Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

STATEMENT OF WORK
for the
Electron-Ion Collider (EIC)
Construction Manager as Advisor (CMa) Pre-Construction Support Services for Electron Injector Complex

Quality Classification: A-3

Prepared By:

Signed by: Conor O'Sullivan 36BF86028B8641A...
Date: 7/14/2026
Conor O'Sullivan, EIC Infrastructure Construction Project Manager

Reviewed By:

Signed by: Maggie Haviland 9C5AAC447D21440...
Date: 7/14/2026
Maggie Haviland, EIC Procurement Liaison Engineer

Signed by: Kevin Reilly 05C9101B391E4F6...
Date: 7/15/2026
Kevin Reilly, Senior Mechanical Engineer

Signed by: Joseph Mondillo 638C7210B72B466...
Date: 7/15/2026
Joseph Mondillo, Lead Architect/Engineer for Design

Signed by: Joseph Zipper 16E754BBA3194D5...
Date: 7/15/2026
Joseph Zipper, Quality Representative

Signed by: Amol Patil 7386114A24984DE...
Date: 7/15/2026
Amol Patil, Project Controls Analyst

Signed by: Charles Schaefer 0EC05C1DA268492...
Date: 7/15/2026
Charles Schaefer, EIC ESH Group Leader

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

Signed by:
Tom Nehring
89DF2BEAADC641C...

Date: 7/14/2026

Tom Nehring, Group Leader Electrical Power Systems

Signed by:
Dirul Nassar
EE674D1F20DB4F0...

Date: 7/14/2026

Dirul Nassar, EIC Infrastructure Division
Deputy Director

Approved By:

Signed by:
Peggy Caradonna
C919B463A678469...

Date: 7/15/2026

Peggy Caradonna, EIC Interim Infrastructure Division
Director

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

REVISION HISTORY

Revision #	Effective Date	Summary of Change
00	07/14/2026	Initial Release

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

List of Acronyms

AACE	Association for the Advancement of Cost Engineering
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guideline
A/E	Architect/Engineer Contractor
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating & Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
BAR	Bunch Accumulation Ring
BIM	Building Information Modeling
BNL	Brookhaven National Laboratory
BSA	Brookhaven Science Associates
CFR	Code of Federal Regulations
CMa	Construction Manager as Advisor
CoR	Code of Record
CPM	Critical Path Method
Cx	Commissioning Agent
DOE	Department of Energy
EIC	Electron-Ion Collider
EIN	Electron Injector Complex
EISA	Energy Independence and Security Act
ESH	Environment, Safety and Health
GERT	General Employee Radiation Training
GUN	Electron Gun Structure
HVAC	Heating, Ventilation, and Air Conditioning
IBC	International Building Code
ICC	International Code Council
IDD	Infrastructure Division Director
kV	kilovolt
LINAC	Linear Particle Accelerator
MEP	Mechanical, Electrical, and Plumbing
MeV	Mega electron-volt

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

NEC	National Electrical Code
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
SMDM	Stormwater Management Design Manual
SSESC	Standards and Specifications for Erosion and Sediment Control
OSHA	Occupational Safety and Health Act
PD	Project Director
PM	Project Manager
RCS	Rapid-Cycling Synchrotron
RF	Radio Frequency
RFI	Request for Information
RHIC	Relativistic Heavy Ion Collider
SBMS	Standards Based Management System
SMACNA	Sheet Metal & Air Conditioning Contractors' National Association
SOW	Statement of Work
SSCs	Structures, Systems, or Components
TIA	Telecommunications Industry Association
UL	Underwriters Laboratory
WBS	Work Breakdown Structure

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

Table of Contents

1 Project Overview 8

1.1 Synopsis 8

1.2 EIN Project Description, Goals and Objectives 8

1.2.1 EIN Complex Design Background 9

1.3 EIN Project Budget 11

2 Applicable Codes, Rules and Regulations 12

2.1 Federal Codes, Regulations, Standards, Acts and Manuals 12

2.2 New York State Codes 13

2.3 Local Codes 13

2.4 EIC Code of Record (CoR) 14

3 Construction Manager as advisor Scope of Work 17

3.1 General 17

3.1.1 CMa Staffing 17

3.1.2 Project and Business Management 17

3.1.3 Partnering 17

3.1.4 ESH 18

3.1.5 Travel 18

4 Pre-Construction Support Services 19

4.1 Training 19

4.2 Site Visits 19

4.3 Meetings 20

4.4 BIM 20

4.5 Immersion Workshops 20

4.6 Value Engineering 20

4.7 Constructability Workshop 20

4.8 Constructability Reviews 21

4.8.1 Preparation of Constructability Review Reports based on Design Documents and Construction Documents 21

4.9 Design Reviews 22

4.10 Cost Scrubbing Review 23

4.11 Detailed Construction Cost Estimates 23

4.11.1 Construction Cost Estimate Requirements 23

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

4.12 Comprehensive Cost- Loaded Construction Schedule 24
4.13 Review of Project Commissioning Plan and Specification 25
4.14 Long Lead Item Report and Estimate 25
4.15 Additional Deliverables 25
4.15.1 Virtual Networking 25
4.15.2 File Management 25
5 Quality Assurance 26
6 Deliverables 27
6.1 Key Deliverables Milestone Schedule 27
6.2 Anticipated A/E and Cx Agent Deliverables 29
7 Project Administration 31
7.1 General 31
7.2 BSA Project Team Directory 31
7.3 Architect /Engineer (A/E): 31
7.4 Construction Manager as Advisor (CMa): 31
7.5 Coordination and Communication 31
7.6 Meetings 32
7.7 Telephone and On-Line Communications 32
7.8 Transmittals 32

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

Statement of Work for the Construction Manager as Advisor (CMa) Pre-Construction Support Services for Electron Injector Complex

1 PROJECT OVERVIEW

1.1 Synopsis

This Statement of Work (SOW) will be the basis for the procurement of Construction Manager as Advisor (CMa) Services to support the Pre-Construction of the Electron-Ion Collider (EIC) Electron Injector Complex (EIN) Infrastructure project at Brookhaven National Laboratory (BNL) managed by Brookhaven Science Associates (BSA). Work to be performed by a CMa shall consist of "Pre-Construction Support Services" which shall include services that will be performed during the design of the EIN and preparation for construction. In accordance with this SOW, self-performed construction services are not permitted. All bidding and contracting for construction services will be performed by BSA. The CMa shall represent the interests of BSA and shall provide sound and proactive management advice regarding the approach to construction work, methods of achieving the best value in the construction work, schedule control, as well as cost control. The CMa shall act in the best interests of BSA in all matters. The CMa will report to the EIC Infrastructure Division Director (IDD). The CMa and the BSA Architect/Engineer contractor (A/E) shall coordinate efforts to promote the partnership and collaborative working environment established between the A/E, CMa, and BSA. The expectation is that all parties will collaborate and cooperate as required to achieve the common goal of successful project execution.

