

COPY

O.E. Smith's Sons Inc.

Wells, Pumps & Septic Tanks

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November 10, 1998

Nassau County Board of County Commissioners
C/O J.M. "Chip" Oxley, Clerk
191 Nassau Place
Yulee, Florida 32097

RE: Bryceville Community Center, Bryceville, Florida

TO WHOM IT MAY CONCERN:

We are pleased to provide the following proposal for the septic system at the above referenced location.

SEPTIC SYSTEM based on attached calculations by Kevin C. Knowles Civil Engineering, Inc., including Addendum 1.

Price: \$ 5,600.00 + Tax

This proposal DOES NOT include stabilization for septic mound, electrical or plumbing work.

Thank you for the opportunity to submit this proposal. If you have any questions, please call David Bruno at 904-765-3511.

Sincerely,



Tracy Lynn Smith
Treasurer

APPROVED

DATE 11/23/98

Project:

Proposed Bryceville Community Center

Sanitary System (Septic Tank) Calculations

Prepared By:

Kevin C. Knowles Civil Engineering, Inc.

7806 South Aquarius Circle
Jacksonville, FL 32216
Phone 904-725-9513
Fax 904-720-0182

Date: September 1998
Revised: October 1998

Kevin C. Knowles
10/20/98

10/17/78

10/19/78 Septic Tank System Bryenville KCKCFI# 9818

Determine Daily Flow

provided by Gary Larson of Nassau County R/d, Dept as 400 GPD

Min. Effective cap. of septic tank = 900 gal (Table II 10D6)

Max. Sewage loading rate = 0.65 GPF/Day (p. 23 10C)(6)

Req'd Area of Mounded drainfield Bed

USE A single mound per Gary Larson

Total area of bed = $\frac{400 \text{ GPD}}{0.65 \text{ GPF/Day}} = 615.4 \text{ SF}$

Determine mound height

Height of mound = $(24'' - 9'') + 12'' \text{ aggregate} + 9'' \text{ cover} = 36'' \text{ high mound}$

Req'd shoulder width = $36'' \times 2 = 72'' = 6 \text{ ft}$

Total area req'd for mound = $(76.5 \text{ ft} + (2 \times 6)) \times 6 \text{ ft}$

Dimensions: $= 135 \text{ ft} \times 6 \text{ ft}$

Total unobstructed area for absorption = $2 \times 135 \text{ ft} \times 6 \text{ ft} = 2700 \text{ SF}$

Grease trap not req'd. because kitchen will be used only for warming.

USE 350 gal dosing tank per Gary Larson.

DESIGN PRESSURE DISTRIBUTION NETWORK FOR DRAINFIELD:

USE A CENTRAL MANIFOLD SPLIT INTO TWO PARTS

lateral length = $\frac{170}{2} - 0.5 \text{ ft} = 9 \text{ ft}$

select hole diam. and hole spacing for laterals
USE 1/4-in holes spaced three (3) feet apart

10/19/98 Septic system Brykville KRCCE#92918

select lateral diameter

Fig 7-28 → 1-in lateral

calculate lateral discharge rate

maintain a 2-ft head in the lateral(s)

Table 7-13 → 1.04 gpm for 1/4-in laterals

Number of holes per lateral = $\frac{9 \text{ ft lateral length}}{3 \text{ ft hole spacing}} = 3 \text{ holes}$

Lateral discharge rate = $(3 \text{ holes/lateral}) \times (1.04 \text{ gpm/hole}) = 3.12 \text{ gpm/lateral}$

select manifold size (Fig 7-22)

manifold length = 9 ft
 8 laterals (4 either side of center manifold) spaced 3 ft apart → 2" central manifold

Determine min. dosing volume (Fig 7-30)

with: lateral diam = 1-inch
 lateral length = 9 ft
 number of laterals = 8

Then: pipe volume = $0.049 \text{ ft}^3 = 0.37 \text{ gal}$
 min. dosing volume < 100 gal (Fig 7-30)
 Dosing vol. = 400 gpd / 6 dosing pd. = 66.7 Gal/Dose
 Min. discharge rate = 8 laterals \times 3.12 gpm/lateral = 24.96 gpm

