



COMMUNITY DEVELOPMENT DEPARTMENT
 80 Columbia Avenue ♦ Marysville, WA 98270
 (360) 363-8100 ♦ (360) 651-5099 FAX
 www.marysvillewa.gov

GRINDER PUMP APPLICATION

SITE INFORMATION	
<input type="checkbox"/> Inside City Limits	<input type="checkbox"/> Outside City Limits/Within UGA
Site Address:	Plat Name:
Tax Parcel No:	Lot No:

OWNER/APPLICANT	
Name:	Company:
Address:	
City/State/Zip:	
Phone (home/office):	Phone (cell):
E-mail:	

CONTRACTOR	
Name:	Company:
Address:	
City/State/Zip:	
Phone:	L & I No:
E-mail:	City License No:

UTILITIES	
Water System	Sewer System
<input type="checkbox"/> City water <input type="checkbox"/> PUD water <input type="checkbox"/> Well water	<input type="checkbox"/> City gravity main in street or easement <input type="checkbox"/> Grinder pump – must be approved by Eng Manager <input type="checkbox"/> Septic system – must be approved by Snoh Health Dist

FEES	
Building/Plumbing Permit Fees	Sewer Capital Improvement Fees
<input type="checkbox"/> Plumbing permit fee - \$75.00 (side sewer repair) <input type="checkbox"/> Admin/Grinder pump review - \$20.00 <input type="checkbox"/> State issuance fee - \$4.50	<input type="checkbox"/> Sewer permit inside city limits - \$4,490.00 <input type="checkbox"/> Sewer permit outside city limits - \$4,890.00 <input type="checkbox"/> Side sewer inspection - \$100.00 (new or replacement)

PROVISIONS AND AUTHORIZATION
<p>This permit is issued by the City Building Official under the provisions of the International Building Code and the International Residential Code, and shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days. By affixing my signature, I hereby certify that I am the owner of the property for which this permit is issued or I am an authorized representative of the owner. All provisions of laws and ordinances governing this type of work will be complied with, whether specified herein or not, including routine calls for inspections.</p> <p>Owner or Authorized Agent: _____ Date: _____</p>

<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove Date: _____	Eng Services Manager: _____
<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove Date: _____	Bldg Official/Insp: _____
Comments: _____	

Engineering Design Standards 2007 – Chapter 5 Sanitary Sewer Design

5-850 Private Grinder Pumps

Private grinder pumps are only permitted under special circumstances when no other means of gravity sewer service is available. In general, gravity sewer shall be deepened to eliminate the need for grinder pumps. Use of private grinder pumps requires approval by the City Engineer (or designee) and will be evaluated on a case-by-case basis. Applicant will need to demonstrate there is no other feasible means of servicing the lot(s). Ejector pumps are permitted for basement applications to pump liquids only (no solids) to an upper level gravity system.

Permit/Application:

- A '*Grinder Pump Application*' is required prior to the application for the Combined Building/Plumbing Permit.
- A '*Combined Building Permit/Plumbing Application*' is required after approval of the Grinder Pump application.

Application Documents:

- Include type and number of fixtures to be serviced by pump. (2 copies)
- Submit a '*Grinder Pump Sizing and Selection Worksheet*'. (2 copies)

Pump Type:

- UL listed pump. Interior ejector pump systems require UPC approval.
- 2" minimum discharge from pump (per UPC 2009 710.3 WA State Code).
- Pump curve from manufacturer.

Tank Type:

- 3" sewer waste line from building requires 500 gallon (minimum) concrete tank outside of structure. 4" waste line from building requires 1000 gallon (minimum) concrete tank. All other systems require detailed engineering plans and shall be submitted for the City's review.
- For exterior grinder pump systems, see Standard Plan 5-850.
- Concrete: 28 day compressive strength $F_c' = 4000$ psi. Rebar #4 ASTM A-815 grade 60. DL-18" earth cover. LL = 25 snow. Soils = 2000 psf, water pressure: 62.4 psf. Flexible pipe adapter: press seal 4" cast-a-seal. Joint material: meet federal specs: SS-S-00210, ASHTO M-1988 and ASTM C990, and risers as required.

