISSION NO. 000077A
MY COMMISSION EXPIRES JULY 14, 1994

Notary Public for Oregon
My Commission Expires: 7/14/94

STATE OF OREGON)
County of Washington) ss.

This instrument was acknowledged before me on March 10, 1992, by Douglas V. Remmick.

OFFICIAL SEAL
HOLLY M. DODD
NOTARY PUBLIC-OREGON
COMMISSION NO. 007783
MY COMMISSION EXPIRES JAN. 2, 1995

Notary Public for Oregon
My Commission Expires: 1-2-95

STATE OF OREGON)
County of Clackamas) ss.

This instrument was acknowledged before me on Feb 5, 1992, by Sally Remmick.

Notary Public for Oregon
My Commission Expires: 3-12-92

JHNB5501

2

EXHIBIT A

The following described tract of land being situated in the S.W. 1/4 of Section 23 T2S, R1W, W.M.: Beginning at a point located as follows from the 1/4 corner on the South line of Section 23, T2S, R1W W. M.: thence: N 00° 11' 22" E 32.90' to a stone; thence: N 89° 59' 11" W 1292.92 feet to a stone; thence: N 00° 27' 37" E 202.70' to the North line of the Burlington Northern Railroad right of way and the "True Point of Beginning"; thence; N 00° 27' 37" E 835.36' to a 3/4" I.P. on the South line of Tualatin-Sherwood Road C. R. 492; thence: along said South line N 85° 44' 09" E 611.78' to road angle Point #3 on the South line of said road; thence: N 74° 10' 45" E 476.17' along said South line; thence: S 00° 11' 22" W 445.08' to a point on a curve of the North right of way of the Burlington Northern Railroad; thence: along the arc of a 1,939.44' radius curve to the left having a central angle of 17° 50' 35" the chord of which bears S 67° 53' 30" W 601.54' (an arc distance of 603.98') to a point of spiral; thence: along the arc of a spiral curve to the left having a spiral angle 02° 30' 00" the chord of which bears S 57° 18' 12" W 166.08', thence: S 56° 28' 13" W 451.63' to the "True Point of Beginning." Containing 13.978 acres.

EXCEPT that property sold to Tualatin Industrial L. P., an Oregon Limited Partnership by Warranty Deed recorded October 13, 1989 as Fee Number 89-49594, Washington County Records

ALSO EXCEPT that property dedicated to Washington County, a political subdivision of the State of Oregon by Deed recorded May 25, 1990 as Fee Number 90-26968, Washington County Records

EXHIBIT B

The North 198.5 feet of the following described parcel, the South line of said 198.5 foot parcel being parallel with and 198.5 feet distant from, when measured at right angles to, the North line there of:

A tract of land situated in the Southwest one-quarter of Section 23, and the Northwest one-quarter of Section 26, Township 2 South, Range 1 West of the Willamette Meridian, in the City of Tualatin, County of Washington and State of Oregon, more particularly described as follows:

Commencing at a 2-inch iron pipe marking the Southwest corner of said Section 23; thence North 0°04'41" West tracing the West line of said Section 23, a distance of 479.73 feet to a point in the Southeasterly right of way line of S.W. Tualatin-Sherwood Road No. 492; thence North 55°25'50" East along said right of way line, 772.64 feet to an angle point in said right of way; thence North 82°32'00" East along said right of way line, 188.91 feet to an angle point in said right of way; thence North 77°37'00" East 6.02 feet to a point; thence South 0°09'47" West along the Easterly right of way line of a 60-foot road, 477.18 feet to the point of beginning of the tract herein to be described; thence continuing South 0°09'47" West 647.14 feet to the Northerly line of the Spokane, Portland & Seattle Railroad right of way; thence North 56°06'32" East 662.93 feet along the Northerly line of the railroad right of way; thence North 0°09'47" East 275.91 feet to the Southwest corner of that 5-acre tract conveyed to Hugh D. Allison, et al, by deed recorded October 27, 1969 in Book 760, Page 956, Washington County Deed Records; thence North 85°50'13" West along the Southerly line of the Allison tract, 549.24 feet to the point of beginning.

