OMB Number: 4040-0004
Expiration Date: 12/31/2022

## Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: Completed by Grants.gov upon submission.

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

**State Use Only:**

6. Date Received by State:

7. State Application Identifier:

**8. APPLICANT INFORMATION:**

* a. Legal Name: Hugo W. Moser Research Institute at Kennedy Krieger Inc

* b. Employer/Taxpayer Identification Number (EIN/TIN): 52-1524967

* c. Organizational DUNS: 1553424390000

**d. Address:**

* Street1: 707 N Broadway
Street2:
* City: Baltimore
County/Parish:
* State: MD: Maryland
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 21205-1832

**e. Organizational Unit:**

Department Name:

Division Name:

**f. Name and contact information of person to be contacted on matters involving this application:**

Prefix:
* First Name: Christine
Middle Name:
* Last Name: Collins
Suffix:

Title: Assoc. Director, Research Programs

Organizational Affiliation:

* Telephone Number: 443-923-9188
Fax Number:

* Email: kki.researchadmin@kennedykrieger.org

## Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

M: Nonprofit with 501C3 IRS Status (Other than Institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Economic Development Administration

**11. Catalog of Federal Domestic Assistance Number:**

11.300

CFDA Title:

Investments for Public Works and Economic Development Facilities

*** 12. Funding Opportunity Number:**

PWEAA2020

* Title:

FY 2020 EDA Public Works and Economic Adjustment Assistance Programs including CARES Act Funding

**13. Competition Identification Number:**

PW-EAA-C

Title:

EDA Construction Full Application 11.300 and 11.307

**14. Areas Affected by Project (Cities, Counties, States, etc.):**

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

FM Kirby Center: Magnetic Particle Imaging (MPI) Scanner Expansion

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

## Application for Federal Assistance SF-424

**16. Congressional Districts Of:**

* a. Applicant MD-007 * b. Program/Project MD-007

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

**17. Proposed Project:**

* a. Start Date: 11/01/2020 * b. End Date: 06/30/2021

**18. Estimated Funding ($):**

| | |
|---|---|
| * a. Federal | 640,000.00 |
| * b. Applicant | 160,000.00 |
| * c. State | 0.00 |
| * d. Local | 0.00 |
| * e. Other | 0.00 |
| * f. Program Income | 0.00 |
| * g. TOTAL | 800,000.00 |

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

**21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix: * First Name: Christine

Middle Name:

* Last Name: Collins

Suffix:

* Title: Assoc. Director, Research Programs

* Telephone Number: 443-923-9188 Fax Number:

* Email: collinsc@kennedykreiger.org

* Signature of Authorized Representative: Completed by Grants.gov upon submission. * Date Signed: Completed by Grants.gov upon submission.

# ED-900 – General Application for EDA Programs

## A. Applicant Information

A.1. EDA Application Identifier (if available):

A.2. Please identify all applicants for this project:

| | Name | SAM.gov CAGE Code | SAM.gov Registration Expiration Date | Fiscal Year End Date (mm/dd) |
|---|---|---|---|---|
| Lead Applicant | Hugo W. Moser Research Institute at Kennedy Krieger Inc | 47VT8 | 01/26/2021 | 06/30 |
| Co-Applicant 1 | | | | |

## B. Project Information

**B.1. Provide a geographical definition of the region to be served by the investment (project), including the specific geographic location of the project within the region.**

The Hugo W. Moser Research Institute at Kennedy Krieger (referred to as 'Kennedy Krieger' within this application) houses the F.M. Kirby Center for Advanced Neuroimaging which provides state-of-the-art MRI scanning to researchers in the Baltimore-Washington region, across the country and internationally. The F.M. Kirby Center is located in urban East Baltimore, Maryland, within KKI’s main hospital and research campus, where the proposed construction will occur.

Baltimore is a mid-sized city of 81 square miles. According to U.S. Census Bureau 2019 data, the city’s estimated population is 593,490, making it the 26th largest city in the nation. Baltimore accounts for roughly 23 percent of the region’s total population of 2.7 million. Compared with the U.S. as a whole, and other Maryland cities, Baltimore is significantly more racially diverse, and has the 9th largest African American population in the U.S. In the City of Baltimore, 62.5% of residents are Black or African American, 27.5% are white, 5.1% are Hispanic or Latino, 2.6% are Asian, 2.5% are two or more races.