Site Plan:

- Required when installed outside of structure – grinder pumps. (2 copies)

House Plan:

- Required when installed inside of structure – ejector pumps. (2 copies)

General Notes:

- Electrical permit must be approved prior to final inspection.
- Force main shall be 2" PVC Schedule 80. Force main shall be tested @ 150% of its design curve pressure.
- All inspections must be completed prior to backfilling.
- When two 45 degree angles are used to achieve a 90 degree bend, no less than one foot of pipe shall be between the two 45 degree bends.



GRINDER PUMP SIZING AND SELECTION WORKSHEET

To begin, fill in the shaded areas on the front side. A calculator and additional sheet of paper may be required.

- STEP #1** Determine the type and quantity of each plumbing fixture. Multiply each by its fixture unit values in figure "A". Sum these values _____
 Determine GPM from figure "B". _____ GPM (1)
- STEP #2** Refer to Figure "C". Based on the System's discharge piping size, Determine the minimum GPM Listed for that size. _____ GPM (2)
- STEP #3** Select the greater of the two GPM values in #1 & #2. This is your Design GPM. If greater than maximum GPM listed in figure, "B", contact factory. _____ GPM (3)
- STEP #4** Multiply each pipe fitting by its equivalent length value shown in figure "D" and sum. _____ Ft. (4)
- STEP #5** Total pipe length from front side _____ Ft. (5)
- STEP #6** Add #4 & #5. [(4) + (5) = (6)] _____ Ft. (6)
- STEP #7** Divide #6 by 100 and multiply it by the associated friction value from Figure "E". This is the total Friction Head. _____ Ft. (7)
- STEP #8** Determine static head in FL, as shown on front side, from minimum water level to the discharge point. _____ Ft. (8)
- STEP #9** Sewer Pressure, if any, expressed in feet (PSI x 2.31). _____ Ft. (9)
- STEP #10** Add #7, #8, & #9. [(7) + (8) + (9) = (10)] _____ Ft. (10)
 This is the system's Total Dynamic Head. (TDH)
- STEP #11** Select the Grinder Pump:
 Base selection on design values, #3 & #10.

Final Notes:

- 1) Consult Factory in any application where TDH is less than 5' [#10].
- 2) Pump must be capable of providing the minimum required GPM for pipe size, Figure "C", at the calculated TDH [#10].

FIGURE B
 PUMP CAPACITY based on total Fixture Units*

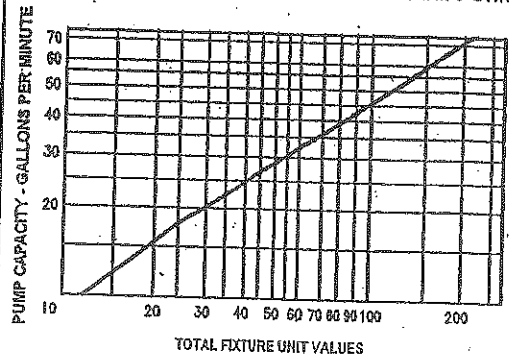


FIGURE C*

Pipe Size	Minimum GPM
2"	21

FIGURE D*
 FRICTION FACTORS FOR PIPE FITTINGS IN TERMS OF EQUIVALENT FEET OF STRAIGHT PIPE

Nominal Pipe Size	90 Elbow	45 Elbow	Tee Branch flow	Swing Check Valve	Gate Valve
2"	5.2	2.8	10.3	17.2	1.4

