

Ruth Stellmacher

From: NoReply@cityofsalem.net on behalf of tim.hay@outlook.com
Sent: Saturday, March 10, 2018 6:48 AM
To: citycouncil
Subject: Contact City Council

Your Name	Tim Hay
Your Email	tim.hay@outlook.com
Your Phone	5033717121
Street	PO BOX 12364
City	SALEM
State	OR
Zip	97309
Message	<p>Dear Salem City Council In regards to the agenda item regarding the State Street Corridor, I am against any plan the-reduces the number of automobile lanes for bike paths. In case you haven't noticed, Salem has a real traffic problem on its hands and reducing traffic lanes makes no sense. There is no easy way to get from east to west in Salem, and with State Street being one of major routes, it makes no sense to reduce traffic capacity. I also have yet to see a bicycle using the new bike lanes on High and Church street, and those lanes have been in place for over a year. Please don't make the traffic issues worse than they already are by reducing more traffic lanes. Thank you.</p> <p>Tim Hay</p>

This email was generated by the dynamic web forms contact us form on 3/10/2018.

Ruth Stellmacher

From: John L. Poole <jlpoole56@gmail.com>
Sent: Monday, March 12, 2018 9:46 AM
To: CityRecorder
Cc: SALEM Manager; citycouncil; Salem Planning; Chuck Bennett; Cara Kaser; Tom Andersen; Brad Nanke; Steve McCoid; Matthew Ausec; Chris Hoy; Sally Cook; Jim Lewis; Juliana Inman
Subject: Submissions of John Poole & Juli Inman - Agenda 3.2a (3/12/2018)
Attachments: CouncilLetter_Hearing_March_12_2018_201803120926_signed.pdf; Shadow_Study_201803120918.pdf

(RRR)

Dear Recorder for the City of Salem,

Attached please find two PDF files, CouncilLetter_Hearing_March_12_2018_201803120926_signed.pdf and Shadow_Study_201803120918.pdf, consisting of a 14 page Letter and 19 page Shadow Study. Please add these two documents to the City's official record for tonight's hearing.

For convenience, the two files may be accessed on Drop Box:

- https://www.dropbox.com/s/uj3psmkz6p5w1ei/CouncilLetter_Hearing_March_12_2018_201803120926_signed.pdf?dl=0
- https://www.dropbox.com/s/7d4v3oihsyx31vq/Shadow_Study_201803120918.pdf?dl=0

There also is a 3 minute video at:

<https://www.youtube.com/watch?v=FGv7dhhKt-o&feature=youtu.be>

Thank you,

John L. Poole

--

John Laurence Poole
1566 Court ST NE
Salem OR 97301-4241
707-812-1323 office

1566 Court Street NE
Salem, Oregon 97301-4241

Monday,
March 12, 2018

Re: Meeting Agenda, City Council — March 12, 2018,
Agenda Item 3.2a **Resolution**

"Initiate the adoption process for new zoning and a new street
design for the State Street Corridor"

Dear Mayor Bennett and Members of the Salem City Council,

We reside at 1566 Court Street NE. Our house is a contributing
resource in the Court-Chemeketa National Register District¹ and the
former residence of past City Manager Robert Moore (d. 2005).



1566 Court Street NE (circa 1910)

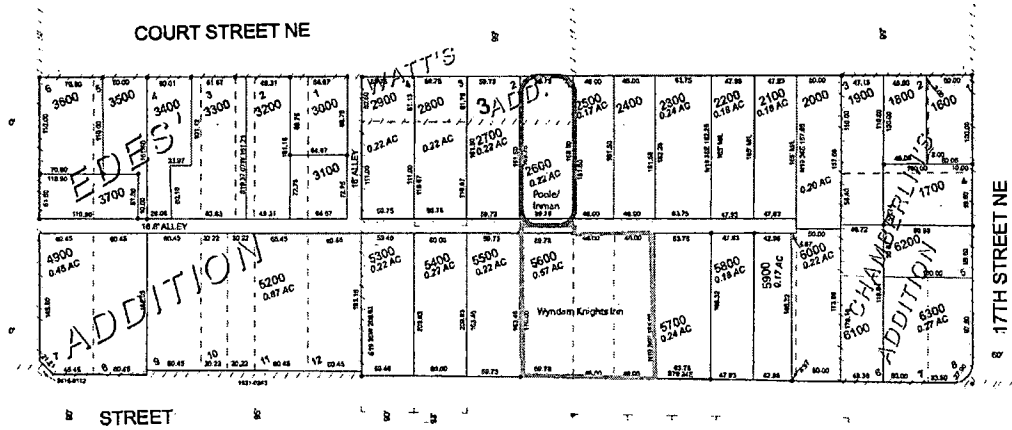
We are enthusiastic preservationists and
new to the neighborhood, having moved
here in October 2017, and chose this
neighborhood because it was within a
National Register District and is, in
our opinion, one of the most charming
neighborhoods in the City of Salem.



1566 Court Street (Fall 2017)

¹ National Historic Preservation Act (NHPA; Public Law 89-665; 54 U.S.C. 300101 et seq.) §300311. **National Register**

Our property shares a property line in the center of the alley with the Wyndam Knights Inn motel parcel:



Wyndam Knights Inn (State Street)



Wyndam Knights Inn (Alley) - facing south



Wyndam Knights Inn (Alley) - facing north

We had registered² several times with the Planning Department our emails and phone numbers; in fact we asked in an email on February 22nd when the next hearing would be, whether it would be in front of the City Council or Planning Commission and the City's response was that the next hearing would be at the Planning Commission and we would be so notified. February 22nd is 7 days after your Agenda item was created on February 15th.

We have not received any notice of the hearing referenced above, from the City either by mail, email, or phone, and only know of today's hearing because a kind neighbor thought to notify us Friday afternoon.

With little time to prepare, we share with you several concerns.

1) **Notice.** Is there some department other than the Planning Department that we must register with to be assured timely written notice? As of March 10, 2018, the Project Updates page has the latest entry dated January 2, 2018; there is no notice of this meeting³. We're concerned other residents whose properties are adjacent to the study area may be unaware of this hearing. The Project Calendar depiction for the month of March, 2018, is empty.⁴ We believe that public participation must be encouraged and that full disclosure of upcoming meetings is essential to the process.

2) **Shadows.** Our property is to the North of the State Street Corridor. As such, it will be subject to shadows during the winter limiting plant growth and solar electric generation. We have asked repeatedly for an analysis of the impact of the shadows that would be created by structures within the proposed building envelopes. Staff concluded no shadow study has been done. From the Stakeholder Advisory Committee Meeting #4 Summary Notes:

- A. Zone-to-zone setbacks are proposed to be required between the proposed mixed-use zones and residential zones even when there is an alley.

- Q: Has a shadow analysis been done?
 - A: No. A SAC member examined shadows during the winter season, and it appears that shadows will not cross into properties to the north of the proposed mixed-use zones.
- Q: What development is be feasible in the State Street corridor?

John was told on the phone February 20th that A) staff would not consider altering the set backs or step backs and B) a shadow study would not be conducted; he confirmed in writing staff's decision.

2 See exhibit "A-1".

3 See exhibits "A-2 & A-3".

4 See exhibit "A-4".

Several days later staff replied with a "clarification" or revision to say "We are looking into possibly doing a shadow analysis."

John has prepared a Shadow Study which accompanies this Letter. The Shadow Study is a model which can depict the shadow profile of a building at any given latitude and longitude at any give time of day. The work product includes a video showing two entire days from dawn until dusk. The two days are the Winter Solstice, December 21st, the Vernal Equinox, March 20th. **We stongly recommend** you view the video to witness the remarkable effect of shadows on the adjacent Court Chemeketa National Register District. You may view the Video of the Shadow Transitions for the Winter Solstice and the Spring Equinox on YouTube at:

<https://youtu.be/FGv7dhhKt-o>

Attached as Exhibits B-1 through B-3 are several screenshot depicting shadows created at a particular time on a particular day during a time when one might reasonably expect to have some sunshine.

Shadows on properties where the owner wishes to harness solar power to save monies on utilities could have a significant financial impact on the ability to save monies and/or make the decision to make a capital investment for solar equipment. Although there is no right to light statutory framework within Oregon, it seems that before something is going to reduce a property owner's ability to conserve electricity, an analysis should be made. Under the current zoning, such information could be weighed in by the Planning Commission in deciding whether or not to approve a proposed project and/or propose mitigation measure, but under the proposed zoning, an administrative approval could be issued and then the property owner would have secured rights to eclipse a neighbor's property risking disputes and potential claims and litigation.

3) Federal NEPA or Section 106 Review. National Historic Preservation Act (NHPA; Public Law 89-665; 54 U.S.C. 300101 et seq.) We understand, but have not verified⁵, that partial funding for this

5 John's request of February 26, 2018, to visit and view the project file was effectively thwarted. Staff's response was:

All of the project deliverables are located on the project website at:

<https://www.cityofsalem.net/Pages/state-street-corridor-plan-to-revitalize-the-street.aspx>

Unlike quasi-judicial land use cases, there is no physical case file with all of the project documents in it. If you would like to see previous versions of a specific deliverable, you can request them through a public records request. The process and fee for making such a request is explained here:

Mayor Bennett and Members of the Salem City Council
March 12, 2018
Page 5

project came from Federal Funds. There is no disclosure of federal funding on the Project's "Background" page which identifies other sources of funds. However, Page 2 of the Plan booklet recently posted to the site on January 30th of this year states:

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Moving Ahead for Progress in the 21st Century (MAP-21), local government, and State of Oregon funds.

Since the proposed zoning changes will permit, by right, 55 foot tall buildings and potentially cast significant shadows into the National Register District located north of the State Street Corridor, causing a change in the character of the District's use or setting and introducing incompatible visual, atmospheric, or audible elements; we request that a Section 106 review be conducted. We further request that the City of Salem Historic Landmarks Commission be designated as the consulting party for the City of Salem and that neighbors directly affected or the North East Neighborhood Association (NEN) also be designated a consulting party.