Baltimore’s East Coast location in the Washington D.C.- Boston corridor along Interstate-95 links it to substantial economic opportunity. With more than 500 biotechnology companies in the state, Maryland’s life sciences sector is thriving. The Greater Baltimore region has successfully transitioned from its origins as a shipping and manufacturing port to become an established hub of research in life sciences, biohealth and biotechnology research. The BioHealth Capital Region includes Maryland, Virginia, and Washington DC, and is home to 800 life science companies, as

well as three of the top life science universities in the country, including Johns Hopkins University, University of Maryland Baltimore, and University of Maryland Baltimore County. These institutions and businesses draw together a scientific community that is driving the regional transition from a post-industrial economy to one fueled by innovation. The Kirby Center is within a one-hour drive of 74 federal labs, including all of the NIH's 27 institutes, labs at the Aberdeen Proving Ground, and the NIH Biomedical Research Center at the Johns Hopkins Bayview Medical Campus.

**B.2. Describe and outline the scope of work for the proposed EDA investment, including a list of tasks to be undertaken.**

Under the F.M. Kirby Center: Magnetic Particle Imaging (MPI) Scanner Expansion project, KKI will renovate the F.M. Kirby Center, located at 707 North Broadway, Baltimore, MD 21205, to house an MPI scanner facility. Magnetic particle imaging is an emerging imaging technology that is expected to change the landscape of modern medical imaging and research. It allows fast tracking of cells and nanoparticles in the body and brain. There are only five MPI scanners in the United States, and currently none in KKI's east coast region. Positioning the new facility as an MPI hub will attract users from well outside of the Mid-Atlantic region and support global biohealth research. KKI received an equipment grant from the National Institutes of Health to purchase the MPI scanner and related equipment.

Accelerating COVID-19 research and effective treatment: MPI scanning technology has important applications for COVID-19 research. Recent studies show that the disease can lead to substantial inflammation in the lung, heart, and intestinal organ systems, with emerging data to suggest that other organ systems are also involved. The MPI scanner will allow investigators to study COVID-19 related inflammation on a scale that is currently unavailable. In the MPI laboratory, researchers can inject animal subjects with magnetic particles that are taken up by macrophages, the first immune cells to arrive at inflammation sites. MPI scans can track macrophages by taking whole body images of all organs to understand when and where inflammation occurs. One new application will be to study how macrophages "overreact" as a result of COVID-19 and cause organ damage. This research will support the study of new experimental drugs to suppress severe inflammation, as well as treatments to eradicate the effects of the virus. The F.M. Kirby Center will be one of a few national facilities that can provide this expertise and technology.

The F.M. Kirby Center is open to academic and industry-based researchers, with resources that support a wide variety of private and higher educational users whose research relies on access to scanning facilities and equipment. Over 90% of the researchers who pay to use the F.M. Kirby Center are from outside institutions. Currently, 10 laboratories are ready to use the new MPI scanner facility. KKI estimates that the MPI scanner facility will initially create at least 22 new jobs via researcher grants in the next two years and will preserve 16 existing positions. The F.M. Kirby Center has a 25-year track record with more than 100 laboratory users of their current scanning equipment. The MPI Scanner to increase users by 10 in year 1 and is expected to ramp up to 20 users by year 2. While some of the positions created will most likely be suitable to PhD-level scientific researchers, many positions will also be created for lab technicians and support staff which are often hired from the comm Because

the Center is available to numerous academic and industrial researchers, many more undergraduate students, graduate students, physicians and researchers will be trained to design studies and use the MPI scanner, enhancing their competitiveness in the national job market. All users sign an agreement that stipulates fees, safety measures, and other terms of use.

Capital renovation project plans: KKI will build out the new MPI scanner suite within the existing footprint of the F.M. Kirby Center (which has a total of 161,833 square feet). The building that houses the F.M. Kirby Center is located at 707 North Broadway, Baltimore, MD 21205, and owned by Madison Street Properties, Inc. (MSP), a nonprofit property holding company operated solely for the charitable, scientific, and educational purposes of KKI and its affiliates. The 1,065 square foot MPI scanner facility will be accessibly located on the ground floor of the Kennedy Krieger Children's hospital, with nearby parking. Its location within the larger hospital provides for well-established safety protocols and security measures for all staff and users.