for 2-distrib. systems, $Q = 2 \times 24.96 = 49.92 \text{ gpm}$

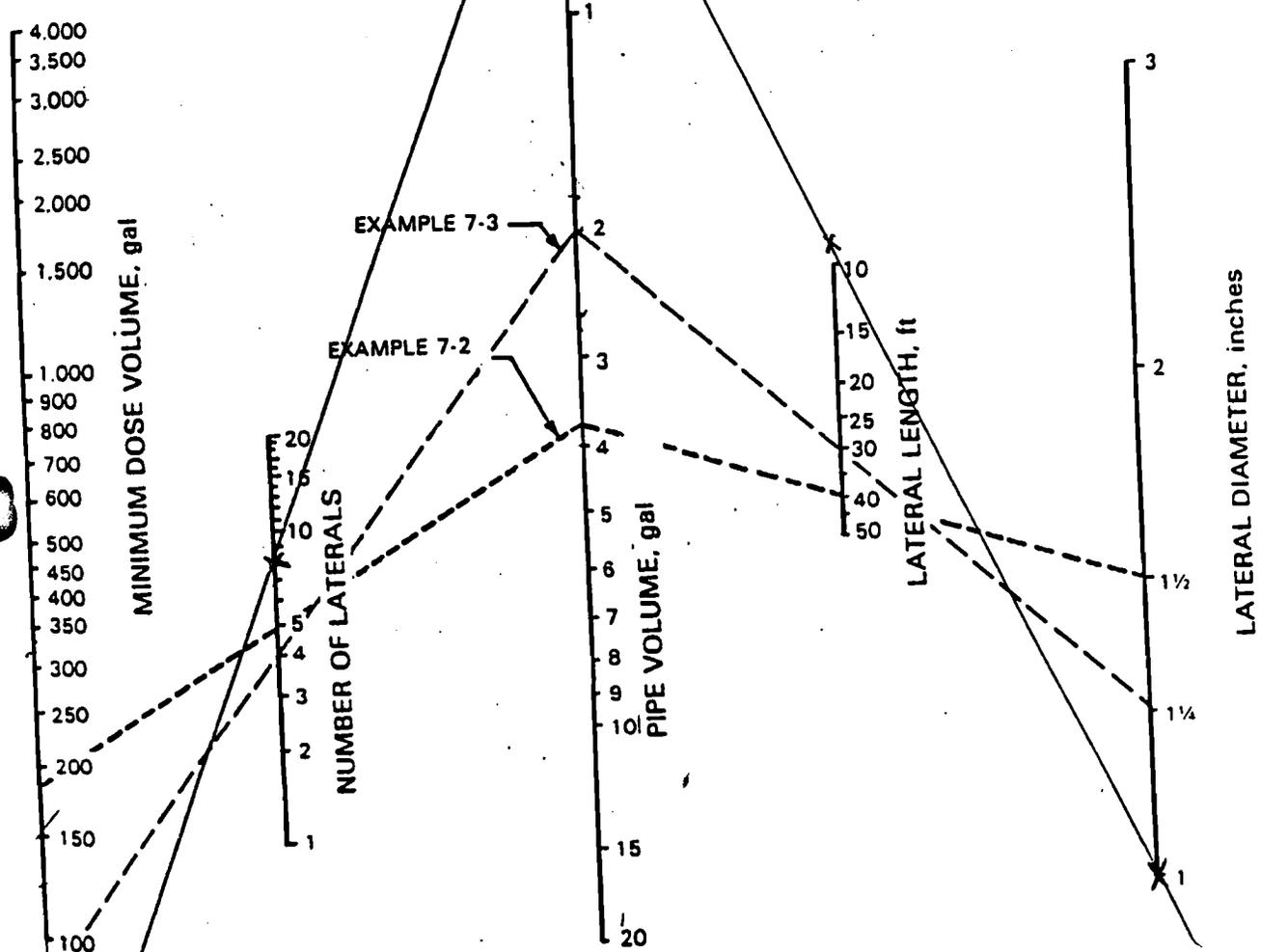
friction loss in 31.42 ft of 2-inch delivery pipe = $1.1 \text{ ft/100 ft} \times 31.42 \text{ ft} = 0.345 \text{ ft}$
 for two distrib. systems $h_f = 2 \times 0.345 = 0.69 \text{ ft}$

static lift = 10.42 ft
 pressure head to be maintained = 2 ft
 friction loss through 3" main manifold = $(0.58 \text{ ft/100 ft} \times 40') = 0.23 \text{ ft}$

10/19/98
Septic system
Bryceville
#9818
Total pumping head = $0.69' + 10.92' + 2' + 0.23' = 13.34'$
House Pump delivering @ least 49.92 gpm @ 13.34 ft TDH

FIGURE 7-30

NO. GRAPH FOR DETERMINING THE MINIMUM DOSE VOLUME FOR A GIVEN LATERAL DIAMETER, LATERAL LENGTH, AND NUMBER OF LATERALS



(a) The minimum laundry waste trench drainfield absorption area for slightly limited soil shall be 75 square feet for a one or two bedroom residence with an additional 25 square feet for each additional bedroom. If an absorption bed drainfield is used the minimum drainfield area shall be 100 square feet with an additional 50 square feet for each additional bedroom over two bedrooms. The HRS county public health unit shall require additional drainfield area based on moderately limited soils and other site specific conditions, which shall not exceed twice the required amount of drainfield for a slightly limited soil.

(4) A separate laundry waste tank and drainfield system may be utilized for residences and may be required by the HRS county public health unit where building codes allow separation of discharge pipes of the residence to separate rainbows and where lot sizes and setbacks allow system construction. Where an aerobic treatment unit is used, all blackwater, graywater and laundry waste flows shall be consolidated and treated by the aerobic treatment unit. Where a residential laundry waste tank and drainfield system is used:

(3) Where a separate graywater tank and drainfield system is used, the minimum effective capacity of the graywater retention tank shall be 250 gallons with such system receiving not more than 75 gallons of flow per day. For graywater systems receiving flows greater than 75 gallons per day, minimum effective tank capacity shall be based on the average daily sewage flow plus 200 gallons for sludge storage. Design requirements for graywater retention tanks are described in rule 10D-6.055(4). Where separate graywater and blackwater systems are utilized, the size of the blackwater system can be reduced, but in no case shall the blackwater system be reduced by more than 25 percent. However, the minimum capacity for septic tanks disposing of blackwater shall be 900 gallons.