Given the one (1) business day notice we have had for this hearing, we have not had sufficient time to assert with certainty that the use of Federal Monies on a project adjacent to a National Register District necessarily triggers some sort of review. We believe that there is sufficient effect, e.g. shadows, upon the properties contiguous with the north boundary of the proposed Corridor that there should be some review and consideration given to this National Register District.

We note that staff has repeatedly asserted they will not consider changes to set backs or step-backs, and, yet, we are concerned that even if a Shadow Study is deemed to have a negative impact, the consideration given to the Study would be perfunctory.

4) **Historic Buildings.** We're concerned about the older homes remaining on State Street and that some plan be developed to prevent their demolition. We believe that these homes were left out of the

<https://www.cityofsalem.net/Pages/public-records-request.aspx>

The City has been working on this project since 2015, so there are many documents. If there is a specific document you are looking for, please let me know. I could email it to you. I'm happy to help.

National Register District because the ratio of properties on State Street that would qualify as contributors were outweighed by properties that were not and as such, the ratio did not reach a certain threshold for inclusion. Nonetheless, we submit these homes should not be abandoned and that consideration be made to either encourage their inclusion in new development, or provide for steps to encourage moving the homes in lieu of demolition.

5) **Residential Neighbor Input.** We challenge the proposed implied finding that the neighbors were fully involved and have buy-in to this proposal. We were unable to attend the meeting of November 10, 2017, but understand that many neighbors felt they were being left out of participating and were being told what was going to happen as if the matter was a *fait accompli*. Several neighbors we have spoken to on Court Street seem dissatisfied with the process. There does not appear on the Project's web site information or minutes from that meeting, nor was an audio recording of that meeting made and/or made available to us. Finally, we learned that one member spoke up and demanded that neighbors be allowed to share their thoughts and several joined in unison much to the protest of staff that their input was not planned for that meeting.

6) **Zoning Impacts on Other Residential Neighborhoods.** Since these proposed MU-1 and MU-2 zones would not be parcel specific, but could be applied in other neighborhoods within the City of Salem in the future, we feel that input from all neighborhoods should be sought and that consideration of these additions to the City's zoning code be advertised as such. We feel the association of these zones with this specific project may be causing people in other neighborhoods to be unaware of the fact that the proposed zone changes could eventually affect their neighborhoods.

In conclusion, we hope that going forward with assignment of this matter to the Planning Commission that a Shadow Study be performed for the properties and that an analysis as to whether a NEPA or Section 106 review is warranted, and, most importantly, that the process allow for changes to the building envelope created by the form based code embodied in the Plan and the proposed new Zoning. We suggest keeping an open mind toward mitigation of adverse impacts arising from any zoning changes which dispense with public hearings and give property owners a right to develop upon administrative approval.

Mayor Bennett and Members of the Salem City Council
March 12, 2018
Page 7

Yours very truly,

John L. Poole

Juliana Inman

jlpoole56@gmail.com
707-812-1323

*Encl. A Court-Chemeketa Shadow Study – The Shadow Impacts Of the
Proposed MU-1 Zoning Building Envelope Upon Properties North of The
State Street Corridor Project dated 3/12/2018*

EXHIBIT "A-1"

Project map



Background



Get involved



Sign up for the State Street Corridor Plan email list to get updates about the project, including invitations to future meetings.

Close

Captured: 3/10/2018



EXHIBIT "A-2"

The State Street Corridor Plan project aims to revitalize State Street from 12th to 25th Street into a vibrant, walkable, mixed-use corridor. The project will result in the following:

- Proposed land use regulations that encourage pedestrian-friendly, mixed-use development
- Proposed alternative street designs that are intended to create a safer, more welcoming environment for pedestrians and bicyclists

Project updates

Stakeholder Advisory Committee Meeting	The Stakeholder Advisory Committee for the State Street project will meet Tuesday, January 23, 4-6 p.m., in the Anderson Rooms in the Salem Public Library, 585 Liberty Street SE, Salem. The public is invited to attend. The committee will review revisions to the proposed mixed-use zones on State Street as well as an analysis of development feasibility. The committee will also discuss the preferred street design.	1/2/2018
Public Meeting	Join us July 25 to learn about the options for the State Street Corridor, hear what improvements are recommended, and provide input.	7/28/2017
Stakeholder Advisory Committee Meeting	The Stakeholder Advisory Committee for the State Street project is scheduled to meet on Wednesday, June 26, 4-6 p.m., in the lecture hall at Center 50+, 2615 Portland Road NE, Salem. The public is invited to attend. The committee will review and discuss the revised land use and street design options for the State Street corridor.	6/28/2017
Refining the options	City staff and the consultant team are refining the land use and street design options for the State Street corridor. These options will be analyzed to determine how well they meet the project's goal of revitalizing the corridor into a vibrant, walkable, mixed-use corridor. The City will present the results of this work to the community at a public meeting this summer.	1/1/2017
Fall 2016 public meeting	More than 100 people weighed in on different options for the State Street corridor at a public meeting on Wednesday, September 14, 2016. See what people thought by reviewing the Public Meeting 2 Presentation Results.	9/14/2016
Project videos - Salem	The Salem Connection, the City's monthly news show, featured the State Street Corridor Plan project in March and September of 2016.	3/15/2016

Contact us

-  Eunice Kim
Project Manager
-  Monday-Friday
8:00 a.m. - 5:00 p.m.
-  555 Liberty ST SE RM 305
Salem OR 97301
-  Email: ekim@cityofsalem.net
-  Phone: 503-540-2302

Follow us

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-  Twitter:
[@cityofsalem](#)
-  Instagram:
[@cityofsalemoregon](#)
-  YouTube:
[YouTube](#)

Captured: Saturday, 3/10/2018

Screenshot of Project Updates taken on March 10, 2018

EXHIBIT "A-3"

RE: Shadow Study

imap://imap.googlemail.com:993/fetch>UID>/INBOX>77327?hea...

Subject: RE: Shadow Study
From: Eunice Kim <EKim@cityofsalem.net>
Date: 2/26/2018 12:58 PM
To: "jlpoole56@gmail.com" <jlpoole56@gmail.com>

Hi John,

Whether or not staff does a shadow analysis will depend on staff time and resources. A public hearing for the State Street project has not yet been scheduled, but I anticipate it going before the Planning Commission this spring. I will send out an email to the interested parties list when a hearing has been set.

Please feel free to call me if you have any questions,
Best,

Eunice | 503-540-2308

From: John L. Poole [mailto:jlpoole56@gmail.com]
Sent: Monday, February 26, 2018 12:13 PM
To: Eunice Kim <EKim@cityofsalem.net>
Subject: Shadow Study

Hi Eunice,

You wrote today at 11:11 AM:

We are looking into possibly doing a shadow analysis.

Can you advise if the matter will be set for hearing with the Planning Commission or City Council (I'm not sure what the progression here is) *before a decision is made* on whether to conduct a shadow analysis?

I understand that the next step in this project is for a public hearing on this matter and I'm not sure how to interpret your words "looking into possibly doing" or placing them within the schedule. My concern is that if a shadow analysis is to be performed, then I think the members of the Court Chemeketa Historic District should have an opportunity to review and assess any conclusions and provide meaningful feedback before staff makes its conclusions. Would another public meeting be the vehicle to address such a study?

Or, would the analysis be performed after a public meeting when staff has made its recommendations to the hearing body? I'm also trying to plan what time I would have to schedule to perform a comprehensive and accurate analysis and would prefer not to have an unexpected notice of hearing sent to me and then have to scramble within the time period allotted from the date of mailing to the date of the hearing. Darrin Brightman, a real estate project manager with the Department of Enterprise Asset Management (EAM) Administrative Services for the State of Oregon and as Vice-Chair of the South East Salem neighborhood Association (aka "SESNA"), so kindly brought to my attention several shortcomings in my proof-of-concept and it's going to take some time to follow-up on his suggestions.

Best regards,

John

EXHIBIT "A-4"

The State Street Corridor Plan project aims to revitalize State Street from 12th to 25th Street into a vibrant, walkable, mixed-use corridor. The project will result in the following:

- Proposed land use regulations that encourage pedestrian-friendly, mixed-use development
- Proposed alternative street designs that are intended to create a safer, more welcoming environment for pedestrians and bicyclists

Project updates



Meetings



Calendar

There are no events to show in this calendar at this time.

Close

Contact us

- Eunice Kim
Project Manager
- Monday-Friday
8:00 a.m. - 5:00 p.m.
- 555 Liberty ST SE RM 305
Salem OR 97301
- Email: ekim@cityofsalem.net
- Phone: 503-540-2303

