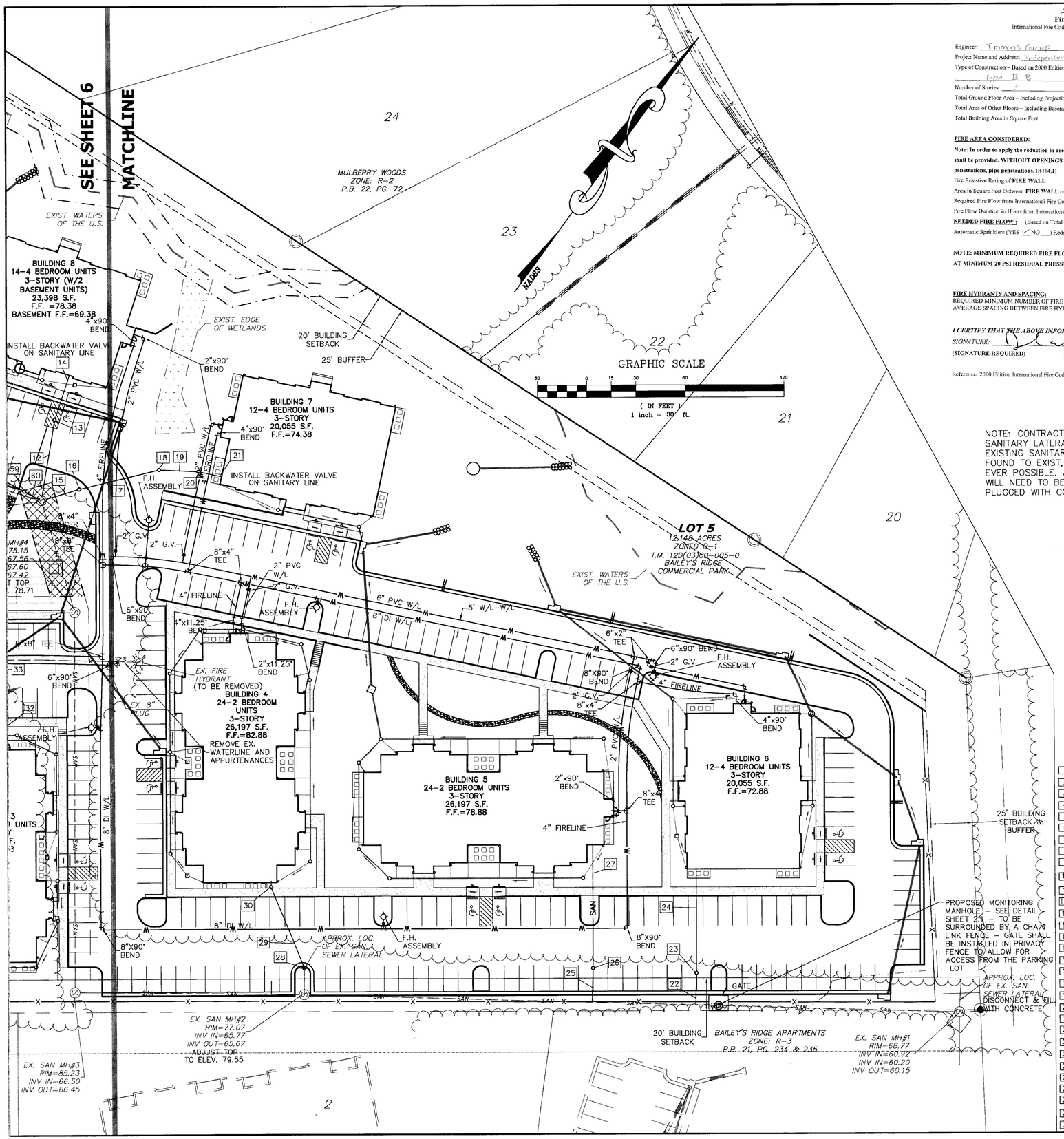

NOTE: CONTRACTOR SHALL DETERMINE IF ANY SANITARY LATERALS WERE INSTALLED ON THE EXISTING SANITARY SEWER LINE. IF LATERALS ARE FOUND TO EXIST, THEN THEY SHALL BE USED WHERE EVER POSSIBLE. ANY LATERALS THAT ARE NOT USED WILL NEED TO BE DISCONNECTED AND PROPERLY PLUGGED WITH CONCRETE.