1.2 EIN Project Description, Goals and Objectives

BSA intends to construct an Electron-Ion Collider (EIC) that will be a particle accelerator that collides an electron beam with a beam of ions. It will produce comprehensive data on the internal structure of protons and nuclei to reveal unprecedented details of the arrangement and interactions of the quarks and gluons that make up the building blocks of nuclei. The EIC will be built to leverage the existing Relativistic Heavy Ion Collider (RHIC) and its infrastructure.

A significant enhancement will be the design and construction of the Electron Injector Complex to provide suitable beam parameters for use in the Electron-Ion Collider. The purpose of this project is to construct a 750 Mega electron-volt (MeV) electron Linear Particle Accelerator (LINAC) approximately 100m in length, along with a Rapid-Cycling Synchrotron (RCS) approximately 1500m in circumference, consisting of two 130m straight sections and end arcs with a bending radius of approximately 196m. These structures are proposed to be constructed of conventional reinforced concrete and steel. Associated support buildings are planned to consist of two power supply and mechanical service buildings, a radio-frequency klystron (power supply) building along and adjacent to the LINAC, a laser room associated with the LINAC, a radio-frequency building and a cryogenic system with connection to the existing RHIC cryogenics system. Electrical power will be provided by an overhead 13.8 kilovolt (kV) line, which shall be tapped from the EIC distribution system.

The EIN is to be integrated with the existing RHIC tunnel. This is primarily a buried steel arch-plate tunnel structure with various poured concrete headwalls and associated support buildings. Construction of new structures, systems and components is to be conducted with minimal impact to the integrity of existing structures and systems.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

The EIN will be connected to BNL's medium voltage power distribution system, sanitary system, potable water system, telecommunication and data system, sitewide fire alarm and suppression systems, wastewater treatment plant and storm drainage system.

The EIC location is already served by BNL's existing underground utility systems as provided for RHIC operations. Utility maps are available for these services, but where planned tie-ins or capacities are critical, the successful firm will be responsible for due diligence necessary for a thorough assessment.

Although the building designs will generally involve standard commercial design and construction techniques, there are some additional considerations due to the specific requirements of the accelerator, experimental beamlines, and types of research that will take place in laboratory spaces. Consideration will need to be made during construction to minimize sources of vibration and transmission of vibration that would impact component stability in the laser, cathode, accelerator, and beamline areas. There will also be specific temperature and humidity stability requirements in the accelerator tunnel and experimental beamline spaces that will require heating, ventilation, and air conditioning (HVAC) system and control design that exceeds standard commercial practices.

1.2.1 EIN Complex Design Background

The EIN Complex is designed to support high-intensity particle acceleration through a staged process that begins with a LINAC and transitions into a circular synchrotron ring optimized for rapid cycling. The LINAC provides initial beam acceleration and accumulation, delivering electrons into the RCS for further acceleration to the desired energy levels. The complex includes a network of interconnected facilities: the LINAC Complex, RF Complex, transfer lines, and the RCS tunnel organized in two straight and two curved sections of precast concrete segments. Straight sections of the tunnel are enlarged to accommodate critical systems such as injection and extraction equipment, RF cavities, and beam diagnostics. The curved sections are more compact, focused on guiding the beam along the ring path.

The EIN ring tunnel comprises 12 key segments: Two main straight segments (D2 and H2) and ten smaller segments (A1, B1, B2, C1, D1, E1, F1, F2, G1, and H1). Significant EIN facilities are sited next to the straight segments, while smaller support buildings are located near the smaller tunnel segments. At the start of EIC operations, the EIN is intended to be operated with a schedule: 9 months on (Oct-Jun) and 3 months off (Jul-Sep). See figure 1 below for reference.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

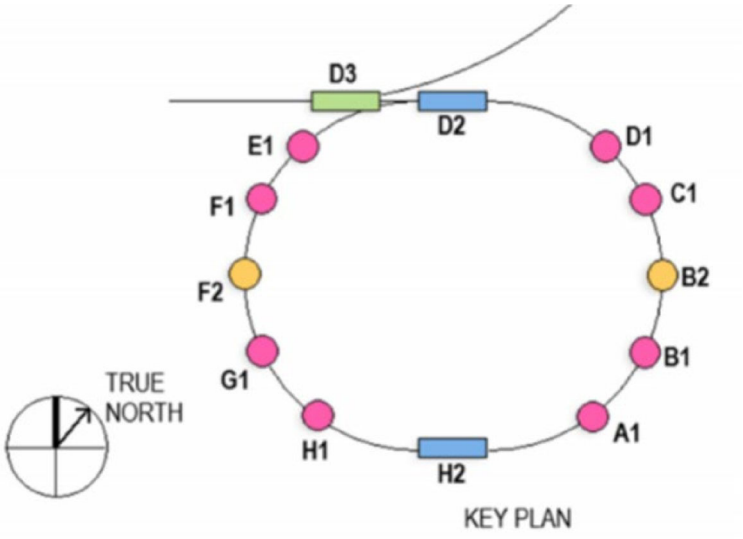

Figure 1: EIN Conceptual design

The largest structure within the EIN Complex is the RCS Tunnel, which is directly interconnected with the LINAC Complex - a facility designed to accommodate the Linear Particle Accelerator (LINAC). The LINAC Complex located between H1 and H2 includes an Electron Gun Structure (GUN), LINAC Gallery, Bunch Accumulation Ring (BAR), Local Injection Control Room, and various supporting equipment rooms.

The second largest facility is the Radio Frequency (RF) Complex, located at D2, houses the Radio Frequency Support Gallery, Kicker Power Supply equipment, Cryogenic Building, and other supporting infrastructure. The project also includes expansion of the Medium Voltage infrastructure to accommodate new EIN power supply requirements.

Supporting infrastructure includes Power Supply buildings, Radio Frequency Support Gallery buildings, Pumphouses, and other service buildings, all integrated with utility systems for cooling, cryogenics and electrical distribution. Site grading differentiates between above-grade service buildings and below-grade beam enclosures to optimize shielding and operational efficiency.

