

I will be applying for a charter for the Roebling Global Technology Charter School, a STEM (Science, Technology, Engineering, Mathematics) middle school, grades 6-8 in CSD-13. This school honors the accomplishments of Emma Roebling who over 100 years ago, despite great adversity and educational discrimination, learned civil engineering, completed the iconic architectural and engineering wonder, the Brooklyn Bridge. Our mission continues Emma Roebling's legacy of inspiration by providing students with a high-quality, interdisciplinary STEM-focused education so that they, too, can shape the engineering wonders of our future as a city and the global community. We are committed to attracting and serving students from populations underrepresented in STEM professions (females, minorities, ELL, disadvantaged).

I.a. Applicant's Information:

Joseph J. Selch [REDACTED]

[REDACTED] NYS Teacher License: Biology/General Science Grades 7-12 09/1998 Permanent, NYS S.D.A. License 09/2000 Permanent, NYS SAS License 02/2004 Permanent

b. Media Contact: Linda Gerardi, roeblingmedia@gmail.com

c. Applicant Founding Group:

◆ **Patricia D. Galloway, M.B.A., Ph.D., Civil Engineer** proposed board member, CEO, Pegasus-Global Holdings, Inc.®. Presidential appointment, U.S. National Science Board, 2006, 6 yr. Term, Vice Chair, 2008-10. First woman president, American Society of Civil Engineers, 2004. International arbitrator and Board of Directors, American Arbitration Association.

Author, *The 21st Century Engineer-A proposal for engineering education reform*, ASCE Press

◆ **Emanuela Gunther, M.A.**, proposed board member, ESL/LAB/BESIS Coordinator, Franklin K. Lane H.S., M.A. TESOL, multi-lingual, 20 years professional experience ESL/ELL.

◆ **Cheryll Duerk, M.A., M.A.**, proposed board member. M.A. Spec. Ed., M.S. Mntal Hlth Cnslg.

◆ **Vivian Kerker, M.B.A., M.A.**, proposed board member, Licensed Speech Pathologist, professional business background H.R., works as part of a Special Education team.

◆ **Dr. Shirley Labardy, DP, MBA** - proposed board member, MBA, Brooklyn College, DPM, NY College of Podiatric Medicine, MSED, Baruch College, Asst. Principal, Bayside H.S.

◆ **Allan Ludman, Ph.D.**, proposed board member, Chair Department of Geology Queens College. Director, [GLOBE NY Metro](#), GLOBE® Program, K-12 international science program enrolling teachers and students in authentic research focused on global change.

◆ **June Miller, Ph.D.** proposed board member. Director, Science Ed., Queens College. Frmr Chair, Science Ed. Committee N.Y. Academy of Sciences, national science education advocate

◆ **Barbara Poseluzny, Ed.D.** - proposed board member. NYS Biology Mentor, past president, Science Teachers Association of NYS (STANYS). STEM consultant for NYC DOE/NYSDOE.

◆ **Robert Schmidt, B.B.A., C.P.A.** - proposed board member. Certified Public Accountant in a variety of capacities. Will advise on issues related to school fiscal management.

◆ **Joseph Selch, M.S.Ed., PD.** - Lead applicant, founding member, and proposed school director. B.A., Marine Biology; M.S.Ed., Science Education, post-master's (PD) Administration and Supervision. Successful track record working in large NYC urban districts, increased academic achievement for all students (grades P-12), including with disabilities and ELL. Demonstrated ability to apply science/evidence based practices, embrace diversity.

d. Initial Board of Trustees: all of the above founding members are Initial Board of Trustees except for the lead applicant, Joseph Selch, M.S. Ed., PD.

e. Replication/Network Information/ f. Application History: Both non-applicable

II. Proposed Charter School Information

a. Proposed school name: Roebing Global Technology Charter School

b. Proposed school location: Community School District 13 - Brooklyn

c. Planned grades and enrollment

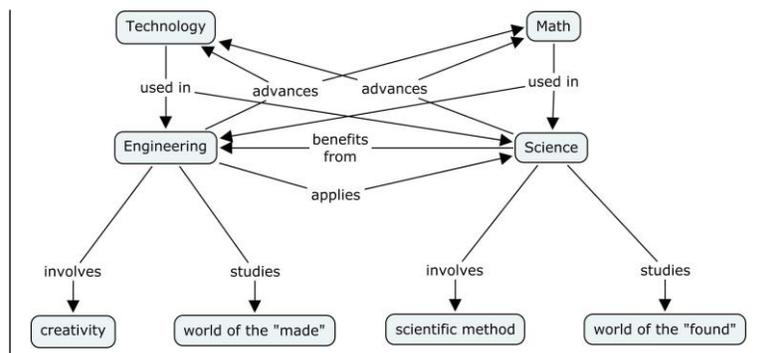
	2013	2014	2015	2016	2017
6th grade	110	110	110	110	110
7st grade	0	100	100	100	100
8nd grade	0	0	100	100	100
Total enrolled	110	210	310	310	310

d. Proposed Management: School will receive governance from the Board of Trustees, daily leadership, management of on-going operations, curriculum direction from the School Director. The small administrative team consists of a Director, an Assistant Principal, Business Manager and secretary. Annual audit and other customary stringent fiscal oversight will be the norm.