EXCEPTING THEREFROM that portion thereof dedicated to the public as a public way, street and road, by Street Dedication recorded July 20, 1970 in Book 786, Page 775, Washington County Records.

GEOTECHNICAL ENGINEERING REPORT
PROPOSED NEW BUILDING
THERMAL MODIFICATION TECHNOLOGY
19830 SW TETON AVENUE
TUALATIN, OREGON

Prepared for:

Steve Mason
Integrated Facility Services, LLC
PO Box 216
Oceanside, Oregon 97134

March 5, 2015
Project No. 626-001

TERRA DOLCE CONSULTANTS, INC.

TERRA DOLCE CONSULTANTS, INC.
4706 NE 75TH AVE
PORTLAND, OREGON 97218
503-502-5114

March 4, 2015
Project No. 626-001

Steve Mason
Integrated Facility Services, LLC
PO Box 216
Oceanside, Oregon 97134

GEOTECHNICAL ENGINEERING REPORT
PROPOSED NEW BUILDING
THERMAL MODIFICATION TECHNOLOGY, INC.
19830 SW TETON AVENUE
TUALATIN, OREGON

Dear Steve:
Terra Dolce Consultants, Inc. (TDC) is pleased to present our report summarizing the site subsurface conditions and providing geotechnical recommendations for the proposed new building at the referenced property. Our project work included field exploration, engineering analyses, and preparation of our report. Our work was completed in general accordance with our proposal dated December 19, 2015.

SITE DESCRIPTION
The referenced property is located in the Tualatin, Oregon (see Figure 1). The 3.32-acre property is developed with a 53,400-square-foot industrial building and storage yard (see Figure 2). The building is a metal framed and loads are carried on a mat foundation with thickened perimeter footings. The remainder of the property is covered in asphalt and has isolated trees.

The property is triangular-shaped and is relatively flat, except for a raised parking area in the southwest corner (see Figure 2). The elevation across the site ranges from 173 feet above mean sea level (MSL) and 172 feet MSL in the northeastern corner (see Figure 2). In the southwest corner, however, the raised parking lot elevation ranges from 179 feet MSL to 176 feet MSL.

PROJECT DESCRIPTION
TDC understands that the owners of Thermal Modification Technologies are in the process of expanding their operations. The expansion will include a 10,000-square-foot metal building that will house a furnace and railcar that works along a conveyor system. The anticipated load of the furnace is 133 kips of dead load and the load of the railcar is a live load of 195 kips. The furnace and the railcar will be supported on a reinforced concrete slab. The metal framing will span the entire building and be founded on a perimeter grade beam.

GEOLOGIC CONDITIONS
Geological maps of area indicate that the site underlain with fine-grained facies of the Catastrophic Flood deposits. The flood deposits are typically layered Silts and

Sands with trace Gravels that are poorly consolidated. The material were 15,000 to 13,000 years ago during the Missoula Floods.

FIELD INVESTIGATIONS

On January 13 and 19, 2015, TDC conducted a two-part site investigation at the referenced property. Part 1 consisted of drilling four (4) borings, in which three (B-1, B-3, and B-4) were drilled to 30 feet below the ground surface (bgs) and one boring (B-2) was drilled to 3 feet bgs ((designated B-1 through B-4, see Figure 2 and Attached Boring Logs). Boring B-2 was used for infiltration test.

Part 2 consisted of pushing two (2) Cone Penetration Test soundings with pore pressure (CPTu) measurement to approximately 48 feet bgs (designated CPTu-1 and -2, see Figure 2 and Attached CPT Logs and Data).

Drilled Borings. The borings were drilled with a solid-stem auger drill rig. In each boring, disturbed soil samples were collected at 2.5-foot intervals from 0 to 10 feet bgs and 5-foot intervals from 10 bgs to 30 feet bgs. The Standard Penetration Test method (ASTM D 1586) was used to collect soil samples with an 18-inch-long split-spoon sampler driven with a 140-pound hammer. The number of blows required to drive the sampler 18 inches were recorded in three (3) 6-inch intervals. The number of blow for the last two intervals were added together to determine the blow count (N) or blows per foot (bpf), which are used to estimate the in-place consistency of the soil. The soil types and blow counts were documented on boring logs (see Attached Boring Logs).