24-2 Bedroom Units

Fire Flow Estimate Form

International Fire Code Method of Calculating NFF (Needed Fire Flow)

Engineer: Timmons Group — Date: 6/8/08
Project Name and Address: Independence Place Apartments — Calc By: K Halpaus
Type of Construction – Based on 2000 Edition of the International Building Code: Type II B
Number of Stories: 3
Total Ground Floor Area – Including Projections (Canopies. Loading Docks, Etc): 8,732 S.F.
Total Area of Other Floors – Including Basements: 17,464 S.F.
Total Building Area in Square Feet: 26,196 S.F.

FIRE AREA CONSIDERED: 26,196 S.F.

Note: In order to apply the reduction in area for a building, a fire resistive rated FIRE WALL without openings shall be provided. WITHOUT OPENINGS refers to no penetrations being permitted (i.e. – doors, duct penetrations, pipe penetrations. (B104.1)

Fire Resistive Rating of **FIRE WALL**: ____ (Hours)
Area In Square Feet Between **FIRE WALL** or Either Side: ____
Required Fire Flow from International Fire Code – Table B105.1: 3,500 gpm
Fire Flow Duration in Hours from International Fire Code – Table B105.1: 2 hours
NEEDED FIRE FLOW: (Based on Total Adjusted Square Foot Area)
Automatic Sprinklers (YES ✓ NO ___) Reduction Factor (75% max) 50 % x (NFF) 3500 = 1750 **GPM**

NOTE: MINIMUM REQUIRED FIRE FLOW NOT LESS THAN 1500 GPM AT MINIMUM 20 PSI RESIDUAL PRESSURE — **TOTAL GPM:** 1,750

FIRE HYDRANTS AND SPACING:
REQUIRED MINIMUM NUMBER OF FIRE HYDRANTS (IFC Table C105.1): 1
AVERAGE SPACING BETWEEN FIRE HYDRANTS (IFC Table C105.1): 500'

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT.
SIGNATURE: ____ P.E.
(SIGNATURE REQUIRED)

Reference: 2000 Edition International Fire Code, Appendix B, C, and D

24-1 Bedroom Units

Fire Flow Estimate Form

International Fire Code Method of Calculating NFF (Needed Fire Flow)

Engineer: Timmons Group — Date: 6/8/08
Project Name and Address: Independence Place Apartments — Calc By: K Halpaus
Type of Construction – Based on 2000 Edition of the International Building Code: Type II B
Number of Stories: 3
Total Ground Floor Area – Including Projections (Canopies. Loading Docks, Etc): 7073 S.F.
Total Area of Other Floors – Including Basements: 14,146 S.F.
Total Building Area in Square Feet: 21,219 S.F.

FIRE AREA CONSIDERED: 21,219 S.F.

Note: In order to apply the reduction in area for a building, a fire resistive rated FIRE WALL without openings shall be provided. WITHOUT OPENINGS refers to no penetrations being permitted (i.e. – doors, duct penetrations, pipe penetrations. (B104.1)

Fire Resistive Rating of **FIRE WALL**: ____ (Hours)
Area In Square Feet Between **FIRE WALL** or Either Side: ____
Required Fire Flow from International Fire Code – Table B105.1: 3,000 gpm
Fire Flow Duration in Hours from International Fire Code – Table B105.1: 2
NEEDED FIRE FLOW: (Based on Total Adjusted Square Foot Area)
Automatic Sprinklers (YES ✓ NO ___) Reduction Factor (75% max) 50 % x (NFF) 3,000 = 1500 **GPM**

NOTE: MINIMUM REQUIRED FIRE FLOW NOT LESS THAN 1500 GPM AT MINIMUM 20 PSI RESIDUAL PRESSURE — **TOTAL GPM:** 1500GPM

FIRE HYDRANTS AND SPACING:
REQUIRED MINIMUM NUMBER OF FIRE HYDRANTS (IFC Table C105.1): 1
AVERAGE SPACING BETWEEN FIRE HYDRANTS (IFC Table C105.1): 500'

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT.
SIGNATURE: ____ P.E.
(SIGNATURE REQUIRED)

Reference: 2000 Edition International Fire Code, Appendix B, C, and D

12-4 Bedroom Units

Fire Flow Estimate Form

International Fire Code Method of Calculating NFF (Needed Fire Flow)

Engineer: Timmons Group — Date: 6/8/08
Project Name and Address: Independence Place Apartments — Calc By: K Halpaus
Type of Construction – Based on 2000 Edition of the International Building Code: Type II B
Number of Stories: 3
Total Ground Floor Area – Including Projections (Canopies. Loading Docks, Etc): 6685 S.F.
Total Area of Other Floors – Including Basements: 13,370 S.F.
Total Building Area in Square Feet: 20,055 S.F.

