

GENERAL NOTES

1.

ALL ELEVATIONS ARE BASED ON USGS DATUM
2.

SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO, PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION, PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.
3.

EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRIC CONDUITS, SEWERS AND WATER LINES, ARE SHOWN ON THE PLANS. THE INFORMATION SHOWN IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER, NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND MISS DIG AND REQUEST THAT THEY STAKE OUT THE LOCATIONS OF THE UTILITIES IN QUESTION, COST OF REPAIR FOR ANY DAMAGED UTILITY LINES THAT IS PROPERLY STAKED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4.

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING THE FURNISHING AND USE OF SAFEGUARDS, SAFETY DEVICES AND PROTECTION EQUIPMENT. THE CONTRACTOR SHALL TAKE ANY NECESSARY PRECAUTIONS TO PROTECT THE LIFE AND HEALTH OF EMPLOYEES AND THE PUBLIC IN THE PERFORMANCE OF THE WORK.
5.

ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, FERTILIZED AND MULCHED. MULCH BLANKET SHALL BE INSTALLED IN AREAS AS DESIGNATED AND SHALL BE INCIDENTAL TO OTHER ITEMS.
6.

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, 1974, THE CONTRACTOR SHALL DIAL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.

WATERMAIN NOTES

1.

ALL CONSTRUCTION MATERIALS AND PROCEDURES SHALL CONFORM WITH CURRENT GRAND TRAVERSE COUNTY D.P.W. STANDARDS, SPECIFICATIONS AND DETAILS.
2.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION OF THE WATERMAIN. CONTRACTOR SHALL ISSUE A WORK SCHEDULE TO THE ENGINEER PRIOR TO THE START OF WATERMAIN CONSTRUCTION.
3.

ALL WATERMAIN SHALL BE DUCTILE IRON PIPE THICKNESS CLASS 52, MEETING CURRENT AWWA STANDARDS.
4.

WATERMAIN SHALL HAVE A MINIMUM OF SIX (6) FEET OF COVER BELOW EXISTING OR PROPOSED GRADE, UNLESS OTHERWISE NOTED ON THE PLANS.
5.

RETAINER GLANDS SHALL BE USED ON ALL MECHANICAL JOINT FITTINGS.
6.

BURLAP, PLASTIC OR POLY (20 MILLS) OR APPROVED EQUAL SHALL BE PLACED BETWEEN THE CONCRETE THRUST BLOCK AND DEAD-END MAINS OR DEAD-END PLUGS, TEES, HYDRANTS AND CROSSES TO FACILITATE THE REMOVAL OF THE THRUST BLOCK FOR FUTURE EXTENSION AND MAINTENANCE.
7.

A PHYSICAL GAP SHALL BE MAINTAINED BETWEEN THE WATERMAIN AND THE EXISTING WATERMAIN UNTIL ALL WATERMAIN TESTING HAS BEEN COMPLETED AND APPROVED BY THE ENGINEER AND THE GRAND TRAVERSE COUNTY D.P.W.
8.

THE CONTRACTOR SHALL COORDINATE THE CONNECTION TO THE EXISTING WATERMAIN WITH THE GRAND TRAVERSE COUNTY D.P.W. THE ENGINEER AND D.P.W. SHALL BE GIVEN A MINIMUM OF 24 HOURS NOTICE PRIOR TO THIS CONNECTION.
9.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN WATER FOR FLUSHING AND TESTING PURPOSES. CONTRACTOR SHALL COORDINATE WITH THE D.P.W., IF WATER IS OBTAINED FROM THE TOWNSHIP WATER SYSTEM. THE D.P.W. SHALL BE GIVEN 48 HOURS NOTICE PRIOR TO USING ANY WATER FROM THE TOWNSHIP WATER SYSTEM.

SANITARY SEWER NOTES

1.

ALL CONSTRUCTION MATERIALS AND WORKMANSHIP MUST CONFORM WITH THE GRAND TRAVERSE COUNTY D.P.W. CURRENT STANDARDS, SPECIFICATIONS AND DETAILS.
2.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION OF THE SANITARY SEWER. THE CONTRACTOR SHALL ISSUE A WORK SCHEDULE TO THE ENGINEER PRIOR TO THE START OF SANITARY SEWER CONSTRUCTION.
3.

NO CONNECTION RECEIVING STORM WATER OR GROUND WATER SHALL BE MADE TO SANITARY SEWERS.
4.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE MANHOLE RIMS TO THE FINISH GRADE ELEVATIONS. THE ELEVATIONS SHOWN ARE BASED UPON PLAN GRADES AND ARE SUBJECT TO CHANGE.