Renovations will relocate an existing vending machine area elsewhere in the building to create space for the MPI scanner suite, and associated storage rooms. A new rooftop nano chiller will be installed to support the MPI and hyper theranostic equipment. The renovated MPI suite will include silicon steel shielding, new cabinetry, wall protection, a stainless-steel worktable and access to required gases. The project includes new finishes (walls, flooring, and ceilings); under slab trenching for below-grade plumbing to support the new equipment; electrical upgrades; and reconfiguring the above-ceiling ductwork. Construction will include demolition to walls, floors and ceilings on the first and second floors of the existing building to access the mechanical shafts that will accommodate the new gas lines and infrastructure for the new rooftop chiller.Project plans include repairing these areas and replacing finishes.

Key tasks will include:
1. Meeting with the architect and KKI personnel team who will manage the new MPI scanner suite to define scope and physical requirements of the equipment and space.
2. Working with the selected architect and engineers to design the space and obtain permits.
3. Obtaining permits from the City of Baltimore.
4. Working with Whiting-Turner, the general contractor, to identify scope of work and parameters for the space and adjacencies.The general contractor competitively bids the project to subcontractors and vendors to establish the project budget and schedule.
5. Working with KKI's facilities team to identify an alternate location for the vending machines and relocate them before construction begins.
6. Completing construction on ground floor, first floor, second floor and second floor roof.
7. Completing installation of the MPI scanner and hyper theranostic equipment.
8. Conducting safety checks on all equipment following installation
9. Training MPI staff in equipment operation and safety measures.
10. Implementing Kirby Center management processes for the new MPI suite.
11. Opening the MPI suite for use by project beneficiary research teams (and other lessees).

**B.3. Economic development needs**

B.3.a. Does the region in which the project will be located have a Comprehensive Economic Development Strategy (CEDS)?

☒ Yes If Yes, what is the source?

Baltimore Development Corporation, Comprehensive Economic Development Strategy: http://baltimoredevelopment.com/resources/ceds/.

☐ No If No, then please check one:

☐ B.3.a.i. An alternate strategic planning document that governs this investment is attached.

Add Attachment | Delete Attachment | View Attachment

☐ B.3.a.ii. This investment is to develop a "strategy grant" to develop, update or refine a CEDS.

☐ N/A – Not Applicable

B.3.b. Describe the economic conditions of your region. Define the economic development need to be addressed by the proposed EDA investment and explain how the proposed investment will address that need.

The City of Baltimore has been in transition for decades. During World War II, the local steel industry thrived. The industrial and demographic shifts that followed led to the loss of 100,000 manufacturing jobs between 1950 and 1995. During this period, the population dropped from almost one million residents to only 620,000 in 2010. In the last decade, the population has stabilized at this level and a variety of revitalization efforts have taken root.

Racial and economic segregation at the neighborhood level results in a lopsided picture of economic health for Baltimore’s residents. At 21.8%, the city’s poverty rate is more than double the state average (9.0%). The per capita income is $29,700 with a median household income of $48,840, far lower than the Maryland median household income of $81,868. Yet, a 2015 Brookings study ranked the Baltimore region as the 7th most affluent large metro area based on its per capita income. The city has twice as many African American residents (62.5%) as Maryland statewide (31.1%). The rate of homeownership (47.3%) is nearly twenty percent lower than elsewhere in Maryland, and the median home value ($156,400) is roughly half of the median value statewide ($305,000). At the same time, Brookings reports that African American residents in Baltimore have higher salaries than African Americans in other cities, and have the second highest median household income among metro regions with large black populations, following Washington D.C.

The City of Baltimore shows a substantially different economic picture than Baltimore County and Maryland as a whole. In June 2020, 10% of Baltimore workers were unemployed, compared to 8.3% for Baltimore County, matching the state rate. These rates reflect COVID-19-related job loss. By comparison, Baltimore’s unemployment rate in June 2019 was only 3.9%.