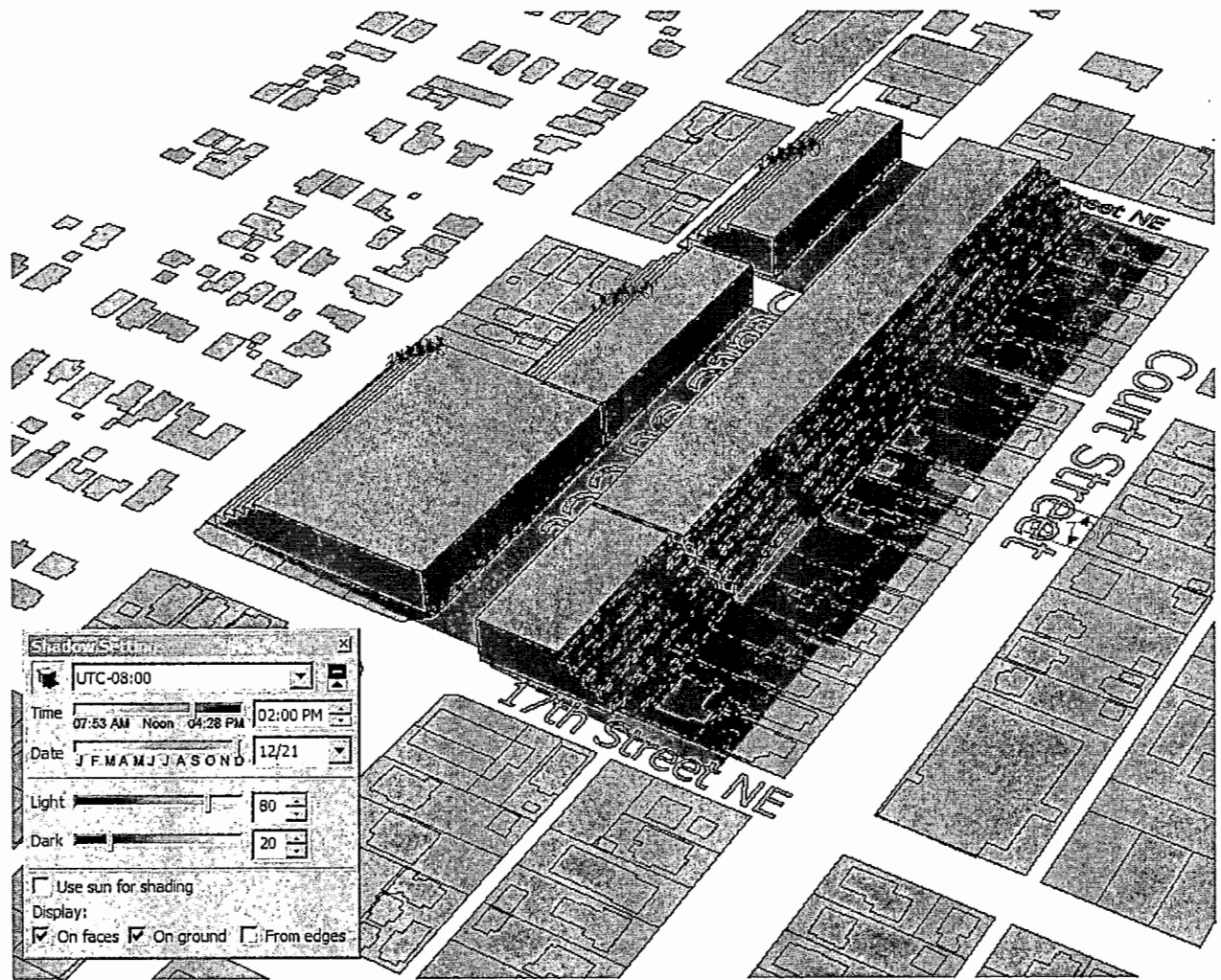
Follow us

- Facebook:
City of Salem
- Twitter:
[cityofsalem](https://twitter.com/cityofsalem)
- Instagram:
[@cityofsalem](https://www.instagram.com/cityofsalem/)
- YouTube:
[cityofsalem](https://www.youtube.com/cityofsalem/)

Captured: 3/10/2018

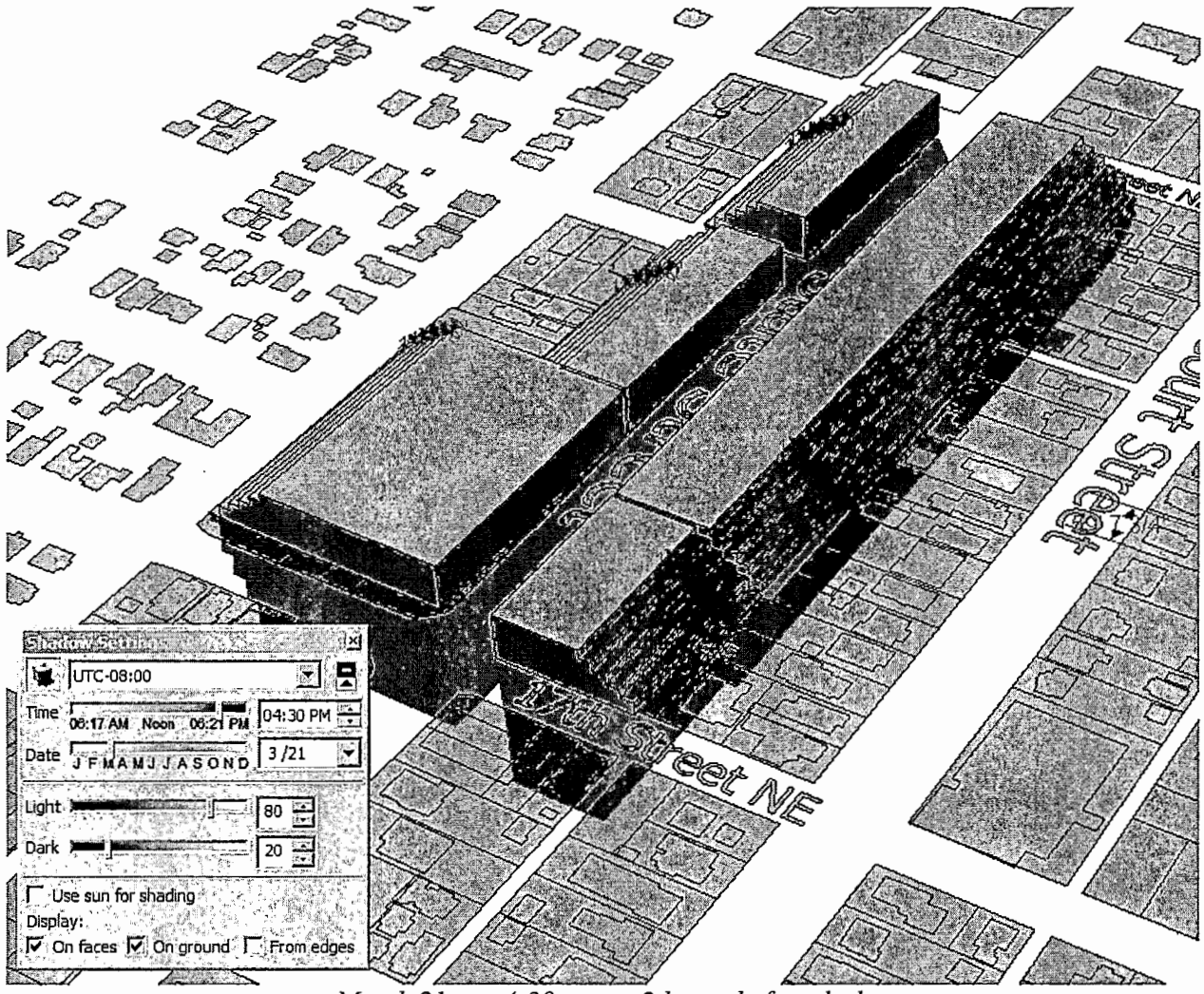
Screenshot of Projects Calender taken March 10, 2018

EXHIBIT "B-1"



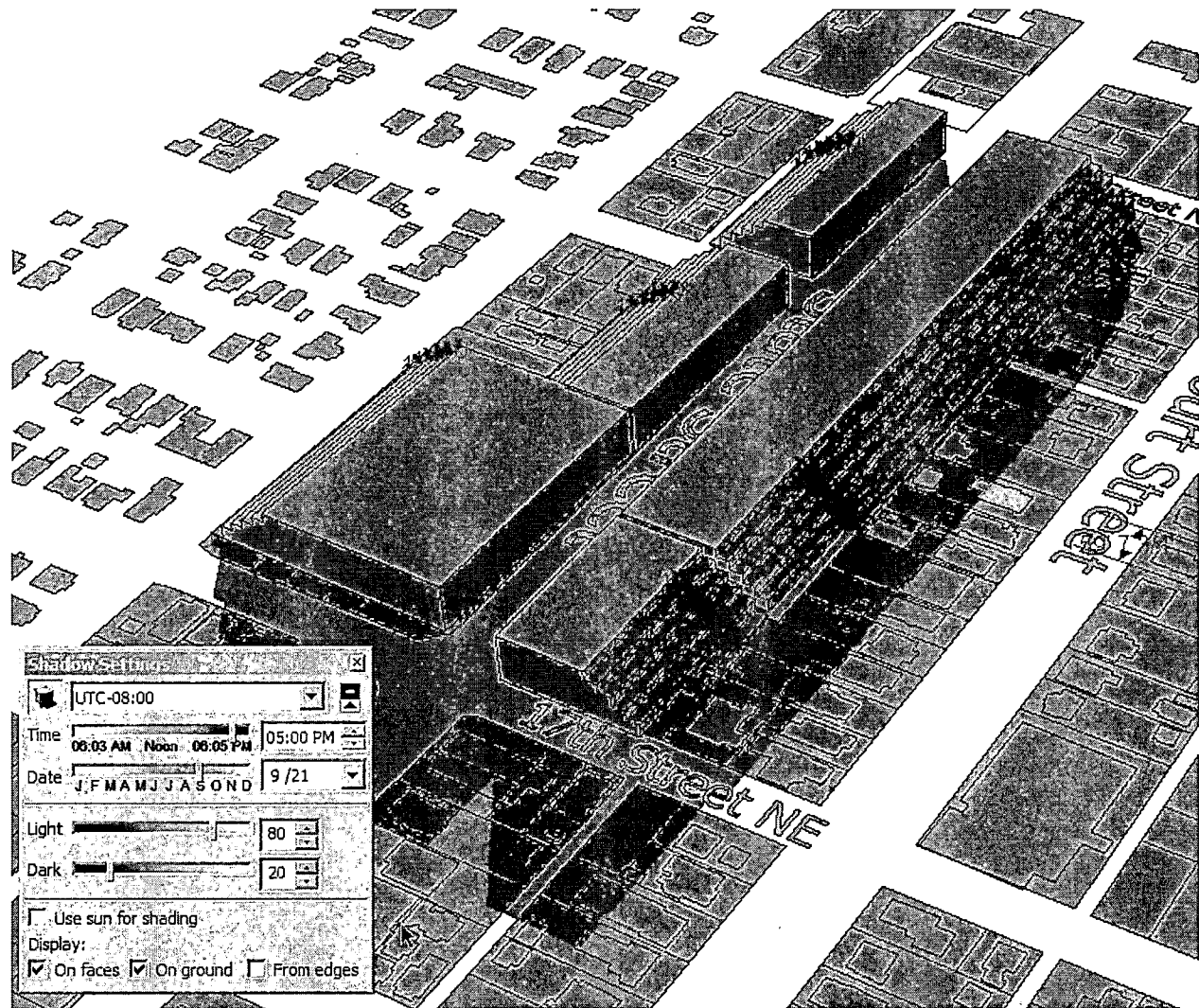
December 21 at 2:00 p.m., 2 1/2 hours before dusk