TABLE II
SEPTIC TANK CAPACITY

SEPTIC TANK CAPACITY	AVERAGE SEWAGE FLOW in Gallons/Day	MINIMUM EFFECTIVE CAPACITY in Gallons
0-300	900	900
301-400	1050	1050
401-500	1200	1200
501-600	1350	1350
601-700	1500	1500
701-800	1650	1650
801-1000	1900	1900
1001-1250	2200	2200
1251-1750	2700	2700
1751-2500	3200	3200
2501-3000	3700	3700
3001-3500	4300	4300
3501-4000	4800	4800
4001-4500	5300	5300
4501-5000	5800	5800

(2) Minimum effective septic tank capacity shall be determined from Table II. However, where multiple family dwelling units are jointly connected to a septic tank system, minimum effective septic tank capacities specified in the table shall be increased 75 gallons for each dwelling unit connected to the system. When estimated sewage flows exceed 1500 gallons per day; when high volume water use fixtures such as spas and hot tubs which exceed 80 gallons are installed; when garbage grinders are used; or when commercial sewage waste is to be treated, a multiple chambered tank or tanks in series or a single chambered tank with a department approved outlet filter shall be required to attain the minimum effective tank capacities shown in Table II. Beginning March 1, 1995, all septic tanks shall be single chambered with a department approved outlet filter or multiple chambered or shall be placed in series to achieve the required effective capacity.

4. Where the number of bedrooms indicated on the floor plan and the corresponding building area of a dwelling unit in Table I do not coincide, the criteria which will result in the greater estimated sewage flow shall apply.

5. Convenience more estimated sewage flows shall be determined by adding flows for food outlets and service stations as appropriate to the products and services offered.

6. Estimated flows for residential systems assumes a maximum occupancy of two persons per bedroom. Where residential care facilities will house more than two persons in any bedroom, estimated flows shall be increased by 50 gallons per each additional occupant.

(3) Mound systems - are used to overcome certain limiting site conditions such as an elevated seasonal high water table, shallow permeable soil overlying slowly permeable soil and shallow permeable soil located over creviced or porous bedrock. Special installation instructions or design techniques to suit a particular site may, using the criteria in section 10D-6.044(4), be specified on the construction permit in addition to the following general requirements.

(a) Site preparation must render the site in compliance with requirements of rule 10D-6.047(1)-(6).

(b) Prior to the construction of a mound system, all or a portion of a lot may be filled utilizing slightly limited soil.

(c) The "O" horizon of original topsoil, any black or very dark gray organic topsoil, and vegetation must be removed from the fill site and the exposed underlying soil plowed or roughened to prevent formation of an impervious barrier between the fill and natural soil. Moderately limited soil required to be removed from the fill site may be used in the construction of mound systems, but shall only be used in the construction of mound slopes. If moderately or severely limited soil is to be replaced beneath the mound, rule 10D-6.048, Table III, footnote 3, shall be followed.

(d) Where the soil material underlying a mound system is of a similar slightly limited textural material as that used in system construction, the mound drainfield size shall be based on estimated sewage flows as specified in 10D-6.048, Table I and upon the quality of fill material utilized in the mound system. When estimated sewage flows are calculated to be less than 200 gallons per day, specifications for system design shall be based on a minimum flow of 200 gallons per day. Maximum sewage loading rates for soils used in mound construction shall be in compliance with the following:

Fill Material	Maximum Sewage Loading Rate to Mound Drain Trench Bottom Surface in gallons per square foot per day	Maximum Sewage Loading Rate to Mound Absorption Bed Bottom Surface in gallons per square foot per day
Sand; Coarse Sand;	1.00	0.75
Loamy Coarse Sand		
Fine Sand	0.80	0.65 ←
Sandy Loam; Coarse	0.65	0.40
Sandy Loam; Loamy Sand		

(e) Where moderately limited soils underlie the mound within 36 inches of the bottom of the drainfield, drainfield sizing shall be based on the most restrictive soil texture existing in the profile to a depth of 36 inches below the bottom of the drainfield.

(f) There shall be a minimum 5 feet separation between the shoulder of the fill and the nearest trench or absorption bed sidewall. Where a portion of the mound slope will be placed adjacent to a building foundation, including pilings for elevated structures, or within 5 feet of mobile home walls, swimming pool walls, or similar obstructions impeding lateral water movement, there shall be a minimum 7 foot separation between the sidewall of the absorption area and the obstructed or compacted area. Where mounds are placed on slopes exceeding 2 percent, the shoulder fill on the downslope side of the mound shall, at a minimum, extend an additional 1 foot for each additional 1 percent of slope. To taper the maximum elevation of the mound down to the toe of the slope, additional moderately or slightly limited fill shall be placed at a minimum 2 foot horizontal to 1 foot vertical grade where mound height does not exceed 36 inches. Mound heights which exceed 36 inches shall have a slope not to exceed 3:1. The slopes of a mound system shall be sodded within seven days of construction. Mound slopes which do not conform to permit requirements shall at a minimum be restored to permit specifications prior to sodding. Other vegetative covers providing protection from mound erosion equal to or better than sod shall be approved by the State Health Office. When the mound slopes are not sodded concurrent with its construction, the mound slopes shall be a minimum of a 5:1 grade. The entire mound shall be seeded with grass and a layer of hay or similar cover shall be placed to prevent mound erosion. The mound shall be stabilized within seven days of completion of mound construction. Final installation approval shall not be granted until sodding or seeding and haying of the mound has occurred. Landscaping features such as boulders or trees which obstruct drainfield or fill shoulder area shall not be used. Retaining walls shall not be allowed that reduce the minimum required shoulder or slope of a mounded system.