FIGURE A

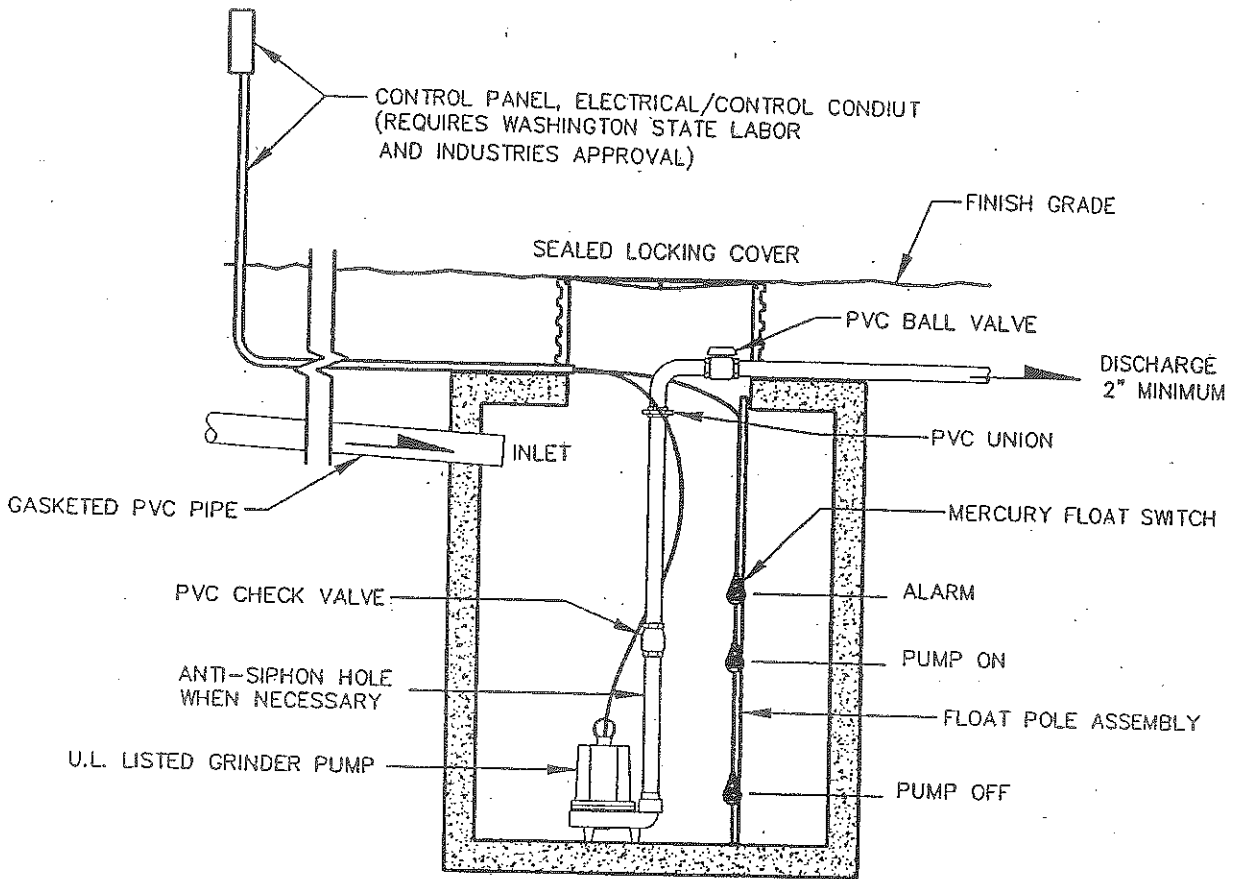
PLUMBING FIXTURE UNIT VALUES*

Fixture Description	Fixture Unit Value	Fixture Description	Fixture Unit Value
Bathtub, 1-1/2" trap	2	Sink, service type	3
Bathtub, 2" trap	2	Sink, scullery	4
Bidet, 1-1/2" trap	3	Sink, surgeons	3
Dental unit or cuspldior	1	Swimming pool (per 100 gallons)	1
Drinking fountain	1	Urinal	2
Dishwasher, domestic	2	Washing machine	3
Kitchen sink	2	Water closet	3
Kitchen sink with disposal	2	Water softener	4
Lavatory, 1-1/2" trap	1	Unlisted fixture, 1-1/4" trap	2
Lavatory, barber/beautician	2	Unlisted fixture, 1-1/2" trap	3
laundry tray	2	Unlisted fixture, 2" trap	4
Shower	2	Unlisted fixture, 2-1/2" trap	5
Shower, group (per head)	3	Unlisted fixture, 3" trap	6
Bathroom group consisting of lavatory, bathtub or shower, and water closet			6

*Graph data is taken from ASPE Handbook, Uniform Plumbing Code, Cameron Hydraulic Data and Plastic Pipe Institute.

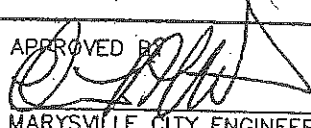
FIGURE E*
 FRICTION HEAD IN FEET PER 100' OF SCHEDULE 40 PLASTIC PIPE

GPM	2" Plastic
10	0.20
12	0.28
15	0.43
18	0.60
21	0.80
25	1.10
30	1.55
35	2.06
40	2.64
45	3.28
50	3.99
60	5.59
70	7.44