Figure 2 below was developed and contained in the Conceptual Design. Building sizes and geometry as shown in the Conceptual Design Report may change as the machine design matures. The CMa shall collaborate with the BSA Technical Representative and the EIC Infrastructure team and the A/E to develop the Preliminary Design. An iterative design process will be required throughout the Preliminary Design Process. However, it is the project goal to converge on the geometry and dimensions of the infrastructure elements by the completion of the Preliminary Design Phase.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

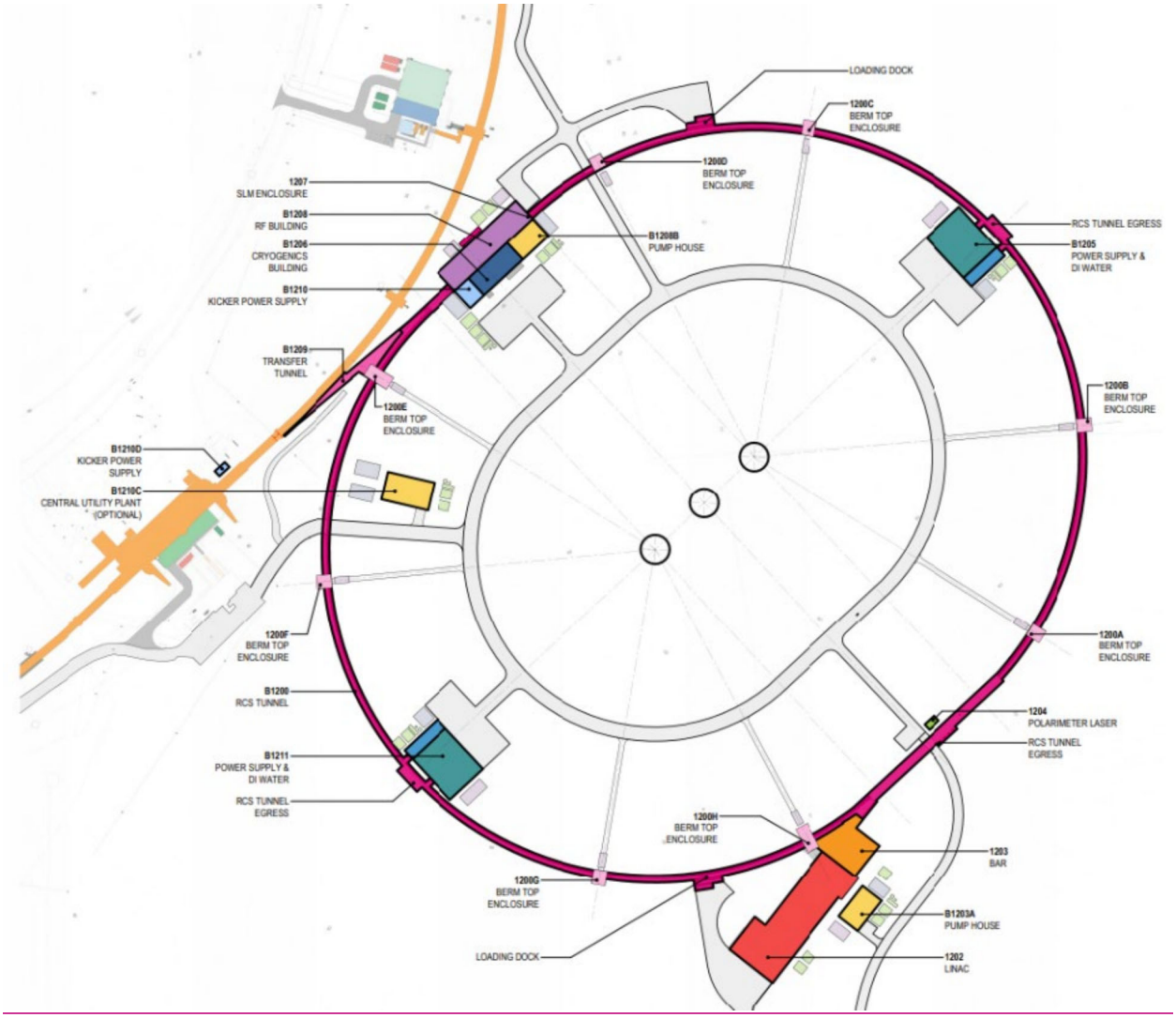

Figure 2 Electron Injector (EIN) Complex with LINAC and Rapid Cycling Synchrotron Configuration

1.3 EIN Project Budget

The targeted construction contract price for the purposes of design shall be $271M direct construction costs in February 2026 dollars. Based upon the Conceptual Design Report, it is estimated that the required square footage of facilities will be approximately 192,000 gross square feet.

Alternates: The A/E shall include 8 to 12 additive/deduct alternates of varying size to support incremental Construction Bid Alternatives ranging from 90% to 109% of the targeted construction contract price. The BSA Infrastructure Division Director (IDD), CMa and the A/E will work collaboratively to identify the specific add/deduct alternates. The alternates will be awarded and executed at the discretion of BSA and as funding allows.

Economic Balance: The elements of the design shall attain economic balance, commensurate with available funds and design objectives, between initial construction costs, building permanence, and operational maintenance costs.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

2 APPLICABLE CODES, RULES AND REGULATIONS

2.1 Federal Codes, Regulations, Standards, Acts and Manuals

In addition to all applicable DOE Orders, the construction shall comply with all applicable versions of the following Codes, Regulations, Standards, Acts, and Manuals. In case of any conflicts, the most stringent requirement shall apply. Any conflict between codes and standards will be sent to the BSA Technical Representative and resolved by DOE, if applicable. The following list identifies the codes and regulations in effect for projects at BNL. These are shared for the CMa awareness and informational purposes.

- International Code Council (ICC) International Building Code (IBC), and New York State (NYS) Supplements and Commentaries
- National Fire Protection Association (NFPA) National Fire Codes
- NFPA Standard 13, "Standard for the Installation of Sprinkler Systems"
- NFPA 70: National Electrical Code (NEC)
- National Electrical Safety Code, ANSI C2
- NFPA 70E: Standard for Electrical Safety in the Workplace
- Occupational Safety and Health Act (OSHA)
- Underwriters Laboratory (UL)
- Americans with Disabilities Act (ADA)
- Americans with Disabilities Act Accessibility Guideline (ADAAG)
- American National Standards Institute (ANSI) Standards
- ANSI A117.1 Accessible and Useable Buildings and Facilities
- DOE G 413.3-6A "High Performance Sustainable Building"
- DOE EO 14057 Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability
- The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Handbooks and Standards
- Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) Standards
- The American Society of Mechanical Engineers (ASME) Standards and Codes
- Telecommunications Industry Association (TIA)
- 29 CFR (Code of Federal Regulations) Part 1910 Occupational Safety and Health Standards
- 29 CFR Part 1926 Safety and Health Regulations for Construction
- 10 CFR Part 851 Worker Safety and Health Program
- DOE O 420.1C Facility Safety
- DOE-STD-1066-2016 Fire Protection
- DOE O5480.4 Environmental Protection, Safety and Health Protection Standards

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

- DOE O414.1D Quality Assurance
- Energy Independence and Security Act (EISA), Sect 438
- American Concrete Institute
- American Society for Testing Materials (ASTM) Standards
- National Environmental Policy Act (NEPA)
- National Fire Protection Association (NFPA) 1140 Standard for Wildland Fire Protection
- National Institute of Standards and Technology

2.2 New York State Codes

The construction and workmanship shall be in conformance with the applicable edition of the Codes, Rules and Regulations of the State of New York, including the Reference Standards. Any conflict between codes and standards will be sent to the BSA Technical Representative and resolved by DOE, if applicable. In particular, the following shall apply to this project. These are shared for the CMa awareness and informational purposes.