(g) There shall be a 9 to 12 inch soil cap spread evenly over the drainfield gravel exclusive of the thickness of sod.

(h) The site shall be landscaped according to permit specifications and shall be protected from automotive traffic or other activity that could damage the system. Swales or other surface drainage structures shall be utilized to prevent surface water shed from mounds draining onto neighboring property.

FIGURE 7-29

RECOMMENDED MANIFOLD DIAMETERS FOR VARIOUS MANIFOLD LENGTHS, NUMBER OF LATERALS, AND LATERAL DISCHARGE RATES (FOR PLASTIC PIPE ONLY)

Flow per Lateral (gpm)		MANIFOLD DIAMETER (IN)																						Flow per Lateral (gpm)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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3/4"	38"	38 1/4"	38 1/2"	38 3/4"	39"	39 1/4"	39 1/2"	39 3/4"	40"	40 1/4"	40 1/2"	40 3/4"	41"	41 1/4"	41 1/2"	41 3/4"	42"	42 1/4"	42 1/2"	42 3/4"	43"	43 1/4"	43 1/2"	43 3/4"	44"	44 1/4"	44 1/2"	44 3/4"	45"	45 1/4"	45 1/2"	45 3/4"	46"	46 1/4"	46 1/2"	46 3/4"	47"	47 1/4"	47 1/2"	47 3/4"	48"	48 1/4"	48 1/2"	48 3/4"	49"	49 1/4"	49 1/2"	49 3/4"	50"	50 1/4"	50 1/2"	50 3/4"	51"	51 1/4"	51 1/2"	51 3/4"	52"	52 1/4"	52 1/2"	52 3/4"	53"	53 1/4"	53 1/2"	53 3/4"	54"	54 1/4"	54 1/2"	54 3/4"	55"	55 1/4"	55 1/2"	55 3/4"	56"	56 1/4"	56 1/2"	56 3/4"	57"	57 1/4"	57 1/2"	57 3/4"	58"	58 1/4"	58 1/2"	58 3/4"	59"	59 1/4"	59 1/2"	59 3/4"	60"	60 1/4"	60 1/2"	60 3/4"	61"	61 1/4"	61 1/2"	61 3/4"	62"	62 1/4"	62 1/2"	62 3/4"	63"	63 1/4"	63 1/2"	63 3/4"	64"	64 1/4"	64 1/2"	64 3/4"	65"	65 1/4"	65 1/2"	65 3/4"	66"	66 1/4"	66 1/2"	66 3/4"	67"	67 1/4"	67 1/2"	67 3/4"	68"	68 1/4"	68 1/2"	68 3/4"	69"	69 1/4"	69 1/2"	69 3/4"	70"	70 1/4"	70 1/2"	70 3/4"	71"	71 1/4"	71 1/2"	71 3/4"	72"	72 1/4"	72 1/2"	72 3/4"	73"	73 1/4"	73 1/2"	73 3/4"	74"	74 1/4"	74 1/2"	74 3/4"	75"	75 1/4"	75 1/2"	75 3/4"	76"	76 1/4"	76 1/2"	76 3/4"	77"	77 1/4"	77 1/2"	77 3/4"	78"	78 1/4"	78 1/2"	78 3/4"	79"	79 1/4"	79 1/2"	79 3/4"	80"	80 1/4"	80 1/2"	80 3/4"	81"	81 1/4"	81 1/2"	81 3/4"	82"	82 1/4"	82 1/2"	82 3/4"	83"	83 1/4"	83 1/2"	83 3/4"	84"	84 1/4"	84 1/2"	84 3/4"	85"	85 1/4"	85 1/2"	85 3/4"	86"	86 1/4"	86 1/2"	86 3/4"	87"	87 1/4"	87 1/2"	87 3/4"	88"	88 1/4"	88 1/2"	88 3/4"	89"	89 1/4"	89 1/2"	89 3/4"	90"	90 1/4"	90 1/2"	90 3/4"	91"	91 1/4"	91 1/2"	91 3/4"	92"	92 1/4"	92 1/2"	92 3/4"	93"	93 1/4"	93 1/2"	93 3/4"	94"	94 1/4"	94 1/2"	94 3/4"	95"	95 1/4"	95 1/2"	95 3/4"	96"	96 1/4"	96 1/2"	96 3/4"	97"	97 1/4"	97 1/2"	97 3/4"	98"	98 1/4"	98 1/2"	98 3/4"	99"	99 1/4"	99 1/2"	99 3/4"	100"	100 1/4"	100 1/2"	100 3/4"	101"	101 1/4"	101 1/2"	101 3/4"	102"	102 1/4"	102 1/2"	102 3/4"	103"	103 1/4"	103 1/2"	103 3/4"	104"	104 1/4"	104 1/2"	104 3/4"	105"	105 1/4"	105 1/2"	105 3/4"	106"	106 1/4"	106 1/2"	106 3/4"	107"	107 1/4"	