Roadway Engineering
Civil Engineering / Land Development
20015 SW Tillamook Ct,
Tualatin OR 97062
Ph 503-267-8433
roadengr@comcast.net

Drainage Report 21003 SW Borchers Drive, Sherwood Oregon

Updated 12-16-2020

Change:

The City and CWS informed me that if we pay the fee-in-lieu for water detention then we only need to count the new and modified impervious area (739 Sq. Ft.) for the fee. After a second conversation with City staff I was informed that since we are below the criteria of 1000 Sq. Ft. of new or modified impervious area there will be no fee required for detention.

Drainage Calculation:

Calculations for this project shall be analyzed by the Santa Barbara Unit Hydrograph Method.

Design Rainfall Event:

The Frequency of Rain Fall Event for Design Storm will be Clean Water Services 10 Year Event

Design Criteria:

2 Yr. Event = 2.50" / Hr.
5 Yr. Event = 3.1" / Hr.
10 Yr. Event = ***3.45" / Hr.*** (Design Event)
25 Yr. Event = 3.90" / Hr.
50 Yr. Event = 4.2" / Hr.
100 Yr. Event = 4.50" / Hr.

Storm Type:

SCS Type 1

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Existing Conditions:

Impervious Area = 0.1081 ACC

Proposed Conditions:

Pervious Area = 0.0367 ACC

Impervious Area = 0.1175 AC

Runoff Coefficients:

Pervious Area used Curve # 75
Impervious Area used Curve # 98

Time of Concentration Existing Conditions:

Tc = **5** Min. See attached Santa Barbara Urban Hydrograph Output.

Water Quality Flow

Using the equation

WQ_{cfs} = 0.36"x Area (Sq. Ft.)/((12"/ft)(4hr)(60min/hr)(60s/min))

Area of impervious 5117 Sq. Ft.

WQ_{cfs} = (0.36x5117)/((12x4x60x60)) **= 0.011 cfs**

Water Quality Flow = 0.011 cfs

Water Quality to be obtained with the use of a 1 cartridge filtered catch basin manufactured by Contech.

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Proposed Flow to point of Discharge (See attached calculation)

Q_{wc}=0.011 cfs.

Q_{2yr}=0.08 cfs.

Q_{5yr}=0.10 cfs.

Q_{10yr}=0.11 cfs.

Q_{25yr}=0.13 cfs.

Q_{50yr}=0.14 cfs.

Q_{100yr}=0.15 cfs.

The 1 cartridge catch basin can take a flow of up to 1 cfs so it can pass all required storms.