In 2005, an $800 million East Baltimore Revitalization Project (EBRP) was created to build on significant progress catalyzed through Baltimore City’s Empowerment Zone designation beginning in the mid-1990s. EBRP partners include The Annie E. Casey Foundation, The City of Baltimore, East

Baltimore Development, Inc; Johns Hopkins University, Forest City-New East Baltimore Partnership and KKI. The EBRP focuses on economic revitalization in the 80 acres north of Johns Hopkins Hospital, which includes KKI's proposed EDA project site. The KKI Center aligns with the Comprehensive Economic Development Strategy for Baltimore (CEDS) in several key areas. The CEDS includes strategies to 1) focus efforts on six key industry clusters, including Health and Bioscience Technology; 2) foster Economic Inclusion from diverse populations; and 3) work strategically to position Baltimore regionally and nationally as a premier place to do business and invest, in part by training top professionals in the biomedical and public health fields. Biohealth entities are changing the city's landscape through significant investments in health and bioscience fields. In 2019, venture funding for Maryland life science companies increased more than 700%, with the majority of this funding flowing to entities in KKI's region. KKI and its partners envision that scientific investments will not only lead to scientific discovery but will re-build Baltimore's economy for this century.

**B.4. Applicant's capability**

Briefly describe the applicant's capability to administer, implement, and maintain the project.

KKI is internationally recognized, with more than 75 years of expertise in improving the lives of children and young adults with pediatric developmental disabilities and disorders of the brain, spinal cord and musculoskeletal system, through patient care, special education, research, and professional training. KKI's patient care programs offer interdisciplinary treatment tailored to the individual needs of each child, throughout all stages of care. In addition to neurobehavioral, rehabilitation, and pediatric feeding disorders inpatient units, KKI offers more than 55 outpatient clinics, home and community programs. KKI conducts school-based, hospital-based, and recreational programs designed to unlock the potential inside each and every student, and hosts the Maryland Center for Developmental Disabilities, which is committed to increasing awareness and breaking down barriers in society, allowing all individuals with developmental disabilities to achieve their potential in work, school, and community life. Each year, KKI cares for more than 25,000 individuals. KKI and all of its affiliated clinics and research centers comply with the relevant standards, regulations and guidelines of accreditation organizations and regulatory agencies such as the Joint Commission (TJC), Commission on Accreditation of Rehabilitation Facilities (CARF), Maryland Department of Health and Mental Hygiene (DHMH), Maryland State Department of Education (MSDE), and the US Department of Health and Human Services (HHS).

The F. M. Kirby Research Center for Functional Brain (The Kirby Center) at KKI is a research resource where imaging scientists, neuroscientists, and clinicians collaborate to study brain function. At the Kirby Center, members of the scientific community use unique, state-of-the-art techniques in a safe, comfortable environment, to further develop innovative methodologies, and provide training and education in their usage. Resources at the Kirby Center include:

MRI Systems: Two Philips 3.0T magnet systems and one Philips 7.0T magnet system, which have been configured, installed, and optimized for human

imaging.

Functional MRI: The Kirby Center houses multiple tools for creating and executing paradigms, as well as providing visual and audio stimuli to subjects, along with the software packages to aid in data analysis.
Physiologic Monitoring: While imaging, it is sometimes necessary to record other physiological responses using EEG and eye-tracking capabilities.
Preclinical scanning: A Biosafety Level 2 clean animal facility for advanced neuroimaging is housed within the FM Kirby Center. It houses two ultra-high field MRI scanners for animals, a Bruker BioSpect 11.7T and a Bruker 17.6T microimaging system.
A preclinical surgical and behavioral suite for animal studies.
Center Personnel: The Kirby Center's expert faculty, support staff, and advisory network ensure high quality studies and provide training on equipment and imaging procedures.

The project team has the capacity to administer, implement, and maintain all activities related to the proposed project, including managing all aspects of construction and renovation, planning for and supporting the project's economic development aims, and advancing the work of the scientific community that will result from the project. KKI has a robust grants and contracts administration office that has manages between 25-30 million dollars in awards per year.

**B.5. List and describe the strategic partners and organizations to be engaged in this project**

The Johns Hopkins Department of Radiology has agreed to provide technical support for the MPI scanner. The F.M. Kirby Center will manage the MPI scanner and the facility.

**B.6. Describe the investment (project) impact and fit with EDA funding priorities**

The proposed F.M. Kirby Center: Magnetic Particle Imaging (MPI) Scanner Expansion project fits within several EDA priorities. Activities will occur within a designated Opportunity Zone as documented below, with the potential to create jobs located within an urban Baltimore Opportunity Zone. The project's plans to install an MPI scanner within the FM Kirby Center to support academic and industrial scientific research supports local economic development efforts to build critical infrastructure needed to support a prosperous and innovation-centric economy. Growing the BioHealth industry is a core economic development strategy in the State of Maryland, where the Maryland Life Science Advisory Board's Maryland BioHealth Acceleration Initiative aims to grow state's BioHealth industry into a globally recognized Top 3 U.S. BioHealth Innovation Hub by 2023. As stated above, the proposed project site is located within the East Baltimore Revitalization Project region, a revitalization initiative under Baltimore City's Empowerment Zone efforts.

