REPORT OF THE
STATE COUNCIL OF HIGHER EDUCATION AND
THE DEPARTMENT OF TREASURY ON

Engineering and Technology Programs in Southside Virginia

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 66

COMMONWEALTH OF VIRGINIA
RICHMOND
1993

ENGINEERING AND TECHNOLOGY PROGRAMS IN SOUTHSIDE VIRGINIA

PREFACE

House Joint Resolution Number 93 requested that the State Council of Higher Education, in cooperation with the Southside Virginia Business and Education Commission, examine the need to increase or expand engineering and technology programs in the Southside Virginia area. This report, prepared in response to that resolution, offers the opinion that these programs are needed in the region and that a cooperative program in Engineering Technology between the community colleges, four-year institutions within the region, and Old Dominion University should be implemented. The report recommends that no action be taken at this time on traditional engineering programs.

This document was prepared by the State Council of Higher Education for Virginia with the cooperation of the Southside Virginia Business and Education Commission. Staff assistance was provided by the Small Business Development Center of Longwood College.

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EXECUTIVE SUMMARY

The request for this study was the result of a recommendation of the Philpott Commission in its 1992 report to the General Assembly (House Document Number 45) regarding the overall plan for the economic development of the Southside region. Delegate Bennett sponsored House Joint Resolution Number 93 requesting the State Council of Higher Education for Virginia, in cooperation with the Southside Virginia Business and Education Commission, "to examine the need to increase or expand engineering and technology programs in the region's institutions of higher education. The Council and Commission are requested to submit their findings and recommendations to the House Committee on Education and the Senate Committee on Education and Health."

The General Assembly's concerns and interests were highlighted in the language of the resolution. A complete copy of the resolution, as approved, is provided in Appendix A.

1.Increasingly complex technology will demand that the 21st century worker display mastery and knowledge of a variety of disciplines, particularly mathematics and sciences.

2.Manufacturing industries are important to the economic development of the Southside region. The region has attracted more than 50 new manufacturing plants in the last four years.

3.Advanced and technical education is important to the region and its industries. An adequate supply of professional engineers and technicians is critical to the continued development of the region.

4.Virginia's institutions of higher education must be equipped to provide the technological and engineering programs necessary to train these workers.

The General Assembly asked that the Council's study include, at least, an examination of current engineering programs, consideration of industry needs, estimated regional retention of program graduates, current and projected enrollments, and the use of satellite programs. With the exception of regional retention of program graduates, all of these issues were studied. Data were not available to adequately determine employment and residence status of program completers.

It appears that sufficient professional engineering graduates are available to meet the current and future needs of the industries in the region. The demand for engineering technologists is sufficient to justify the expansion of existing two-year programs and the development of a two-plus-two engineering technology degree program at several locations within the region. Longwood College and other institutions within the region should be asked to provide some upper level courses to supplement the offerings of the community colleges and Old Dominion University. Because much of the need for baccalaureate engineering technologists will emerge over the next ten years, a

selected number of sites should be used to test student demand and the long-term employment and in-service training needs of local industries during the 1993-96 period. Delivery of four-year engineering and engineering technology programs via technology and on-site instruction should be tested and evaluated before investments in capital sites or permanent staff are made.

INTRODUCTION

The impetus for the Philpott Commission's concern about the availability of engineering and technological educational programs was directly related to the high concentration of manufacturing jobs in the Southside region. Over 38 percent of the Commonwealth's manufacturing jobs are located within the region. The Commission was aware of the need to insure an adequate number of highly educated and skilled engineers and engineering technologists as the region's manufacturing firms became increasingly dependent upon technology to maintain their competitiveness with other regions and international firms.

The Southside Virginia Business and Education Commission (SVBEC) was created by the 1991 session of the General Assembly. Based upon the recommendations of the Philpott Commission, the SVBEC was assigned the following functions:

1.To provide general leadership in the region for education and business partnership programs and excellence in education.

2.To encourage and expand business participation and involvement in public education and to foster partnerships between public and private sectors to enhance public education in Southside Virginia.

3.To collect, generate, and disseminate ideas and information regarding educational innovations and effective instructional practices pertinent to Southside Virginia.

4.To coordinate with business and industry throughout the region to ascertain those skills, education and training that businesses seek from entry level workers.

5.To serve as a resource and referral center for area school divisions by maintaining and disseminating information on existing educational programs and resources.

6.To develop in coordination with the Department of Education and local school boards specific goals for public education in Southside Virginia.

7.To promote the coordination of elementary, secondary, and higher education and adult

education and worker training.

The role of the SVBEC is critical to the development and implementation of programs to expand the opportunities for engineering and engineering technology education in the region. The preparation of high school graduates and adults to participate in such programs and the basic competencies required to work in the increasingly sophisticated manufacturing settings is the responsibility of the local schools and the community colleges. Coordination of two-year and four-year programs will require periodic examinations of the needs of industries within the region and encouragement of necessary changes in the programs offered. The SVBEC appears to have the cooperation of all participants and should continue to play a leadership role as these programs evolve.

This report provides a summary of current educational programs offered by the higher education institutions within the region or serving the region, an examination of the number of students graduating from engineering and engineering technology programs in the region, a summary of the results of the SVBEC survey identifying the current and future employment and training needs of manufacturing firms in the region, and a discussion of observations and recommendations.

Educational Programs In The Region

There are a significant number of educational programs in engineering technology at the two-year and four-year institutions serving the region. A combination of certificate, diploma, and associate degree programs are offered at Central Virginia, Danville, John Tyler, Patrick Henry, Paul D. Camp, and Southside Virginia Community Colleges. An accredited engineering technology program is offered by Old Dominion University and Virginia State University, but neither are currently offering their programs within the region. Old Dominion University is currently offering its four-year engineering technology program, in cooperation with local community colleges, in several regions of the state using distance learning and on-site courses. A summary of programs offered is provided in table 1.

Old Dominion University is a participant in the Graduate Televised Engineering Program and has large numbers of students enrolled across the Commonwealth in its Masters of Engineering Management program. The Continuing Education Center at South Boston has been a receive site for the masters programs and has experience in televised instruction and other forms of distance learning. The ODU Engineering Technology program is offered via television and on-site courses in Roanoke at Virginia Western Community College. There appears to be acceptance of televised delivery as an acceptable means of meeting regional demands for specialized programs and courses.

Old Dominion University has demonstrated the ability to deliver high quality undergraduate programs in distance learning formats. For example, approximately 80 students have been graduated from a televised nursing program offered to residents of the Eastern Shore area. All graduates have successfully passed the licensure exam of the State Board of Nursing. Student evaluations of Old Dominion University offerings in the Masters of Engineering Management have been consistently positive and student performance equals, or exceeds, that of on-campus students in similar courses.