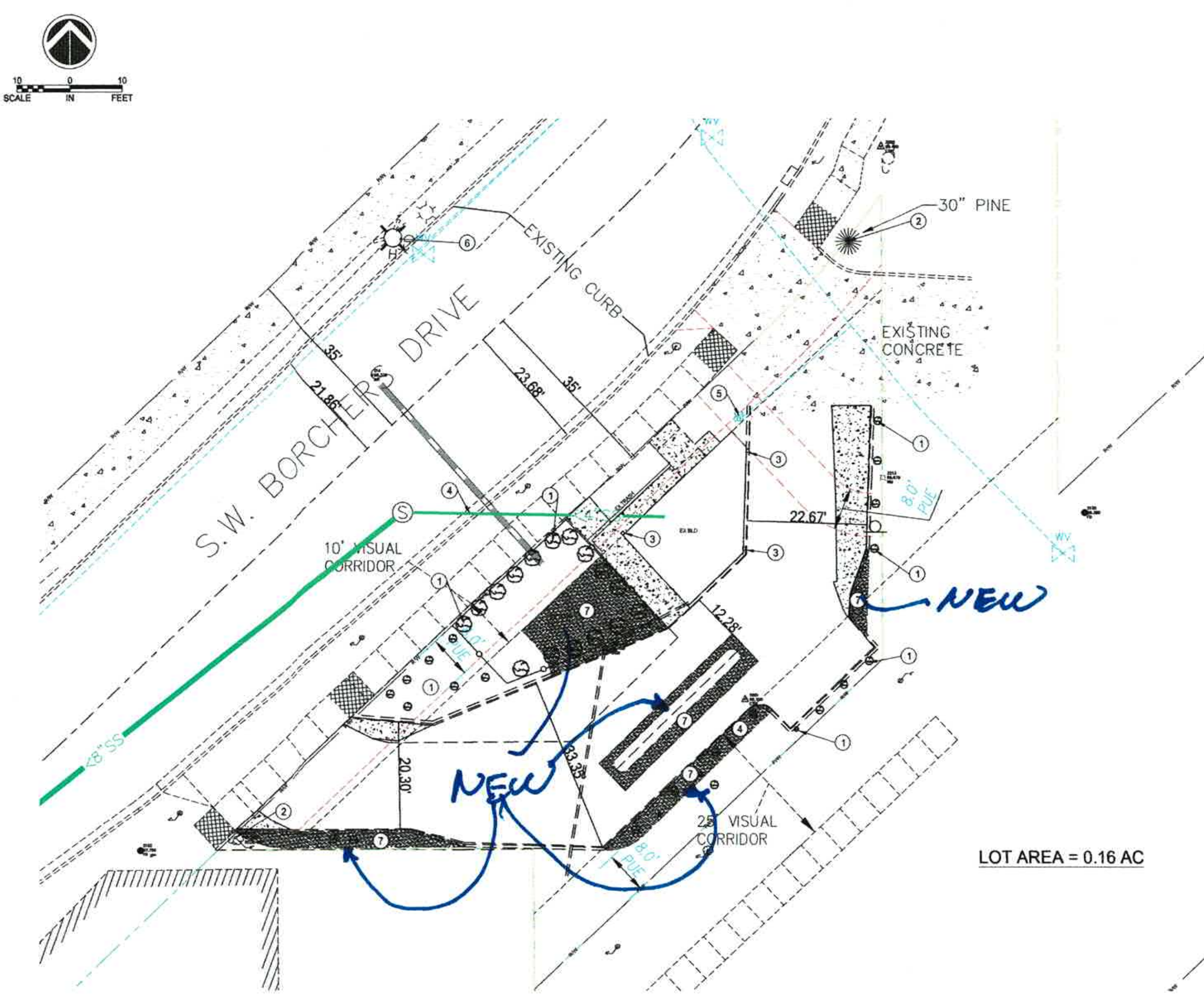
Detention - Storage:

There is only 1.20' of elevation between the outlet of the filter catch basin to the invert of the existing 12" C-900 that carries the discharge out to Borchers Drive, and that does not allow enough elevation difference to do the required storage for this project. If you also allow for 25 lf of pipe @ 2% slope you would only have an elevation difference of 0.70' to provide detention.

We are requesting to pay a fee in lieu of $ 1 per Sq. Ft. of impervious area to offset this storage requirement.

The amount of private development new or modified impervious area for the project is 739 Sq. Ft.

The required fee in acceptable would then be **$ 0 as we would be under the threshold amount of 1000 Sq. Ft.**



GENERAL NOTES:

1. EXISTING LANDSCAPING (TYP.)
2. EXISTING TREE ON SITE.
3. LOCATION OF EXISTING ROOF DRAIN LOCATIONS. NO CHANGES ARE PROPOSED.
4. LOCATION OF EXISTING 4" SEWER LATERAL. NO CHANGES.
5. LOCATION OF EXISTING WATER METER AND SERVICE. NO CHANGES
6. LOCATION OF EXISTING FIRE HYDRANT
7. NEW IMPERVIOUS AREAS (TOTAL 739 SQ. FT.)

LOT AREA = 0.16 AC

New Impervious Area Exhibit

SCALE: 1" = 10'

REVISION INFORMATION		
SUBMITTAL	DATE	AGENCY
1ST SUBMITTAL	11/17/2020	CITY OF SHERWOOD
2ND SUBMITTAL	12/7/2020	CITY OF SHERWOOD

PRELIMINARY

RENEWS: 12-31-21

Roadway Engineering, Inc.