EXHIBIT "B-2"



March 21st at 4:30 p.m., ~2 hours before dusk

EXHIBIT "B-3"



September 21st at 5:00 PM, 1 hour before dusk

Ruth Stellmacher

From: NoReply@cityofsalem.net on behalf of tim.hay@outlook.com
Sent: Saturday, March 10, 2018 6:48 AM
To: citycouncil
Subject: Contact City Council

Your Name	Tim Hay
Your Email	tim.hay@outlook.com
Your Phone	5033717121
Street	PO BOX 12364
City	SALEM
State	OR
Zip	97309
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Ruth Stellmacher

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Sent: Monday, March 12, 2018 9:46 AM
To: CityRecorder
Cc: SALEM Manager; citycouncil; Salem Planning; Chuck Bennett; Cara Kaser; Tom Andersen; Brad Nanke; Steve McCoid; Matthew Ausec; Chris Hoy; Sally Cook; Jim Lewis; Juliana Inman
Subject: Submissions of John Poole & Juli Inman - Agenda 3.2a (3/12/2018)
Attachments: CouncilLetter_Hearing_March_12_2018_201803120926_signed.pdf; Shadow_Study_201803120918.pdf

(RRR)

Dear Recorder for the City of Salem,

Attached please find two PDF files, CouncilLetter_Hearing_March_12_2018_201803120926_signed.pdf and Shadow_Study_201803120918.pdf, consisting of a 14 page Letter and 19 page Shadow Study. Please add these two documents to the City's official record for tonight's hearing.

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There also is a 3 minute video at:

<https://www.youtube.com/watch?v=FGv7dhhKt-o&feature=youtu.be>

Thank you,

John L. Poole

--

John Laurence Poole
1566 Court ST NE
Salem OR 97301-4241
707-812-1323 office

Ruth Stellmacher

From: NoReply@cityofsalem.net on behalf of arkaye2@gmail.com
Sent: Monday, March 12, 2018 7:20 AM
To: citycouncil
Subject: Contact City Council

Your Name	Aileen P. Kaye
Your Email	arkaye2@gmail.com
Your Phone	5037434567
Street	PO Box 1113
City	Turner
State	OR
Zip	97392
Message	Please do not allow hard liquor sales in city parks, etc. It increases the number of drunk drivers. Thank you for your consideration.

This email was generated by the dynamic web forms contact us form on 3/12/2018.



A Court-Chemeketa Shadow Study

The Shadow Impacts
Of the Proposed MU-1 Zoning Building Envelope
Upon Properties North of
The State Street Corridor Project

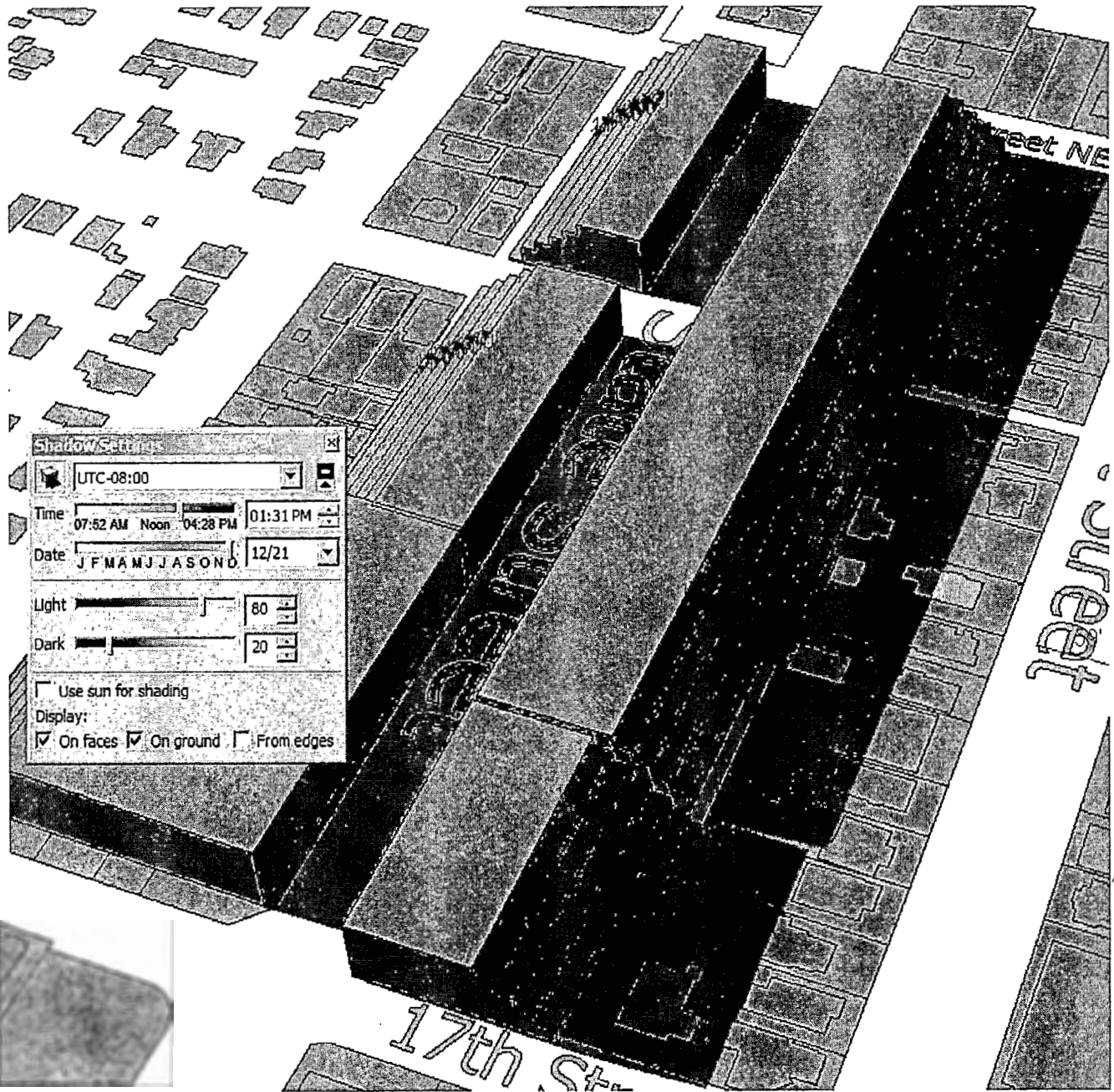


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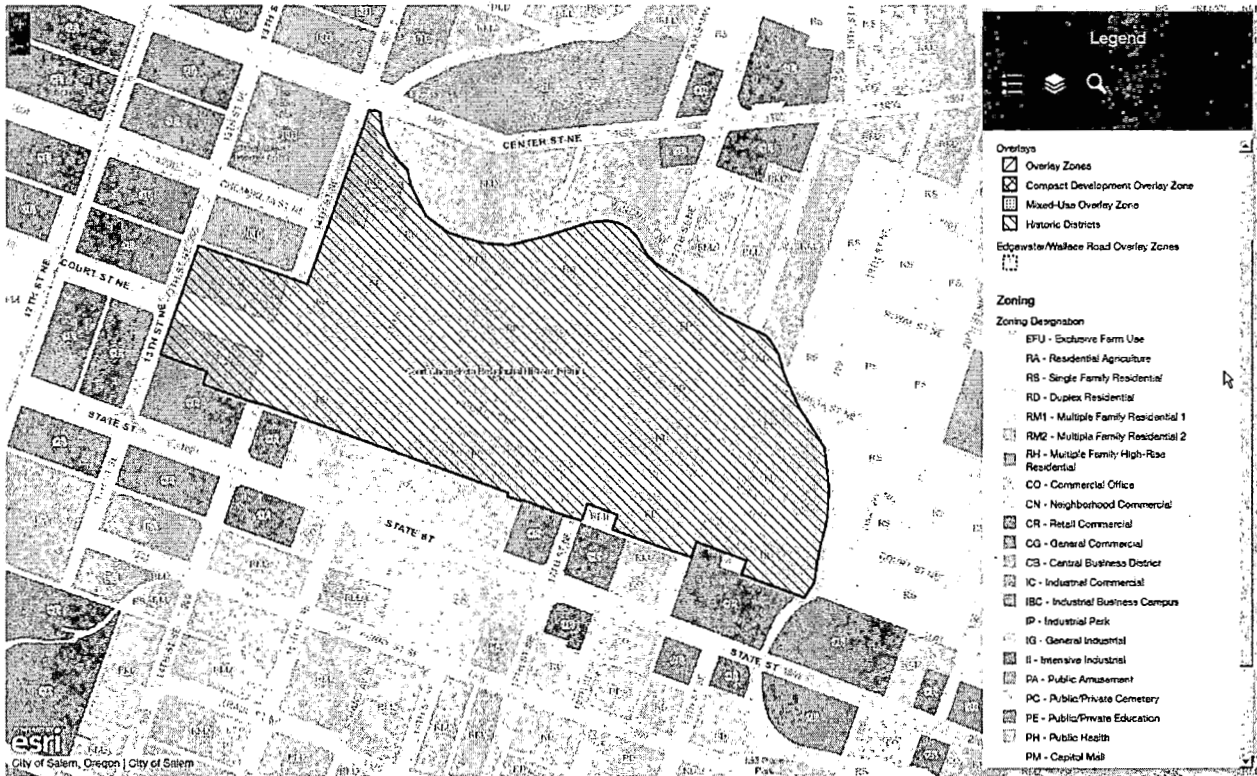
Introduction

This shadow study was prompted from the concerns of adjacent property owners as to the effect of creating a new building envelope on adjacent properties undergoing a rezoning study. City Staff would not perform a shadow study; moreover, the conclusions relied upon by Staff have been proven false.

There is no traditional buffer zone and the solution arrived at was to utilize setbacks (the distance between a building's foot and a property line) and stepbacks (elevated setbacks in a stair-like configuration).

