



BISMARCK
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North Dakota's
Polytechnic Institution

FUNDING BSC'S SUCCESSFUL POLYTECHNIC MISSION

North Dakota's Polytechnic Institution

HOUSE APPROPRIATIONS COMMITTEE
MARCH 17, 2021
Dr. Doug Jensen, President



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Critical Date

September 2018 - SBHE authorizes Bismarck State College to pursue an expanded Polytechnic mission



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Design, Develop, and Implement a Polytechnic Mission

- National Coalition of Advanced Technology Centers (NCATC)
 - September 2020: BSC engaged NCATC to assess readiness to pursue expanded Polytechnic mission
 - NCATC engages 17 stakeholder groups in a collaborative conversation and fact finding
 - K-12, Marketing and Recruitment, Local Government and Economic Leaders, State Government, TrainND, BSC Faculty, BSC Students, Manufacturing, Energy, Cyber, Health Science, Agriculture, STEAM Stakeholders, Executive Team, Leadership Team, Polytechnic Working Group, and Futurist Group.
 - NCATC Study is the foundation of the Strategic Plan for the role out of the BSC Polytechnic expanded mission
 - Strategic Plan includes organizational structure, Business and Industry Leadership Teams (BILT), operational, programming, equipment, and facility needs

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Design, Develop, and Implement a Polytechnic Institute

- November 2020: Gray & Associates Economic Environmental Scan and Competitive Analysis Study
 - Study provided guidance on emerging and future educational needs to develop a robust talent development system for High Priority Occupations (HPOs)
 - Mechatronics/Robotics/Automation Engineering
 - Computer Science
 - Health Care Admin/Management
 - Registered Nursing
 - Business Admin and Management
 - Logistics/Materials/Supply Chain Management
 - Other Engineering and Digital Disciplines

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Funding BSC's Polytechnic Mission

- Each new polytechnic program requires startup investment (~\$1M)
 - Faculty with industry experience
 - Curriculum and content development
 - Instructional and lab supplies
 - Specialized Equipment
 - Marketing new student populations
 - Recruitment and partnership development



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4 Year Delay in State Funding

- Polytechnic programs started in Fall 2021 will not be included for state funding until FY 2026 - 2027 biennium
- Operating on student tuition only
 - Does not cover direct program operational cost
 - Does not allow for any additional student services support cost
 - Does not cover curriculum development
 - Does not cover specialized equipment



Mechatronics Start-up Forecast – One Example

	FY22		FY23		FY24		FY25		FY26		FY27	
REVENUE												
Enrollment Student - 15 per yr	Annual	15	Annual	27	Annual	45	Annual	67	Annual	67	Annual	67
On Campus Credit Hrs/Student		\$ 87,219.00		\$ 156,994.20		\$ 261,657.00		\$ 389,578.20		\$ 389,578.20		\$ 389,578.20
TOTAL REVENUES		87,219		156,994		261,657		389,578		389,578		389,578
STATE APPROPRIATION - Engineer		-		-		-		-		120,112		216,201
DIRECT EXPENSES												
FTE Faculty	Average	2.5	Average	2.5	Average	3.5	Average	4.0	Average	4.0	Average	4.0
Salary	55,000	137,500	56,100	140,250	57,200	200,200	58,300	233,200	59,500	238,000	60,700	242,800
FB	48%	66,000		67,320		96,096		111,936		114,240		116,544
TOTAL SALARIES & FB		203,500		217,668		306,394		355,234		362,338		369,442
Instructional supplies		15,000		20,000		25,000		25,000		25,000		25,000
Professional Development		8,000		8,000		10,000		12,000		12,000		12,000
Operating Expense		15,000		15,000		18,000		20,000		20,000		20,000
Marketing/Outreach		75,000		75,000		50,000		50,000		45,000		45,000
TOTAL OPERATING		113,000		118,000		103,000		107,000		102,000		102,000
TOTAL DIRECT EXPENSES		316,500		335,668		409,394		462,234		464,338		471,442
OPERATING CONTRIBUTION		(229,281)		(178,674)		(147,737)		(72,656)		45,352		134,337
Start-up Equipment/Facility ¹		1,197,500		-		-		-		-		-
NET CONTRIBUTION/(LOSS)		\$ (1,426,781)		\$ (178,674)		\$ (147,737)		\$ (72,656)		\$ 45,352		\$ 134,337
Loss on Start Up		(1,426,781)		(1,605,455)		(1,753,192)		(1,825,848)				