SPECIALIZING IN CIVIL ENGINEERING

Licensed in California, Oregon & Washington

ZIGGY'S COFFEE STAND
MODIFICATIONS TO DRIVE UP

21003 SW BORCHERS ROAD
CITY OF SHERWOOD, OREGON

EXISTING CONDITIONS PLAN

DATE:	8/31/17
DESIGN:	SLF
DRAWN:	RFD
CHECK:	SLF
SCALE:	1" = 10' HORIZ

PRELIMINARY

C-2A

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Catchment Area Diagrams

&

Proposed Santa Barbara Urban Hydrograph Project Calculation

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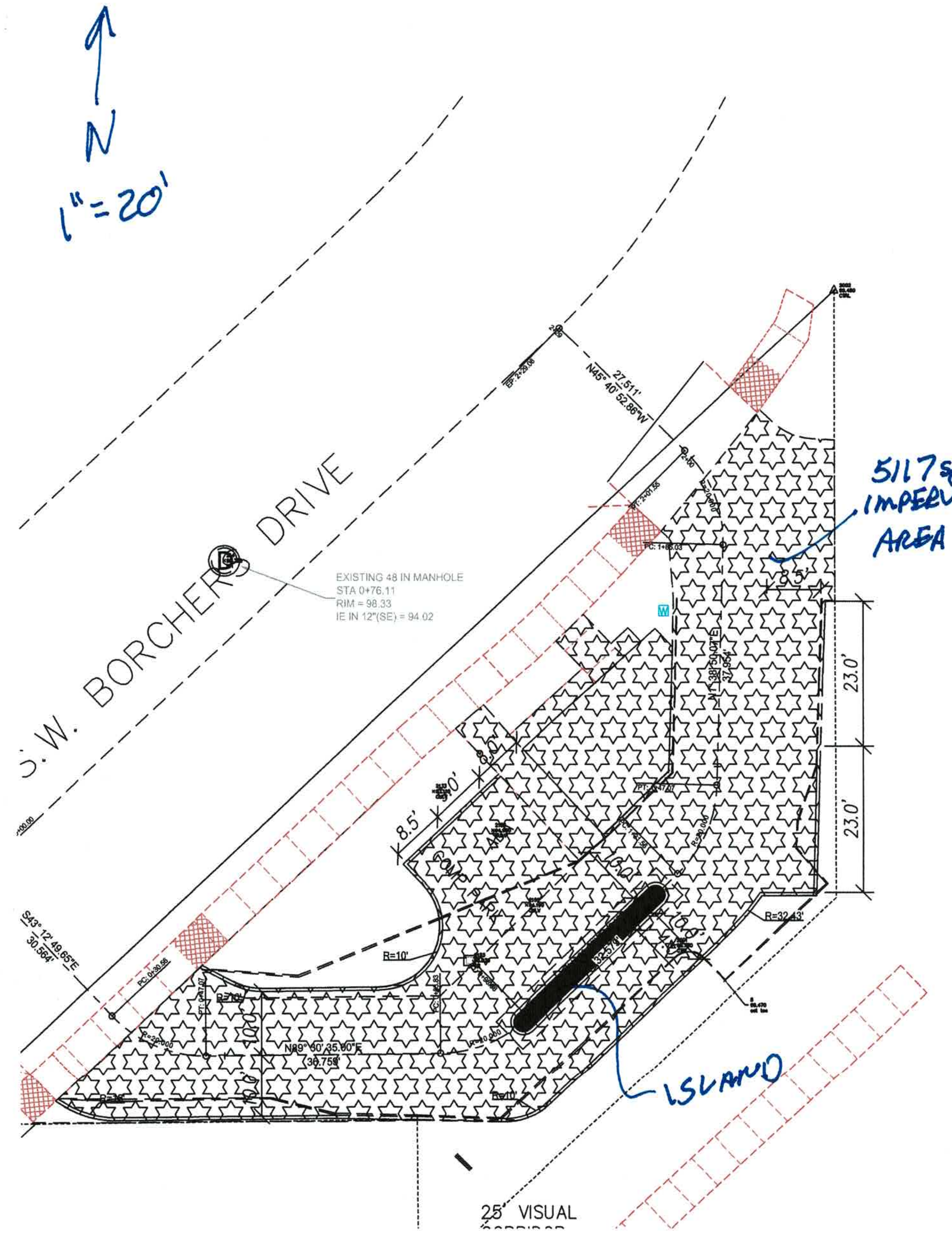
Proposed Santa Barbara Urban Hydrograph Project Calculation


N
1" = 20'
S.W. BORCHERS DRIVE
EXISTING 48 IN MANHOLE
STA 0+76.11
RIM = 98.33
IE IN 12"(SE) = 94.02
N45° 40' 52.86"W
27.511'
5117 sq.ft.
IMPERVIOUS
AREA
8.5'
23.0'
23.0'
8.5'
10.0'
COMP PARK
R=10'
R=32.43'
S43° 12' 49.65"E
30.564'
N89° 50' 35.00"E
36.759'
ISLAND
25' VISUAL

