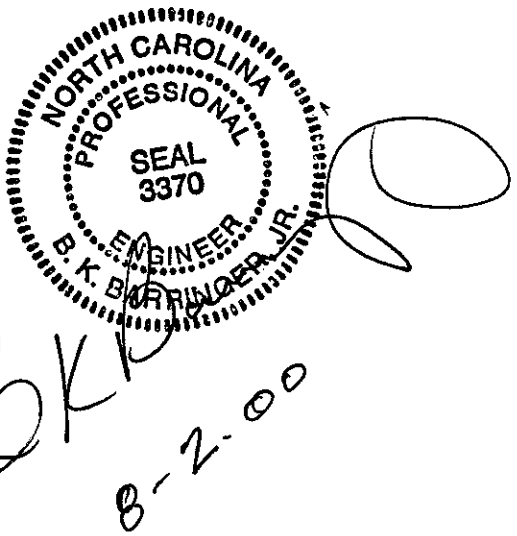
Record Documents and Specifications

Scope of Work, Plans and Details For the Utilization of the Existing Septic System for Additional Church Building

Calvary Community Church
PO Box 1312
2487 Charlotte Hwy.
Mooresville, NC 28115

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Prepared for:
Calvary Community Church
PO Box 1312
Mooresville, NC 28115

Prepared by:
B.K. Barringer & Associates. PA
Suite 104 Westfield Center
125 East Plaza Drive
Mooresville, NC 28115
Office 704-664-7888
Fax 704-664-1778

I. NARRATIVE

Calvary Community Church recently constructed a new church facility at 2487 Charlotte Hwy. (Hwy. 21, North of Hwy.150) just outside the town limits of Mooresville and moved into the new building in March of this year (2000). This building is served by a septic system consisting of one 2000-gallon 1st stage tank, a second 2000-gallon pump tank, and 1365 lineal feet of conventional nitrification field. The water source is a well on site, tagged at 50 gallons per minute. The existing septic system design for this church facility is based on an LTAR of 0.3 G/SF/D and uses a ratio of 5 gallons per person per day. The building maximum occupancy is 250 people. The system capacity is 1,250 gallons per day, or 8,750 gallons per week. (250 x 5 = 1,250 x 7 = 8,750)

The church has experienced continued growth in the past few months and recognizes the need for additional space to accommodate this growth. The need is specifically for additional classroom space and meeting space for expanding youth programs. This includes a cottage school that combines home instruction with classroom instruction. The school has been meeting 4 days a week, for 5 hours each day for the past two school years. The church expects this cottage school concept to continue to grow at the rate of approximately 12 to 17 students per year. Current enrollment is 33 students and limited to 50 students this next school year (2000-2001). In developing a master plan, the church has designed a secondary building, Phase IB, to provide for this need until a larger Phase II building can be constructed. It is expected that the church will connect to the town water and sewer system in building the future Phase II facility.

II. FACILITIES DESCRIPTIONS & FUNCTIONS

The existing building contains a 250 seat Sanctuary, 4 offices, a kitchen, 1 multipurpose room, 2 nursery rooms, 2 classrooms, 3 restrooms with a total of 6 toilets and 4 sinks and a janitor closet with a sink. This facility is used on Sunday for services. Three staff members occupy the offices during the week. In addition, the classrooms will be used only 4 days of the week for school.). There will be classrooms dedicated only to nursery and other uses on Sundays for morning services, leaving 8 classrooms for the school with a maximum of 15 students per classroom. There will be 6 full time teachers on staff. The school meets Monday through Thursday, from 9am to 2pm.

The proposed Phase IB Youth Facility will be 4000 square feet. It will contain 1 large meeting room, 6 classrooms, a multifunction room with a kitchen sink, microwave and refrigerator, and 2 restrooms with a total of 4 toilets and 4 sinks. The building would be used 4 days a week for classrooms, Children's church and a Youth meeting on Sunday and 1 other evening for smaller meetings.