Background

The State Street Study Corridor consists primarily of properties on State Street. On the north side of State Street is a zone with an overlay establishing the Court-Chemeketa National Register District:



The need for a shadow study

At the Stakeholder Advisory Committee Meeting #4 on January 23, 2018, John Poole addressed the committee expressing his concern about shadows and effect on the National Register District adjacent to the State Street Corridor study area. His concerns were duly noted and reflected in the Stakeholder Advisory Committee



*Stakeholders Meeting 1/23/2018
-- the public's view*

- A: Zone-to-zone setbacks are proposed to be required between the proposed mixed-use zones and residential zones even when there is an alley.
- Q: Has a shadow analysis been done?
 - A: No. A SAC member examined shadows during the winter season, and it appears that shadows will not cross into properties to the north of the proposed mixed-use zones.
- Q: What development is feasible in the State Street corridor?

Meeting #4 Summary Notes.

It was later revealed in an email dated 2/22/2018 9:23 AM that the City's analysis of shadows consisting of the following:

Jeff Leach, a board member of SESNA [South East Salem Neighborhood Association] and a Stakeholder Advisory Committee member, said at the meeting that he had examined the shadows in the area and did not see them crossing into properties north of the proposed Mixed-Use zones. He did not submit any photos or analysis.

Since buildings yet to be built in the new building envelope cannot cast shadows, the finding of Jeff Leach and the City is dismissed. Moreover, anecdotal evidence within the premises of 1566 Court Street demonstrated that even a 28' high building (the current Wyndam motel) casts shadows across the alley and into adjacent property to the extent of approximately 20' into the property.

Staff further advised that someone for SESNA was working on a shadow study. It was determined that the person doing so was Darrin Brightman, a Real Estate Project Manager with the Enterprise Asset Management (Department of Administrative Services) for the State of Oregon, who wrote

I used <https://www.findmyshadow.com/> which allows you to set a footprint and height, and pick the latitude and date. So you can then see the difference between midwinter and other times of year.

It is nothing as advanced as SketchUp. I did use that some time ago, but believe I only had a trial version; will check.

Even if the Knights Inn property line is in the middle of the alley, that's only an 8-foot difference (alley being 16').

SESNA has recommended the City do a shadow study, as it is clearly a concern to folks in NEN and was inadequately explained at the meetings; we haven't delved deeply into it ourselves.

An offer was made to include properties within SESNA and nearby the State Street Corridor, however that was declined citing SESNA homes were on the South side, so shadows were not an issue for them. Nonetheless, the entire State Street Corridor has been brought into the model.

Solar Declination and Azimuth

The angle of 23°44' is confirmed at <https://www.esrl.noaa.gov/gmd/grad/solcalc/> by placing the marker at the property known as 1566 Court Street NE, Salem.

Location

Latitude: 44.936559 Longitude: -123.02172 Time Zone: -8 DST?

Date: Day: 21 Month: Dec Year: 2018

Local Time: 01 : 10 : 44 PM Use Current Time

Save Location

Result

Equation of Time (minutes):	Solar Declination (in°):	Apparent Sunrise (hh:mm):	Solar Noon (hh:mm:ss):	Apparent Sunset (hh:mm):	Az/EI (in °) at Local Time:
1.77	-23.44	08:47	13:10:19	17:34	180° 21.67

Show Sunrise Show Sunset Show Azimuth

The solar declination is a critical component to calculating a shadow triangle. When you have one side of a triangle, e.g. 55 feet, and the angle opposite it, e.g. 23.44, you can calculate the other two side. In order to determine a shadow's fall, you create a right angle triangle as follows:

Using the web-based triable calculator, [TrianCal](#), we can determine what the length of a shadow is from the footing of a building 55' high to the endpoint of the shadow on the ground: 125.1 feet.

TrianCal TRIANGLES SOLVER

Jesús S.

Sides

a (\overline{CB}) Calculated: 125.1 <small>125.0957071845</small>	b (\overline{CA}) > 0 55	c (\overline{AB}) Calculated: 136.65 <small>136.6526104982</small>
---	---	--

Angles A B C Degrees and minutes (°')

A (α) = Acute angle Calculated: 66° 16' <small>66° 16'</small>	B (β) = Acute angle < 90° > 0° 23° 44'	C (γ) = Right angle < 156° 16' > 0° 90°
---	--	--

BASIC PARAMETERS

Heights

h_a ($a \perp A$) Calculated: 55 <small>55</small>	h_b ($b \perp B$) Calculated: 125.1 <small>125.0957071845</small>	h_c ($c \perp C$) Calculated: 50.35 <small>50.3485727061</small>
--	---	--

Basic parameters

Decimals: **2**

Type: (sides) **Scalene ($a \neq b \neq c \neq a$)**
Select type: (sides)

Type: (angles) **Right ($C=90^\circ$)**
Select type: (angles)

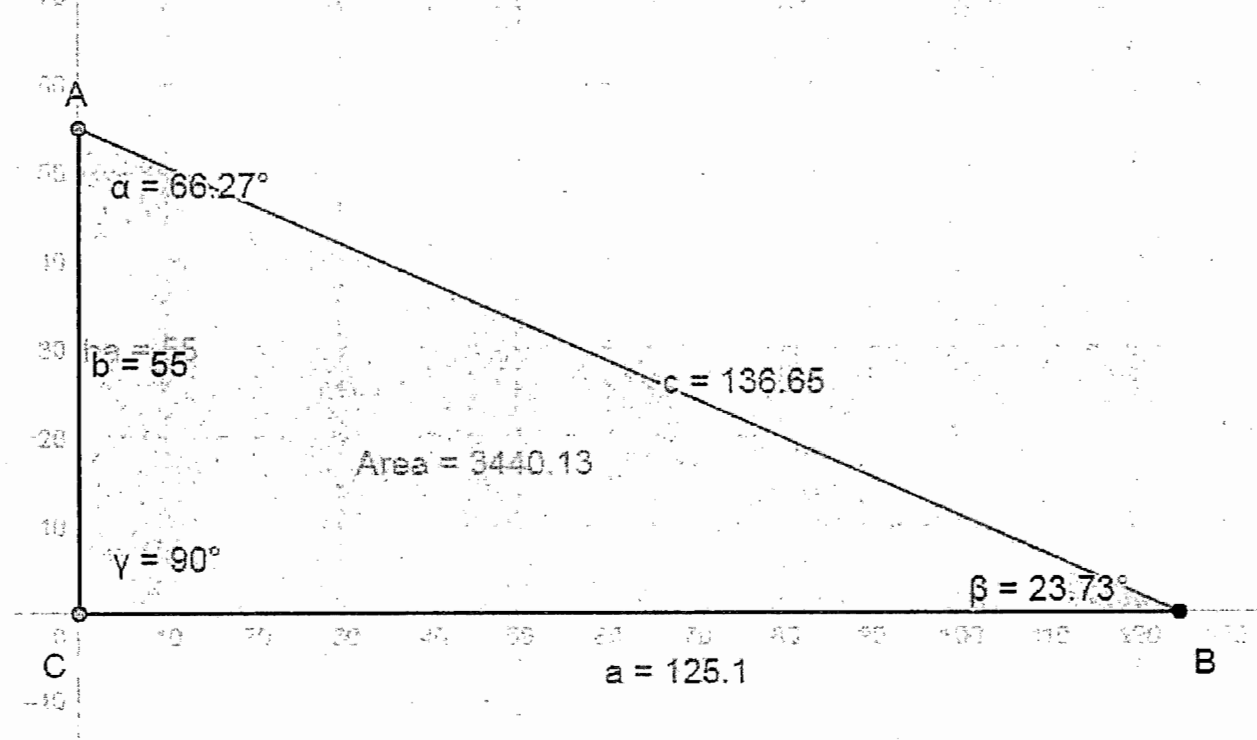
Cursors/Tab=Move, Intro=Ok and Esc=Undo

Calculated: **316.75**
316.7483176827

Calculated: **3440.13**
3440.1319475731

TrianCal solves plane triangles with any values combination including sides, heights, angles, area, perimeter or type of any triangle with the minimum amount of values, usually 3. This site uses "cookies" from third-parties for generate statistics. [Video](#)

Produces this triangle:



B is the height of the building, 55 feet, the solar declination is 23.73° , so the shadow length on the ground is 125.1 feet. This is the worst case scenario occurring on the solar winter solstice on December 21st.

The calculations of the solar declination is automatically made in SketchUp, the only values SketchUp needs to know is where is the models location in terms of latitude and longitude.

The Model

Software

SketchUp Pro, version 8.0.16846 purchased from Google. SketchUp that helps in designing 3D models within Google Earth — a virtual map of most of the planet's surface. is a three dimensional "3D" modeling software which allows one to quickly create 3D models on a computer workstation. The platform enables users to create collections of models, including 3D buildings, and share them with fellow modelers around the world. As of June, 2012, there were 30 million license activations of SketchUp.¹

The models can then be imported into Google Earth, a computer program that renders a 3D representation of Earth based on satellite imagery. The program maps the Earth by superimposing satellite images, aerial photography, and GIS data onto a 3D globe, allowing users to see cities and landscapes from various angles. Users can explore the globe by entering addresses and coordinates, or by using a keyboard or mouse

Google sold their SketchUp Division on June 1, 2012 to a private company, Trimble, Inc, of Sunnyvale, California, purchased SketchUp. Trimble is a mapping, surveying and navigation equipment company and continue to develop and sell SketchUp.

OpenJump (Version 1.12 release rev.5704 04. March 2018) was used for importation of ESRI shape files and selecting subsets and exporting same as shape files.

The SketchUp Plugin Spirix Shapefile Importer was used to import ESRI Shape files into SketchUp.

Source Files

Assessor Map parcels files were obtained from the Marion County GIS web site, the Property Records & Data page. A subset of the files was selected within OpenJump (Version 1.12 release rev.5704 04. March 2018) using a bounding box. The selection criteria included the entire Court-Chemeketa National Register District. The selected parcel shapes were then exported as ESRI shapefile format and imported into SketchUp using the plugin Shapefile Importer. The subset was chosen to keep the model simple, nimble and address most properties relevant to the State Street Corridor Study.