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Projected Mechatronic Start-up Equipment

Tabletop Mechatronics Smart Factory trainers	\$ 387,100
Robotic Arm	212,900
Logistics trainer	220,000
Click PLCs, HMI Screens	30,000
Automatic Guided Vehicle	45,000
Full-size Mechatronics Trailer	300,000
Smart Automation Certification Alliance Membership - Industry 4.0 Certifications	2,500
	\$ 1,197,500





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Polytechnic Infrastructure

- Non-traditional academic, collaborative learning spaces
 - Flexible, adaptive and configurable instructional spaces
 - Supports project-based learning and multidisciplinary activities

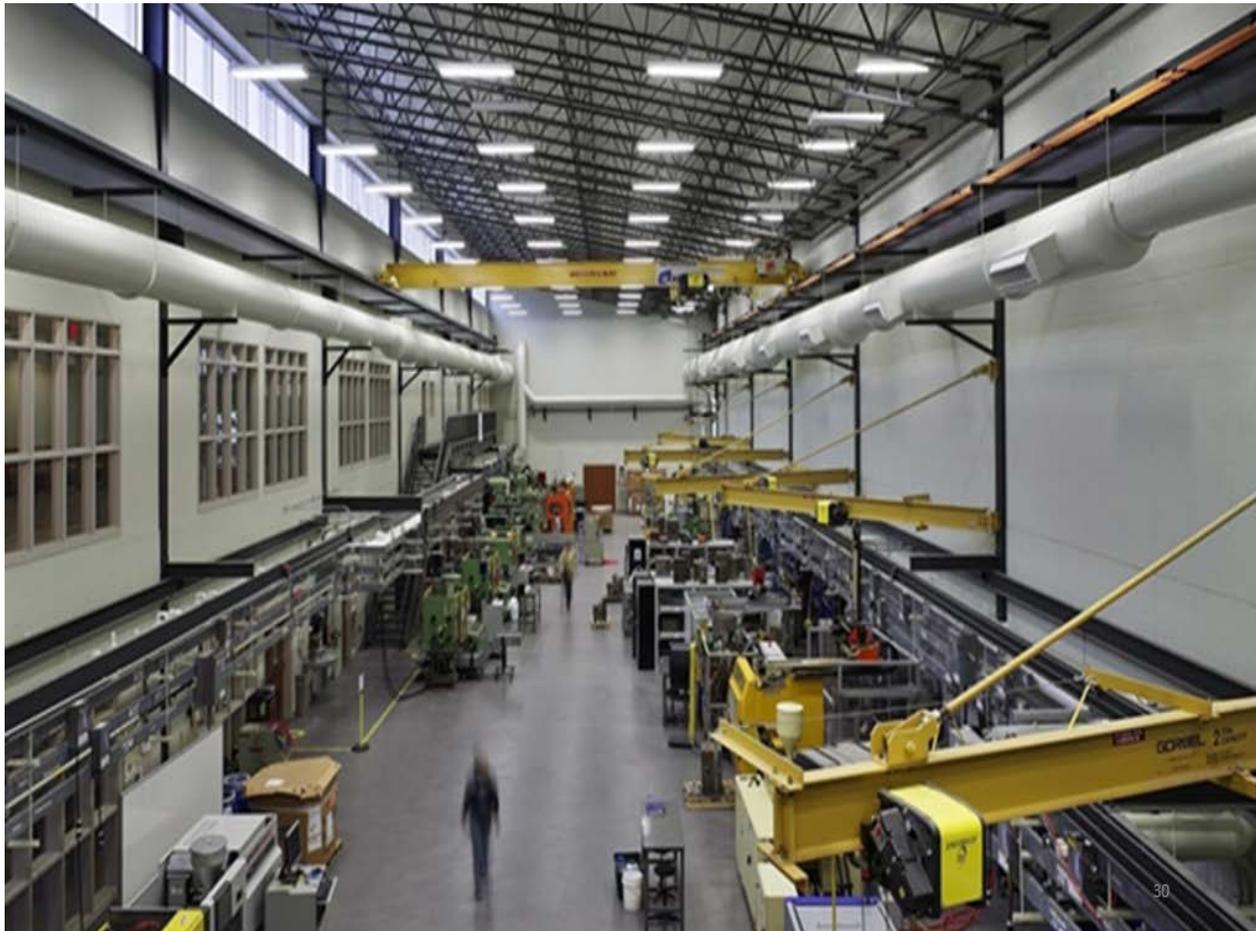




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MEGA Lab Space with Loading Dock