II.a

EXISTING BUILDING FUNCTIONS:

Sunday Services:	250 People
Monday, School	30 Students
Monday Evening Meeting	15 People
Tuesday, School	30 Students
Wednesday, School	30 Students
Thursday, School	30 Students
Thursday Evening meeting	20 People
Friday Morning Meeting	15 People
School Staff:	6 Fulltime
Church Staff	3 Fulltime

NEW YOUTH FACILITY FUNCTIONS:

Sunday Services:	50 Youth in Children's Church
Sunday Evening Youth meeting:	198 Youth
Monday, School (5hours/day):	90 Students
Tuesday, School	90 Students
Wednesday, School	90 Students
Wednesday Evening Meeting	50 People
Thursday, School	90 Students

III. ISSUE:

It is proposed that the church connects into the existing septic system for the next Phase IB. Youth Facility. This proposal to construct a smaller, Phase IB, facility and tie into the existing septic system is a short-term solution to the church's growth needs. The enclosed documentation will demonstrate that:

- Churches in general use very little water and this church is not an exception. Much larger churches use less than this system's capacity.
- The existing system's capacity far exceeds the church's usage, even with growth projections.
- Using the existing system provides for optimum growth and use of the church resources now. This efficient growth will help finance the future development of the church and the planned future connection to town sewer and water.

IV. ANALYSIS: Background

The church has been renting existing sanctuary, classroom and fellowship-hall facilities on Parker Avenue in Mooresville for the past 18 months prior to moving to the new location. The School has also used the Parker Ave. facilities for the past 2 school years. Records have been obtained from the Mooresville Water Dept. to document the actual church usage. Records were also obtained for two other area churches to compare usage. One church, First Assembly of God, has a congregation approximately the size we forecast in our growth plan and is very active with services during the week. The other church is much larger. Fairview United Methodist has recently expanded their facilities but they use even less water by comparison.

IVa. Table: Water Meter Records

Congregation Size	This Church 135 Members	This Church 33 Students	Sample Church1 225 Members	Sample Church2 500 Members
Month	Sanctuary	Fellowship Hall & School	First Assembly of God	Fairview United Methodist
1 April '99	700	1000	5900	6500
2	600	900	6800	7400
3	400	1600	7500	5400
4	100	6800	9100	6400
5	2300	0	7100	6400
6	0	3600	8500	6100
7	300	2400	8200	8300
8	2500	2500	15200	8100
9	2400	2800	7700	8400
10	2100	0	6900	5200
11	2800	100	7300	11800
12 April '00	1700	3300	7300	9100
Total Gallons for 12 months	15,900	25,000	97,500	89,100
Average per Month	1325	2083	8125	7425
Avg/Member per Month per Day	(135) 10 gal, .34g/d	(33) 63 gal, 2.12g/d	(225) 36 gal 1.21g/d	(500) 15 gal .51g/d

IV.b Notes:

- "Congregation Size" indicates maximum capacity of facilities and assumes all members in attendance for all services and meetings.

- Extreme fluctuations in water usage due to leakage have been included to account for "worse case" possibilities.

- The School primarily uses the separate fellowship hall facilities, Student water usage has been established with these records: **2.12g/d/s.**

V. CONCLUSIONS FROM DATA:

By comparison, Calvary Community Church Members each use 10gal/month or .34 gal/day. That is less than the other two churches that use 36 & 15 g/month or 1.21 & .51 gal/day. **The Church Members use less than 1 Gallon per Day per Person**

For studies of this type, an average of the three churches would typically be used as the unit of measure. (In Gallons per Day). However, **to provide an added degree of safety in the analysis and results, the HIGHEST unit of measure will be used: 1.21 g/d/p.**

Church	*Calvary Comm. (Sanctuary)*	***First Assembly***	*Fairview Methodist*	*Totals:*
# Gallons per Day per Person	.34g/d/p	**1.21g/d/p**	.51g/d/p	2.06g/d/p
Average			(2.06/3)=	.69g/d/p

Notes:

The Churches in this study use considerably less water than the current guideline for rating septic systems: 5 gal/person/day.