Table 1		
Educational Programs in Engineering and Engineering Technology Public and Private Institutions in Southside Virginia - 1993		
Institution	Degree Program	Educational Program
University of Virginia	Bachelor	Electrical Engineering
	Bachelor	Mechanical Engineering
	Bachelor	Nuclear Engineering
	Bachelor	Systems Engineering
Virginia Tech	Bachelor	Engineering Mechanics
	Bachelor	Industrial Engineering
	Bachelor	Materials Engineering
	Bachelor	Mechanical Engineering
	Bachelor	Mining and Mineral Engineering
	Bachelor	Nuclear Engineering
	Bachelor	Engineering Technology
Old Dominion	Bachelor	Mechancial Engineering
	Bachelor	Engineering Technology
George Mason	Bachelor	Systems Engineering
Virginia Military	Bachelor	Civil Engineering
	Bachelor	Electrical Engineering
	Bachelor	Mechanical Engineering
Norfolk State	Associate	Electrical Engineering
	Bachelor	Electrical Engineering
	Bachelor	Engineering Technology
Virginia State	Bachelor	Engineering Technology
Central Virginia CC	Associate	Electrical Engineering
	1-2 Year Cert.	Electrical Engineering
	1-2 Year Cert.	Mechanical Engineering
	2+ Year Cert.	Mechanical Engineering
	Associate	Engineering and Eng. Related
	Associate	General Engineering
Southside Virginia CC	Associate	Electrical Engineering
	1-2 Year Cert.	Electrical Engineering
	1-2 Year Cert.	Environ. Control. Tech.
	2+ Year Cert.	Environ. Control. Tech.
	1-2 Year Cert.	Industrial Product Tech.
	Associate	Mechanical Engineering
	1-2 Year Cert.	Mechanical Engineering
	1-2 Year Cert.	Arch. Design & Const. Tech.
Paul D. Camp CC	Associate	Electrical Engineering
	1-2 Year Cert.	Electrical Engineering
	1-2 Year Cert.	Mechanical Engineering
	1-2 Year Cert.	Arch. Design & Const. Tech.
Danville CC	1-2 Year Cert.	Environ. Control. Tech.
	2+ Year Cert.	Environ. Control. Tech.
	1-2 Year Cert.	Industrial Product Tech.
	2+ Year Cert.	Mechanical Engineering
	Associate	General Engineering
	1-2 Year Cert.	Electrical Engineering
	2+ Year Cert.	Electrical Engineering
John Tyler CC	1-2 Year Cert.	Environ. Control. Tech.
	Associate	Industrial Product Tech.
	Associate	Mechanical Engineering
	1-2 Year Cert.	Mechanical Engineering
	Associate	General Engineering
	Associate	Arch. Design & Const. Tech.
	1-2 Year Cert.	Arch. Design & Const. Tech.
	Associate	Civil Technologies
	Associate	Electrical Engineering
Patrick Henry CC	1-2 Year Cert.	Industrial Product Tech.
	1-2 Year Cert.	Mechanical Engineering
	1-2 Year Cert.	Arch. Design & Const. Tech.
	Associate	Electrical Engineering

A good working relationships currently exists between the two-year and four-year institutions within the region. Courses, especially in general education disciplines, mathematics, and sciences, are available through Longwood College and the community colleges. Additional opportunities are provided by the private institutions in the region.

Current engineering technology programs are graduating about 250 students per year. Table 2 provides a summary of graduates by institution for the last nine years. Most of the graduates complete one or two year programs.

No attempt was made to examine the curricular content of certificate and diploma programs but there is a general expectation that associate degree programs provide a broader exposure to general education courses. The respondents of most industrial studies identify a high degree of concern about the need for broadly educated individuals who can communicate well, understand the technical environment, and comprehend the global environment within which the firm must operate. As employment opportunities for semi-skilled and skilled workers declines as industries restructure and increase their investment in technology, the demand for increasing levels of competency and literacy will require greater emphasis on general education and broadly defined technical training and skills.

The number of graduates from the Bachelors of Engineering Technology program at Virginia State University has declined as the university modified its program while seeking and achieving accreditation. The ability of VSU to expand its program to serve more students and to reinstitute its off-campus offerings should be explored as one approach to increasing opportunities in the eastern portion of the Southside region.

SURVEY RESULTS

Extensive staff support for this study was provided by the Small Business Development Center at Longwood College. The Center conducted the analysis of the industrial concentrations and employment patterns in the region, designed and implemented the survey of business and educational institutions, summarized the results of the survey, and developed forecasts of the future employment opportunities for professional engineers and engineering technologists. The Center staff's knowledge of the region and good working relationships with industry representatives were valuable in identifying educational and employment needs. A copy of the report prepared by the Center for the Commission is included in Appendix B.

Industrial Profile of Region. In its report to the SVBEC on *"The Role of Engineering and Technology Degree Programs in Southside Virginia,"* Longwood College described the importance of manufacturing industries to the region.

> Manufacturing industries are the major force driving demand for engineering an technology employment in Southside Virginia. Manufacturing accounts for over 28% of total employment in the region. Southside has only 7% of Virginia's non-agricultural employment but has 20% of Virginia's manufacturing employment.

Table 2											
Engineering and Engineering Technology Degrees And Other Awards Conferred In Virginia Public and Private by Type of Degree Conferred: 1983 - 1991											
Institution	Degree Level	1983	1984	1985	1986	1987	1988	1989	1990	1991	TOTAL
CVCC	Cert. & Dip.	30	24	26	11	9	17	13	21	29	180
	Associate	36	28	13	39	25	28	17	20	23	229
	Bachelor	0	0	0	0	0	0	0	0	0	0
	Total	66	52	39	50	34	45	30	41	52	409
SVCC	Cert. & Dip.	10	16	10	7	6	10	8	12	19	98
	Associate	19	12	20	6	8	4	17	17	13	116
	Bachelor	0	0	0	0	0	0	0	0	0	0
	Total	29	28	30	13	14	14	25	29	32	214
PDCC	Cert. & Dip.	35	19	12	23	21	10	11	16	15	162
	Associate	3	10	2	3	9	9	0	4	1	41
	Bachelor	0	0	0	0	0	0	0	0	0	0
	Total	38	29	14	26	30	19	11	20	16	203
DNCC	Cert. & Dip.	47	24	15	14	10	17	9	7	73	216
	Associate	3	0	0	0	0	0	0	0	0	3
	Bachelor	0	0	0	0	0	0	0	0	0	0
	Total	50	24	15	14	10	17	9	7	73	219
JTCC	Cert. & Dip.	12	12	9	4	8	3	6	2	4	60
	Associate	29	35	39	34	42	30	26	24	41	300
	Bachelor	0	0	0	0	0	0	0	0	0	0
	Total	41	47	48	38	50	33	32	26	45	360
PHCC	Cert. & Dip.	16	2	14	8	7	10	7	14	12	90
	Associate	0	0	12	13	11	12	10	9	13	80
	Bachelor	0	0	0	0	0	0	0	0	0	0
	Total	16	2	26	21	18	22	17	23	25	170
VSU Total	Bachelor	6	7	33	39	10	21	15	14	10	155
UVA Total	Bachelor	180	169	199	151	191	183	164	150	179	1,566
VPI Total	Bachelor	469	525	444	433	411	490	386	350	369	3,877
VMI Total	Bachelor	0	0	0	0	0	0	0	0	0	0
GMU Total	Bachelor	0	0	0	0	0	0	0	1	3	4
ODU Total	Bachelor	205	250	262	231	265	284	284	193	179	2,153
VMI Total	Bachelor	116	106	146	137	90	118	89	92	101	995
NSU Total	Associate	1	25	10	0	2	4	13	14	15	84
	Bachelor	127	97	84	89	68	45	52	46	54	662
TOTALS	Cert. & Dip.	150	97	86	67	61	67	54	72	152	806
	Associate	126	121	122	131	131	119	106	110	127	805
	Bachelor	1,103	1,154	1,168	1,080	1,035	1,141	990	846	895	9,412
GRAND TOTAL		1,379	1,372	1,376	1,278	1,227	1,327	1,150	1,028	1,174	11,311