Magnetic particle imaging is the most promising emerging imaging technology developed in the last 20 years and is expected to change the landscape of modern medical imaging and in vivo translational research. The MPI scanner facility will have broad applicability for a variety of ongoing research with biotech applications, including studies that will contribute to understanding, treating, and eradicating COVID-19. In its application to the NIH to purchase the scanner, KKI identified research teams in the region that are most likely to need and benefit from this technology. One

research team has already obtained grants from NIH and the State of Maryland. These awards total $1.8M and will create three new positions and maintain four faculty positions who will conduct research using the MPI scanner in combination with magnetic heating to kill tumors. The investigator for these projects has other pending applications totally $3.5M. Investigators from the Departments of Radiology, Radiation Oncology, Biomedical Engineering, and Chemical & Biomolecular Engineering have committed to using the scanner for their ongoing research. In addition, KKI has active collaborations with researchers at Johns Hopkins University School of Medicine and the Johns Hopkins University Whiting School of Engineering; investigators with relevant studies will use the MPI facility.

It is too soon to predict the potential impact that the MPI scanning facility will have in the quest to understand and respond to COVID-19. Given the scanner's broad applicability, KKI anticipates that this resource will contribute to the critical scientific infrastructure that is needed to develop COVID-19 treatments, testing technologies, and vaccines.

### B.7. Identify the proposed time schedule for the project

KKI has been working with Whiting-Turner, the selected contractor, to develop project plans over the last year. Planning paused in March 2020 while project staff were focused on addressing day-to-day operations in response to the COVID-19 pandemic. A general timeline of project plans is as follows:

August 2019 to September 2020: Preconstruction period- Planning, design and review, permitting
September- November 2020: Approvals, order/deliver materials, and fabrication.
November 2020 to April 2021: Construction and MPI installation.
April 2021-May 2021: Final inspection of MPI scanner suite.
June 2021: MPI scanner suite staffed and available to research teams.

### B.8. Economic impacts of the project

B.8.a. Please describe the economic impacts of the project:

KKI's new MPI facility will promote economic growth in the Baltimore region by establishing a state-of-the-art center for principal investigators in numerous fields of study to conduct novel biomedical research. KKI currently employs 2,600 professionals in the Baltimore metro region, including physicians, nurses, medical and lab technicians, allied health clinicians, and other specialists. Eleven studies have committed to using the MPI facility. All of these are expected to lead to new grants for continued research.

NIH funding has been shown to play a significant role in boosting economic growth in regions with concentrated bioscience activity. In 2016, NIH funding supported 380,000 jobs and created 27,000 new jobs and generated $62.13 billion in new economic activity (2012). Every dollar of NIH funding is estimated to generate $2.21 in economic output in one year (NIH data). NIH R01 Grants create an average of seven jobs per project. An analysis of NIH-funded positions found that senior level researchers (principal investigators, faculty, staff scientists, biostatisticians) accounted for roughly half of the raw number of positions that were created by NIH funds.

However, when all positions were into “person-years of effort,” it was found that mid-level research support positions (health care professional, research coordinator, technician, data analyst, data entry, managerial/ administrative, and information technology) and training-related positions (for high school, undergraduate, and graduate student workers) had a greater amount of effort funded by NIH (Pool et al, 2016).

NIH funding has been shown to influence the number of jobs that are created in entire industries. Early NIH investments in research and development produce novel biomedical advancements in the form of new technologies, treatments, patents, and products. This generative activity promotes future job creation.

If each investigator obtains one NIH grant averaging $1.5M, the facility could easily have an economic impact of $13M within two years. With an average of two new positions per grant, it is projected that the facility could contribute to creating at least 22 new jobs in biomedical research and maintaining 16 existing jobs. In 2018, Maryland business and researchers received a total of $1.5 billion in NIH funding for biosciences. KKI’s MPI facility will be the only one of its kind on the east coast and one of only a handful of such facilities in the world. Having already secured funding to purchase the MPI equipment, building out and launching this new facility will become a driver for biomedical and biotechnical innovation with a regional, national, and international reach.