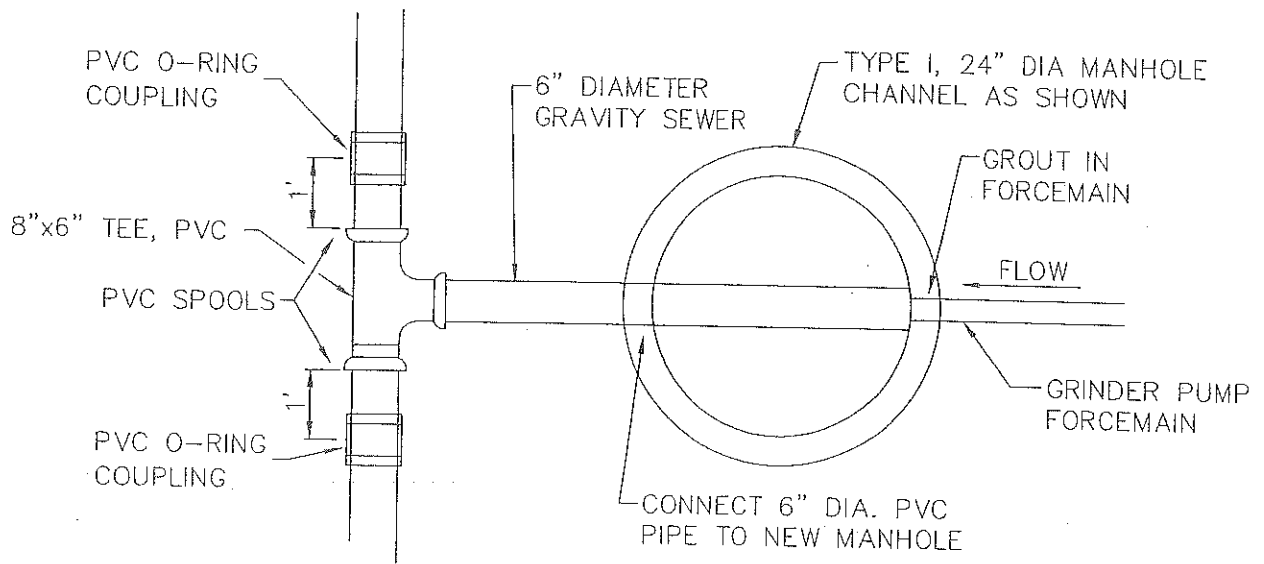
NOTES:

1. MINIMUM TANK REQUIREMENT: 500 GAL., SINGLE CELL, REINFORCED CEMENT CONCRETE
2. PVC DISCHARGE PIPE AND FITTINGS TO BE SCHEDULE 80 OR GREATER
3. SIZING SHEET AND RECORD DRAWING MUST BE ONSITE PRIOR TO APPROVAL
4. WASHINGTON STATE LABOR AND INDUSTRIES ACCEPTANCE OF ELECTRICAL REQUIRED PRIOR TO FINAL APPROVAL
5. THE MINIMUM SIZE OF ANY PUMP OR ANY DISCHARGE PIPE FROM A SUMP HAVING A WATER CLOSET CONNECTED THERETO SHALL NOT BE LESS THAN TWO (2) INCHES. (UNIFORM PLUMBING CODE SECTION 710.3)
6. GROUT ALL PICK HOLES INSIDE AND OUT.

APPROVED BY  10/12/05
 MARYSVILLE CITY ENGINEER DATE

PRIVATE GRINDER PUMP DETAIL





NOTE:
 FERNCO COUPLINGS TO BE USED ONLY ON
 6" PIPE DIA. OR LESS. 8" PIPE DIA. AND
 LARGER MAIN LINES USE PVC O-RING COUPLINGS.
 DUCTILE IRON CAN BE USED WITH APPROVED FITTINGS.