- National Electrical Code (NEC)
- Building Code of New York State, and NYS Supplements and commentaries
- Energy Conservation Construction Code of New York State
- Fire Code of New York State
- Fuel Gas Code of New York State
- Mechanical Code of New York State
- Plumbing Code of New York State
- Protection Against Legionella. 10 New York Codes, Rules and Regulations (NYCRR) Part 4 – Subpart 4-1, Cooling Towers
- New York State Department of Transportation Standard Specifications
- New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual (SMDM)
- NYSDEC Standards and Specifications for Erosion and Sediment Control (SSESC)
- Property Maintenance Code of New York State - 2020 Edition

2.3 Local Codes

Design work shall conform to the requirements of the Suffolk County Department of Health Services Sanitary Code as applicable and BNL's Standards Based Management System (SBMS). These are shared for the CMa awareness and informational purposes.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

2.4 EIC Code of Record (CoR)

This Code of Record (CoR) is comprised of a set of technical and operational requirements, including applicable laws, codes and standards which govern a design. These requirements were in effect at the time that the Electron-Ion Collider was designed and will be in effect when the EIC is constructed and modifications are made to the existing facility structures, systems, or components (SSCs). Additionally, this CoR is subject to change management for the life of the facility. These are shared for the CMa awareness and informational purposes.

Codes and Standards	Year/ Edition	Title
Federal Regulations and Laws		
10 CFR 835	2007	Occupational Radiation Protection
10 CFR 850	2021	Chronic Beryllium Disease Prevention
10 CFR 851	2023	Worker Safety and Health Program
10 CFR 1021	2012	National Environmental Policy Act (NEPA) Implementing Procedures
10 CFR 1022	2014	Compliance with Floodplain/Wetlands Environmental Review Requirements
29 CFR 1910	2020	Occupational Safety and Health Standards
29 CFR 1926	2020	Safety and Health Regulations for Construction
40 CFR 61 – Subpart A	2024	National Emissions Standards for Hazardous Air Pollutants (NESHAPs)- General Provisions
40 CFR 61 – Subpart H	2024	National Emission Standards for Hazardous Air Pollutants (NESHAPs) - National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities
National Fire Protection Association		
NFPA 10	2018	Standard for Portable Fire Extinguishers
NFPA 13	2022	Standard on the Installation of Fire Sprinklers
NFPA 14	2024	Standard for the Installation of Standpipe and Hose Systems
NFPA 51B	2024	Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70 (1)	2023	National Electric Code (design/purchase)
NFPA 70E	2021	Electrical Safety in the Workplace
NFPA 72	2022	National Fire Alarm and Signaling Code
NFPA 79	2021	Electrical Standard for Industrial Machinery
NFPA 80	2022	Fire Doors and Other Opening Protectives
NFPA 80A	2022	Recommended Practice for Protection of Buildings from Exterior Fire Exposures
NFPA 90A	2024	Standard for the Installation of Air-Conditioning and Ventilating Systems
NFPA 92	2021	Standard for Smoke Control Systems
NFPA 101	2021	Life Safety Code
NFPA 101A	2022	Guide on Alternative Approaches to Life Safety

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

NFPA 105	2022	Standard for Smoke Door Assemblies and Other Opening Protectives
NFPA 110	2022	Emergency and Standby Power Systems
NFPA 214	2021	Standard on Water-Cooling Towers
NFPA 220	2024	Standard on Types of Building Construction
NFPA 241	2022	Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 497	2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
NFPA 780	2023	Standard for Installation of Lightning Protection Systems
NFPA 790	2024	Standard for Competency of Third-Party Field Evaluation Bodies
NFPA 1144	2018	Standard for Reducing Structure Ignition Hazards from Wildland Fire
NFPA 1225	2022	Standard for Emergency Communications Services
International Standards Organizations		
ISO 21013-3	2016	Cryogenic Vessels - Pressure-Relief Accessories for Cryogenic Service Part 3: Sizing Capacity Determination
American Concrete Institute		
ACI CODE-318-19	2019	Building Code Requirements for Structural Concrete
American Institute of Steel Construction		
ANSI/AISC 360-22	2022	Specification for Structural Steel Buildings
American Society of Mechanical Engineers		
ASME (2)	2015	Boiler and Pressure Vessel Codes
ASME B30.26	2015	Rigging Hardware
ASME B31.3 (2)	2015	Process Piping
ASME B31.9 (2)	2014	Building Services Piping
ASME BPVC Section VIII		Rules for Construction of Pressure Vessels, Division 1, Rules for Construction of Pressure Vessels and Division 2, Alternative
ASME BTH-1	2017	Design of Below-the-Hook Lifting Devices
ASME Y14.5	2019	Geometric Dimensioning and Tolerancing Standard
ASME Y14.100	2017	Engineering Drawing Practices
American Welding Society		
AWS D17.2/D17.2M	2019	Specification For Resistance Welding For Aerospace Applications
U.S. Department of Energy		
DOE Order 414.1D, Chg. 2	2011	Quality Assurance
DOE Order 420.1C, Chg. 3	2019	Facility Safety
DOE-STD-1066	2023	Fire Protection
Building Code		
NYS Uniform Fire Prevention and Building Code	2020	Note: Previously approved by BHSO in CY2020

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

	2020	Fuel Gas Code of New York State
	2020	Mechanical Code of New York State
	2020	Plumbing Code of New York State
American Society of Heating, Refrigerating and Air-Conditioning Engineers		
ASHRAE 62	2022	Standards for Ventilation and Indoor Air Quality
ASTM International		
ASTM C1055	2020	Standard Guide for Heated System Surface Conditions that Produce Contact Burn Injuries
Underwriters Laboratory		
UL 508	2024	Standard for Industrial Control Equipment
UL 508A	2020	Industrial Control Panels

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

3 CONSTRUCTION MANAGER AS ADVISOR SCOPE OF WORK

3.1 General

The success of DOE-funded projects requires excellence in project management practices, both functional requirements practices and business practices. The CMa will be required to use sound, disciplined, and up-front project planning. Effective communication will be critical and must be established amongst the integrated project team.

The full scope of work for CMa services includes:

- Pre-Construction Support Services

3.1.1 CMa Staffing

The CMa shall assign and dedicate personnel to this project sufficient in number, and with the requisite expertise and experience, to perform the duties described in this Statement of Work (SOW) and in the CMa Contract. BSA anticipates that the CMa will supplement the core staff as needed with other CMa-contracted employees, consultants, and/or lower-tier contractors who will complement the core staff and provide the additional support needed as the demands of the project fluctuate. Having adequate staff as needed for the project is a requirement of the Contract and is the responsibility of the CMa. Hereinafter, reference to 'CMa' shall imply the CMa and/or all CMa-contracted consultants, lower-tier contractors, and/or other staff.

3.1.2 Project and Business Management

The CMa shall provide the project management resources, tools, and interpersonal skills used to manage a CMa project team and partner with the broader team of A/E, BSA, and specialty consultants.