e. Proposed school mission: Roebing is dedicated to equipping students to be competitive members of this next learning generation's global science and technology fields. This is a middle school education with an eye on the prize, preparing our students for a stake in the worldwide economic and academic communities. Competition with the best of the best worldwide is our standard. Commitment to provide an excellent academic foundation and to stimulate interest in a multidisciplinary approach to science is our hallmark. In the spirit of non-traditional learners Albert Einstein, Marie Curie, Steve Jobs, Clara Barton, Bill Gates, Maria Agnesi, creative minds are welcome. We value families as partners in their children's education.

f. School overview: The Roebing choice offers parent and students a STEM-focused learning environment for 6-8 graders, an extensive integrated curriculum that develops the skills of all learners. Integrating academics, mentors, practical skills and an international perspective, we collaboratively underscore connections between what students learn and the world in which they live. Responsiveness to all aspects of multilingual learning and cross cultural team building skills are an essential component of our model, a rich and rigorous learning environment characterized by high academic standards and individual support. All academic subjects will be integrated with interdisciplinary themes based on a collaborative team teaching model consisting of a common core of students being taught by a common English, History, Mathematics, Science, and Technology teacher to promote problem-based, inquiry, and lab-based learning through the content areas. The curriculum will reinforce a Science, Technology, Engineering, and Mathematics (STEM) theme that promotes 21st century learning skills as demonstrated by the diagram below which visually illustrates the inherent value of an interdisciplinary approach .

Value of an Interdisciplinary Approach Source: The Thornburg Center for Space



Our goal is to implement an innovative, project-based, interdisciplinary approach to foster STEM Literacy defined by the National Governor's Association Center for Best Practices:

- *Scientific literacy – using scientific knowledge and process to understand the natural world*
- *Technological literacy - analyze how new technologies affect us, our nation, and the world*
- *Engineering literacy - understanding technology development using project-based lessons*
- *Mathematical literacy - ability to analyze, reason, communicate ideas effectively as they pose, formulate, solve, and interpret solutions to mathematical problems in a variety of situations*

Students will become STEM-literate, proficient in all subjects via a wide range of hands-on, project-based, team-taught interdisciplinary activities provided both in the classroom as well as the greater CSD-13 community and beyond. Roebing students will benefit from our partnerships/linkages within the growing high-tech hub in DUMBO and via utilization of technology to create virtual connections with learning communities around the globe.

We will incorporate **common planning time** for our teachers to enable them to regularly communicate with one another regarding: integrated curriculum content, team-teaching, plan frequent field trips for workplace and lab-based learning, to implement performance based assessment components, and to enable parents to meet with all of their children's teachers with ease. We will establish a highly-interactive learning community which embraces students, parents, and the CSD-13 community.

Our model maximizes real world exposure through STEM professional advisers. Students will experience enrichment activities, myriad opportunities to participate in national, regional and international science fairs, other STEM-related competitions, independent study projects, solo and in groups, supervised by faculty and/or mentors. The Roebing STEM model compels students to acquire dynamic communication skills to think and work in the context of systems. This will enhance their ability to work collaboratively on engineering and science projects which solve real-world problems.

g. School's target population: Roebing's target population is coed and emphasizes enrolling students with learning disabilities, ELL and the economically disadvantaged. Emphasis is placed on recruitment of young women who are underrepresented in every specialized STEM program at the secondary and college levels, except those exclusively for girls starting at 5th grade.

III. Enrollment and retention of students with disabilities, English language learners, and students who are eligible applicants for the free and reduced price lunch program.

Bridging the Gap: Admission preference and targeted parent and student recruitment

Students eligible for reduced or free lunch, ELL, girls will be entered 2x's in lottery.

Roebing will recruit and retain economically disadvantaged students by:

Develop relationships with elementary science teachers, parents associations with high percentage of children eligible for free or reduced lunch (e.g. P.S. 307, 88.8%).

Utilize middle school community service requirement to develop mentoring relationships between Roebing students and low income elementary students.

Outreach through camps and after school activities that are fun, STEM stimulating and free.

Parent-child science hands on education programs at local libraries and youth centers in the lowest income zones to highlight the value of a focused STEM education for children.

Providing one on one, convenient, bilingual help for parents in application process.

These activities have already been discussed with parents, school staff, library staff and youth in CSD 13 or in some cases suggested as an activity that would be welcome. In addition traditional community outreach: flier distribution, community blogs, community board, postings, school visits, social service offices, cash/supplemental nutrition benefits sites, DOH, WIC.

English Language Learners (ELL): Brooklyn census data lists 46.7% of the population reporting speaking a language other than English at home (approximately 1500 ELL students in CSD-13). To increase our target ELL pool, we are enlisting the community support of social service organizations, after school programs, adult ESL programs, religious groups and organizations as well as libraries (the multilingual center) and children's health care facilities (e.g. Brooklyn Hospital and private pediatric practices) to share information about Roebing. We will be posting on-line information as well as fliers in translation for the major languages in CSD- 13: Spanish, and Haitian French and/or Creole. Home Language Surveys provided.