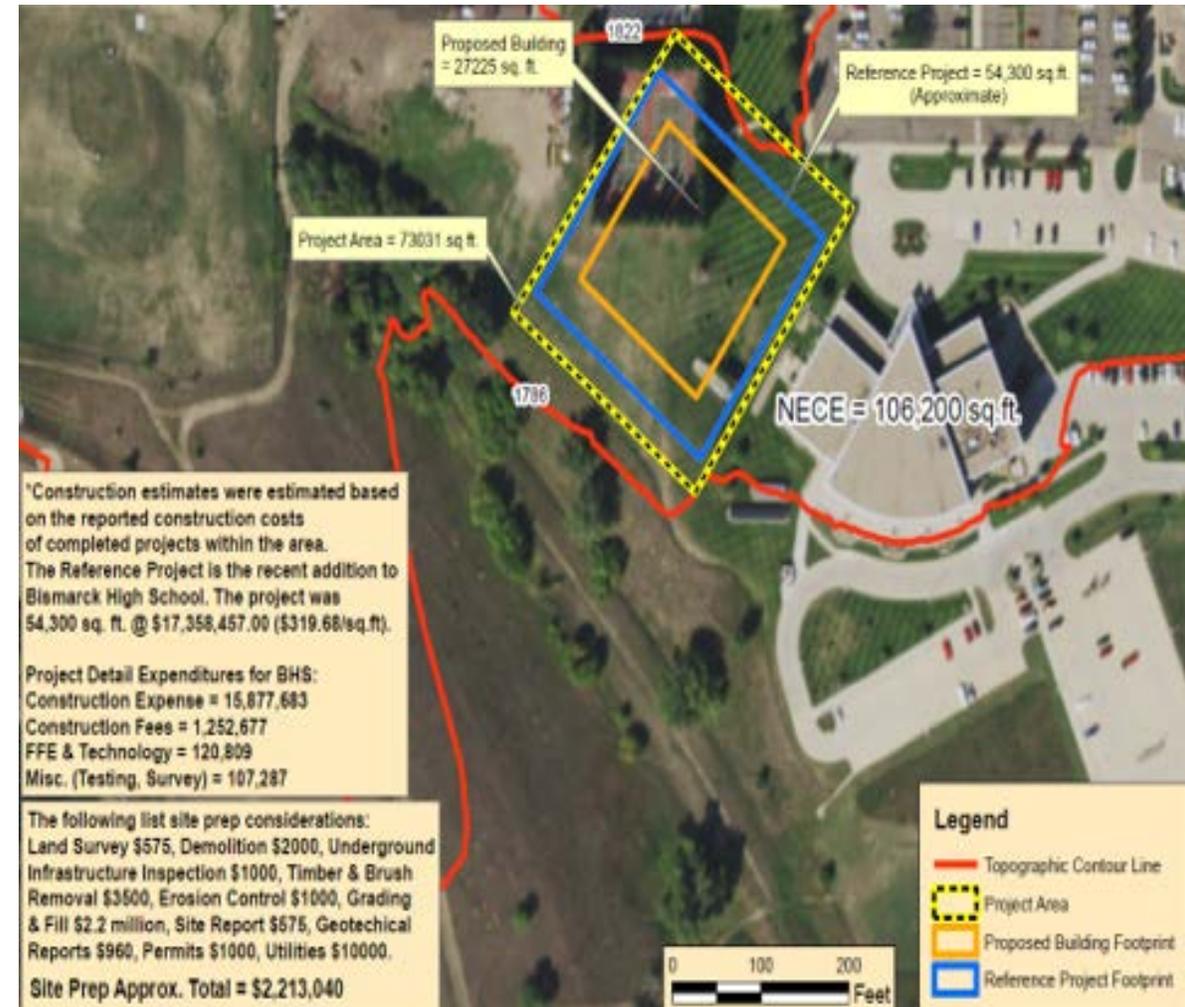


- Flexible space
- Movable walls
- Floor space to accommodate heavier loads
- Door sizes
- Loading docks
- Second floor access
- HVAC & power capacity
- Equipment ventilation



Estimated Infrastructure Space – Based on NCATC Study

Estimated Polytechnic Infrastructure Space		QTY #	Square Footage	Capacity (ea.)	Total Square Feet
1	MEGA Lab Flex Space (accommodates receiving/training dock)	1	20,000	50-60	20,000
2	Larger Adaptive Project Training Area	1	2,250	120	2,250
3	Medium Adaptive Project Training Rooms (Specialized Labs like GTC, IMET, ATC)	6	1,000	68	6,000
4	Smaller Adaptive Project Training Rooms	2	500	10-12	1,000
5	Student & Industry Assessment Center (NIMS, Cybersecurity, SME, ASE, Skills Gap, etc)	1	750	6-10	750
6	Project Development & Presentation Space	1	2,400	200	2,400
7	Digital Training Center	1	650	6 - 12	650
8	Experiential Learning, Internship, Externship Space	1	2,100	8-12	2,100
9	Student Learning Support Areas (Advising, Tutoring, etc)	1	2,000		2,000
10	STEAM Presentation & Engagement Area	1	14	950	13,600
11	Digital Media Support Center	1	650	10-12	650
12	Business & Industry Support Center	1	350	2-4	350