107 1/2"	107 3/4"	108"	108 1/4"	108 1/2"	108 3/4"	109"	109 1/4"	109 1/2"	109 3/4"	110"	110 1/4"	110 1/2"	110 3/4"	111"	111 1/4"	111 1/2"	111 3/4"	112"	112 1/4"	112 1/2"	112 3/4"	113"	113 1/4"	113 1/2"	113 3/4"	114"	114 1/4"	114 1/2"	114 3/4"	115"	115 1/4"	115 1/2"	115 3/4"	116"	116 1/4"	116 1/2"	116 3/4"	117"	117 1/4"	117 1/2"	117 3/4"	118"	118 1/4"	118 1/2"	118 3/4"	119"	119 1/4"	119 1/2"	119 3/4"	120"	120 1/4"	120 1/2"	120 3/4"	121"	121 1/4"	121 1/2"	121 3/4"	122"	122 1/4"	122 1/2"	122 3/4"	123"	123 1/4"	123 1/2"	123 3/4"	124"	124 1/4"	124 1/2"	124 3/4"	125"	125 1/4"	125 1/2"	125 3/4"	126"	126 1/4"	126 1/2"	126 3/4"	127"	127 1/4"	127 1/2"	127 3/4"	128"	128 1/4"	128 1/2"	128 3/4"	129"	129 1/4"	129 1/2"	129 3/4"	130"	130 1/4"	130 1/2"	130 3/4"	131"	131 1/4"	131 1/2"	131 3/4"	132"	132 1/4"	132 1/2"	132 3/4"	133"	133 1/4"	133 1/2"	133 3/4"	134"	134 1/4"	134 1/2"	134 3/4"	135"	135 1/4"	135 1/2"	135 3/4"	136"	136 1/4"	136 1/2"	136 3/4"	137"	137 1/4"	137 1/2"	137 3/4"	138"	138 1/4"	138 1/2"	138 3/4"	139"	139 1/4"	139 1/2"	139 3/4"	140"	140 1/4"	140 1/2"	140 3/4"	141"	141 1/4"	141 1/2"	141 3/4"	142"	142 1/4"	142 1/2"	142 3/4"	143"	143 1/4"	143 1/2"	143 3/4"	144"	144 1/4"	144 1/2"	144 3/4"	145"	145 1/4"	145 1/2"	145 3/4"	146"	146 1/4"	146 1/2"	146 3/4"	147"	147 1/4"	147 1/2"	147 3/4"	148"	148 1/4"	148 1/2"	148 3/4"	149"	149 1/4"	149 1/2"	149 3/4"	150"	150 1/4"	150 1/2"	150 3/4"	151"	151 1/4"	151 1/2"	151 3/4"	152"	152 1/4"	152 1/2"	152 3/4"	153"	153 1/4"	153 1/2"	153 3/4"	154"	154 1/4"	154 1/2"	154 3/4"	155"	155 1/4"	155 1/2"	155 3/4"	156"	156 1/4"	156 1/2"	156 3/4"	157"	157 1/4"	157 1/2"	157 3/4"	158"	158 1/4"	158 1/2"	158 3/4"	159"	159 1/4"	159 1/2"	159 3/4"	160"	160 1/4"	160 1/2"	160 3/4"	161"	161 1/4"	161 1/2"	161 3/4"	162"	162 1/4"	162 1/2"	162 3/4"	163"	163 1/4"	163 1/2"	163 3/4"	164"	164 1/4"	164 1/2"	164 3/4"	165"	165 1/4"	165 1/2"	165 3/4"	166"	166 1/4"	166 1/2"	166 3/4"	167"	167 1/4"	167 1/2"	167 3/4"	168"	168 1/4"	168 1/2"	168 3/4"	169"	169 1/4"	169 1/2"	169 3/4"	170"	170 1/4"	170 1/2"	170 3/4"	171"	171 1/4"	171 1/2"	171 3/4"	172"	172 1/4"	172 1/2"	172 3/4"	173"	173 1/4"	173 1/2"	173 3/4"	174"	174 1/4"	174 1/2"	174 3/4"	175"	175 1/4"	175 1/2"	175 3/4"	176"	176 1/4"	176 1/2"	176 3/4"	177"	177 1/4"	177 1/2"	177 3/4"	178"	178 1/4"	178 1/2"	178 3/4"	179"	179 1/4"	179 1/2"	179 3/4"	180"	180 1/4"	180 1/2"	180 3/4"	181"	181 1/4"	181 1/2"	181 3/4"	182"	182 1/4"	182 1/2"	182 3/4"	183"	183 1/4"	183 1/2"	183 3/4"	184"	184 1/4"	184 1/2"	184 3/4"	185"	185 1/4"	185 1/2"	185 3/4"	186"	186 1/4"	186 1/2"	186 3/4"	187"	187 1/4"	187 1/2"	187 3/4"	188"	188 1/4"	188 1/2"	188 3/4"	189"	189 1/4"	189 1/2"	189 3/4"	190"	190 1/4"	190 1/2"	190 3/4"	191"	191 1/4"	191 1/2"	191 3/4"	192"	192 1/4"	192 1/2"	192 3/4"	193"	193 