ROAD CONSTRUCTION NOTES

1.

ALL CONSTRUCTION WORKMANSHIP AND MATERIALS SHALL CONFORM WITH CURRENT ROAD COMMISSION STANDARDS, SPECIFICATIONS AND DETAILS.
2.

THE PRESENCE OF OTHER THAN GRANULAR MATERIALS IN THE SUBGRADE SOIL SHALL REQUIRE A FULL WIDTH, FIFTEEN INCH, GRANULAR SUB-BASE, MDOT CLASS II OR EQUIVALENT.
3.

PREPARE SUBGRADE WIDTH, DEPTH AND COMPACTION MUST BE REVIEWED AND/OR TESTED BY THE FIELD ENGINEER PRIOR TO PLACEMENT OF GRAVEL.
4.

GRAVEL TO BE USED ON PROJECT MUST MEET SPECIFICATIONS FOR MDOT 22A AND MUST BE TESTED AND/OR REVIEWED BY THE FIELD ENGINEER PRIOR TO PLACEMENT.
5.

GRAVEL PLACEMENT MUST COMPLY WITH SECTION 3.01 OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION 1990 STANDARD SPECIFICATIONS.
6.

PREPARED GRAVEL WIDTH, DEPTH AND COMPACTION MUST BE REVIEWED AND TESTED BY THE PROJECT ENGINEER PRIOR TO THE PLACEMENT OF BITUMINOUS SURFACE.
7.

CONTRACTOR SHALL GIVE THE PROJECT ENGINEER 48 HOUR'S NOTICE PRIOR TO PLACEMENT OF BITUMINOUS SURFACE.
8.

BITUMINOUS PAVING MUST BE PERFORMED IN ACCORDANCE WITH MDOT STANDARD SPECIFICATIONS.
9.

ALL TREES, STUMPS, BRUSH AND ROOTS THEREOF, SHALL BE ENTIRELY REMOVED FROM WITHIN THE GRADING LIMITS OF ALL ROADS IN THE PROPOSED PLAT AND DISPOSED OF AS DIRECTED BY THE OWNER.
10.

THE LEVEL OF THE FINISHED SUBGRADE SHALL BE AT LEAST TWO AND ONE HALF FEET ABOVE THE HIGH WATER TABLE.
11.

ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, FERTILIZED AND MULCHED.
12.

CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING GROUND COVER ON AREAS DISTURBED BY CONSTRUCTION AND WILL REPAIR AREAS AS NEEDED FOR A PERIOD OF ONE YEAR.
13.

ANY CHANGES IN SPECIFICATIONS/PLANS MUST BE REVIEWED BY THE PROJECT ENGINEER AND/OR THE OWNER.

DRAINAGE AREA 'A'

BASIN 'A1'

25 YEAR, 24 HOUR DURATION STORM
V=(Cf-Ci)(i)(acre)(86,400sec)

150'x 30'x 1' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 3037 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
INCLUDING HOME ROOF, GARAGE & DRIVES, etc. = 3,000 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 0
C FACTOR FOR HARD SURFACE = .9

TOTAL AREA THAT IS LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 0 SF
C FACTOR FOR LAWNS = .2
(HEAVY SOIL, AVERAGE 2-7%)

TOTAL AREA THAT IS BEING RESTORED (ROADWAY SLOPES)
RESTORATION AREA = 680 SF
C FACTOR FOR RESTORATION AREAS = .25
(HEAVY SOIL, 7% TO STEEP)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF = 0.07 ACRE
V= (.9)(.16)(0.07)(86400sec) = 871 CF
V= (.2)(.1)(0.07)(86400sec) = 121 CF

TOTAL RESTORATION RUN-OFF = 0.015 ACRE
V= (.25)(.16)(0.015)(86,400sec) = 52 CF
V= (.2)(.1)(0.015)(86,400sec) = 26 CF

VOLUME REQUIRED = (871 CF - 121 CF) + (52 CF- 26 CF) = 776 CF
VOLUME PROVIDED = 995 CF

BASIN SIDE SLOPES 1 ON 3
TOP OF BASIN ELEVATION = 596.5
BOTTOM OF BASIN ELEVATION = 595.5
FREE BOARD = .5 FOOT MINIMUM

BASIN 'A2'