These shape files represent the County of Marion drawings of each assessor's parcel. In some cases, properties appearing on an Assessor's maps may appears as more than one lot, but for the Assessor's purposes, the lots are combined into one "Assessor's Parcel" for convenience and tracking within the Assessor's office.

Building footprint shape files were obtained through a public records request from the City of Salem's Enterprise GIS Services department. These files represent the outline of a buildings footprint upon the earth and are correlated with precise coordinates so that their representation within a computer models is very accurate to a degree if several inches.

¹ Reuters, Trimble Navigation to buy Google's SketchUp, April 26, 2012.

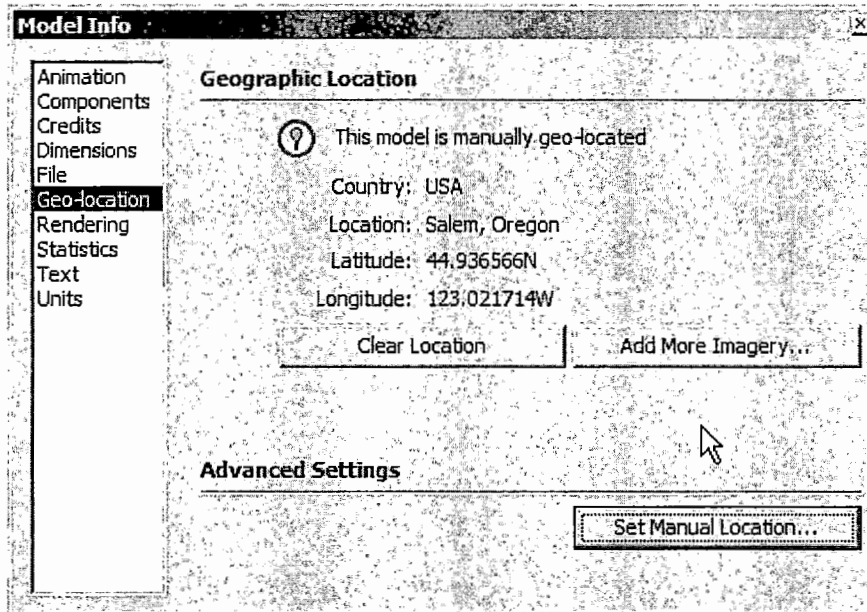
Correlation of Imported Files:

Superimposition of the building footprint shapes over the tax parcels was hand edited by selecting the building footprints as a group and then moving and rotating them until a known footprint matched its place on a known tax parcel. The relative integrity of both groups were maintained, so any variation as to location would be applicable to the entire data sets. The building footprints were raised 3" so that the superimposition of them on the tax parcel shapes would keep lines between the two datasets distinct, this was to overcome the SketchUp software to resolve items on the same plane. The tax parcels were colored brown to simulate dirt, and the building footprints colored blue.

Street names were manually added.

Geolocation

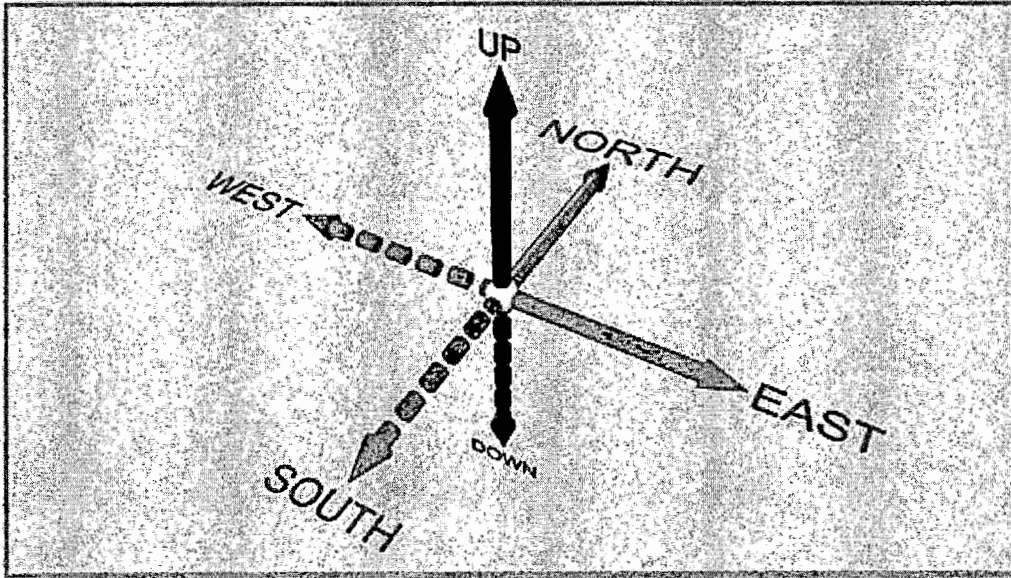
The coordinates were set manually using the Advanced Settings "Set Manual Location" dialog box in SketchUp. The values entered were: Latitude: 44.936566, Longitude: -123.021714 which represents <https://www.latlong.net/> coordinate association with the address 1566 Court NE, Salem, OR.



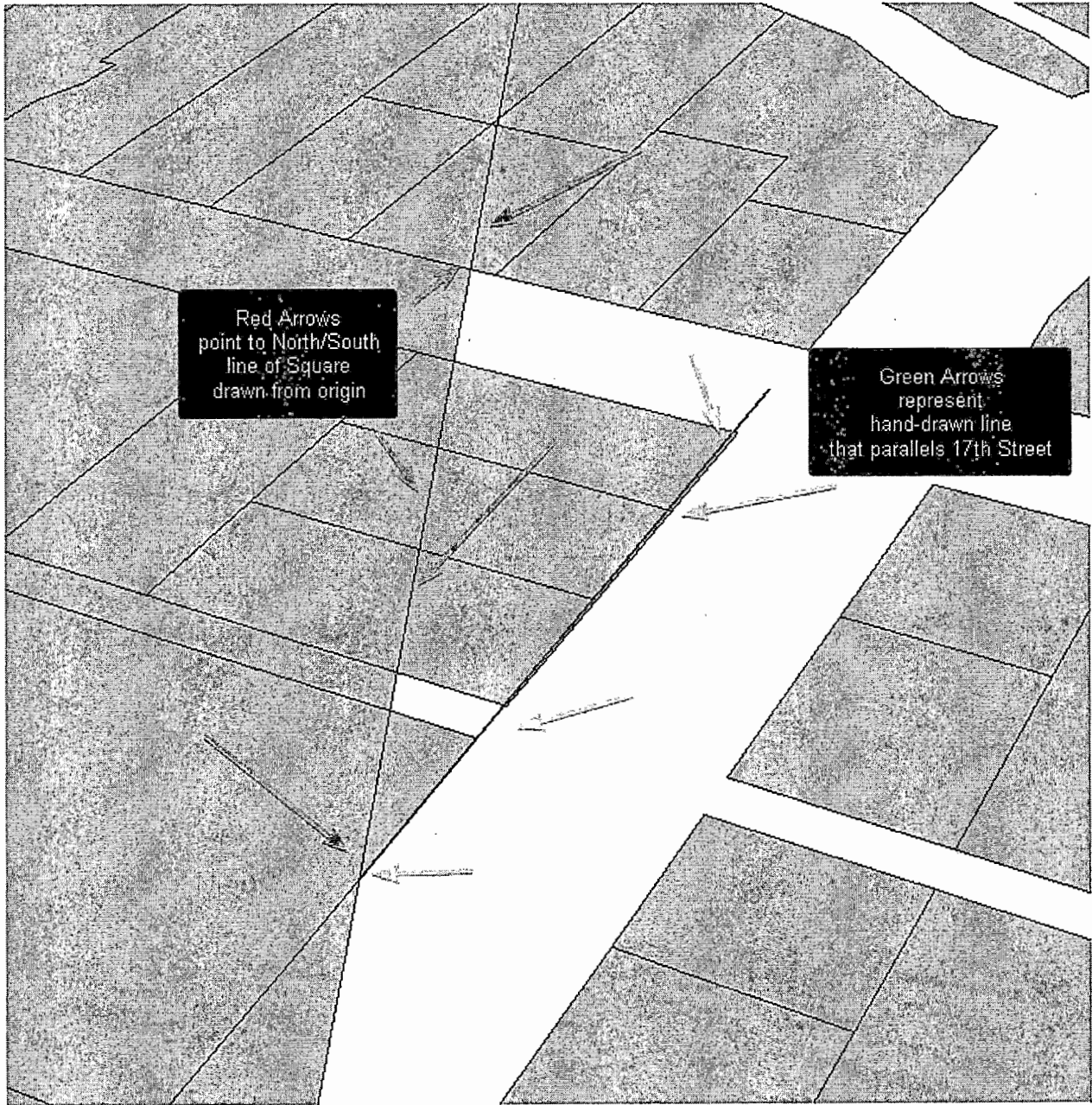
The center point axis is relatively close to the southwest corner of the imported datasets, no attempt was made to realign the Sketchup Axes to 1566 Court Street as the longitude/latitude differences are deemed negligible.