CPTu Soundings. The CPTu soundings were advanced 48 feet bgs using a cone penetrometer truck. CPTu method determines geotechnical engineering properties of soils and delineating soil stratigraphy. The method consists of pushing an instrumented cone into the ground at a controlled rate. Software records at 5-cm intervals cone tip resistance (qc), sleeve resistance (fs), and dynamic pore water pressure (u2). The tip, sleeve, and pore pressure measurements determines soil behavior types (see Attached CPT Logs).

Surface Conditions.

The property is located on the east side of SW Teton Ave (see Figure 2). The triangular-shaped property is relatively flat with less than 2 feet of relief across the site, with the exception of the southwestern corner, which is 3 to 6 feet higher than the remainder of the site.

The proposed new building is located in the northeastern corner of the site. At the time of our investigation, the site was covered in 3 to 6 inches of asphalt, with 3 to 6 inches crushed rock underneath. In the very northeast corner of the site, the site was mantled with 2.5-feet of ¾-inch to crushed rock

Subsurface Conditions

During our site investigation, TDC encountered the Fine-Grained Flood Deposits underlying the Asphalt/Rock that mantled the site. The flood deposits consisted of

layers of Silt, Sand, and Gravel (see Attached Boring Logs and CPT Logs). The layers are described below.

Asphalt/Rock (0 – 2.5 feet bgs). A majority of the proposed building footprint is covered with 3 to 6 inches of Asphalt and 3 to 6 inches of ¾-inch rock. In the far northeastern corner, however, there is a 2,000-square-foot area that is covered with 12 inch of ¾-inch rock and 18 inches of 2-inch rock and geofabric (see Attached Boring Logs).

Silt to Silty Sand (ML/SM) (2.5 – 20 feet bgs). Silt to Silty Sand was encountered up to 20 feet bgs. The Silt to Silty Sand was brown, very loose to loose, sandy silts and fine-grained sand. From 2.5 to 11 feet bgs, the Silty Sand was moist and below 11 feet bgs, the Silty Sand was saturated.

Blow counts within the Silty Sand ranged from 2 bpf to 5 bpf. CPTu cone tip resistances range between 9 and 100 tons per square foot (tsf), indicating loose to medium dense relative density.

Sand (SP) (20 – 25 bgs). Sand was encountered between 15 to 20 feet bgs. The Sand was clean with no fines, medium dense to dense, wet, and was medium-grained with trace gravels. Blow counts within the Sands ranged from 8 to 18 bpf. CPTu cone tip resistance was around 120 tsf.

Silty Sand (SM) (25 – 46 feet bgs). Underlying the Sand was a Silt to Silty Sand. In the borings, the Silty Sand was encountered to 30 feet bgs or the depth of the boring; in the CPTu soundings, it was encountered to 46 feet bgs. The material was Blue Grey, medium dense to dense, wet, fine-grained Silt and Sand with trace gravel. Blow counts ranged from 8 to 18 bpf. CPTu cone tip resistance ranged from 20 to 150 tsf.

Sand to Gravel (46 to 48 feet bgs). The CPTu sounding hit resistance at 48 feet bgs. The material is a Sand to Gravel. CPTu cone tip resistance was 500 tsf.

Groundwater. Groundwater was encountered at 15 feet bgs during drilling. After 5 hours, the groundwater was measured at 11 feet bgs the borings. The CPTu data also confirmed the groundwater levels at 11 feet bgs.

Pore Pressure Dissipation (PPD) Tests. Four PPD tests were conducted in CPTu-1 and two in CPTu-2 (see Attached CPT Logs and Data). Results indicate that the pore pressures in the soils from 15 feet to 43 feet bgs dissipated relatively quickly and at 46 feet, the pore pressures dissipated slowly. This is consistent with the material logged by the CPTu.