25 YEAR, 24 HOUR DURATION STORM
V=(Cf-Ci)(i)(acre)(86,400sec)

80'x 30'x 1.1' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 1935 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
INCLUDING HOME ROOF, GARAGE & DRIVES, etc. = 3,000 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 0
C FACTOR FOR HARD SURFACE = .9

TOTAL AREA THAT IS LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 1619 SF
C FACTOR FOR LAWNS = .2
(HEAVY SOIL, AVERAGE 2-7%)

TOTAL AREA THAT IS BEING RESTORED (ROADWAY SLOPES)
RESTORATION AREA = 2730 SF
C FACTOR FOR RESTORATION AREAS = .25
(HEAVY SOIL, 7% TO STEEP)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF = 0.07 ACRE
V= (.9)(.16)(0.2)(86400sec) = 2488 CF
V= (.2)(.1)(0.2)(86400sec) = 346 CF

TOTAL RESTORATION RUN-OFF = .06 ACRE
V= (.25)(.16)(.06)(86,400sec) = 207 CF
V= (.2)(.1)(.06)(86,400sec) = 104 CF

TOTAL LAWN RUN-OFF = .037 ACRE
V= (.2)(.16)(0.037)(86,400sec) = 102 CF
V= (.2)(.1)(0.037)(86,400sec) = 64 CF

VOLUME REQUIRED = (2488 CF - 346 CF) + (207 CF - 104 CF)
+ (102 CF - 64 CF) = 2283 CF
VOLUME PROVIDED = 2685 CF
BASIN SIDE SLOPES 1 ON 3

TOP OF BASIN ELEVATION = 595.0
BOTTOM OF BASIN ELEVATION = 592.6
FREE BOARD = .5 FOOT MINIMUM

STORM DRAINAGE CALCULATIONS

DRAINAGE AREA 'B'
BASIN 'B'

25 YEAR, 24 HOUR DURATION STORM
V=(Cf-Ci)(i)(acre)(86,400sec)

150'x 23'x 2' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 3697 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
INCLUDING HOME ROOF, GARAGE & DRIVES, etc. = 3,000 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 4
C FACTOR FOR HARD SURFACE = .9
(LOTS 31, 30, & 29)

TOTAL AREA THAT ARE LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 13880 SF
C FACTOR FOR LAWNS = .25
(HEAVY SOIL, AVERAGE 7% TO STEEP)

TOTAL AREA THAT IS BEING RESTORED (ROADWAY SLOPES)
RESTORATION AREA = 710 SF
C FACTOR FOR RESTORATION AREAS = .25
(HEAVY SOIL, 7% TO STEEP)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF (PAVEMENT) =.084 ACRE
V= (.9)(.16)(0.084)(86400sec) = 1045 CF
V= (.2)(.1)(0.084)(86400sec) = 145 CF

TOTAL HARD SURFACE RUN-OFF (BUILDINGS) = 0.28 ACRE
V= (.9)(.16)(0.28)(86400sec) = 3484 CF
V= (.2)(.1)(0.28)(86400sec) = 483 CF

TOTAL RESTORATION RUN-OFF = 0.018 ACRE
V= (.25)(.16)(0.018)(86,400sec) = 62 CF
V= (.2)(.1)(0.018)(86,400sec) = 31 CF

TOTAL LAWN RUN-OFF = 0.32 ACRE
V= (.25)(.16)(0.32)(86,400sec) = 1106 CF
V= (.2)(.1)(0.32)(86,400sec) = 552 CF

VOLUME REQUIRED = (1045 CF - 145 CF) + (3484 CF - 483 CF) +
(62 CF - 31 CF) + (1106 CF - 552 CF) = 4486 CF
VOLUME PROVIDED = 4,486 CF

BASIN SIDE SLOPES 1 ON 3
TOP OF BASIN ELEVATION = 604.25
BOTTOM OF BASIN ELEVATION = 602.25
FREE BOARD = .5 FOOT MINIMUM

DRAINAGE AREA 'D'

BASIN 'D1'

100 YEAR, 24 HOUR DURATION STORM (BACK TO BACK)
(NO OUTLET)
V=(Cf-Ci)(i)(acre)(86,400sec)

85'x 30'x 3' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 6595 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF (PAVEMENT) =.15 ACRE
V= (.9)(.19)(0.15)(86400sec) = 2216 CF

VOLUME REQUIRED = 2,216 CF x 2 = 4,432 CF
VOLUME PROVIDED = 4,550 CF
BASIN SIDE SLOPES 1 ON 3

TOP OF BASIN ELEVATION = 620.00
BOTTOM OF BASIN ELEVATION = 617.00
FREE BOARD = .5 FOOT MINIMUM

BASIN 'D2'