In addition to the potential use of multiple office locations, when appropriate, some CMa services may be carried out remotely, thus requiring remote working environment guidelines, operating procedures, and personnel experienced in working as part of virtual teams. See sections 4.3 and 7.6.

The CMa will schedule and conduct meetings as necessary for the successful completion of the project. The CMa will schedule and coordinate with the BSA Technical Representative; provide advance notice of meetings to attendees; prepare and distribute agendas to all attendees before meetings; and chair meetings, addressing all old and new business, recording minutes, and controlling discussions to focus on results.

3.1.3 Partnering

In order to most effectively accomplish work associated with this SOW, BSA intends to form a cohesive partnership with the CMa and the A/E firm and its consultants, to ensure timely and cost-effective, safe and quality completion of work associated with this SOW. This partnership would strive to draw upon the strength of each organization to achieve a quality project. It would include, but not be limited to, consideration of all parties' interests and requirements; fostering clear, objective communication among all persons who are involved; development of mutual goals and objectives and strategies for implementation and periodic objective evaluation to ensure these goals and objectives are being met.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

3.1.4 ESH

The CMa shall support BSA's commitment to the health and safety of workers and the public and to protecting the environment. All work shall be performed safely and will adhere to all applicable laws and requirements. Integral to this being accomplished is the workers' commitment to working safely and to working to meet the requirements. The CMa shall support the Environment, Safety and Health (ESH) commitment and incorporate relevant recommendations and findings into each deliverable.

3.1.5 Travel

Representatives of the CMa shall travel in support of tasks such as site assessments and preconstruction activities. All costs for travel shall be included in the fixed price as outlined in the Contract. See sections 4.2, 4.3 and 7.6 for more information on travel expectations.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

4 PRE-CONSTRUCTION SUPPORT SERVICES

Upon BSA's issuance of a Notice to Proceed for Pre-Construction Support Services, the CMa shall commence the Pre-Construction Support Services in accordance with this document. The CMa will be part of a collaborative and integrated project team. BSA expects all members of this team to work together in a professional manner. Pre-Construction Support Services shall include the following, as further described herein:

- CMa Pre-Construction Support Services Team
- Training
- Meetings
- Utilization of Building Information Modeling (BIM)
- Deliverables per milestone schedule in section 6.1, for EIN Infrastructure construction at approximately 192,000 gross square feet.:
- Immersion Workshop participation
- Constructability Workshop
- Value Engineering Workshop participation
- Cost scrubbing reports
- Design Reviews
- BIM reports
- Constructability Reviews of Design and Construction Documents
- Detailed Project Construction Cost Estimates
- Comprehensive Cost- Loaded Construction Schedules
- Review of Project Commissioning Plan and Specification
- Long Lead Item Report and Estimate
- Additional Deliverables, see section 4.15

4.1 Training

All CMa personnel visiting construction areas will be required to attend the BNL Contractor-Vendor Orientation Training, General Employee Radiation Training (GERT), and TQ-Barricades as needed for access to the site. CMa personnel visiting BNL for meetings shall complete Guest Site Orientation training.

4.2 Site Visits

The CMa pre-construction team shall visit the site for a preliminary investigation of existing conditions. Prior to visiting, the CMa shall familiarize themselves with the conceptual design and complete training as required. This shall occur prior to second immersion workshop and as needed thereafter.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

4.3 Meetings

The CMa's pre-construction team will be expected to participate in meetings as needed through remote support. In-person meetings shall be held at BNL, a total of five (5) times during the period of performance. The objectives, content, and goals for these meetings will be developed in advance by the integrated project team to ensure meetings are efficient and productive, and appropriate team member attendance can be planned.

4.4 BIM

The design development process is expected to use building information modeling (BIM-Revit files), with transfer of the model to the CMa for use in multiple construction processes. The CMa shall utilize the BIM model in addition to the design documents to complete pre-construction reviews, Mechanical, Electrical, and Plumbing (MEP) coordination, clash detection, trade interface and coordination to inform constructability reports, and to support estimate development where practical. As a result of these requirements, the CMa shall provide the appropriate staffing and resources such as computing equipment, licenses, and associated systems for utilization during pre-construction to meet these expectations. The CMa shall submit this BIM report within two (2) weeks of receipt of the 90% and 100% Detailed Design submittals.

4.5 Immersion Workshops

Immersion workshops with project stakeholders will be conducted throughout the design phase. These will be led by the A/E. This will impart user needs and design requirements to affirm the scope and kick-off design progression milestones. Participation from the CMa team will be as an active advisor. The CMa shall share input on constructability, cost and schedule. A total of four (4) Immersion workshops will be conducted during EIN design.

4.6 Value Engineering

A Value Engineering (VE) study of the A/E 60% Preliminary Design and 60% Final Detailed Design shall be performed by the A/E, CMa, and an independent committee established by the BSA. The CMa shall at each instance provide three team members (Civil, Mechanical and Electrical), with expert construction knowledge. The CMa shall work with the VE team to discuss, assess and recommend opportunities based on the designs. Through the breakout, evaluation and development phases of the VE, the CMa shall collaborate with the VE team to provide technical input, support the development of cost estimates and VE recommendations. This effort in each instance will be five (5) days long.

The VE committee's recommendations, as accepted by the BSA IDD, shall be incorporated into the preliminary and final designs, respectively. Additional meetings may be required to evaluate the recommendations.

4.7 Constructability Workshop

The CMa shall host a virtual constructability workshop with the EIC infrastructure team and the A/E. It shall be based on the 60% preliminary design submittal. The purpose of the workshop is to identify and evaluate project scope that can be constructed efficiently, safely, and as intended. At a minimum,

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

buildability, sequencing, conflicts and safety risks shall be assessed. Prior to scheduling, the CMa shall submit a draft agenda for BSA review, and the workshop should not run longer than seven (7) hours.

The constructability workshop shall also establish the basis of future constructability reports (see section 4.8) as the design progresses. Ensuring key areas for the project's success are evaluated. The framework shall address strategies to minimize project costs and schedule growth, reduction of request for information (RFI) and claims, and improved construction efficiency.

At the conclusion of the workshop, findings and recommendations shall be prepared and sent to the IDD for review and acceptance.

4.8 Constructability Reviews

The CMa shall schedule and conduct Constructability Reviews per required milestone deliverable and shall be completed within two (2) weeks receipt of each design submittal. These shall be delivered utilizing the findings of the Constructability workshop in addition to the elements outlined in this section. Each review shall leverage the CMa's construction means and methods expertise, their access to available resources, their problem-solving capabilities, and their innovation capacity. Constructability Reviews will also leverage the CMa's understanding of project and program objectives to professionally assess the extent to which the design of the EIN Infrastructure facilitates ease of construction, and to assess construction processes from start to finish to identify obstacles, minimize or prevent errors or delays, minimize costs, and maximize value to the EIN. As the design progresses, the constructability reviews shall increase in depth extending beyond but not limited to the elements listed in section 4.8.1.