Shear Wave Velocity (SWV) Tests. Eight SWV measurements were taken in CPTu-1 (see Attached CPT Logs and Data). The results indicate that the material from 6 to 35 feet have a shear wave velocity from 534 feet per second (ft/s) to 918 ft/s. Deeper, the shear wave velocity increased to 1654 ft/s. These values are consistent with the material type for the area.

Infiltration Test. An infiltration test was completed in Boring B-2 at 3 feet bgs. The test was conducted in a 6-inch diameter boring. The water was filled 24 inches above the bottom of the boring and allowed to percolate. The measured infiltration rate was 2.5 inches per hour.

SEISMIC CONDITIONS

Faulting

The entire Northwest, including the site, is located within a seismically active region. The U.S. Geological Survey fault database contains information on faults and associated folds in the United States that are believed to be sources of Magnitude 6 or greater earthquakes during the Quaternary (the past 1.6 million years). The database indicates that the site is located near several crustal faults or fault segments:

Fault	Approx. Distance From the Site (miles)	Fault or Fault Segment Length (km)	Slip Rate (Mm/yr.)
Portland Hills	9 NE	68.3	<0.2
East Bank	13 NE	34	<0.2
Oatfield	8 NE	5	<0.2
Canby-Molalla	3 NE	75.5	<0.2
East Bank	12 NE	41.3	<0.2
Newberg	9 NE	7.1	<0.2
Beaverton	9 N	21.4	<0.2

In our opinion, surface fault rupture is a low hazard at the site.

Liquefaction

Liquefaction triggering was evaluated using data collected from the CPT soundings. Liquefaction potential was evaluated using a simplified, empirical method (Roberston, 2009).

Earthquake data required for liquefaction analyses include peak horizontal "ground surface" acceleration PGAM and earthquake magnitude M. In accordance with the 2014 OSSC and ASCE 7-10, the potential for liquefaction and soil strength loss evaluation for seismic design Categories D through F shall use a site peak ground acceleration adjusted for site soil conditions determined either by a site specific study or by assuming PGAM = FPGA·PGA, where PGAM is the maximum considered earthquake geometric mean (MCEG) peak ground acceleration adjusted for Site Class effects, FPGA is the site coefficient from ASCE 7-10 Table 11.8-1, and PGA is

the mapped MCEG peak ground acceleration shown in ASCE 7-10 Figure 22-7 (ASCE, 2010).

For this project, the PGAM = FPGA*PGA = 1.077 x 0.423 = 0.47g

The 2008 USGS National Seismic Hazard Mapping program was used to deaggregate the 2% in 50 year earthquake hazard at the site and to select the earthquake magnitude/distance most representative of this ground surface acceleration. Based on the USGS deaggregation, we selected a Magnitude 6.8 local earthquake at a distance of 3 to 7 km as representative of producing the PGAM ground motion.

We also considered the effects of a distant, large magnitude earthquake by evaluating the site liquefaction potential during a Magnitude 9.0 Cascadia subduction zone earthquake occurring at a distance of 100 km and producing a peak ground surface acceleration amax = 0.18g. The groundwater table during the design earthquake shaking was assumed 11 feet bgs.

Results of our liquefaction analyses indicate that the site is potentially liquefiable during both a local M6.8 and a distant M9.0 earthquake (see CPT Logs). The two earthquakes happen to be roughly equal in their potential to induce liquefaction. The analyses indicate that silty sandy soils located between the depths of 14 feet and 19 feet are most liquefiable. The overall liquefaction risk is judged to be low, with minor to little soil liquefaction. Estimates of post-earthquake ground settlement were made using five different methods by (Youd and Idriss, 2001) (Moss, et al, 2006), (Idriss and Boulanger, 2008), (Roberton, 2009), and (Boulanger and Idriss, 2014).

The estimates range about 1 inch to 4 inch of ground settlement and average about 1.2 inch (see Attached CPT Logs and Data).