FIRE AREA CONSIDERED: 20,055 S.F.

Note: In order to apply the reduction in area for a building, a fire resistive rated FIRE WALL without openings shall be provided. WITHOUT OPENINGS refers to no penetrations being permitted (i.e. – doors, duct penetrations, pipe penetrations. (B104.1)

Fire Resistive Rating of **FIRE WALL**: ____ (Hours)
Area In Square Feet Between **FIRE WALL** or Either Side: ____
Required Fire Flow from International Fire Code – Table B105.1: 3000 GPM
Fire Flow Duration in Hours from International Fire Code – Table B105.1: 3 hours
NEEDED FIRE FLOW: (Based on Total Adjusted Square Foot Area)
Automatic Sprinklers (YES ✓ NO ___) Reduction Factor (75% max) 50 % x (NFF) 3,000 = 1500 **GPM**

NOTE: MINIMUM REQUIRED FIRE FLOW NOT LESS THAN 1500 GPM AT MINIMUM 20 PSI RESIDUAL PRESSURE — **TOTAL GPM:** 1500

FIRE HYDRANTS AND SPACING:
REQUIRED MINIMUM NUMBER OF FIRE HYDRANTS (IFC Table C105.1): 1
AVERAGE SPACING BETWEEN FIRE HYDRANTS (IFC Table C105.1): 500'

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT.
SIGNATURE: ____ P.E.
(SIGNATURE REQUIRED)