Alignment of Imported Shapes to North

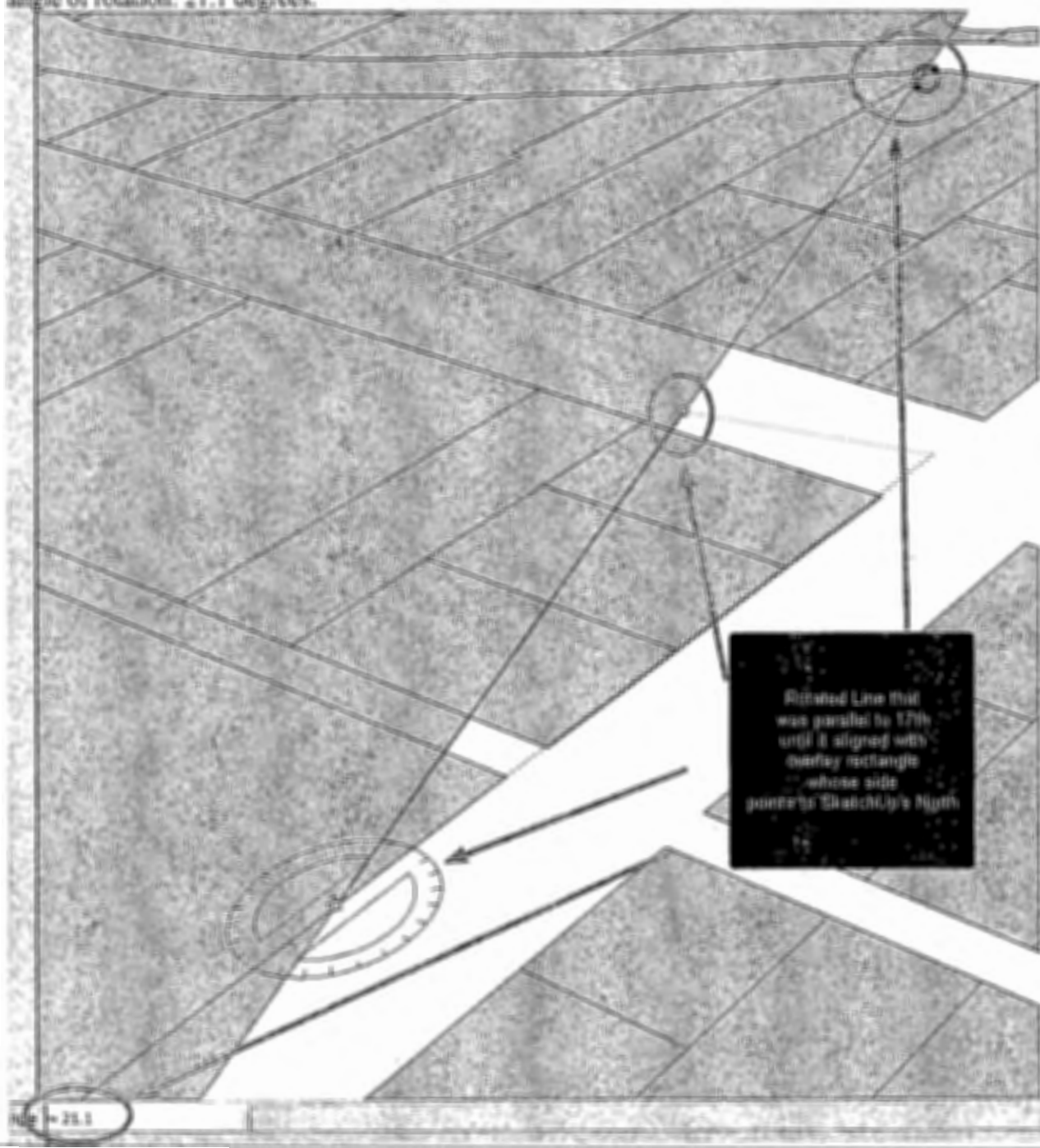
In order for the SketchUp to know how to cast a shadow correctly, the imported objects need to rotate so that their position vis-a-vis North is the same in the model.; this is referred to as Geographic Orientation. In Sketchup, the green axis runs North and South.



I'm not confident about how Sketchup deals with imported models and correctly aligns them. For example, the import of the tax parcels with the building footprints were off and required manual adjustments. A line that runs parallel along 17th Street and between State Street and Court Street was used as a reference line. Also, a rectangle having as two sides lines on the green and red (east/west axis) was created at the axes' origin point and then expanded so the side opposite the green axis intersected 17th Street. The edge of this rectangle provide a SketchUp North/South line. Then an arbitrary line, in blue, was draw over the edge of a block facing 17th Street.



From there, I then used the rotation tools to rotate the blue block line until it was on top of the edge of the rectangle (mislabeled in the diagram above as "Square"), and in the left corner of SketchUp is the angle of rotation: 21.1 degrees.

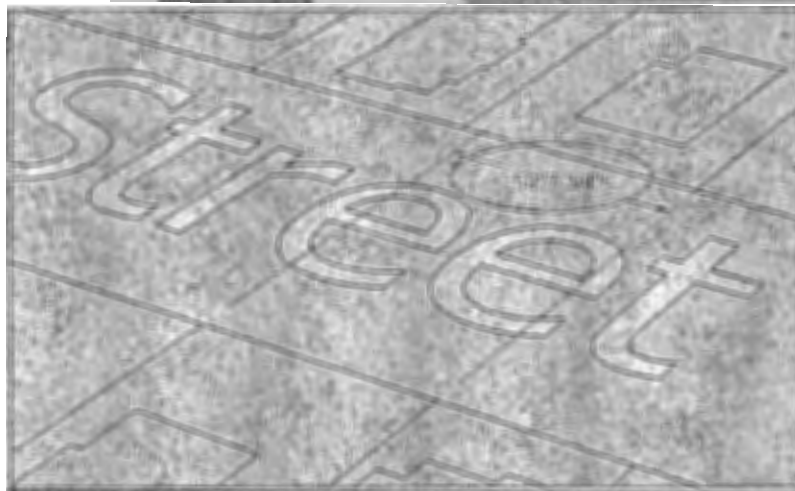
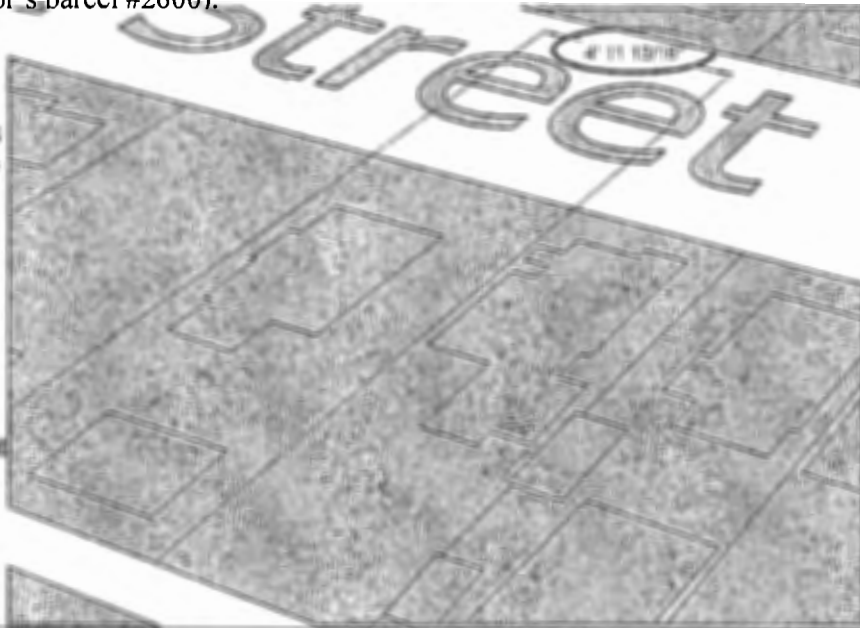


Correction to Scale

The imported shapes appear to be the same relatively, this was exhibited by the footprint for the Wyndam motel and assessor's parcel it sits on. I took a measurement of the line facing the Court Street for 1566 Court Street (Assessor's parcel #2600).

The Assessor has that edge of the parcel at 59.75'. I calculated that $4' 11'' 13/16$ is approximately 60". $708 + 1 = 718$ inches. So the ratio is $60/718 = 0.0836$, and the scale factor the inverse: **11.967**.

I selected all the objects in all layers, and then scaled everything to 11.967. I then revisited the dimension callout for parcel 5600 and found its value to be: $59' 7 3/4''$. The error is $1/4''$ for 718 which is for all practical purposes negligible.



The Animation Video

SketchUp provides a facility to transition between “scenes” that depict the shadows on a given date and time; the result is a movie video showing the transitions between scenes simulating what shadows during the day time. Two days were selected and scenes were created for every hour during sunlight from dawn until dusk. The days are the worst-case scenario of the Winter Solstice on December 21st, and then an intermediate example from March 21st. An additional perspective was added at 12:30 p.m. to show that buildings on the south side of State Street will produce shadows on the sidewalks on the north side of Street Street.

The video has been uploaded to Youtube and is 2 minutes and 52 seconds long.

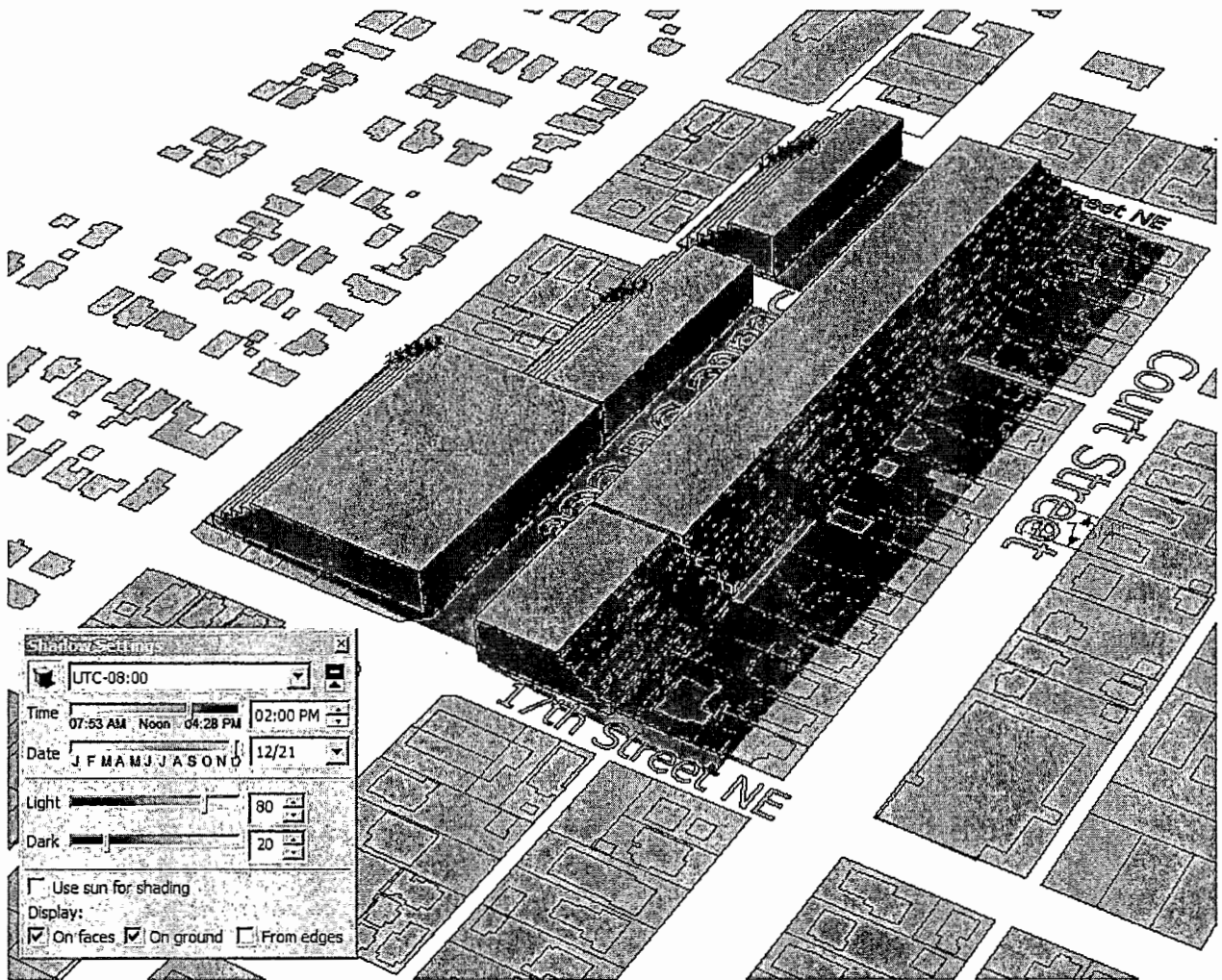
The video is located at: <https://youtu.be/FGv7dhhKt-o>