Seismic Shaking

Strong, seismic ground shaking is a significant hazard at the site. The site is underlain up to 47 feet of relatively weak silts followed by a very dense gravel and cobble conglomerate. The water table is about 11 feet bgs. Based on our simplified CPT-based empirical liquefaction analyses, layers of saturated silt are susceptible to liquefaction during the design earthquake event. Thus, in accordance with the 2014 OSSC, the site classifies as Site Class F due to the liquefiable materials. Without considering liquefaction, based on a weighted average shear wave velocity (Vs) of about 700 ft/sec in the top 100 feet, the site classifies as Site Class D.

Typically, for projects constructed on Class F sites, site-specific dynamic response analyses need to be performed to determine appropriate values of site coefficients Fa and Fv. However, in accordance with ASCE 7-10 Section 20.3.1, site specific dynamic response analyses is not needed to be performed on sites that are Class F because of liquefiable soils if the proposed structures have periods of vibration equal to or less than 0.5 seconds. We understand that the proposed structure has a fundamental period of 0.46 seconds.

It is interesting to note that when soil suffers liquefaction during an earthquake its stiffness decreases significantly, which strongly influences the amplitude and frequency content of the motion of the soil above the liquefied zone. Recent research shows that the changed properties of the soil tend to filter out the high frequency ground motions, thus only allowing lower frequency waves to continue to the ground surface conclude and that there is generally a reduction of short period (<0.7 sec) spectral accelerations for motions with liquefaction to those without liquefaction (Huang, 2008) and (Youd and Carter, 2003). Soil softening also amplifies long-period spectral values (0.7-1.0 sec) due to the lengthening of the fundamental site period as the soil softens. Huang (2008) found that the reduction in short period motion is more consistent throughout the case histories than the amplification of long period motion.

Based on all of the above information, site coefficients Fa and Fv can reasonable and conservatively be selected using the pre-liquefaction spectra for Site Class D.

As stated previously, the 2014 OSSC specifies the use of an earthquake event having a 2 % probability of exceedance in 50 years (an approximate return period of 2,475 years). This earthquake is defined as the Maximum Considered Earthquake (MCE) for use in structural design. The design spectral accelerations were obtained from the 2008 U.S. Geological Survey (USGS) National Seismic Hazard Mapping Program probabilistic seismic hazard analyses (PSHA). The location of the ground motions for the evaluation is:

Latitude = 45.375 Longitude = -122.782

The seismically induced acceleration values at the rock interface, and the coefficients used to estimate ground surface response adjusted for Site Class D, for the MCE at the site are presented below:

Seismic Parameters	Value
Mapped Peak Ground Acceleration, ASCE7-10, Fig. 22-7, PGA	0.415g
Peak Ground Acceleration adjusted for site effects, PGA_M	0.45g
MCE Bedrock Spectral Acceleration, 0.2 second period, S_S	0.947g
MCE Bedrock Spectral Acceleration, 1.0 second period, S_1	0.416g
Short-Period Site Factor, F_a	1.120
Long-Period Site Factor, F_v	1.584
Soil MCE Spectral Acceleration, 0.2 second period, Site Class D, S_{MS}	1.085g
Soil Design Spectral Acceleration, 1.0 second period, Site Class D, S_{M1}	0.659g
Soil Design Spectral Acceleration, 0.2 second period, Site Class D, S_{DS}	0.708g
Soil Design Spectral Acceleration, 1.0 second period, Site Class D, S_{D1}	0.439g

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations in this report are based on the information provided to us, results of the site investigation, and professional judgment. We have observed only a small portion of the pertinent soil and groundwater conditions. The recommendations are based on the assumptions that the soil conditions do not deviate appreciably for those encountered during our site visit.

Conclusions

It is our opinion that the site is geotechnically sound for the proposed new building. The opinion is based on the assumption that recommendations provided in this report are followed.

Site Clearing

TDC understands that the footprint for the new building is in the northeastern corner of the property. At the time of our field investigation, the northeast corner of the property was covered with 3 to 6 inches of asphalt and up to 2.5 feet of crushed rock. In addition, the area was used as storage for wide-flanged beams, scrap metal, and other miscellaneous metal items. TDC recommends that the area be cleared of the scrap metal and other debris and that the asphalt and rock be stripped to native material.