Project ZIGGI'S Coffee
Proposed flows for Ziggi's Coffee Property on Hwy 99

RUNOFF by the SANTA BARBARA URBAN HYDROGRAPH
2 yr Post Dev Flow from Impervious Surfacxe

total Time of Concentration = 5.0'

storm hyetograph: SCS TypeI
return period = 2 years
storm duration = 24 hr.
total rainfall = 2.50 in.

pervious area = 0.04 A CN = 75 GpB:Res,1/4-A.lots
impervious area = 0.12 A CN = 98
total site area = 0.15 A

hydrograph file: c:\quick3\sharkey coffee\2 yr post development.hyd

peak flow = 0.08cfs @ 10.00 hr.
runoff volume = 1,055 cu.ft.

Project ZIGGI'S Coffee
Proposed flows for Ziggi's Coffee Property on Hwy 99

RUNOFF by the SANTA BARBARA URBAN HYDROGRAPH
5 yr Post Dev Flow from Impervious Surfacxe

total Time of Concentration = 5.0'

storm hyetograph: SCS TypeI
return period = 5 years
storm duration = 24 hr.
total rainfall = 3.10 in.

pervious area = 0.04 A CN = 75 GpB:Res,1/4-A.lots
impervious area = 0.12 A CN = 98
total site area = 0.15 A

hydrograph file: c:\quick3\sharkey coffee\5 yr post development.hyd

peak flow = 0.10cfs @ 10.00 hr.
runoff volume = 1,360 cu.ft.

Project ZIGGI'S Coffee
Proposed flows for Ziggi's Coffee Property on Hwy 99

RUNOFF by the SANTA BARBARA URBAN HYDROGRAPH
10 yr Post Dev Flow from Impervious Surfacxe

total Time of Concentration = 5.0'

storm hyetograph: SCS TypeI
return period = 10 years
storm duration = 24 hr.
total rainfall = 3.45 in.

pervious area = 0.04 A CN = 75 GpB:Res,1/4-A.lots
impervious area = 0.12 A CN = 98
total site area = 0.15 A

hydrograph file: c:\quick3\sharkey coffee\10 yr post development.hyd

peak flow = 0.11cfs @ 10.00 hr.
runoff volume = 1,541 cu.ft.

Project ZIGGI'S Coffee
Proposed flows for Ziggi's Coffee Property on Hwy 99

RUNOFF by the SANTA BARBARA URBAN HYDROGRAPH
25 yr Post Dev Flow from Impervious Surfacxe

total Time of Concentration = 5.0'

storm hyetograph: SCS TypeI
return period = 25 years
storm duration = 24 hr.
total rainfall = 3.90 in.

pervious area = 0.04 A CN = 75 GpB:Res,1/4-A.lots
impervious area = 0.12 A CN = 98
total site area = 0.15 A

hydrograph file: c:\quick3\sharkey coffee\25 yr post development.hyd

peak flow = 0.13cfs @ 10.00 hr.
runoff volume = 1,775 cu.ft.

Project ZIGGI'S Coffee
Proposed flows for Ziggi's Coffee Property on Hwy 99

RUNOFF by the SANTA BARBARA URBAN HYDROGRAPH
50 yr Post Dev Flow from Impervious Surfacxe

total Time of Concentration = 5.0'

storm hyetograph: SCS TypeI
return period = 50 years
storm duration = 24 hr.
total rainfall = 4.20 in.

pervious area = 0.04 A CN = 75 GpB:Res,1/4-A.lots
impervious area = 0.12 A CN = 98
total site area = 0.15 A

hydrograph file: c:\quick3\sharkey coffee\50 yr post development.hyd

peak flow = 0.14cfs @ 10.00 hr.
runoff volume = 1,933 cu.ft.

Project ZIGGI'S Coffee
Proposed flows for Ziggi's Coffee Property on Hwy 99

RUNOFF by the SANTA BARBARA URBAN HYDROGRAPH
100 yr Post Dev Flow from Impervious Surfacxe

total Time of Concentration = 5.0'

storm hyetograph: SCS TypeI
return period = 100 years
storm duration = 24 hr.
total rainfall = 4.50 in.

pervious area = 0.04 A CN = 75 GpB:Res,1/4-A.lots
impervious area = 0.12 A CN = 98
total site area = 0.15 A

hydrograph file: c:\quick3\sharkey coffee\100 yr post development.hyd

peak flow = 0.15cfs @ 10.00 hr.
runoff volume = 2,092 cu.ft.