The CMa shall provide a written Constructability Review Report.

4.8.1 Preparation of Constructability Review Reports based on Design Documents and Construction Documents

Within two (2) weeks receipt of each Design submittal, the CMa shall review and evaluate the associated proposed designs against the construction process, from start to finish, to identify obstacles, prevent errors and delays, and avoid potential cost overruns. Items shall also be identified that, in the opinion of the CMa, could result in change orders due to ambiguity in the documents or lack of coordinated trade work packages.

a. Recommended bid packages

b. The following shall be the key areas in the review:

   i. Design schedules are construction-driven

   ii. Designs are configured to enable efficient construction

   iii. Design elements are standardized

   iv. Construction efficiency is considered in specification development

   v. Modular/preassembled designs are prepared to facilitate fabrication, transport, and installation

   vi. Designs promote construction accessibility of personnel, material, and equipment

   vii. Designs facilitate construction under adverse weather conditions

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

c. Input from the CMa shall also be provided but not limited to the additional areas below:
   i. Site logistics
   ii. Temporary facilities
   iii. Proximity of existing subsurface utilities
   iv. Review of Geotechnical report, soil conditions and compatibility with the scope of work (when available)
   v. Demolition works clearly detailed
   vi. Existing to remain property clearly detailed
   vii. Work by others clearly detailed
   viii. Sufficient design coordination, clash detection and modeling completed
   ix. Connection point or integration with existing facilities is feasible as detailed
   x. Construction safeguards
   xi. Permit requirements
   xii. Adequate survey data in place, correct datum and coordinate system
   xiii. Construction scope is clear on the plans and in the specifications
   xiv. Inspection requirements are clear
   xv. Delegated design requirements

d. The CMa shall be expected to tailor the level of effort required based on the need to identify constructability/buildability issues as early in the design process as feasible.

e. Special emphasis shall be placed on the incorporation of safety standards, and the review shall strive to ensure construction safety is "designed-in" to the project for increased effectiveness, mitigation of hazards, and to avoid costly changes.

f. Constructability review is not required for the Final Detailed Design submittal.

4.9 Design Reviews

The CMa shall provide design review comments based on each design deliverable. In addition, the CMa shall provide improvements and recommendations to enhance buildability, support plan production, improve ease of interpretation and ensure clear traceable requirements for the construction contractor to work with upon award. The Design Reviews shall be completed two (2) weeks after receipt of each design submittal.

- The project shall utilize Bluebeam construction software during the design review phases, to record comments in each design deliverable by the A/E. The CMa shall participate and comment in these Bluebeam Studio Sessions and follow BSA guidance so comments can be sorted per discipline.
- The CMa shall participate in the Design Reconciliation meetings with the A/E and provide support in the resolution of related comments.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

4.10 Cost Scrubbing Review

The CMa shall review each design deliverable for opportunities to improve cost efficiency, reduce preventable exposure to costs and help maintain alignment with the EIN project budget. The review shall not redefine scope functions or alter the basis of design. It shall at a minimum consider excessive cost drivers, specification driven cost premiums and labor-intensive aspects of the design. The report shall include comparison details with cost and schedule savings based on the opportunities identified by the CMa. Recommendations and findings shall be prepared and sent to the IDD for review and acceptance. Reviews shall be completed within five (5) weeks of each Preliminary Design submittal and within six (6) weeks of each Detailed Design submittal. This is not required for the 100% and Final Detailed Design submittals.

4.11 Detailed Construction Cost Estimates

Preparation of detailed Cost Estimates shall be based on each design deliverable.

The CMa shall submit associated detailed construction cost estimates in Excel format for BSA review and approval. The CMa estimates shall be in the BSA Work Breakdown Structure (WBS) format and shall be based on a detailed quantity takeoff of the design drawings and specifications. Estimate format and structure shall be reviewed and approved by the BSA Technical Representative prior to execution.

The CMa shall be required to meet with the A/E, and the EIC Infrastructure Division Director (IDD) to reconcile cost discrepancies between the estimates. This shall be performed for the 60%, 90% and 100% Detailed Design Cost Estimates. The CMa's estimates shall be based on the CMa's detailed quantity takeoffs of the A⁄E's drawings and specifications. The CMa shall obtain the EIC Infrastructure Division Director's written approval of the estimate format and structure prior to proceeding with the estimate. At the same time the CMa performs the Project Construction Cost Estimates, it shall conduct reviews to determine and identify items or elements that could lead to a higher cost of bids for the Bid Packages, and/or lead to change orders resulting from ambiguities, coordination between various trades, errors, and/or omissions in the lower-tier subcontracting documents. The CMa shall present its results in a written report to the EIC Infrastructure Division Director and meet with both the EIC Project team and the A/E to present and explain its findings.

The cost estimate reconciliation meetings shall be held immediately following the submission of estimate. Revised CMa estimate(s) based on reconciliation meetings shall be submitted within two (2) weeks of the meeting date. The CMa shall maintain the cost estimate up-to-date to reflect changes in materials and labor costs as well as changes in scope. The CMa shall submit the detailed construction cost estimates in Excel format for BSA review and approval.

4.11.1 Construction Cost Estimate Requirements

In accordance with the applicable specifications, referenced documents, and instructions as defined in this Statement of Work, each independent cost estimate shall be performed for the EIN project deliverables as defined by the WBS Dictionary. The WBS Dictionary shall be provided to the CMa post award.

The CMa is to review the basis of design documents, construction specifications and drawing packages provided by BSA and develop cost estimates for executing the scope of work for comparison with cost estimates developed by the Architect/Engineering firm assigned to the project and/or BSA.

The estimates shall include a brief narrative that includes the following elements: purpose of estimate, scope of work (i.e., plans and specifications used, equipment lists or data sheets used, duration and sequencing of

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

unique sections of the work, and site restrictions or constraints), base assumptions, cost resources, markups (i.e., overhead, profit, mobilization, bond and insurance, escalation, and contingency), schedule, allowances, constructability (i.e., issues noted during preparation of the estimate) and construction cost index. BSA shall define the assumptions for design contingency and escalation to be used.

The drawing packages and construction specifications utilized to develop the construction cost estimates shall be based on the governing documents per design submittal/milestone (i.e. 90% Detailed Design) as provided by BSA. The independent construction cost estimates shall be performed in at-year dollars in accordance with the Association for the Advancement of Cost Engineering (AACE) Cost Estimate Classes equivalent to the design milestone-based deliverable.