Wet Weather or Wet Soil Construction

During wet weather or soil conditions, the exposed soils may be disturbed with construction traffic. Such disturbance will structurally weaken the soil and render it unsuitable for uses in foundation bearing.

If construction occurs during wet weather, the exposed soils should be protected with at least 3 inches of ¾-inch-minus crushed rock. In addition, care should be taken to minimize disturbance of native Silty soil, which may become "pumped" and weakened by repeated loading and vibratory compaction and wheeled equipment. Should soils become disturbed, the soils should be removed to firm native subgrade and replaced with compacted ¾-inch-minus gravel structural fill placed in accordance with the above recommendations.

Allowable Bearing Capacity

TDC understands that a reinforced concrete foundation will be founded on the subgrade soils. TDC recommends an allowable bearing capacity of 2,000 psf for the native fine-grained soils. The allowable bearing capacity can be increase 30 percent for transient live loads, such as seismic loading.

The allowable capacity assumes that the bearing soils are firm, non-yielding native Silts. If during excavation of the footing, the Fill or soft soils are encountered, then the Fill and Soft soil shall be overexcavated and replaced with compacted engineered Fill.

The Structural Fill shall consist of ¾-inch minus with less than 10 percent fines. The Structural Fill shall be compacted in 12-inch lifts to 95 percent of standard Procter (ASTM D698).

Foundation System

Due to the potential for liquefaction to occur at the site during a severe seismic event, we recommend foundation systems that mitigate this hazard be considered. The conservative approach would be to utilize a deep foundation system such as piles to transfer loads to a bearing stratum underlying the potentially liquefiable zone. Another alternative to reduce the risk of damage due to liquefaction would be to utilize a reinforced slab-on-grade with thickened edges which ties the foundation components together laterally. Of these two options, the deep foundation system would provide a higher level of performance during a severe earthquake event but is considerably more expensive. The strengthened shallow foundation system would provide a lesser degree of performance and could suffer damage as a result of liquefaction induced differential settlement. The amount of risk acceptable for any structure must be determined by the owner and the appropriate regulatory agencies based on the intended use and occupancy requirements.

Based on discussions with the owner, project architect, and project structural engineer it has been decided to utilize the reinforced concrete slab-on-grade option to mitigate life safety hazards and accept the potential risk of loss of serviceability following a significant seismic event.

Thickened edges should extend a minimum of 18 inches below the lowest adjacent finish grade and should be a minimum of 18 inches in the least dimension.

Lateral loads can be resisted by passive pressures acting against footings and by frictional resistance between foundation elements and supporting soils. A passive resistance of 300 pounds per square foot per foot of embedment depth and a friction factor of 0.35 may be used for design.

Total and differential settlement as a result of static loading is expected to be within typical construction tolerances of one inch total settlement and one quarter to one half inch of differential settlement. We have calculated total settlement as a result of subsidence during a major earthquake event to approximately 6 inches. Differential settlement would likely be less than 50 percent of the total settlement.

Floor Slabs

Floor slabs should be underlain by a minimum of 12 inches of free-draining crushed rock. Slab thickness and reinforcing should be determined in accordance with structural considerations. For slab design, modulus of subgrade reaction ("k") values of 210 pounds per cubic inch for 12 inches crushed aggregate base may be utilized.

Onsite Infiltration System.

TDC understands that the stormwater generated from the new building will be managed with an onsite infiltration system. The system should be designed for a measured infiltration rate of 2.5 inches per hour. Due to the relatively high groundwater in the area, the infiltration system should include an overflow system with an appropriate discharge point.

DOCUMENT REVIEW AND CONSTRUCTION MONITORING

We recommend that TDC be retained to review final plans and specifications for the remodel. This review will allow us to examine the documents to determine whether the intent of our recommendations presented in this report was incorporated into the report.