1/4"	193 1/2"	193 3/4"	194"	194 1/4"	194 1/2"	194 3/4"	195"	195 1/4"	195 1/2"	195 3/4"	196"	196 1/4"	196 1/2"	196 3/4"	197"	197 1/4"	197 1/2"	197 3/4"	198"	198 1/4"	198 1/2"	198 3/4"	199"	199 1/4"	199 1/2"	199 3/4"	200"	200 1/4"	200 1/2"	200 3/4"	201"	201 1/4"	201 1/2"	201 3/4"	202"	202 1/4"	202 1/2"	202 3/4"	203"	203 1/4"	203 1/2"	203 3/4"	204"	204 1/4"	204 1/2"	204 3/4"	205"	205 1/4"	205 1/2"	205 3/4"	206"	206 1/4"	206 1/2"	206 3/4"	207"	207 1/4"	207 1/2"	207 3/4"	208"	208 1/4"	208 1/2"	208 3/4"	209"	209 1/4"	209 1/2"	209 3/4"	210"	210 1/4"	210 1/2"	210 3/4"	211"	211 1/4"	211 1/2"	211 3/4"	212"	212 1/4"	212 1/2"	212 3/4"	213"	213 1/4"	213 1/2"	213 3/4"	214"	214 1/4"	214 1/2"	214 3/4"	215"	215 1/4"	215 1/2"	215 3/4"	216"	216 1/4"	216 1/2"	216 3/4"	217"	217 1/4"	217 1/2"	217 3/4"	218"	218 1/4"	218 1/2"	218 3/4"	219"	219 1/4"	219 1/2"	219 3/4"	220"	220 1/4"	220 1/2"	220 3/4"	221"	221 1/4"	221 1/2"	221 3/4"	222"	222 1/4"	222 1/2"	222 3/4"	223"	223 1/4"	223 1/2"	223 3/4"	224"	224 1/4"	224 1/2"	224 3/4"	225"	225 1/4"	225 1/2"	225 3/4"	226"	226 1/4"	226 1/2"	226 3/4"	227"	227 1/4"	227 1/2"	227 3/4"	228"	228 1/4"	228 1/2"	228 3/4"	229"	229 1/4"	229 1/2"	229 3/4"	230"	230 1/4"	230 1/2"	230 3/4"	231"	231 1/4"	231 1/2"	231 3/4"	232"	232 1/4"	232 1/2"	232 3/4"	233"	233 1/4"	233 1/2"	233 3/4"	234"	234 1/4"	234 1/2"	234 3/4"	235"	235 1/4"	235 1/2"	235 3/4"	236"	236 1/4"	236 1/2"	236 3/4"	237"	237 1/4"	237 1/2"	237 3/4"	238"	238 1/4"	238 1/2"	238 3/4"	239"	239 1/4"	239 1/2"	239 3/4"	240"	240 1/4"	240 1/2"	240 3/4"	241"	241 1/4"	241 1/2"	241 3/4"	242"	242 1/4"	242 1/2"	242 3/4"	243"	243 1/4"	243 1/2"	243 3/4"	244"	244 1/4"	244 1/2"	244 3/4"	245"	245 1/4"	245 1/2"	245 3/4"	246"	246 1/4"	246 1/2"	246 3/4"	247"	247 1/4"	247 1/2"	247 3/4"	248"	248 1/4"	248 1/2"	248 3/4"	249"	249 1/4"	249 1/2"	249 3/4"	250"	250 1/4"	250 1/2"	250 3/4"	251"	251 1/4"	251 1/2"	251 3/4"	252"	252 1/4"	252 1/2"	252 3/4"	253"	253 1/4"	253 1/2"	253 3/4"	254"	254 1/4"	254 1/2"	254 3/4"	255"	255 1/4"	255 1/2"	255 3/4"	256"	256 1/4"	256 1/2"	256 3/4"	257"	257 1/4"	257 1/2"	257 3/4"	258"	258 1/4"	258 1/2"	258 3/4"	259"	259 1/4"	259 1/2"	259 3/4"	260"	260 1/4"	260 1/2"	260 3/4"	261"	261 1/4"	261 1/2"	261 3/4"	262"	262 1/4"	262 1/2"	262 3/4"	263"	263 1/4"	263 1/2"	263 3/4"	264"	264 1/4"	264 1/2"	264 3/4"	265"	265 1/4"	265 1/2"	265 3/4"	266"	266 1/4"	266 1/2"	266 3/4"	267"	267 1/4"	267 1/2"	267 3/4"	268"	268 1/4"	268 1/2"	268 3/4"	269"	269 1/4"	269 1/2"	269 3/4"	270"	270 1/4"	270 1/2"	270 3/4"	271"	271 1/4"	271 1/2"	271 3/4"	272"	272 1/4"	272 1/2"	272 3/4"	273"	273 1/4"	273 1/2"	273 3/4"	274"	274 1/4"	274 1/2"	274 3/4"	275"	275 1/4"	275 1/2"	275 3/4"	276"	276 1/4"	276 1/2"	276 3/4"	277"	277 1/4"	277 1/2"	277 3/4"	278"	278 1/4"	278 1/2"	278 3/4"	279"