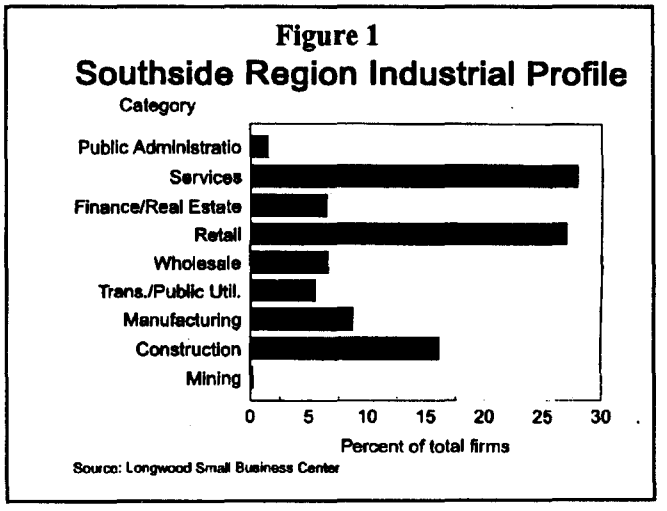
Table 3

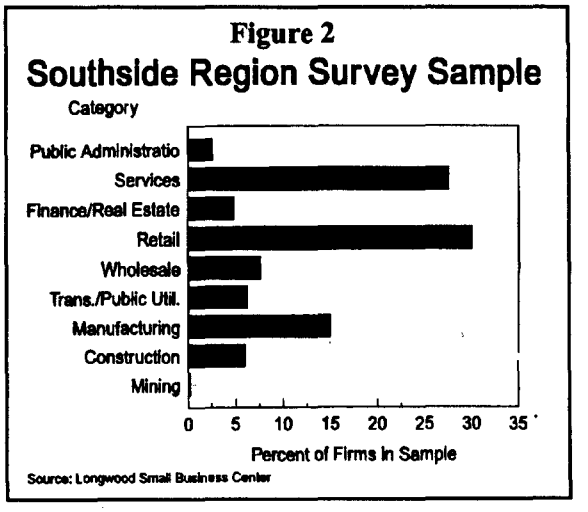
Engineering and Engineering Technology Degrees and Other Awards Conferred in Virginia Public and Private by Discipline - 1983 - 1991

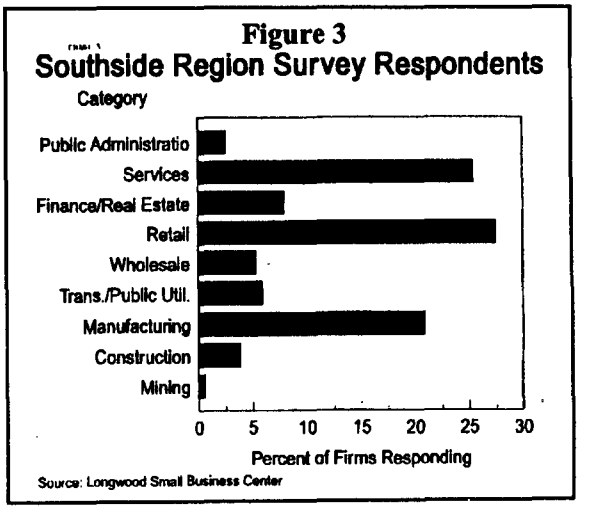
Discipline	1983	1984	1985	1986	1987	1988	1989	1990	1991	TOTAL
TWO YEAR OR LESS PROGRAM										
Arch. Design & Const. Tech.	29	25	18	14	20	13	22	17	16	174
Chemical Engineering	0	0	0	0	0	0	0	0	0	0
Civil Technologies	1	0	0	0	0	0	0	0	0	1
Electrical & Electronic	86	113	92	83	82	89	71	69	124	809
Engineering and Eng. Rel.	42	41	32	33	22	22	15	17	12	236
Environ. Control Tech.	9	3	6	3	1	4	1	5	17	49
Indust. Prod. Technology	31	6	3	3	3	1	0	0	0	47
Mechnical & Rel. Tech.	48	34	41	29	31	25	22	44	80	354
2 YEAR OR LESS PROGRAM TOT	246	222	192	165	159	154	131	152	249	1,670
FOUR-YEAR COLLEGES										
Aerospace Engineering	97	109	160	125	118	119	126	115	157	1,126
Arch. Design & Const. Tech	25	23	28	29	19	30	20	25	34	233
Chemical Engineering	129	118	115	101	63	70	67	60	61	784
Civil Engineering	295	301	306	276	235	242	212	219	250	2,336
Electrical & Electronic	390	449	458	439	475	475	394	378	483	3,941
Engineering and Eng. Rel.	143	172	192	175	192	202	217	127	127	1,547
Environ. Control Tech.	0	0	0	0	0	0	0	0	0	0
Indust. Prod. Technology	108	124	93	114	112	158	114	102	79	1,004
Materials Engineering	26	33	36	32	34	37	13	16	27	254
Mechnical & Rel. Tech.	419	449	418	384	366	412	368	322	359	3,497
Mining Engineering	27	27	15	11	20	3	5	9	12	129
Nuclear Engineering	18	22	17	14	15	10	9	7	7	119
Systems Engineering	34	39	56	51	60	60	60	59	54	473
FOUR-YEAR TOTAL	1,711	1,866	1,894	1,751	1,709	1,818	1,605	1,439	1,650	15,443
FOUR YEAR ENGINEERING TECHNOLOGY										
Norfolk State University	68	48	46	58	36	23	32	30	28	369
Old Dominion University	143	165	188	171	187	198	213	122	121	1,508
Virginia State University	6	7	33	39	10	21	15	14	10	155
4 YEAR ENGR TECH. TOTAL	217	220	267	268	233	242	260	166	159	2,032
GRAND TOTALS										
Aerospace Engineering	97	109	160	125	118	119	126	115	157	1,126
Arch. Design & Const. Tech.	54	48	46	43	39	43	42	42	50	407
Chemical Engineering	129	118	115	101	63	70	67	60	61	784
Civil Technologies	296	301	306	276	235	242	212	219	250	2,337
Electrical & Electronic	476	562	550	522	557	564	465	447	607	4,750
Engineering and Eng. Rel.	152	175	198	178	193	206	218	132	144	1,596
Engineering Technology	217	220	267	268	233	242	260	166	159	2,032
Environ. Control Tech.	42	41	32	33	22	22	15	17	12	236
Indust. Prod. Technology	139	130	96	117	115	159	114	102	79	1,051
Materials Engineering	26	33	36	32	34	37	13	16	27	254
Mechnical & Rel. Tech.	467	483	459	413	397	437	390	366	439	3,851
Mining Engineering	27	27	15	11	20	3	5	9	12	129
Nuclear Engineering	18	22	17	14	15	10	9	7	7	119
Systems Engineering	34	39	56	51	60	60	60	59	54	473
GRAND TOTAL	2,174	2,308	2,353	2,184	2,101	2,214	1,996	1,757	2,058	19,145

The Southside region has attracted 54 new manufacturing plants in the last four years, creating 5,857 new jobs. Manufacturing will remain as the most important industry in Southside. (Dorrill and Hughes, 1992)

Figure 1 provides a visual comparison of the number of firms by industry group within the region and those responding to the survey. The proportion of firms responding from the manufacturing and construction sector is higher than for other sectors. This reflects the importance of engineering and engineering technology workers to these firms but may also reflect the sampling technique that included most of the larger firms. Over two-thirds of the businesses indicated that they now, or plan to, employ engineers or engineering technologists.