TDC should provide construction monitoring during the foundation construction activities. The purpose of our field monitoring services is to confirm that the site conditions are as anticipated and to provide field recommendations as required based on the conditions encountered. TDC should observe the following:

- Foundation Subgrade.

LIMITATIONS

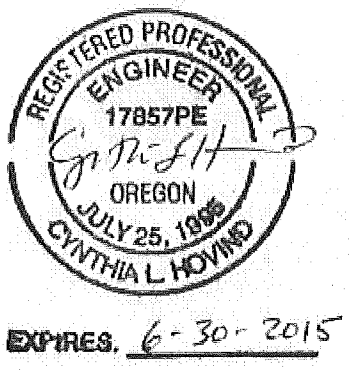
Geotechnical review is of paramount importance in engineering practice. The poor performance of many foundations has been attributed to inadequate construction review. On-site grading and earthwork should be observed and, where necessary, tested by a qualified engineering firm to verify the compliance with the recommendations contained in this report. Foundation excavation should also be observed to compare the generalized site conditions assumed in this report with those found on the site at the time of construction. If the plans for site development are changed, or if various or undesirable geotechnical conditions are encountered during construction, the geotechnical engineer should be consulted for further recommendations.

This report is issued with the understanding that it is the responsibility of the owner to ensure that the recommendations are incorporated in the plans and the necessary steps are taken to see that the constructor and subcontractors carry out such recommendations in the field. Geotechnical engineering is characterized by a certain degree of uncertainty. Professional judgments presented are based partly on our understanding of the proposed construction and partly on our general experience. Our engineering work and judgments rendered meet current professional standards; no other warranties, either expressed or implied are made. This report is subject to review and should not be relied upon after a period of 3 years.

It has been a pleasure providing you the geotechnical services for this project. If you have any questions, please call at 503.502.5114.