FIGURE 7-28

REQUIRED LATERAL PIPE DIAMETERS FOR VARIOUS HOLE DIAMETERS, HOLE SPACINGS, AND LATERAL LENGTHS^a
(FOR PLASTIC PIPE ONLY)

Lateral Length (ft)	LATERAL DIAMETER (IN)																																			
	Hole Diameter (in)							Hole Diameter (in)							Hole Diameter (in)							Hole Diameter (in)							Hole Diameter (in)							
	1/4							5/16							3/8							7/16							1/2							
	Hole Spacing (ft)							Hole Spacing (ft)							Hole Spacing (ft)							Hole Spacing (ft)							Hole Spacing (ft)							
	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
10	1"							1"							1"							1"							1"							
15	1"							1"							1"							1 1/2"							1 1/4"							
20	1"							1"							1 1/2"							1 1/4"							1 1/2"							
25	1"							1 1/2"							1 1/4"							1 1/2"							1 1/2"							
30	1 1/2"							1 1/4"							1 1/2"							1 1/2"							1 1/2"							
35	1 1/2"							1 1/2"							1 1/2"							2"							1 1/2"							
40	2"							2"							2"							2"							2"							
45	2"							2"							2"							3"							3"							
50	2"							3"							3"							3"							3"							

285

^a Computed for plastic pipe only. The Hazen-Williams equation was used to compute headlosses through each pipe segment (Hazen-Williams C=150). The orifice equation for sharp-edged orifices (discharge coefficient = 0.6) was used to compute the discharge rates through each orifice. The maximum lateral length for a given hole and spacing was defined as that length at which the difference between the rates of discharge from the distal end and the supply end orifice reached 10 percent of the distal end orifice discharge rate.

To simplify the design of small pressure distribution networks, Table 7-13, and Figures 7-28, 7-29, and 7-30, may be used. Examples 7-2 and 7-3 illustrate their use. Other design methods may be equally suitable, however.

TABLE 7-13
DISCHARGE RATES FOR VARIOUS SIZED HOLES
AT VARIOUS PRESSURES (gpm)

Pressure		Hole Diameter (in.)				
<u>ft</u>	<u>psi</u>	<u>1/4</u>	<u>5/16</u>	<u>3/8</u>	<u>7/16</u>	<u>1/2</u>
1	0.43	0.74	1.15	1.66	2.26	2.95
2	0.87	1.04	1.63	2.34	3.19	4.17
3	1.30	1.28	1.99	2.87	3.91	5.10
4	1.73	1.47	2.30	3.31	4.51	5.89
5	2.17	1.65	2.57	3.71	5.04	6.59

Example 7-2: Design of a Pressure Distribution Network for a Trench Absorption Field

Design a pressure network for an absorption field consisting of five trenches, each 3 ft wide by 40 ft long, and spaced 9 ft apart center to center.

Step 1: Select lateral length. Two layouts are suitable for this system: central manifold (Figure 7-24) or end manifold (Figure 7-25). For a central manifold design, ten 20-ft laterals are used; for an end manifold design, five 40-ft laterals are required. The end manifold design is used in this example.

Step 2: Select hole diameter and hole spacing for laterals. For this example, 1/4-in. diameter holes spaced every 30 in. are used, although other combinations could be used.

BRYCEVILLE COMMUNITY CENTER

ADDENDUM I

SEPTIC SYSTEM

1. Substitute 1050 gallon tank for 900 gallon.
2. Substitute 300 gallon dosing tank for 350 gallon.
3. Drainfield will be gravel and pipe.

Job References:

Lil' Champ Food Stores, Inc.
9143 Phillips Highway
Jacksonville, Florida

Contact: Billy Robertson
Phone : 904-464-7244

AVA Engineers
9283 San Jose Boulevard
Jacksonville, Florida 32257

Contact: Henry Vorpe
Phone : 904-730-3223

A.F. Alan Custom Homes
P.O. BOX 26006
Jacksonville, Florida 32226

Contact: Alan Fixel
Phone : 904-713-9002

O.E. SMITH'S SON, INC. has been in the septic tank business since 1976.

The State licensed septic tank contractor for this company is David R. Bruno. The state license number is SR0980367.

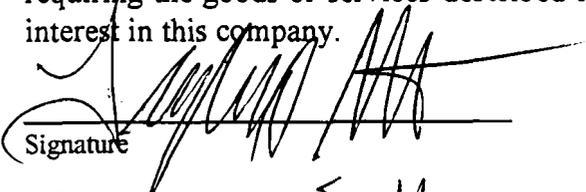
CONFLICT OF INTEREST CERTIFICATE

NASSAU COUNTY BRYCEVILLE COMMUNITY CENTER

Bidder MUST execute either Section I or Section II hereunder relative to Florida Statute 112.313(12). Failure to execute either Section may result in rejection of this bid proposal.

SECTION I

I hereby certify that no official or employee of the County or independent agency requiring the goods or services described in these specifications has a material financial interest in this company.



Signature
Tracy Lynn Smith
Name of Official - Typed

O.E. Smith's Sons, Inc.
Company Name
11749 U.S. 1 North
Business Address
Jax, FL, 32219
City, State, Zip Code

SECTION II

I hereby certify that the following named County official(s) and employee(s) having material financial interest(s) (in excess of 5%) in this company have filed CONFLICT OF INTEREST statement(s) with the Supervisor of Elections, 11 North 14th Street, Fernandina Beach, Florida, prior to bid opening date.