Professional Engineering Demand. The Longwood Small Business Development Center (LSBDC) estimates that more than 500 professional engineers are now employed within the region and that over the next ten years an additional 1,100 will be needed. Industrial respondents did not indicate experiencing problems recruiting or retaining engineers.

Employment demand for engineers tends to fluxuate with the economy, as does the enrollment in engineering programs by speciality. Table 2 and 3 provide information on the number of graduates from Virginia's existing undergraduate engineering programs. Information was not available to identify the number of region residents enrolled in engineering programs at institutions located in other areas of the state. This information will be available in the Spring, 1993 and will be made available to the SVBEC.

Engineering Technology Demand. The survey attempted to identify current and future employment of engineering technologists. Over 15 percent of the region's businesses employ engineering technologists. These firms account for over 70 percent of the region's total employment. Two separate needs were identified by the LSBDC.

1.There is a need for an increase in the number of qualified two-year engineering technology graduates. While the graduates are viewed as meeting the performance needs of the firms, they report needing about 800 additional employees over the next ten years. It is anticipated that the regional community colleges need to expand the size of their programs to meet this increased demand.

2.There is a need for an increase in the number of four-year engineering technologists. Most of the 28 percent of the regions businesses that employ engineering technologists indicated that their need for more highly trained engineering technologists is increasing as the nature of their manufacturing process incorporates new technology. These firms report needing about 1,200 additional four-year technologist over the next ten years.

While the survey collected information by individual subcategory or discipline within engineering technology, no conclusions should be drawn at this time about the specific nature of the student or employment demand. Further market analysis and experience with actual enrollment patterns over several years is needed to develop a more accurate indication of program direction and volume of interest.

CONCLUSIONS AND RECOMMENDATIONS

The importance of manufacturing and advanced technology to the economic development of the Southside region is obvious. Previous studies by the Longwood Small Business Development Center have documented the economic impact and the potential for future development. The survey results reflect interest in advancing the implementation of technology in a wide spectrum of industries and firms. The need for a well-educated and highly skilled workforce is reported in the testimony to the Southside Virginia Business and Education Commission and in the responses to the survey and other investigations by the Center.

The existing community college engineering technology programs are meeting most of the regions current needs. The general education and applied nature of less than associate degree programs should be reviewed by the individual colleges and the Commission. There may be justification for the replacement of some of the less than two year programs with associate degree programs, especially at Danville Community College. Continued evaluation of industrial needs and job evolution should be the responsibility of the region's institutions in cooperation with the Commission.

Professional Engineering. Employment levels of professional engineers appear to be consistent with national profiles for manufacturing industries and the indicated demand for additional

engineers reflects national trends. Over 85 percent of the engineering employment is concentrated on the U.S. 58 corridor from Emporia to Martinsville which relects the distribution of manufacturing firms in the region.

Professional engineers are recruited from the Mid-Atlantic states. Over 90 percent of the businesses surveyed indicated that they were not experiencing problems in recruiting or retaining engineers. Graduate engineering programs are available through the Halifax/South Boston Continuing Education Center of Longwood College. These programs provide opportunity for continuing education and professional development of employed engineers and are an advantage in attracting new engineers to the region.

Additional information is needed about the enrollment patterns of students from Southside in the existing engineering programs at George Mason University, Old Dominion University, the University of Virginia, Virginia Military Institute, and Virginia Tech. The Commission should receive this information periodically from the Council of Higher Education to determine if adequate access is being provided to citizens from the region. The Commission should periodically survey firms within the region to determine if they continue to recruit and retain sufficient engineers to sustain and advance their firm's operations.

No action should be taken to initiate an undergraduate engineering program at one of the four-year institutions within the region.

Engineering Technology. Over 15 percent of the region's businesses employ engineering technologists. These businesses account for over 72 percent of the region's total employment. The respondents to the survey indicate satisfaction with the existing two-year or less programs offered by the community colleges.

The survey results indicate a need to increase the number of graduates and maybe the number of two-year programs available. The LSBDC estimates that almost 800 new jobs will be needed in these specialities. The expectations of the employeers for better educated technologists who are able to communicate suggests that the community colleges should examine the suitability of less than associate degree programs and to initiate the necessary curricular changes to respond to this demand. **The community colleges should expand the opportunities for study in two-year programs as necessary.**

The changing nature of the manufacturing industry and the accelerating implementation of technology to maintain competitive standing in all industrial sectors is increasing the demand for qualified graduates from four-year engineering technology programs. There is a four-year accrediated engineering technology program at Virginia State University and Old Dominion University is already providing access to its accrediated program at Virginia Western Community College in Roanoke. The exact nature and magnitude of the student demand for these programs is not known.

The Old Dominion University program is offered through the use of a combination of televised and on-site courses through the community colleges. It provides an in-expensive means of

testing the market and acceptability of additional distance learning programs. Initial discussions have indicated that the Danville, Martinsville, and Lynchburg areas have sufficient student potential to justify the implementation of the current ODU program during the 1993-94 academic year.

ODU should be asked to plan for the initial offerings of its 2+2 engineering technology program at Danville Community College and the Halifax/South Boston Continuing Education Center, at Patrick Henry Community College in Martinsville, and at Central Virginia Community College in Lynchburg. Longwood College should be asked to offer all upper division courses to supplement the engineering and engineering technology courses offered by ODU. The Commission should seek appropriations in the 1993 session of the General Assembly to initate this program.

The role of the engineering technology program at Virginia State University should be explored by the Commission, especially for the Eastern region of Southside.

ATTACHMENT 1

House Joint Resolution

No. 93

Requesting the State Council of Higher Education for Virginia, collaboratively with the Southside Virginia Business and Education Commission, to examine the need to increase or expand engineering and technology programs in the region's institutions of higher education.

FINAL REPORT

January 15, 1993

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I. History and Background

I. History and Background

HJR 93 requests that the State Council of Higher Education and the Southside Virginia Business and Education Commission collaboratively examine the need to increase or expand engineering and technology programs in the region's institutions of higher education.

This request for a study was the result of a recommendation of the Philpott Commission in its 1992 report to the General Assembly (House Document No. 45, Recommendation No. 10 ; Executive Summary). The recommendation is the result of testimony before the Task Force on Education, Training, and the Workforce. An initial inquiry by the Task force indicated the need for a study.

The impetus for the Philpott Commission's concern in this area is directly related to the high concentration of manufacturing jobs in the Southside region. Over 38 % of the Commonwealth's manufacturing jobs are located within the region and the Commission is aware of the need to insure an adequate number of highly educated and skilled engineers and engineering technologists as appropriate for the region's manufacturers' increasing dependency upon technology.

The Southside Virginia Business and Education Commission (SVBEC) was created by the General Assembly during the 1991 session. The legislation creating the SVBEC was based upon a recommendation by the Philpott Commission and charges the SVBEC to perform the following functions:

1. To provide general leadership in the region for education and business partnership programs and excellence in education.

2. To encourage and expand business participation and involvement in public education and to foster partnerships between public and private sectors to enhance public education in Southside Virginia.

3. To collect, generate, and disseminate ideas and information regarding educational innovations and effective instructional practices pertinent to Southside Virginia.

4. To coordinate with business and industry throughout the region to ascertain those skills, education and training that businesses seek from entry level workers.