The largest ELL group in CSD-13 is Hispanic/Latino, yet only 8% of Bronx H. S. of Science and Brooklyn Tech's population and 3% of Stuyvesant H. S., though 19.5%(upwards of 75% in some communities) of Brooklyn's population. We intend to increase these numbers by overcoming language barriers. It will not be enough to increase our enrollment of Hispanics and other ELL students *but to insure that they are building skills with intentionality from day 1 of admission to transition to the next level of STEM education.* Blacks/African Americans are also underrepresented at the STEM secondary school level (11% at Brooklyn Tech, yet 31.9% of Brooklyn's population) and affect black Haitians and other black ELL students in CSD-13. We have sought resources to reach these populations by doing multiple outreach sessions (scheduled at libraries in July) throughout the district and using non-English media and social networks to reach parents. We are scheduling day and evening sessions.

Students with Disabilities: Addressing disability often means ignoring giftedness in other areas. This will not happen at Roebing. Many such as Einstein, Edison often called doubly gifted students, are proof of the necessity to proceed with a different strategy: address the disability, capture the giftedness. We maximize talents of every student. Our inclusion model welcomes students with different learning styles and disabilities. In the context of a school blueprint for special education (S.E.) services, designated S.E. staff will be included in "team" activities as seamlessly as possible. The required full complement of school S.E. Staff - designated guidance counselor, reading coach, student achievement coordinator, 2 certified special education teachers, speech therapist, occupational therapist, social worker and psychologist will be integrated into an ongoing team teaching approach. Scheduled private time and space for IEP required services will be allotted with as little disruption as possible to the student's schedule. Recruitment will be from within the district's special needs populations, private and alternative schools, listing with Resources for Children with Special Needs, the Child Center. Every Roebing student's initial assessment is designed to build on each student's strengths to insure individual support in areas that require accommodation. Our team approach, the use of a variety of teaching modalities creates an especially accommodating education model for many special needs children and their families. As middle school students, some will enter with IEPs, others will be identified as having needs during the initial assessments. Identification and follow-up of previously unidentified needs will be implemented in a thorough, supportive, non-stigmatizing manner. Regardless of the special needs present, Roebing faculty have a commitment to extensive training regarding the needs of students with disabilities, are informed of their responsibilities for particular students, receive the support they may require to implement a student's program, and

implement any necessary modifications or accommodations in their classes. Effectively coordinating evaluation, placement, as well as direct, contracted and district services through the CSE and trained Parent Advocates.

Public Outreach and Community Support: Our local assessment has been qualitative and anecdotal. We have spoken to religious leaders, elementary school parents, community board staff, libraries, community organizations, hospitals, other health care providers, local higher education, economic development and business people. Roebling School's nature is to be a bridge between community resources and CSD-13 middle school students. The STEM community has a landscape that changes daily, new start ups, new technologies – all in CSD- 13 and in students daily use of technology. Students hope to be employed in this world in the future but few adults even understand it. School controversies, failings, sanctions, closings, lack of access, and other issues have created a climate of uncertainty, frustration for many of the 3500 CSD-13 middle school students and families. The Roebling Global Technology Charter School strives to be part of the solution in accenting the best of what this community's students can bring to this global technology community at our doorstep. Our founder is a homegrown STEM professional from Brooklyn, an educator close to the community who is choosing to invest here because he wants to give back. We have recruited live STEM professionals, local, regional, national and international who also want to give back. Physicists, engineers (Industrial, computer, electrical, civil, geotechnical, nuclear, computer technology, even forest), medical professionals, researchers, environmentalists, science educators. They want to invest in the next technology generation, CSD-13's Generation Z, digital natives - our school is that bridge. The vision - having a school focused on science, math, engineering and technology (STEM) not as abstract concepts or something to be done some day but like a new technology start-up or incubator -hands-on activities inspired by and led by diverse New Yorkers at the crossroads of the new technology hub is exciting to local students, parents, educators, business leaders, religious leaders and community groups. We have asked. CSD-13 parents know that if their child gains these skills they are being given the gift of access to a prosperous future.

In speaking with local CSD-13 elementary school parents and staff, especially in more challenged schools, our school vision is a welcome relief. We reassure ELL parents and children that their child can successfully compete in the STEM universe. Parents whose child's disability has led to exclusion view our inclusion model favorably. Library staff appreciate the presence of a STEM program, because they “don't see much of it because of the focus on other core standards” that have eclipsed the STEM message, “ I can't remember the last time someone had a science assignment or asked a science question – even a biography.” It's really needed.” Community Board conversations have affirmed the Roebling emphasis of inclusiveness, aggressively seeking students receiving free lunch, those with ELL or LD issues, not just “cherry picking”. Also our commitment to set aside a percentage seats for those who live locally and desire an excellent, challenging, modestly sized local community middle school. They value the potential access for local youth to the Bio-science, technology, engineering education centers, other industries sprouting up in CSD-13's “technology triangle”. Excellence, professional STEM linkages, building practical science, math, engineering and technology skills - the bridge CSD-13 middle school students need to gain access to this world.