We also are please that several Kennedy Krieger laboratories have hosted students for intensive research experiences and training via the Ingenuity Project. This is a comprehensive, advanced math and science instructional program for Baltimore City students in grades 6-12. The project prepares and launches the next diverse generation of nationally competitive STEM leaders in Baltimore City Public Schools. The new MPI scanner will be yet another resource available for training this next generation of potential scientists.

B.8.b. Please identify the total estimated jobs and private investment that is expected to be generated by this project:

| Estimated Jobs Created | Estimated Jobs Retained | Estimated Private Investment |
|---|---|---|
| 22 | 16 | $0.00 |

B.8.c. Please identify the source of Estimates above (check as many as apply):

- ☒ Letters from Beneficiaries of the Project
- ☐ Input/Output Model (e.g. IMPLAN, REMI)
- ☐ Comparison to Similar Projects
- ☐ Other Method (specify below)

## B.9. Beneficiaries of the project

| Beneficiary Name | NAICS Code | Estimated Jobs Created | Estimated Jobs Retained | Estimated Private Investment |
|---|---|---|---|---|
| Artemov Laboratory | 541714 | 1 | 1 | $0.00 |
| Bhujwalla Laboratory | 541714 | 2 | 0 | $0.00 |
| Bulte Laboratory | 541714 | 5 | 3 | $0.00 |
| Delikatny Laboratory | 541714 | 2 | 1 | $0.00 |
| Green Laboratory | 541714 | 1 | 1 | $0.00 |
| Ivkov Laboratory | 541714 | 5 | 2 | $0.00 |
| Lu Laboratory | 541714 | 2 | 3 | $0.00 |
| Pomper Laboratory | 541714 | 2 | 1 | $0.00 |
| Preclinical Imaging Lab, NYU | 541714 | 1 | 2 | $0.00 |
| Walczak Laboratory | 541714 | 1 | 2 | $0.00 |
| **Total** | | 22 | 16 | $0.00 |

## B.10. Non-EDA funding for the project

B.10.a. Are all non-EDA funds committed to the project, available as needed, and not conditioned or encumbered in any way that would preclude their use consistent with the purpose of the project?

☒ Yes ☐ No (explain below)

B.10.b. Identify the source, nature and amount of all non-EDA funds.

| Source | Amount | Date Available | Type | Restriction/Comments |
|---|---|---|---|---|
| Kennedy Krieger Institute Capital Budget | $160,000.00 | 10/15/2020 | Cash | unrestricted |

B.10.c. Does the applicant plan to seek other federal financial assistance as part of or in connection with this project? If so, please describe the source, amount and any terms and conditions of the funding, and when the funding will be available for use by the applicant.

☐ Yes (explain below) ☒ No

B.10.d. Please attach documentation confirming non-EDA (matching or cost share) funding:

Add Attachment | Delete Attachment | View Attachment

**B.11. Justification for sole source procurement**

Will you contract work to complete part or all of this project?

☐ B.11.a. No

☒ B.11.b. Yes If yes, will contracts be awarded by competitive bid?

☒ B.11.b.i. Yes

☐ B.11.b.ii. No

If contracts will not be awarded by competitive bid, please provide a justification. A cost analysis will be necessary when adequate price competition is lacking, and for sole source procurements.

**B.12. Equipment**

Will any funds be used to purchase equipment?

☒ B.12.a. No

☐ B.12.b. Yes If yes, will project funding be used to install the equipment?

☐ Yes

☐ No

Please attach a list, including cost, description, purpose, and estimated useful life of any equipment that will be purchased as a part of this project.

Add Attachment | Delete Attachment | View Attachment

## C. Regional Eligibility

**C.1. Region**

Define the area/region that is the basis for the applicant's claim of eligibility. EDA will review and evaluate documentation submitted by the applicant to verify and determine eligibility.

Kennedy Krieger is a private non-profit organization. Both the City of Baltimore and Baltimore County are EDA Revolving Loan Fund grantees.

### C.2. Economic Distress

Check all that apply in establishing regional eligibility (see NOFO for more details):

☐ **C.2.A. Unemployment rate**

☐ **C.2.B. Per capita income**

☒ **C.2.C. Special need**, including:

- ☐ Substantial out-migration or population loss;
- ☐ Underemployment; that is, employment of workers at less than full-time or at less skilled tasks than their training or abilities permit;
- ☐ Military base closure or realignment, defense contractor reductions-in-force, or U.S. Department of Energy defense-related funding reductions;
- ☐ Natural or other major disasters or emergencies;
- ☐ Extraordinary depletion of natural resources;
- ☐ Closing or restructuring of an industrial firm or loss of other major employer;
- ☐ Negative effects of changing trade patterns; or
- ☒ Other circumstances set forth in the applicable NOFO (please explain below).