NAME	TITLE/POSITION	DATE OF FILING
_____	_____	_____
_____	_____	_____
_____	_____	_____

Signature

Name Of Official - Typed

Company Name

Business Address

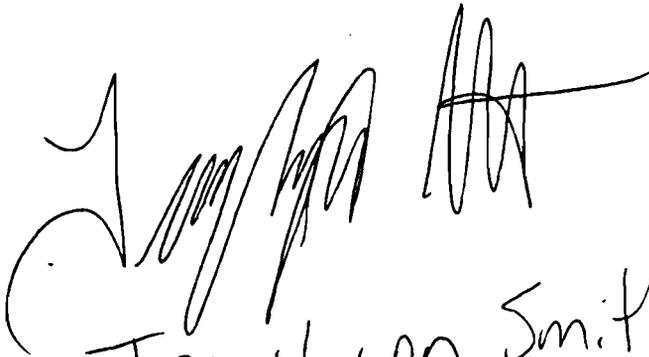
City, State, Zip Code

PUBLIC ENTITY CRIME STATEMENT

The following statement shall be included in all Bid Specifications, Request For Qualifications and Request For Proposals.

Any firm responding to this _____ (Bid Spec., RFQ, or RFP) shall include a statement to the effect that they have read and understand the provisions of Paragraph (2) (a) of Section 287.133, Florida Statutes (which reads as follows) and that such Statute does not prevent them from responding:

“ A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.”


Tracy Lynn Smith,
Treasurer
O.E. Smith's Sons, Inc.

ACORD. CERTIFICATE OF INSURANCE

DATE (MM/DD/YY)
11/10/98

PRODUCER
CECIL W POWELL & COMPANY
PHONE: 353-3181 FAX: 353-5722
P O DRAWER 41490
JACKSONVILLE FL 32203

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	TRANSCONTINENTAL INSURANCE CO
COMPANY B	TRANSPORTATION INSURANCE CO
COMPANY C	AMCOMP PREFERRED INSURANCE CO
COMPANY D	

INSURED
O E SMITHS SONS INC
11749 US 1 NORTH
JACKSONVILLE FL 32219

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY CLAIMS MADE <input checked="" type="checkbox"/> OCCUR OWNER'S & CONTRACTOR'S PROT	C173696787	10/01/98	10/01/99	GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000 PERSONAL & ADV INJURY \$1,000,000 EACH OCCURRENCE \$1,000,000 FIRE DAMAGE (Any one fire) \$ 50,000 MED EXP (Any one person) \$ 5,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS NON-OWNED AUTOS	C173678189	10/01/98	10/01/99	COMBINED SINGLE LIMIT \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE \$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EACH ACCIDENT \$ AGGREGATE \$
B	EXCESS LIABILITY <input checked="" type="checkbox"/> UMBRELLA FORM OTHER THAN UMBRELLA FORM	C173716620	10/01/98	10/01/99	EACH OCCURRENCE \$1,000,000 AGGREGATE \$1,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input type="checkbox"/> INCL <input type="checkbox"/> EXCL OTHER	408013101	10/01/98	10/01/99	<input checked="" type="checkbox"/> STATUTORY LIMITS EACH ACCIDENT \$ 500,000 DISEASE - POLICY LIMIT \$ 500,000 DISEASE - EACH EMPLOYEE \$ 500,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

WC FL EMPLOYEES ONLY

CERTIFICATE HOLDER

NASSAU COUNTY BOARD OF COUNTY COMMISSIONERS & JM OXLEY CLERK
191 NASSAU PLACE
YULEE FL 32097

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Faye G. Crawford

TC A

NOV-13-1988

Bid on Septic System for Bryceland
Community Center

7500.⁰⁰

Seven Thousand Five Hundred ——— $\frac{XX}{CO}$

Hendricks Septic Co.
Daniel R. Hendricks

J.D. Phillips Plumbing Co., Inc.
1438 Oak Street
Fernandina Beach, Fl 32034
CFCO41782
261-2298 (Office)
261-2298 (Fax)

PROPOSAL

To Nassau County Board of Commissioners
Address Bryceville Park
City _____
Date 11/13/98

Install _____ gallon septic tank
Install 1050/300 gallon septic/dosing tank combination w/pump and alarm
Install 1300 square ft. drain field or the ~~EEE-ZZZ~~ Lay equivalent Rock Bed
Install _____ seed and hay for stabilization of mound system
Install XXX sod on slope of mound

Perform all work as required by permit # Not issued and all applicable codes.
Any changes or additions to above specifications will be executed only upon signed written change order and will become an extra to original price and terms.
Price quoted does not include any clearing needed to install tank or access location, or fill needed to access property.

We are not responsible for damages to any existing trees, shrubbery, concrete drives, walks, or patios, lawns, flowers, fences, sprinkler systems, water, gas, electric, or telephone lines. It shall be the owners responsibility to locate and secure these lines.

Total price of quote \$ 8,000.00
Payment to be made as follows: 50% upon acceptance of proposal \$ 4,000.00
Balance upon completion of installation \$ 4,000.00

Authorized signature [Signature] Date 11/13/98
This proposal may be withdrawn if not accepted within 30 days

The above price and specifications are hereby accepted. You have authorization to perform the work as specified above.

Signature _____ Date _____