5. To serve as a resource and referral center for area school divisions by maintaining and disseminating information on existing educational programs and resources.

6. To develop in coordination with the Department of Education and local school boards specific goals for public education in Southside Virginia.

7. To promote the coordination of elementary, secondary, and higher education and adult education and worker training.

The study is receiving assistance from the Longwood Small Business Development Center (LSBDC). The Center is located at Longwood College, is providing space for the SVBEC personnel , and is charged with providing assistance to the SVBEC.

The LSBDC was one of the first two centers to be selected by former Governor Baliles in a statewide network of thirteen centers. The LSBDC's major mission is to provide counseling and education for the benefit of small and medium-sized businesses. However, the LSBDC performs a number of research projects each year for such entities as the Virginia Department of Economic Development, Virginia Economic Developers Association, other state agencies, cities, town, chambers of commerce, and others. The LSBDC possesses unique computer software, hardware, databases, and program analyst. The LSBDC has assisted in the preparation of the survey instruments, the applicable databases, and the computer analysis.

Considerable knowledge, experience, and data has been contributed to this study by Mr. Mike Mullen, Deputy Director for Finance and Facilities, State Council of Higher Education For Virginia.

II. Study Methodology

II. Study Methodology

The purpose of this study is to examine the need to increase or expand professional engineering and/or engineering technology programs within the Southside Region.

The SVBEC recently received a Virginia Center On Rural Development (CORD) grant in order to survey both business and industry and educational entities within the region concerning a number of areas including:

1) An evaluation of the existing work force
2) An evaluation of current workforce needs
3) Business and education communication / involvement
4) An evaluation of skills gaps

The SVBEC survey provided the opportunity to include questioning appropriate to the needs of the HJR No. 93 study.

Business and industries were asked the following:

1) Do you employ Engineering Technologists?
2) If so, how many, and in what disciplines?
3) Will you employ Engineering Technologists in the future?
4) If so, how many, and in what areas?
5) The same questions were asked concerning professional engineers as well as questions concerning recruitment and retention.

Regional educational entities were asked the following:

1) Do you provide Engineering Technology Degree programs (2 year or 4 year)? ; In what disciplines?
2) Do you provide Professional Engineering Degrees?; In what disciplines?
3) Do you presently offer these programs in cooperation/partnership with business or industry?
4) What plans may you have concerning programs in these disciplines in the future?

A database was created which includes every registered business in Southside Virginia as well as every educational institution.

The total universe of Southside region educational institutions is 42. This universe includes four year state colleges, four year private colleges, community colleges, public schools K through 12, and private academies and schools with religious affiliations. The entire population was selected for survey participation.

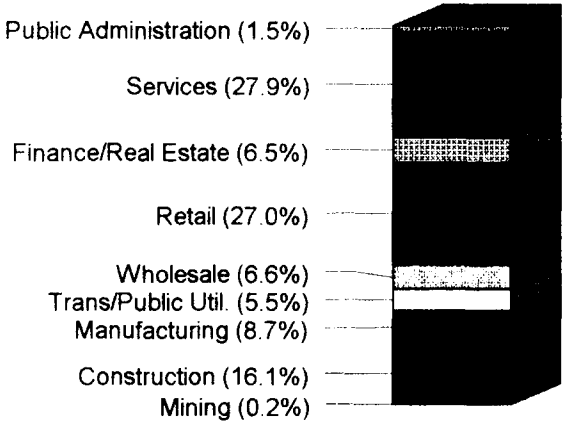
The total universe of registered businesses in the region is slightly in excess of 8,000. When dual location registrations were deleted, the remaining universe contained 7,835 businesses. Of this number, 1,249 businesses were randomly selected for survey participation.

One hundred eighty three businesses responded to the survey, representing 14.65 percent of those surveyed and 2.3 percent of the total number of registered businesses in the region

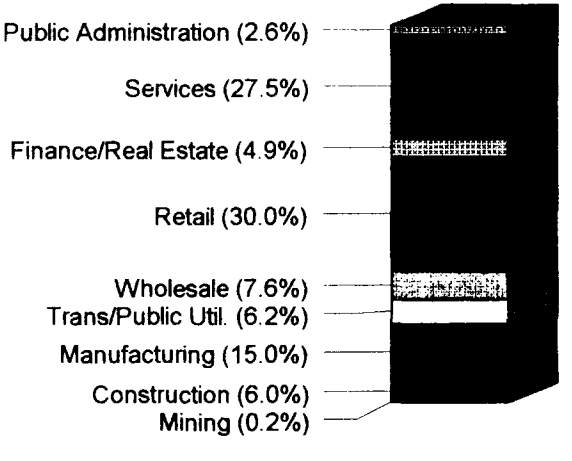
The following represents the percent distribution for the total universe, survey sample, and survey responses:

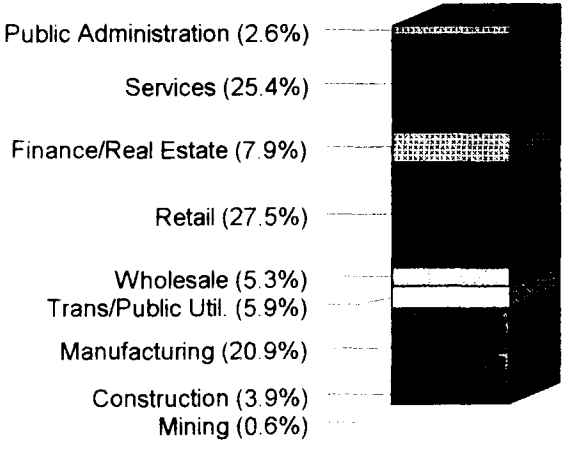
SURVEY DISTRIBUTION

% OF TOTAL REGION



% SURVEYED





% RESPONDING

The Business types which indicated that they presently employ or will employ within the next ten years any professional engineers or engineering technologists are summarized below:

Business Type	#/% Total Regional Businesses	#/% of Survey Sample	#/% of Survey Responses
Manufacturing	667/8.5%	165/13.2%	32/17.5%
Retail	2,058/26.3%	331/26.5%	42/23.0%
Service	2,128/27.2%	303/24.3%	39/21.3%
Trans./Utility/Public Sector	542/6.9%	98/7.8%	13/7.1%

Summary

Total Regional Businesses Employing Engineers/Technologists - 5,395
% of Total Regional Businesses - 68.8%

Total Number Surveyed as a percent of Total - 897
% of Total Surveyed - 71.2%

Total Number of Survey Response from those Employing Eng./Tech. - 126
% of Total Survey REsponses - 68.8%

The number of businesses responding to the survey accurately reflects the total number of registered businesses in the Southside region who employ or will employ either professional engineers or engineering technologists.

III. Observations

A) Professional Engineering

B) Engineering Technology

A) Professional Engineering

1) Existing Level of Employment
2) Ten Year Projected Employment
3) Recruitment and Retention

A) Professional Engineering

1) Existing Level of Employment:

Responses of those businesses who indicated that they presently employ professional engineers and the representative percentage of all of those responding is as follows:

	# Responding "Yes"	% of all Responses
Manufacturing	10	5.4%
Service	6	3.2%
Trans./Util./Public	6	3.2%
Retail	3	1.6%
Totals	25	13.7%

Survey responses indicate a total of 96 professional engineers employed. Total regional estimated employment is 548.