Among Maryland's 149 U.S. Treasury-designated opportunity zones, 42 are located within Baltimore City and County. The Kennedy Krieger facility at 707 N Broadway is located within census tract 24510080400, a qualified Opportunity Zone. 707 N. Broadway also has HSPA designation for Dental Health (East Baltimore City, ID 6245137562), Mental Health (ME-East Baltimore City, ID 7247645787), Primary Care (ME-East Baltimore City, ID 1249627494) and we are in a MUA/P (ID 01484).

### C.3. Substantial Direct Benefit

If the project does not meet any of the criteria above, is it located in an Economic Development District (EDD), and will it provide substantial direct benefit to residents of an area within that EDD that does meet the distress criteria?

☐ Yes ☐ No

Which Economic Development District?

Please explain how the proposed project will provide a substantial direct benefit to this geographic area within the EDD.

### C.4. Source of data provided for regional eligibility determination

Check the box denoting what data source you used to establish eligibility:

☐ C.4.a. The most recent ACS data published by the U.S. Census Bureau.

☐ C.4.b. The most recent Bureau of Labor Statistics Data.

☐ C.4.c. The most recent other federal data for the region in which the project is located (e.g., U.S. Census Bureau or the Bureaus of Economic Analysis, Labor Statistics, Indian Affairs, etc.).

☐ C.4.d. If no federal data are available, the most recent data available through the state government for the region in which the project is located.

☒ C.4.e. Other data to substantiate regional eligibility based on a "Special Need" as defined in 13 C.F.R. § 300.3.

Please attach a copy of the documentation used to support your claim of eligibility:

MDDesignated QOZs.12.14.18. | Add Attachment | Delete Attachment | View Attachment

## D. Budget and Staffing

To be completed by applicants for non-construction assistance only

### D.1. Budget justification

### D.2. Indirect costs

### D.3. Key applicant staff

## E. Administrative Requirements

### E.1. Civil rights

E.1.a. Does the applicant understand and agree to comply with all applicable civil rights requirements (see 13 C.F.R. § 302.20)?

☒ Yes ☐ No (explain below)

E.1.b. Do identified "Other Parties" (as listed in question B.9.), businesses that will create and/or save fifteen or more jobs as a result of the EDA project, understand and agree to comply with all applicable civil rights requirements under 13 C.F.R. § 302.20, including the requirement to provide signed assurances of compliance (ED-900B)?

☐ Not Applicable (No Other Parties Identified) ☒ Yes ☐ No (explain below)

**E.2. Lobbying certifications**

Will you be able to comply with federal requirements regarding lobbying?

☒ Yes ☐ No (explain below)

**E.3. Compliance with Executive Order 12372, State Single Point of Contact (SPOC)**

Does the state in which the project will be located have a project review process that requires submission to a Single Point of Contact (SPOC)?

☐ E.3.a. No. Go to Question E.4

☒ E.3.b. Yes

If Yes, does this request for EDA investment assistance meet the SPOC process established by the state?

☐ E.3.b.i. No ☒ E.3.b.ii. Yes

Please explain why not

If Yes, were SPOC comments/clearance received?

☐ E.3.b.ii.a. Yes

Please attach the comments/clearance:

Add Attachment | Delete Attachment | View Attachment

☐ E.3.b.ii.b. No. The review period has expired and no comments were received.

☒ E.3.b.ii.c. No. Comments have been requested but the review period has not yet expired.

Please attach evidence of your request for comments:

email_to_State_Clearinghous | Add Attachment | Delete Attachment | View Attachment

**E.4. Single Audit Act Requirement**

E.4.a. Does the applicant understand and agree to the requirements of subpart F of 2 C.F.R. part 200 regarding federal audits?

☒ Yes ☐ No

E.4.b. Is the applicant currently audited under the Single Audit Act?

☐ E.4.b.i. No

☒ E.4.b.ii. Yes, If yes:

E.4.b.ii.a. What is the date of the most recent audit? 06/30/2019

E.4.b.ii.b. Was this audit submitted to the Federal Audit Clearinghouse?