The estimates shall include the following backup documentation consistent with the requirements of an AACE Cost Estimate Class 1 when applicable:

- Equipment cut sheets used as the basis for vendor equipment quotes
- Well-organized lists of material quantities associated with each facility that can be quantified (quantities organized by specification section and facility for easy reference between the estimate and support documentation)
- Vendor or subcontractor quotes for equipment or services quoted for the estimate
- Construction Cost Index assigned to the estimate
- Cost development information (crew cost and productivity assumptions)
- Other cost development information (references to applicable cost guides used to support individual unit costs, applicable labor rates, etc.)
- Computer spreadsheets or estimating software output that summarize the detailed cost and summary information for the estimate
- Estimates shall include midpoint of construction costs as a separate column within the estimate

Upon receipt of the Construction Cost Estimate, BSA will review and provide comments as necessary, which will be further discussed in an estimate review meeting, based on all Cost Estimates. The goal of the estimate review meetings is to ensure the scopes are aligned, rates are reasonable, and risks are appropriately captured. BSA, CMa Construction Cost Estimate reconciliation meetings shall be held remotely.

4.12 Comprehensive Cost- Loaded Construction Schedule

Preparation of detailed construction schedules based on each design deliverable.

Within five (5) weeks of each Preliminary Design submittal and within six (6) weeks of each Detailed Design submittal, the CMa shall submit associated comprehensive Critical Path Method (CPM) construction schedules using Primavera P6 for BSA review and approval.

The CPM schedule shall reflect the project delivery under optimum conditions, assuming timely approvals, procurement, and resource availability, unless otherwise specified by BSA. The CMa shall use input from BSA on this strategy for the development of a CPM schedule. The CMa shall prepare preliminary Critical Path Method (CPM) schedules, showing all project related construction activities, logic ties and milestones.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

Within two (2) weeks of completing a Construction Cost Estimate, the CMa shall cost-load the draft schedule with the reconciled cost estimate and produce a monthly budgeted cost of the construction work. CPM schedules are to be produced in an Oracle supported version of Primavera P6 or P6-compatible software.

4.13 Review of Project Commissioning Plan and Specification

BSA shall retain an independent third-party Commissioning Agent (Cx) for the duration of the project. The Cx shall prepare a Commissioning Plan, schedule, and specifications during the pre-construction period.

Within two (2) weeks of receipt of the Commissioning Plan and specifications, the CMa shall review the plan and preliminary specifications and provide comments and/or suggestions for consideration as required. Commissioning activities shall be identified in the CMa schedule preparation.

4.14 Long Lead Item Report and Estimate

To ensure project milestones can be met, the CMa will need to identify long lead equipment which may impact schedule goals. These may include 13.8kV/480V unit substation and other custom equipment. The long lead items will be identified for planning purposes and procured by BSA. These are items with a lead time greater than one year or items that could be categorized as an impact to the project's critical path found during the comprehensive construction schedule development. The review of long lead items shall be presented in a report and an estimate for the items' cost shall be included. The review and estimate of long lead items shall be completed two (2) weeks after receipt of the 60% Detailed Design submittal.

4.15 Additional Deliverables

The CMa shall be responsible for providing deliverables to BSA in conjunction with the outlined pre-construction management services, which include supporting documents, drawings, and model files, along with the data management services necessary to support the EIC Infrastructure pre-construction activities. These deliverables shall be provided as follows:

4.15.1 Virtual Networking

Given the nature of the project and the many parties involved that will make up the integrated project team, the CMa must establish and maintain a virtual network to support the efficient and dynamic sharing of data and files remotely. Solutions may include cloud-based software tools with the appropriate administrative controls and features. This network and associated applications must be maintained throughout the project lifecycle.

4.15.2 File Management

Wherever feasible, all required documentation shall be submitted to BSA in an electronic format acceptable to the EIC Electronic Information Management System, in addition to any other formats. The cost estimate documents shall also be provided in an Excel-compatible file (CSV or text format).

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

5 QUALITY ASSURANCE

The CMa is responsible for the professional quality, technical accuracy, and the coordination of all documents and other services furnished under this Contract.

It is the responsibility of the Contractor to flow down and impose applicable technical and quality assurance requirements upon their contractors and subcontractors. BSA reserves the right to disapprove, in writing, any contractor or subcontractor.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

6 DELIVERABLES

6.1 Key Deliverables Milestone Schedule

The table below outlines the key deliverables milestone schedule.

Key Project and Deliverable Milestone Schedule		
No.	**Deliverable**	**Completion Date**
	Conceptual to 60% Preliminary Design	
1	1st Immersion Workshop with Project Stakeholders, led by A/E	NTP (1) * + 2 weeks
2	CMa Site visit	NTP (1) * + 4 weeks
3	2nd Immersion Workshop for connection of Injector to existing RHIC tunnel, led by A/E	NTP (1) * + 6 weeks
4	CMa 60% Preliminary Design Deliverables • Design review comments • Cost estimate • Host constructability workshop • Constructability review & report	NTP (1) * + 12 weeks
5	60% Preliminary Design Reconciliation Meeting	NTP (1) * + 13 weeks
6	Value Engineering (VE) Study, led by AE for 60% Preliminary Design	NTP (1) * + 14 weeks
7	60% Preliminary Cost-Loaded Construction Schedule	NTP (1) * + 15 weeks
8	60% Preliminary Design based Cost Scrubbing Report	NTP (1) * + 15 weeks
	60% Preliminary Design to 90% Final Preliminary Design	
9	3rd Immersion Workshop Kick-off meeting for 90% Preliminary Design, led by A/E	NTP (1) * + 16 weeks
10	CMa 90% Preliminary Design Deliverables • Design review comments • Cost estimate • Constructability review & report	NTP (1) * + 27 weeks
11	90% Preliminary Design Reconciliation Meeting	NTP (1) * + 28 weeks
12	90% Preliminary Cost-Loaded Construction Schedule	NTP (1) * + 30 weeks
13	90% Preliminary Design based Cost Scrubbing Report	NTP (1) * + 30 weeks
	Final Preliminary Design	
14	CMa Final Preliminary Design Deliverables	NTP (1) * + 32 weeks

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

	• Design review comments • Cost estimate • Constructability review & report	
15	Final Preliminary Cost-Loaded Construction Schedule	NTP (1) * + 35 weeks
16	Final Preliminary Design based Cost Scrubbing Report	NTP (1) * + 35 weeks
	Detailed Design	
17	BSA- Preliminary Design Report Approval, NTP (2) start	NTP (1) * + 38 weeks
18	4th Immersion Workshop Kick-off meeting for Final Detailed Design, led by A/E	NTP (2) **+ 2 weeks
19	CMa 60% Detailed Design Deliverables • Design review comments • Cost estimate • Constructability review & report • Long lead material report and estimate	NTP (2) ** + 14 weeks
20	Reconciliation Meeting 60% Detailed Design	NTP (2) ** + 16 weeks
21	60% Detailed Design Cost-Loaded Construction Schedule	NTP (2) ** + 18 weeks
22	60% Detailed Design based Cost Scrubbing Report	NTP (2) ** + 18 weeks
23	Value Engineering (VE) Study, led by AE for 60% Detailed Design	NTP (2) ** + 26 weeks
24	CMa 90% Detailed Design Deliverables • Design review comments • Cost estimate • Constructability review & report • BIM report	NTP (2) ** + 30 weeks
25	Reconciliation Meeting 90% Detailed Design	NTP (2) ** + 32 weeks
26	90% Detailed Design Cost-Loaded Construction Schedule	NTP (2) ** + 34 weeks
27	90% Detailed Design based Cost Scrubbing Report	NTP (2) ** + 34 weeks
28	CMa 100% Detailed Design Deliverables • Design review comments • Cost estimate • Constructability review & report • BIM report	NTP (2) ** + 38 weeks
29	100% Detailed Design Cost-Loaded Construction Schedule	NTP (2) ** + 42 weeks
30	CMa Final Detailed Design Deliverables • Design review comments • Cost estimate	NTP (2) ** + 42 weeks