Conclusion

The study reveals that property owners adjacent to the MU-1 will be experiencing significant shadows in the Winter, Spring and Fall. In the worst cases, there are up to 2 hours (Exhibit A) earlier of shadows if buildings are built 55 feet tall 75’ feet back from the center line of the alley.

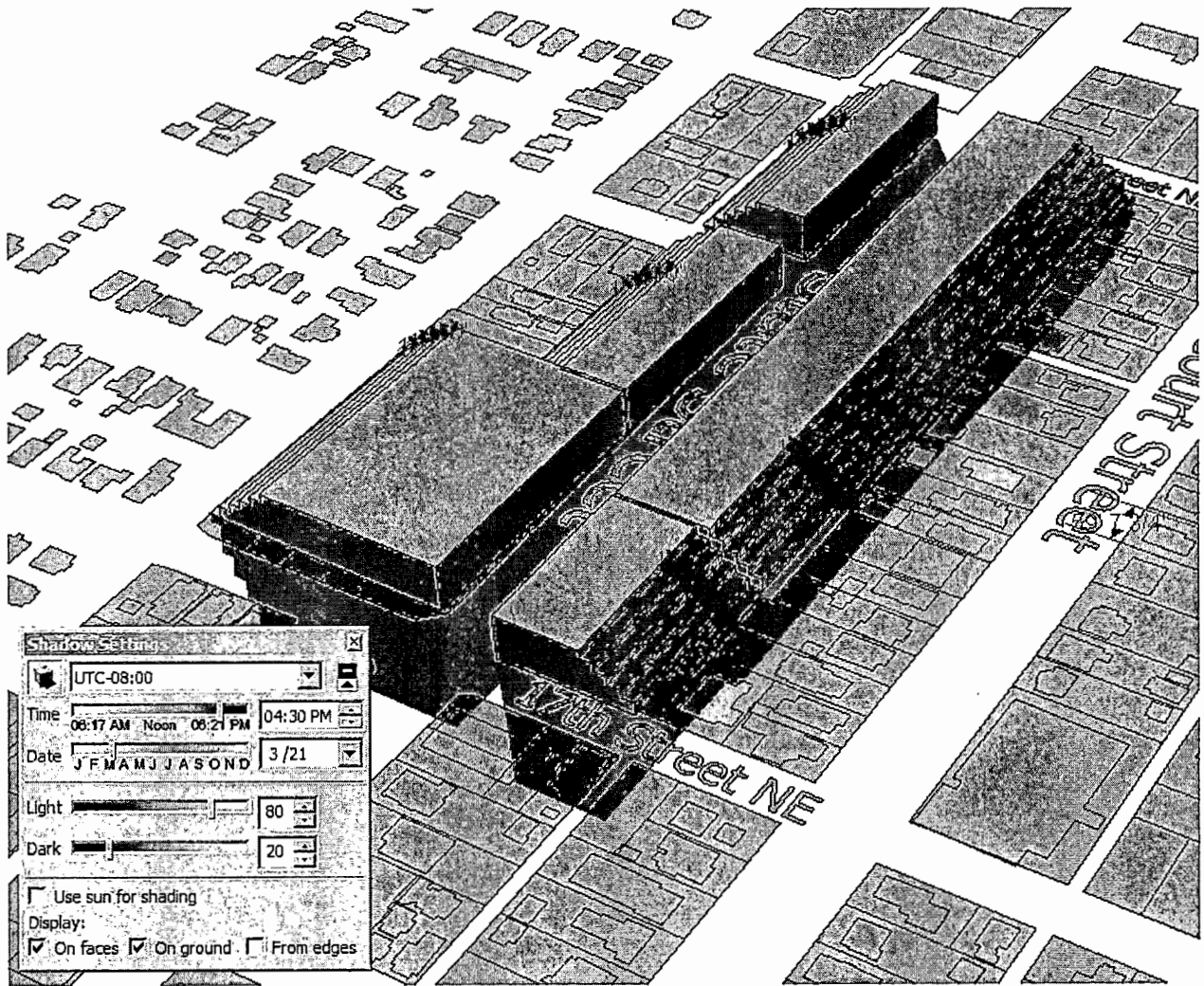
This study does not go into the effects on horticulture or solar power generation.

EXHIBIT "A"



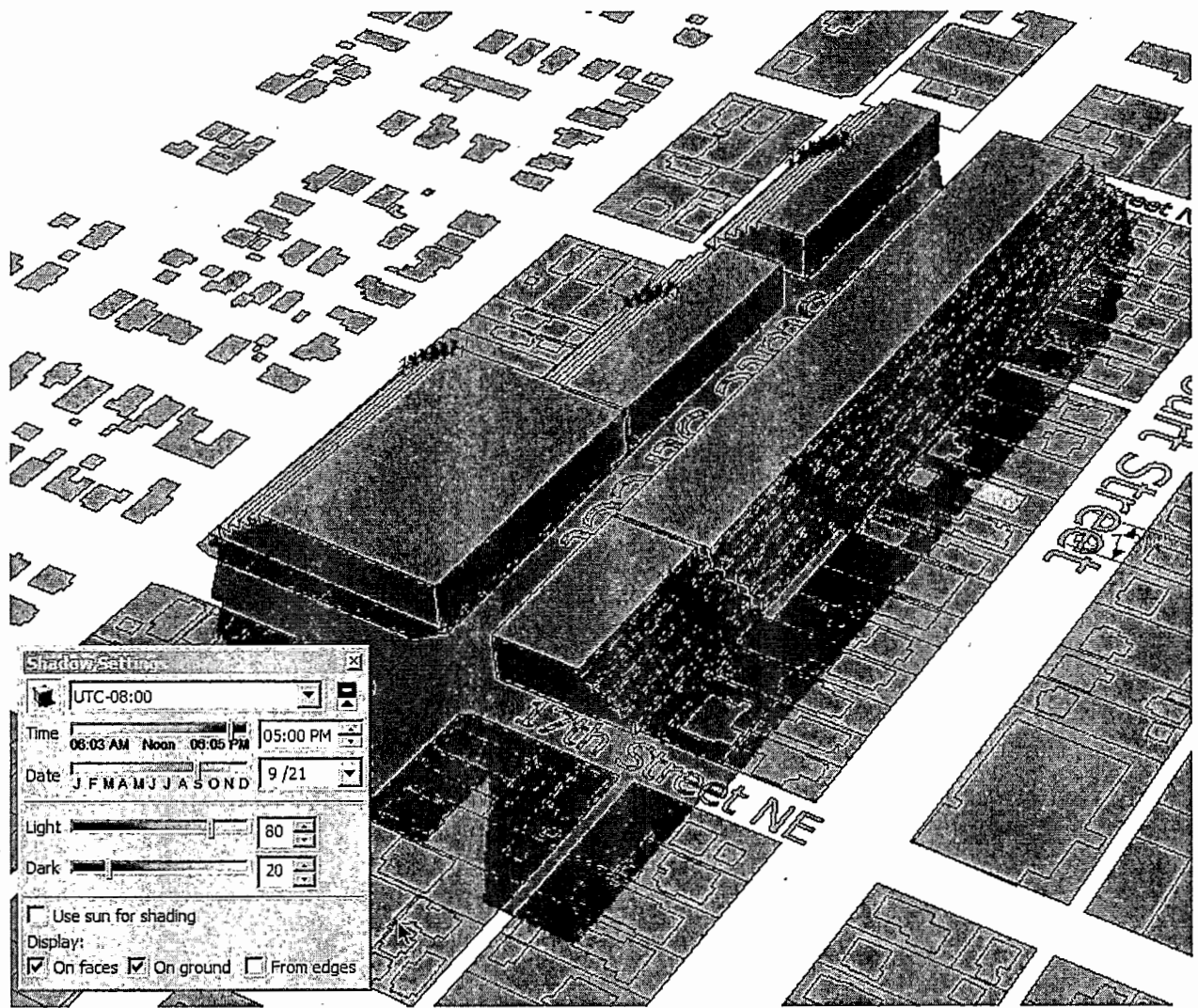
December 21 at 2:00 p.m., 2 1/2 hours before dusk

EXHIBIT "B"



March 21st at 4:30 p.m., ~2 hours before dusk

EXHIBIT "C"



September 21st at 5:00 PM, 1 hour before dusk