APPROVED BY

Kevin Neider
 MARYSVILLE CITY ENGINEER

5/9/07
 DATE

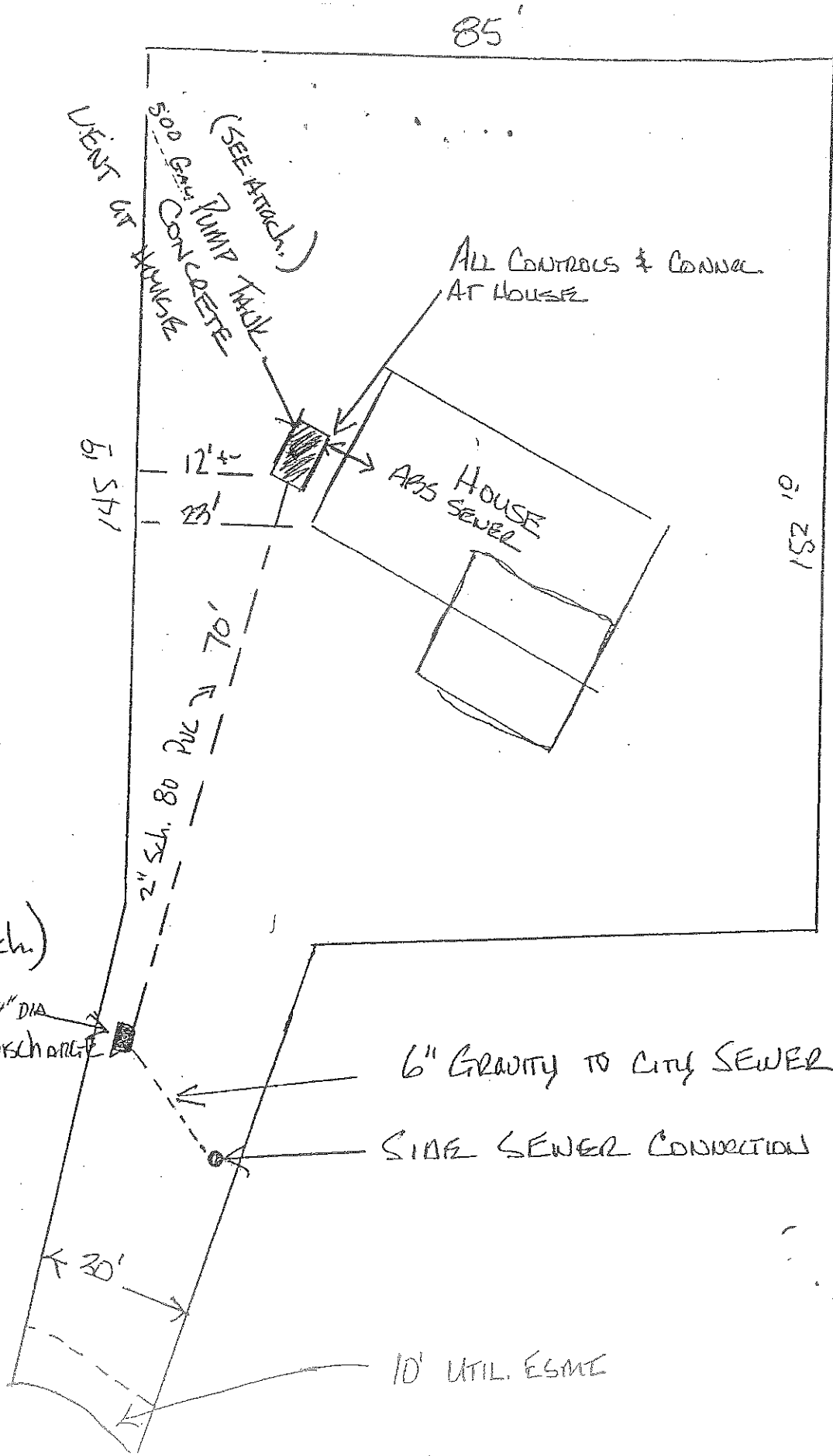
GRINDER PUMP DISCHARGE
 MANHOLE FOR SINGLE
 UNIT OR DUPLEX



Example ONLY
COPY

APR 5/12/04

T. ... E.
MARYSVILLE, WA.



(SEE Attach.)

TYPE I 24" DIA
MAN HOLE DISCHARGE
CONCRETE

6" GRAVITY TO CITY SEWER

SIDE SEWER CONNECTION

10' UTIL. EASE



COMMUNITY DEVELOPMENT DEPARTMENT
80 Columbia Avenue, Marysville, WA 98270
(360) 363-8100, (360) 651-5099 FAX
(360) 363-8204 INSPECTION LINE

Side Sewer Diagram

Street Address _____ Date _____

Plat Name (or Parcel#) _____ Div _____ Lot _____

Owner or Builder _____

Contractor _____ Phone _____

UT# _____ Notes _____

Please include a north arrow. Show location of clean-outs, length of pipe runs, bends, depth at connection points, and distance from foundation corners. Use straightedge for drawing.

Connection date _____ Inspected by _____