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

31	Final Detailed Design Cost-Loaded Construction Schedule	NTP (2) ** + 46 weeks
32	Review of EIN Commissioning Plan and Specifications	Two (2) weeks after Commissioning Plan and Specification submittal

6.2 Anticipated A/E and Cx Agent Deliverables

The A/E and CMa schedule shall run parallel. Should any changes occur, consult with BSA Technical representative. A/E deliverables applicable to the CMa's Deliverable Milestone Schedule are outlined below.

Key Deliverables by Others (for reference)		
No.	**Deliverable by Other**	**Date**
	Conceptual to 60% Preliminary Design	
A/E1	Conduct 1st Immersion Workshops with Project Stakeholders	NTP (1) * + 2 weeks
A/E3	Conduct 2nd Immersion Workshops for connection of Injector to existing RHIC tunnel	NTP (1) * + 6 weeks
A/E4	60% Preliminary Design Submittal & Cost Estimate	NTP (1) * + 10 weeks
A/E5	BSA 60% Preliminary Design & Cost Estimate Review comments to A/E	NTP (1) * + 12 weeks
A/E6	60% Preliminary Design Reconciliation Meeting	NTP (1) * + 13 weeks
A/E7	Conduct Value Engineering (VE) Study	NTP (1) * + 14 weeks
	60% Preliminary Design to 90%/Final Preliminary Design	
A/E8	3rd Immersion Workshops Kick-off meeting for 90% Preliminary Design	NTP (1) * + 16 weeks
A/E9	90% Preliminary Design Submittal & Cost Estimate	NTP (1) * + 25 weeks
A/E10	BSA 90% Preliminary Design & Cost Estimate Review comments to A/E	NTP (1) * + 27 weeks
A/E11	Final Preliminary Design Report reconciliation meeting	NTP (1) * + 28 weeks
	Final Preliminary Design	
A/E12	Final Preliminary Design Report (PDR) submittal	NTP (1) * + 30 weeks

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

A/E13	BSA PDR & Cost Estimate Review Comments to A/E	NTP (1) * + 32 weeks
A/E14	Final (Reconciled) Preliminary Design Report & Cost Estimate submittal	NTP (1) * + 34 weeks
	Detailed Design	
A/E15	BSA- PDR Approval, NTP (2) start	NTP (1) * + 38 weeks
A/E16	4th Immersion Workshops Kick-off meeting for Final Detailed Design	NTP (2) **+ 2 weeks
A/E17	60% Detailed Design Submittal & Cost Estimate	NTP (2) ** + 12 weeks
A/E18	BSA 60% Detailed Design & Cost Estimate Review comments to A/E	NTP (2) ** + 14 weeks
A/E19	Reconciliation Meeting 60% Detailed Design	NTP (2) ** + 16 weeks
A/E20	BSA Approval of 60% Detailed Design	NTP (2) ** + 18 weeks
A/E21	Issue Final Design Review (FDR) Report	NTP (2) ** + 20 weeks
A/E22	Conduct Value Engineering (VE) Study	NTP (2) ** + 26 weeks
A/E23	90% Detailed Design Submittal & Cost Estimate	NTP (2) ** + 28 weeks
A/E24	BSA 90% Detailed Design & Cost Estimate comments to A/E	NTP (2) ** + 30 weeks
A/E25	Reconciliation Meeting 90% Detailed Design	NTP (2) ** + 32 weeks
A/E26	100% Detailed Design Submittal	NTP (2) ** + 36 weeks
A/E27	BSA 100% Detailed Design & Cost Estimate comments to A/E	NTP (2) ** + 38 weeks
A/E28	Final 100% Detailed Design & Cost Estimate submittal	NTP (2) ** + 40 weeks
A/E29	Final Construction Packages Bid Issue and Cost Estimates (including alternates)	NTP (2) ** + 42 weeks
	Commissioning Agent Deliverables	
CX1	EIN Commissioning Plan and Specifications	When available

*NTP (1) Notice to proceed with Preliminary Design preconstruction support services
**NTP (2) Notice to proceed with Detailed Design preconstruction support services

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

7 PROJECT ADMINISTRATION

7.1 General

The purpose of this section is to outline specific requirements for the project coordination process and for interaction between BSA, the A/E, and the CMa.

7.2 BSA Project Team Directory

Brookhaven Science Associates (BSA):

- BSA EIC Project Director (PD)
- BSA Project Manager (PM)
- BSA EIC Infrastructure Division Director (IDD)
- BSA EIC Infrastructure Construction Project Manager/ Technical Representative
- BSA Environment, Safety & Health (ESH) Representative
- BSA EIC Contractual Representative

7.3 Architect /Engineer (A/E):

- A/E Project Executive
- A/E Project Engineer/Architect

7.4 Construction Manager as Advisor (CMa):

- Project Executive
- Project Manager

Note: It is expected that the CMa team will remain constant for the Contract. If changes are required, they are subject to BSA approval.

7.5 Coordination and Communication

The CMa shall coordinate design and technical issues with the BSA Technical Representative and the designated A/E representative. All decisions shall be documented by the CMa and copied to the BSA Technical Representative.

The CMa team members may communicate directly with corresponding BSA and A/E design team members concerning coordination of efforts, systems selection, coordination of information on drawings and specifications, and other design and technical issues. All decisions shall be documented by the CMa and copied to the BSA Technical Representative.

Docusign Envelope ID: C88AE10C-59EF-8377-815B-4FD20F5E581B

7.6 Meetings

The CMa shall be responsible for participating in regular meetings at BNL throughout the period of performance for the purpose of project design reviews, project progress, and presentation meetings. Meetings shall be scheduled at agreed-upon locations as required in this document.

7.7 Telephone and On-Line Communications

The CMa shall document in writing to the BSA Technical Representative all telephone and online communications (such as Teams/Zoom calls and chat) that result in interpretation, changes, additions, or deletions to the program and/or design criteria requirements.

7.8 Transmittals

All technical correspondence and submittals shall be routed through the BSA Technical Representative and shall be accompanied by a written and dated transmittal that describes the information submitted and action or response required along with the date requested for action or response. Each transmittal shall include the BSA Contract and job numbers. All correspondence and submittals shall be in an electronic format.