Reference: 2000 Edition International Fire Code, Appendix B, C, and D

SANITARY SEWER SCHEDULE

1	41.92 LF OF 6" PVC PIPE @ 6.77%, IN=81.66, OUT=78.82
2	C.O., TOP AT FINISHED GRADE, INV=81.66
3	48.00 LF OF 6" PVC PIPE @ 1.50%, IN=82.38, OUT=81.66
4	C.O., TOP AT FINISHED GRADE, INV=82.38
5	8.00 LF OF 6" PVC PIPE @ 1.50%, IN=82.50, OUT=82.38
6	16.00 LF OF 6" PVC PIPE @ 1.50%, IN=79.06, OUT=78.82
7	C.O., TOP AT FINISHED GRADE, INV=78.82
8	8.62 LF OF 6" PVC PIPE @ 1.51%, IN=78.95, OUT=78.82
9	C.O., TOP AT FINISHED GRADE, TIE INTO EX. LATERAL
10	8.00 LF OF 6" PVC PIPE @ MIN 1.50%, IN=78.32, OUT=TIE INTO EX. LATERAL
11	C.O., TOP AT FINISHED GRADE, INV=78.32
11A	11.84 LF OF 6" PVC PIPE @ 1.52%, IN=78.50, OUT=78.32
12	50.00 LF OF 6" PVC PIPE @ 0.76%, IN=68.16, OUT=67.78
13	C.O., TOP AT FINISHED GRADE, INV=68.16
14	28.72 LF OF 6" PVC PIPE @ 0.73%, IN=68.37, OUT=68.16
15	24.00 LF OF 6" PVC PIPE @ 1.50%, IN=68.18, OUT=67.78
16	C.O., TOP AT FINISHED GRADE, INV=68.14
17	50.00 LF OF 6" PVC PIPE @ 1.50%, IN=68.89, OUT=68.14
18	C.O., TOP AT FINISHED GRADE, INV=68.89
19	24.00 LF OF 6" PVC PIPE @ 1.50%, IN=69.25, OUT=68.89
20	C.O., TOP AT FINISHED GRADE, INV=68.89
21	14.80 LF OF 6" PVC PIPE @ 1.49%, IN=69.11, OUT=68.89
22	19.56 LF OF 6" PVC PIPE @ 13.60%, IN=65.06, OUT=62.40
23	C.O., TOP AT FINISHED GRADE, INV=65.06
24	64.00 LF OF 6" PVC PIPE @ 3.81%, IN=67.50, OUT=65.06
25	20.88 LF OF 6" PVC PIPE @ 17.29%, IN=66.88, OUT=63.27
26	C.O., TOP AT FINISHED GRADE, INV=66.88
27	76.00 LF OF 6" PVC PIPE @ 8.71%, IN=73.50, OUT=66.88
28	C.O., TOP AT FINISHED GRADE, TIE INTO EX. LATERAL
29	53.46 LF OF 6" PVC PIPE @ 1.50%, IN=78.00, OUT=TIE INTO EX. LATERAL
30	C.O., TOP AT FINISHED GRADE, INV=78.00
31	6.37 LF OF 6" PVC PIPE @ 1.57%, IN=80.00, OUT=79.90
32	C.O., TOP AT FINISHED GRADE, INV=79.90
33	56.00 LF OF 6" PVC PIPE @ MIN 6.50%, IN=71.97, OUT=TIE INTO EX. LATERAL
34	12.00 LF OF 6" PVC PIPE @ 1.50%, IN=83.01, OUT=82.83
35	C.O., TOP AT FINISHED GRADE, INV=83.01
36	9.11 LF OF 6" PVC PIPE @ 1.54%, IN=83.15, OUT=83.01
37	10.77 LF OF 6" PVC PIPE @ 2.23%, IN=84.00, OUT=83.76
38	C.O., TOP AT FINISHED GRADE, INV=83.76
39	100.00 LF OF 6" PVC PIPE @ 4.26%, IN=83.76, OUT=79.50
40	C.O., TOP AT FINISHED GRADE, INV=79.50
41	40.49 LF OF 6" PVC PIPE @ MIN 5.00%, IN=79.50, OUT=TIE INTO EX. LATERAL
41A	C.O., TOP AT FINISHED GRADE, TIE INTO EX. LATERAL
42	12.00 LF OF 6" PVC PIPE @ 1.67%, IN=84.00, OUT=83.82
43	C.O., TOP AT FINISHED GRADE, INV=83.82
44	75.21 LF OF 6" PVC PIPE @ 8.32%, IN=83.82, OUT=77.56
45	FLOOR DRAIN, TOP=85.83, INV=84.33
46	28.04 LF OF 6" PVC PIPE @ 1.04%, IN=84.33, OUT=84.04
47	OIL-WATER SEPERATOR, INV IN=84.04, INV OUT=83.69
48	4.00 LF OF 6" PVC PIPE @ 13.50%, IN=83.69, OUT=83.15
49	C.O., TOP AT FINISHED GRADE, INV=83.15
50	79.70 LF OF 6" PVC PIPE @ 1.50%, IN=83.15, OUT=81.95
51	C.O., TOP AT FINISHED GRADE, INV=81.95
52	100.00 LF OF 6" PVC PIPE @ 1.50%, IN=81.95, OUT=80.45
53	C.O., TOP AT FINISHED GRADE, INV=80.45
54	100.00 LF OF 6" PVC PIPE @ 1.50%, IN=80.45, OUT=78.95
55	C.O., TOP AT FINISHED GRADE, INV=78.95
56	100.00 LF OF 6" PVC PIPE @ 1.50%, IN=78.95, OUT=77.45
57	C.O., TOP AT FINISHED GRADE, INV=77.45
58	100.00 LF OF 6" PVC PIPE @ 8.65%, IN=77.45, OUT=68.80
59	C.O., TOP AT FINISHED GRADE, INV=68.80
60	11.75 LF OF 6" PVC PIPE @ 8.65%, IN=68.80, OUT=67.78

COMMONWEALTH OF VIRGINIA
DERRICK A. JOHNSON
Lic. No. 24761
PROFESSIONAL ENGINEER
5-18-09

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Site Development | Residential | Infrastructure | Technology

DATE	REVISION DESCRIPTION
04-15-09	COUNTY COMMENTS
05-12-09	COUNTY COMMENTS
05-18-09	OWNER REVISIONS

DATE: 02 JULY 2008
DRAWN BY: K.HALPAUS
DESIGNED BY: K.HALPAUS
CHECKED BY: D.JOHNSON
SCALE: 1"=30'

TIMMONS GROUP

INDEPENDENCE PLACE APARTMENTS
BLAND DISTRICT - PRINCE GEORGE COUNTY - VIRGINIA
UTILITY LAYOUT

JOB NO. 25056
SHEET NO. 7

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