2) Ten year projected employment:

Responses of those businesses who indicated that they will hire professional engineers for new positions over the next 10 years are as follows:

	# Responding "Yes"	% of all Responses
Manufacturing	18	9.8%
Service	17	9.2%
Trans./Utility/Public	17	9.2%
Retail	16	8.7%
Other	5	2.7%
Totals	73	39.8%

Survey responses indicate a total new employment of 192 professional engineers over the next 10 years. Total regional estimated new employment is 1,097.

3) Recruitment and Retention

A total of eight or 4.4 percent of businesses surveyed indicated that they had experienced problems either recruiting or retaining engineers. Those indicating problems were evenly distributed among business types.

B. Engineering Technology

1) Existing Level of Employment by Specialty Area
2) Ten Year Projected Employment
3) Demand for Additional Education (4 yr. Degree) by Specialty Area

B) Engineering Technology

1) Existing Level of Employment by Specialty Area:

The following is a summary of those businesses indicating that they employ engineering technologists by the area of specialty:

	# of Businesses Surveyed	% of Those Responding "Yes"
Mechanical	8	22%
Industrial	8	22%
Electrical	11	30%
Civil	5	14%
Other	4	12%
Totals	36	100%

Eight companies employed more than one specialty area. A total of 28 companies indicated that they employ engineering technologists or 15.3% of all the businesses in the region.

2) Ten Year Projected Employment:

Survey respondents' ten year projected employment needs in new positions are as follows:

	No. of New Positions
Mechanical	40
Industrial	20
Electrical	35
Civil	20
Other	16
	131

Total estimated new employment in engineering technology for the next 10 years is 784.

3) Demand for Additional Education (4yr. degree) by Specialty Area:

Survey respondents indicated the following demand for four year engineering technology positions, both existing and new, over the next ten years. The following represents the total number of companies and jobs by specialty area:

	# of Companies Responding	# of Positions	% of Total Jobs
Mechanical	15	72	34%
Industrial	11	50	24%
Electrical	14	53	25%
Civil	8	26	12%
Other	4	10	5%
	52	211	100%

The survey response of 211 positions requiring four year degrees can be estimated to represent a total demand for the region of 1,205 positions over the next 10 years.

IV. Conclusions and Recommendations

IV. Conclusions and Recommendations

Professional Engineering:

Employment levels of professional engineers appear to be constant with anticipated increases nationally. Over 85% of the engineering employment is concentrated on the U.S. 58 corridor from Emporia to Martinsville which reflects the same distribution of manufacturing jobs within the region.

At the present time professional engineers are recruited on a basis with the region consisting of the Mid-Atlantic states. The Southside Virginia region is an equal distance from professional engineering schools at V.P.I., University of Virginia, Old Dominion University, and North Carolina State. Over 90% of the businesses surveyed indicated that they were not experiencing problems in either recruiting or retention.

there are remote teaching facilities located at the Halifax/South Boston Continuing Education Center of Longwood College (CEC). The CEC facility is located in South Boston and is in the center of the manufacturing area. Graduate courses in several engineering disciplines are being offered by Virginia institutions via satellite.

Survey results do not support the location of a new four year professional engineering program within the Southside Virginia region.

Engineering Technology:

Over 15 percent of the Southside Virginia region's businesses employ engineering technologists. These same businesses account for over 72 percent of the region's total employment.

These businesses have indicated two separate needs in the area of engineering technology.

The first need is for an increase in the number of qualified two-year engineering degree programs. Regional community colleges located in Danville, Franklin, Roanoke, Lynchburg and Keysville/Alberta presently offer such programs. Survey results reflect that these programs are generally deemed sufficient by employers. The survey generated estimate of 784 new jobs in this area supports an increase in community college resources in order for demand to be met.

The second need is for an increase in the number and/or availability of qualified four year degree Engineering Technologists. Over 28 percent of the regions total number of businesses employ engineering technologists and have indicated that their need for more highly trained engineering technologists is increasing in proportion with their ever

increasing manufacturing technology. Survey responses reflect an estimated increase of over 780 new four year engineering technology jobs.

There is only one four year engineering technology programs in the region at the present time. This program is located at Virginia Western Community College near Roanoke. This program is offered in conjunction with the Old Dominion University College for Engineering. The program has been successful, but is located at the far western end of the Southside region which is over 200 miles from the eastern region.

Danville Community College has expressed an interest in initiating a similar program with O.D.U., and the C.E.C. of Longwood College. The initial proposal was formulated in 1989 but was not initiated due to lack of funding.

Survey results support the initiation of a four year engineering technology program within a central section of the Southside region. A D.C.C./C.E.C. program with course offerings in Danville and South Boston would allow the most convenient access for the areas with the highest demand for employment.

Danville Community College could offer lower division course work at both locations with Old Dominion University and Longwood College offering appropriate upper division course offerings at the same locations.

V. Appendices

A) HJR No. 93
B) SVBEC Industry Survey Instrument
C) SVBEC Educational Survey Instrument
D) SPSS-X Cross Tabulations and Statistical Analysis (Under Separate Cover)

A. HJR No. 93

1992 SESSION

LD4256128

HOUSE JOINT RESOLUTION NO. 93

AMENDMENT IN THE NATURE OF A SUBSTITUTE

(Proposed by the House Committee on Education
on February 7, 1992)

(Patron Prior to Substitute—Delegate Bennett)

Requesting the State Council of Higher Education for Virginia, collaboratively with the Southside Virginia Business and Education Commission, to examine the need to increase or expand engineering and technology programs in the region's institutions of higher education.

WHEREAS, increasingly complex technology will demand that the 21st century worker display mastery and knowledge of a variety of disciplines, particularly mathematics and sciences; and

WHEREAS, manufacturing industries support much of the demand for engineering and technology employment in Southside Virginia, and the region has attracted more than 50 new manufacturing plants in the last four years, thereby increasing the demand for engineering professionals; and

WHEREAS, Virginia's institutions of higher education must be equipped to provide the technological and engineering programs necessary to train these workers; and

WHEREAS, pursuant to § 23-9.6:1 of the Code of Virginia, the State Council of Higher Education is authorized to "review and approve or disapprove the creation and establishment of any department, school, college, branch, division or extension of any public institution of higher education"; and

WHEREAS, the 1991 Session of the General Assembly, upon the recommendation of the Southside Economic Development Commission, established the Southside Virginia Business and Education Commission to provide "general leadership" for excellence in education in Southside Virginia; and

WHEREAS, while some engineering programs are currently offered by community colleges and four-year institutions in Southside Virginia, strengthening these programs might further enhance employment opportunities and regional development; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the State Council of Higher Education for Virginia, collaboratively with the Southside Virginia Business and Education Commission, be hereby requested to examine the need to increase or expand engineering and technology programs in the region's institutions of higher education. The study should include, among other things, an examination of current engineering programs, consideration of industry needs, estimated regional retention of program graduates, current and projected enrollments, and the use of satellite programs.

All agencies of the Commonwealth shall cooperate with the State Council and the Commission, and, upon request, provide assistance in the performance of their duties and responsibilities.

The State Council and the Commission shall submit their findings and recommendations to the House Committee on Education and the Senate Committee on Education and Health prior to the 1993 Session of the General Assembly.

B. SVBEC Industry Survey Instrument

The following information will be held in strict confidence. Your cooperation is greatly appreciated.