100 YEAR, 24 HOUR DURATION STORM (BACK TO BACK)
V=(Cf-Ci)(i)(acre)(86,400sec)

155'x 75'x 2.3' DEEP

ON SITE

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 0 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
ONLY INCLUDING DRIVEWAYS = 700 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 2
C FACTOR FOR HARD SURFACE = .9
(LOTS 6, & 7)

TOTAL AREA THAT ARE LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 13939 SF
C FACTOR FOR LAWNS = .25
(HEAVY SOIL, AVERAGE 7% TO STEEP)

TOTAL AREA THAT IS UNDEVELOPED
UNDEVELOPED AREA = 73257 SF
C FACTOR FOR UNDEVELOPED AREAS = .2
(UNDEVELOPED AREAS)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF (PAVEMENT) = 0 ACRE
V= (.9)(.19)(0)(86400sec) = 0 CF

TOTAL HARD SURFACE RUN-OFF (BUILDINGS) = 0.016 ACRE
V= (.9)(.19)(0.016)(86400sec) = 237 CF

TOTAL UNDEVELOPED ON-SITE RUN-OFF = 1.68 ACRE
V= (.2)(.19)(1.68)(86,400sec) = 5516 CF

TOTAL UNDEVELOPED OFF-SITE RUN-OFF = .74 ACRE
V= (.2)(.19)(.74)(86,400sec) = 2429 CF

TOTAL LAWN RUN-OFF = 0.32 ACRE
V= (.25)(.19)(0.32)(86,400sec) = 1313 CF

VOLUME REQUIRED = 9495 CF x 2 = 18990 CF
VOLUME PROVIDED = 19,305 CF
BASIN SIDE SLOPES 1 ON 3

TOP OF BASIN ELEVATION = 624.90
BOTTOM OF BASIN ELEVATION = 622.60
FREE BOARD = .5 FOOT MINIMUM

DRAINAGE AREA 'E'
BASIN 'E'

25 YEAR, 24 HOUR DURATION STORM
V=(Cf-Ci)(i)(acre)(86,400sec)

155'x 25'x 2' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 13,559 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
ONLY INCLUDING DRIVEWAYS = 1,000 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 4
C FACTOR FOR HARD SURFACE = .9
(LOTS 8, 9, 27 & 28)

TOTAL AREA THAT ARE LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 15712 SF
C FACTOR FOR LAWNS = .25
(HEAVY SOIL, AVERAGE 7% - STEEP)

TOTAL AREA THAT BEING RESTORED (ROADWAY SLOPES)
RESTORATION AREA = 29254 SF
C FACTOR FOR RESTORATION AREAS = .25
(HEAVY SOIL, 7% TO STEEP)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF (PAVEMENT) =.31 ACRE
V= (.9)(.16)(.31)(86400sec) = 3857 CF
V= (.2)(.1)(.31)(86400sec) = 536 CF

TOTAL HARD SURFACE RUN-OFF (BUILDINGS) = 0.07 ACRE
V= (.9)(.16)(0.07)(86400sec) = 871 CF
V= (.2)(.1)(0.07)(86400sec) = 121 CF

TOTAL RESTORATION RUN-OFF = .67 ACRE
V= (.25)(.16)(.67)(86,400sec) = 2315 CF
V= (.2)(.1)(.67)(86,400sec) = 1158 CF

TOTAL LAWN RUN-OFF = 0.36 ACRE
V= (.25)(.16)(0.36)(86,400sec) = 1244 CF
V= (.2)(.1)(0.36)(86,400sec) = 622 CF

VOLUME REQUIRED = (3857 CF - 536 CF) + (871 CF - 121 CF) +
(2315 CF - 1158 CF) + (1244 CF - 622 CF) = 5850

VOLUME PROVIDED = 5936 CF
BASIN SIDE SLOPES 1 ON 3

TOP OF BASIN ELEVATION = 624.50
BOTTOM OF BASIN ELEVATION = 622.50
FREE BOARD = .5 FOOT MINIMUM

DRAINAGE AREA 'F'

BASIN 'F'

25 YEAR, 24 HOUR DURATION STORM
V=(Cf-Ci)(i)(acre)(86,400sec)

120'x 60'x 3.75' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 19784 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
INCLUDING HOME ROOF, GARAGE & DRIVES, etc. = 3,000 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 10
C FACTOR FOR HARD SURFACE = .9
(LOTS 19-23, 10-14)