13	Collaborative Chamber/Workforce/Economic Development Space	1	250	3-4	250
14	Small Business Accelerator Space	1	800	4-8	800
15	Facility/Utility Area (IT, Electrical, HVAC, Etc.)	1	2,500		2,500
16	Welcome, Security, Registration, and Recognition Area	1	2,000	200	2,000
17	Collaborative Conference and Community Room	1	1,600	18-24	1,600
18	Polytechnic Staff & Outreach Workspace	10	175	100	1,750
19	Employee Support Area	1	2,050		2,050
20	Common Areas, Hallways, Stairways, Gathering/Convening Space	1	25,625		25,625
21	Total Projected Square Footage				88,325
	Projected Cost per Square Footage				\$319.86
	Total Projected Costs of New Building				28,251,635







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Summary of Estimated Polytechnic Funding

Capital Infrastructure & Program	Amount
Polytechnic Program Start-up, Operating and Equipment Cost	
Mechatronics	\$ 1,825,848
Potential New Polytechnic Programs (Supply Chain, Logistics, Process Control, etc.)	3,200,000
Polytechnic Educational Delivery Space	
Polytechnic Building	28,251,635
Polytechnic New Addition Site Preparation	2,213,040
Total Polytechnic Project Budget	<u>\$35,490,523</u>

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Questions/ Comments?