Part One - General Information

I. Company Information

Company Name: _____

Address: _____

County/City of Location: _____

CEO/President: _____

Person completing form (if different): _____

Title: _____

Telephone: _____

II. Type of Business

( ) Retail Sales ( ) Manufacturing ( ) Service ( ) Agricultural/Forestry/Transportation
( ) Wholesale ( ) Construction ( ) Other

III. Number of Employees

( ) 0-4 ( ) 5-25 ( ) 26-100 ( ) Over 100

Part Two - Employment Needs

I. Recent Employment Statistics. Estimate as closely as possible

	0 - 5	6 - 10	over 10
1. Total Number of new hires in 1991-92 _____			
2. Number of new hires with less than GED or high school diploma	( )	( )	( )
3. Number of new hires with GED or high school diploma	( )	( )	( )
4. Number of new hires with some college experience, but no degree	( )	( )	( )
5. Number of new hires with Associates of Arts/Sciences degree	( )	( )	( )
6. Number of new hires with B.S. or B.A. degree	( )	( )	( )
7. Number of new hires with Master's or other advanced degree	( )	( )	( )

8. Are there any planned shifts in minimum skill levels within your workforce? ( )Yes ( )No

9. If you answered "Yes" to question 8, please indicate the area(s) in which the shifts will occur.

( ) Mostly professional / upper level management
( ) Mostly middle management / staff
( ) Mostly skilled line workers / lower level staff
( ) Mostly unskilled labor
( ) Shifts will occur within all levels

II. Future Employment Needs

Please answer the following questions concerning your company's hiring needs and future workforce requirements. Check all responses that apply.

Important to Your Company?			Should Schools Provide?		How well are the schools performing?			
Yes	No		Yes	No	Very Satisfied	Somewhat Satisfied	Dissatisfied	Unsure
( )	( )	Reading Critically	( )	( )	( )	( )	( )	( )
( )	( )	Writing Clearly	( )	( )	( )	( )	( )	( )
( )	( )	Math Problem Solving	( )	( )	( )	( )	( )	( )
( )	( )	Math Computation	( )	( )	( )	( )	( )	( )
( )	( )	Logical Thinking	( )	( )	( )	( )	( )	( )
( )	( )	Accuracy	( )	( )	( )	( )	( )	( )
( )	( )	Team Cooperation	( )	( )	( )	( )	( )	( )
( )	( )	Group Problem Solving	( )	( )	( )	( )	( )	( )
( )	( )	Manual Dexterity	( )	( )	( )	( )	( )	( )
( )	( )	Data Processing	( )	( )	( )	( )	( )	( )
( )	( )	Secretarial Skills	( )	( )	( )	( )	( )	( )
( )	( )	Interpersonal Skills	( )	( )	( )	( )	( )	( )
( )	( )	Work Ethic / Reliability	( )	( )	( )	( )	( )	( )
( )	( )	Commitment	( )	( )	( )	( )	( )	( )
( )	( )	Punctuality / Attendance	( )	( )	( )	( )	( )	( )
( )	( )	Attention to Detail	( )	( )	( )	( )	( )	( )
( )	( )	Other – Please Identify	( )	( )	( )	( )	( )	( )

Part Three – Current involvement with education and area schools. Please check all that apply.

I. Direct Assistance in Education

Did this in the past	Might consider		Highly Beneficial	Beneficial	Not Very Beneficial
( )	( )	Send Speaker to School	( )	( )	( )
( )	( )	Lend Equipment to School	( )	( )	( )
( )	( )	Give Formal Teaching Material	( )	( )	( )
( )	( )	Student Tours (Grades K-6)	( )	( )	( )
( )	( )	Student Tours (Grades 7-12)	( )	( )	( )
( )	( )	Student Work Study (paid)	( )	( )	( )
( )	( )	Student Work Study (unpaid)	( )	( )	( )
( )	( )	Provide Instructor for Course	( )	( )	( )
( )	( )	Provide Technical Assistance	( )	( )	( )
( )	( )	Adopt a School Program	( )	( )	( )
( )	( )	Tutor or Mentor Program	( )	( )	( )

II. Financial Assistance in Education

Did this in the past	Might consider		Highly Beneficial	Beneficial	Not Very Beneficial
( )	( )	Donate Extra Materials	( )	( )	( )
( )	( )	Buy Ads or Sale Items	( )	( )	( )
( )	( )	Financial Donation	( )	( )	( )
( )	( )	Donate Project Materials	( )	( )	( )
( )	( )	Provide Awards / Prizes	( )	( )	( )
( )	( )	Attendance / Grade Incentives	( )	( )	( )
( )	( )	Sponsor Teams / Activities	( )	( )	( )
		Tuition Assistance:			
( )	( )	Community College	( )	( )	( )
( )	( )	Four Year College	( )	( )	( )

III. Employee / Parent Involvement

Did this in the past	Might consider		Highly Beneficial	Beneficial	Not Very Beneficial
( )	( )	Release Time for School Visits	( )	( )	( )
( )	( )	Recognize Student Successes	( )	( )	( )
( )	( )	Bonus for Student Successes	( )	( )	( )
( )	( )	Inquiry About Child's Progress	( )	( )	( )
( )	( )	Homework Assistance Pledges	( )	( )	( )
( )	( )	Homework Assistance Classes	( )	( )	( )
( )	( )	Parenting Skills Classes	( )	( )	( )
		DayCare:			
( )	( )	Before/After School	( )	( )	( )
( )	( )	During Work	( )	( )	( )
( )	( )	Release for Job Fair	( )	( )	( )
( )	( )	Release for Volunteer Work	( )	( )	( )
( )	( )	Flex Time for School Visits	( )	( )	( )
( )	( )	Flex Time for School Visits	( )	( )	( )

Part Four – Education and the Current Workforce

I. Skills Enhancement

1. Is the success of your business in any way dependent upon a highly skilled workforce? ( ) Yes ( ) No

2. Is it likely to be in the near future? ( ) Yes ( ) No

3. If your answer to number one or two is "Yes", what skill upgrades are most desired in your business? (Check all that apply)

( ) Human Relations/Customer Service
( ) Job Specific/Technical Skills
( ) Computer-Related Skills
( ) Job Related Science/Math Proficiencies
( ) Basic Skills (Literacy)
( ) Professional Development
( ) Management Skills
( ) Clerical Skills
( ) Safety Training
( ) Sales Training
( ) Other

4. In your view, what possible sources could be used to effectively present training in the above categories?

( ) School System
( ) Community College/Technical School
( ) Higher Education (College Level)
( ) Private Consultants/In House Training
( ) Government Sponsored Job Training
( ) Other – Please Specify _____

5. Please complete the following table to let us know the extent of your involvement with adult/worker education. (Please check all that apply)

Did this in the past	Might Consider		Highly Beneficial	Beneficial	Not Very Beneficial
( )	( )	Flex time to attend adult education classes	( )	( )	( )
( )	( )	Tuition assistance for adult education	( )	( )	( )
( )	( )	On Site adult ed. / training classes	( )	( )	( )
( )	( )	Bonus incentives for continuing ed.	( )	( )	( )
( )	( )	Workplace literacy programs	( )	( )	( )
( )	( )	Flex time for degree completion	( )	( )	( )