TOTAL AREA THAT IS LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 61952 SF
C FACTOR FOR LAWNS = .25
(HEAVY SOIL, AVERAGE 7% - STEEP)

TOTAL AREA THAT BEING RESTORED (ROADWAY SLOPES)
RESTORATION AREA = 16505 SF
C FACTOR FOR RESTORATION AREAS = .25
(HEAVY SOIL, 7% TO STEEP)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF (PAVEMENT) =.45 ACRE
V= (.9)(.16)(.45)(86400sec) = 5599 CF
V= (.2)(.1)(.45)(86400sec) = 778 CF

TOTAL HARD SURFACE RUN-OFF (BUILDINGS) = 0.69 ACRE
V= (.9)(.16)(0.69)(86400sec) = 8585 CF
V= (.2)(.1)(0.69)(86400sec) = 1192 CF

TOTAL RESTORATION RUN-OFF = .38 ACRE
V= (.25)(.16)(.38)(86,400sec) = 1313 CF
V= (.2)(.1)(.38)(86,400sec) = 656 CF

TOTAL LAWN RUN-OFF = 1.42 ACRE
V= (.25)(.16)(1.42)(86,400sec) = 4907 CF
V= (.2)(.1)(1.42)(86,400sec) = 2453 CF

VOLUME REQUIRED = (5599 CF - 778 CF) + (8585 CF - 1192 CF) +
(1313 CF - 656 CF) + (4907 CF - 2453 CF) = 15325 CF

VOLUME PROVIDED = 15,325 CF
BASIN SIDE SLOPES 1 ON 3

TOP OF BASIN ELEVATION = 654.50
BOTTOM OF BASIN ELEVATION = 650.75
FREE BOARD = .5 FOOT MINIMUM

DRAINAGE AREA 'G'

BASIN 'G'

25 YEAR, 24 HOUR DURATION STORM
V=(Cf-Ci)(i)(acre)(86,400sec)

70'x 30'x 3' DEEP

TOTAL HARD SURFACE RUN-OFF FROM
BITUMINOUS PAVEMENT = 7818 SF
C FACTOR FOR BITUMINOUS PAVEMENT = .9

TOTAL HARD SURFACE RUN-OFF FROM EACH LOT
INCLUDING HOME ROOF, GARAGE & DRIVES, etc. = 3,000 SF
NUMBER OF LOTS WITHIN DRAINAGE AREA = 3
C FACTOR FOR HARD SURFACE = .9
(LOTS 15, 16, 18)

TOTAL AREA THAT IS LAWNS (WITHIN BUILDING ENVELOPE)
LAWN AREA = 18071 SF
C FACTOR FOR LAWNS = .25
(HEAVY SOIL, AVERAGE 7% - STEEP)

TOTAL AREA THAT BEING RESTORED (ROADWAY SLOPES)
RESTORATION AREA = 11318 SF
C FACTOR FOR RESTORATION AREAS = .25
(HEAVY SOIL, 7% TO STEEP)

VOLUME CALCULATIONS

TOTAL HARD SURFACE RUN-OFF (PAVEMENT) =.18 ACRE
V= (.9)(.16)(.18)(86400sec) = 2239 CF
V= (.2)(.1)(.18)(86400sec) = 311 CF

TOTAL HARD SURFACE RUN-OFF (BUILDINGS) = 0.2 ACRE
V= (.9)(.16)(0.2)(86400sec) = 2488 CF
V= (.2)(.1)(0.2)(86400sec) = 346 CF

TOTAL RESTORATION RUN-OFF = .26 ACRE
V= (.25)(.16)(.26)(86,400sec) = 899 CF
V= (.2)(.1)(.26)(86,400sec) = 449 CF

TOTAL LAWN RUN-OFF = .41 ACRE
V= (.25)(.16)(.41)(86,400sec) = 1417 CF
V= (.2)(.1)(.41)(86,400sec) = 708 CF

VOLUME REQUIRED = (2239 CF - 311 CF) + (2488 CF - 346 CF) +
(899 CF - 449 CF) + (1417 CF - 708 CF) = 5229 CF

VOLUME PROVIDED = 5357 CF
BASIN SIDE SLOPES 1 ON 3

TOP OF BASIN ELEVATION = 645.00
BOTTOM OF BASIN ELEVATION = 641.50
FREE BOARD = .5 FOOT MINIMUM

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