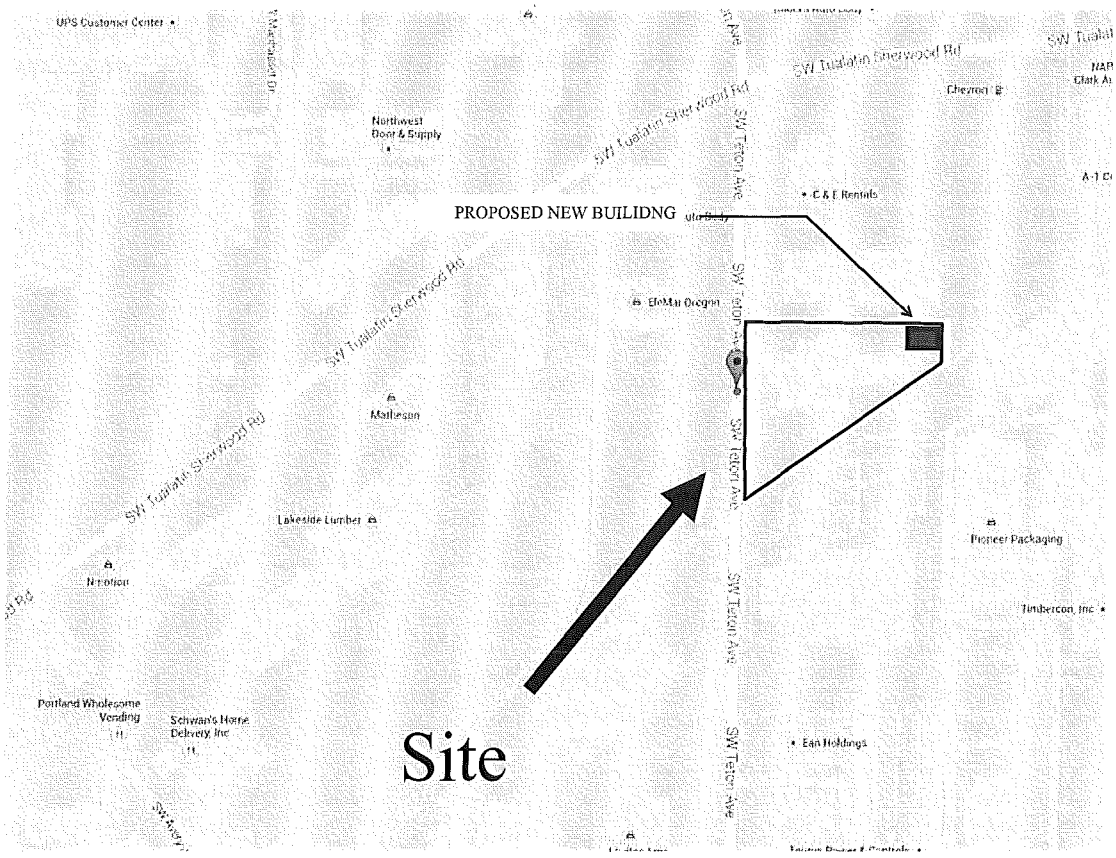
Sincerely,

Terra Dolce Consultants, Inc.



Cynthia L. Hovind, P.E., G.E.
Professional Geotechnical Engineer, OR-17857PE

Attachments
Figure 1 – Vicinity Map
Figure 2 – Site Plan
Boring Logs
CPT Logs and Data



Google Maps, 2015

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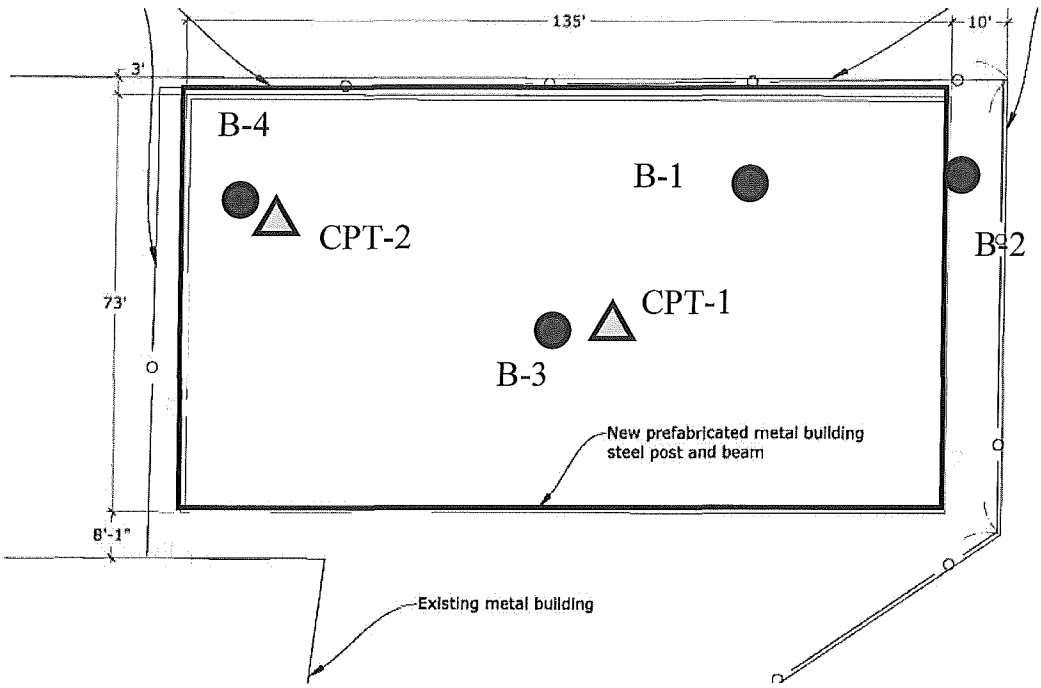
Terra Dolce Consultants, Inc. 4706 NE 75th Ave Portland, Oregon 97218 Phone 503.502.5114 Fax 503.206-5114	TMT Property 19830 SW Teton Ave Tualatin, Oregon		
Project No. 626-001	**March 5, 2015**	**Vicinity Map**	**Figure 1**



Site Map , 2014

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Project No. 626-001	**March 5, 2015**	**Site Map**	**Figure 2**