6. Would your company be willing to invest in an on-site / satellite training program? ( ) Yes ( ) No

II. Engineering Technology

1. Do you presently employ Engineering Technicians? (i.e. certified through two-year degree) ( ) Yes ( ) N
   If your answer is "No", please skip to part III.
2. If your answer to number one was "Yes", please indicate the disciplines involved and the number of technicians in each.
   ( ) Mechanical ____ ( ) Industrial ____ ( ) Electrical ____ ( ) Civil ____ ( ) Other ____
3. Would your company and its employees benefit from further education through Engineering Technology programs and degrees? ( ) Yes ( ) No
4. If the answer to number 3 is "Yes", please indicate which disciplines would benefit as well as the number of jobs anticipated in each discipline over the next ten years.
   ( ) Mechanical ____ ( ) Industrial ____ ( ) Electrical ____ ( ) Civil ____ ( ) Other ____

III. Professional Engineers

1. Do you have any professional engineers currently on your staff? ( ) Yes ( ) No
   If so, how many? ____
2. How many professional engineers do you anticipate hiring over the next ten years? _____
3. Are you experiencing difficulty in recruiting and/or retaining professional engineers? ( ) Yes ( ) No

Would you like to be contacted concerning your participation in future business / education partnerships?
( ) Yes ( ) No

Would you like to receive results of this survey? (If so, please remember to include your address a l telephone number on the front of this survey) ( ) Yes ( ) No

Thank you for your time in completing this survey. Your time and effort is greatly appreciated as we continue our efforts to improve the current and future workforce.

COMMENTS

Please use the remaining space on this paper for your comments on what could be done to improve Southside Virginia's workforce.

C. SVBEC Educational Survey Instrument

Southside Virginia Business and Education Commission
Survey of Educational Institutions

Part One: General Information

Institution: _____

Status: Public / Private

Grades Served: _____

Degrees Offered: _____

Person Completing Form: _____

Title: _____

Address: _____

Telephone: _____

Part Two: Participation in Business / Education Partnerships

1. Please tell us the extent of your involvement in business/education partnerships.
   High Schools -- Please indicate Division Wide or By Individual School where appropriate.

	Division Wide	Individual Schools
( ) We have a partnership program in place	( )	( )
( ) We are making plans for a partnership	( )	( )
( ) We have a partnership program in place, but it is in need of support	( )	( )
( ) We do not have a partnership program in place	( )	( )

2. Does your institution have a structured permanent business/education partnership program/committee, etc.?
   ( ) Yes ( ) No
3. If yes, what is the name and title of the individual responsible for the direction of the program?

   _____ Percentage of time dedicated? _____

4. Please indicate the areas in which you have business participation or would like to see business participation. Also, in areas where you have business participation, please indicate whether or not the participation is beneficial to you as an educational institution.

Have Received Assistance	Would Like to Receive Assistance	Would Not Like to Receive Assistance	Activity	Highly Beneficial	Beneficial	Not Beneficial	Unsure
( )	( )	( )	Curriculum Development	( )	( )	( )	( )
( )	( )	( )	Teaching / Lecturing	( )	( )	( )	( )
( )	( )	( )	Donating Teaching Materials	( )	( )	( )	( )
( )	( )	( )	Student Work-Study (Paid)	( )	( )	( )	( )
( )	( )	( )	Student Work-Study (Unpaid)	( )	( )	( )	( )
( )	( )	( )	Adopt-A-School Program	( )	( )	( )	( )
( )	( )	( )	Tutor or Mentor Program	( )	( )	( )	( )
			Providing Summer Jobs for:				
( )	( )	( )	Teachers	( )	( )	( )	( )
( )	( )	( )	Students	( )	( )	( )	( )
( )	( )	( )	Donating Materials	( )	( )	( )	( )
( )	( )	( )	Financial Donations	( )	( )	( )	( )
( )	( )	( )	Providing Awards/Prizes	( )	( )	( )	( )
( )	( )	( )	Other -- Please Specify	( )	( )	( )	( )

5. Please rank the following factors in order of importance ("1" being most important) in the potential success of a business/education partnership.

( ) Structured Programs / Activities	( ) Business Interest / Support
( ) Frequent Contact / Communication with Sponsor	( ) Adequate Resources
( ) Faculty Interest / Support	( ) Guidance in Establishing Programs
( ) Student Interest / Support	( ) Other -- Please Specify _____

6. Have you had experience with a business/education partnership which did not meet expectations? ( ) Yes ( ) No
7. If the answer to number 6 is yes, please tell us the factors which you believe contributed to the lack of success. Please check as many as apply in your case.

( ) Lack of Structured Programs / Activities	( ) Lack of Guidance in Establishing Programs
( ) Lack of Frequent Contact / Communication with Sponsor	( ) Lack of Business Interest / Support
( ) Lack of Faculty Interest / Support	( ) Lack of Adequate Resources
( ) Lack of Student Interest / Support	( ) Other -- Please Specify _____

Continued on Back

Part Two – continued

8. Do you see business/education partnerships as beneficial to your school / institution?
   ( ) Yes ( ) No **If so, how?** **If not, why?**

9. Do you see business/education partnerships as an integral part of your plans/strategies for the future?
   ( ) Yes ( ) No **If so, how?** **If not, why?**

Part Three – Future Employment

1. Do you know or are you made aware of the educational needs of area businesses? ( ) Yes ( ) No
2. Do you currently involve business and industry in curriculum development in the following areas in order to meet employment requirements or standards?

	Yes	No	No, but would consider
Vocational/Technical Programs	( )	( )	( )
General Education/Academic Programs	( )	( )	( )

3. Do you currently communicate with area business and industry in order to assess the educational needs/requirements for new employees? ( ) Yes ( ) No ( ) No, but would consider
4. Do you currently work with businesses in order to design and implement industry involvement in:

	Yes	No	No, but would consider
Vocational/Technical Programs	( )	( )	( )
General Education/Academic Programs	( )	( )	( )

5. Do you perform follow-ups with employers on graduates to obtain feedback on the quality of :

	Yes	No	No, but would consider
Vocational/Technical Programs	( )	( )	( )
General Education/Academic Programs	( )	( )	( )

Part Four – Current Workforce Education

Do you currently participate in:	Yes	No	No, But would Consider
1. Adult Literacy Programs	( )	( )	( )
2. Adult Continuing Education – Skill Upgrades	( )	( )	( )
3. Providing GED Classes	( )	( )	( )
4. Job Training Partnerships	( )	( )	( )
5. "On-site" educational programs at specific business locations	( )	( )	( )

Part Five – Educational Program Partnerships

Do you currently participate in:	Yes	No	No, But would Consider	Not Applicable
1. 2 + 2 Programs (with Community Colleges)	( )	( )	( )	( )
2. Co-op Education with other institutions	( )	( )	( )	( )
3. Vocational/Technical Programs/Partnerships	( )	( )	( )	( )
4. Engineering Technology Programs (2 yr degree)	( )	( )	( )	( )
5. Professional Engineering Programs (4yr degree and up)	( )	( )	( )	( )
6. Joint on-site degree completion programs for:				
High School	( )	( )	( )	( )
College	( )	( )	( )	( )
7. Tech Prep Programs/Partnerships	( )	( )	( )	( )

Part Six – Comments

1. What role do you think the SVBEC should play in the development and support of partnership programs?

2. Would you like to be contacted concerning your present or future participation in partnership programs?
   ( ) Yes ( ) No
3. Please share any other comments you wish to make regarding business participation in the educational process.

Thank you for your time in completing this survey!!! You will receive a copy of the results as soon as they are complete. Please be sure to include your mailing address on the front of this survey.

D) SPSS-X Cross-Tabulations and Statistical Analysis (Under Separate Cover)