The School (Students, Fellowship hall column) usage analysis from Page 4 above shows: **2.12 g/d per Student**
Well below the 9–12 gallons per student state guideline.

The actual usage determined in this analysis is much lower than state guidelines. The actual usage is a realistic approach to sizing septic system to the need.

VI. GROWTH PROJECTIONS FOR CHURCH USAGE

The Projected Growth of Calvary Community Church shown above (pg. 2,3) can now be totaled for the existing building and the Youth Center building (1b). The water usage and related septic system demand can be calculated using the higher value established in the Table above (pg.5). The added demand for the proposed building is shown as "+Youth" in the table below:

WeekDay	Member Exist+Youth	Student Exist+Youth	Avg/G/Day	Total:	Cumulative 1250 – Total
Sunday AM Service	250 + 50		1.21 g/d/p	363 g/d	1250-363= +887
Sunday PM Service	+198		1.21 g/d/p	240 g/d	887-240= +647
Monday, School		30 + 90	2.12 g/d/s	254 g/d	1250+647= 1897-254= +1643
Mon.Evening Meeting	15		1.21 g/d/p	18 g/d	1643-18= +1625
Tuesday, School		30 + 90	2.12 g/d/s	254 g/d	1250+1625= 2875-254= +2621
Wednesday, School		30 + 90	2.12 g/d/s	254 g/d	1250+2621= 3871-254= +3617
Wed.Evening Service	+ 50		1.21 g/d/p	61 g/d	3617-61= +3556
Thursday, School		30 + 90	2.12 s/d/s	254 g/d	1250+3556= 4806-254= +4552
Thursday, Worship Practice	20		1.21 g/d/p	24 g/d	4552-24= +4528
Friday AM Meeting	15		1.21 g/d/p	18 g/d	1250+4552= 5778-18= 5760
School Staff	+ 6	X 4 days	1.21 g/d/p	29 g/d	5760-29= +5731
Church Staff	3	X 5 days	1.21 g/d/p	18 g/d	5731-18= +5713
Saturday	System rests			0 g/d	1250+5713= +6963
Total:	**Total Septic System Capacity:**	**8,750 Gallons per Week**	**Total Church & School Usage:**	**1,787 Gallons per Week**	**Total Surplus: +6963**

(g/d/p = gallons per day per person, g/d/s = gallons per day per student) **(20.42% of capacity)**

NOTES: (From Chart Above)

- Note that much of the use for the additional building facility will be during the week when the existing building is not being used. Although this new building will increase demand on the septic system, it will not all be "simultaneous" usage.
- At no time does the daily usage exceed daily system capacity. The heaviest day, Sunday, still uses less than 50% of capacity. The system and worst case usage scenario shows there is a significant safety factor built into the existing septic system

VII. SUMMARY STATEMENT:

Based on the above analysis, connecting the youth facility to the existing septic system will not overtax the system. The projected increased demand on the system, even in the worst case, can be managed with the existing system. There is an overall safety factor of 5 (20% usage x 5 = 100% capacity). Current data shows the existing system as designed is capable of handling the additional load from the proposed Youth Center. Therefore, it is requested that the church be allowed to tie the additional building (Youth Center) into the existing septic system without need for expanding or changing the existing system. No other corrective actions are needed at this time.

VIII. ADDITIONAL REMEDY & SOLUTIONS:

Although the above analysis is considered complete and accurate in it's assessment: no other measures need to be taken at this time, this study does consider all possible outcomes. Additional options are available to use the existing system and insure its' proper function. These measures can be taken on a step by step basis as needed:

1) The church will install a water meter on the well water in-feed. This will allow the church to monitor water usage and insure system function.

2) If the septic system experiences periods when high levels of demand require flow equalization, the church will install a timer on the existing pump.

3) In conjunction with the flow equalization timer, an additional holding tank may be installed to manage the demand and extend the distribution of fluids over longer time periods.

Attachments: Mooresville Water Dept. Records