☒ Yes ☐ No

## F. Requirements for Non-Governmental Applicants (Excluding Public Universities and Certain District Organizations)

As indicated below, non-governmental applicants (excluding public universities and district organizations) must also provide a copy of the following items, either using the Attachments form that is part of the application package downloaded from www.Grants.gov or providing a hard copy.

F.1. Non-profit organizations must provide a current Certificate of Good Standing from the State in which they are incorporated.

2020-07-31 HWMRI Certificat | Add Attachment | Delete Attachment | View Attachment

F.2. New non-profit organization applicants must provide their Articles of Incorporation and By-Laws. Non-profits with an active EDA grant must either provide a) a revised copy of their Articles of Incorporation or By-Laws if these have been amended or b) a statement certifying that there has been no change in the organization's Articles of Incorporation or By-Laws.

KKI_Articles_of_Incorporati | Add Attachment | Delete Attachment | View Attachment

F.3. Non-profit organizations must provide a resolution passed by a general purpose political subdivision of a State (e.g., local government entity) or a letter signed by an authorized representative of a local government acknowledging that the applicant is acting in cooperation with officials of the political subdivision. EDA may waive this requirement for certain projects of significant regional or national scope (see 13 CFR § 301.2(b)).

Gold Letterhead_Young_Mayor | Add Attachment | Delete Attachment | View Attachment

F.4. If applying for a construction or RLF investment, an applicant must afford the appropriate general purpose governmental authority a minimum of 15 days to review and comment on the proposed project (13 CFR § 302.9(a)).

Will the applicant be able to provide these comments?

- ☒ Yes
- ☐ Not applicable, because the applicant is not applying for a construction or RLF grant
- ☐ Not applicable, because this requirement has been satisfied under an existing RLF plan
- ☐ No, for another reason (explain below)

# Instructions for Form ED-900

## A. Applicant Information

A.1. EDA Application Identifier – If EDA has previously provided an identifier for your proposal/application, please enter that identifier here. Otherwise, leave blank.

A.2. Please identify all applicants for this project:

The Lead Applicant should be the party who is responsible for handling disbursement of funds and reporting to EDA.

Note that Sam.gov registration is required of all EDA applicants and awardees. Please list the relevant CAGE Code and SAM.gov expiration data for all applicants and co-applicants (if any).

## B. Project Information

**B.1. Provide a geographical definition of the region to be served by the investment (project), including the specific geographic location of the project within the region.**

Clearly and concisely describe the region where the project will be located, including the specific geographic location of the project within the region, as well as background on the assets of the area, which may include clusters, and workforce, physical, educational and financial infrastructure.

**B.2. Describe and outline the scope of work for the proposed EDA investment, including a list of tasks to be undertaken.**

List specific activities that will be undertaken and the specific deliverables that will be produced as a result of this investment. The description of the proposed project must include a clear statement of the overall purpose of the project.

**Applicants for construction assistance (including design and engineering assistance)** should also include a statement of project components. Indicate if the proposed project involves the construction of a new facility or facilities or the enlargement, expansion, renovation, or replacement of an existing facility or facilities. Describe the existing facility and proposed project components in terms of dimensions, capacities, quantities, etc.

**Applicants for Partnership Planning Assistance** should provide a narrative on the economic development activities that will be undertaken including managing and maintaining the CEDS process.

**Applicants for Short Term Planning Assistance** should provide a narrative explaining how the proposed scope of work will enhance economic development planning capacity of the identified region. Include any relationship or collaboration with other public and private entities. Please explain how the strategy will expand the capacity of public officials and economic development organizations to work effectively with employers and enable the region to plan and coordinate the use of available resources to support economic recovery and the development of a regional economy and/or develop innovative approaches to economic revitalization in the region.

**Applicants for State Planning Assistance** should provide a narrative outlining the proposed scope of work for the project. Include the relationship to any existing CEDS or similar planning processes in the region and the goals and objectives of the proposed project.

### B.3. Economic development needs

Except for grants to fund developing, updating or refining a CEDS as described in 13 C.F.R. § 303.7, the region in which Public Works or Economic Adjustment projects will be located must have a CEDS with which the project is consistent.

B.3.a. Does the region in which the project will be located have a Comprehensive Economic Development Strategy (CEDS)?

If Yes, what is the source? *Note: If you are unsure if your region has a CEDS, please contact your local District Organization. In areas without a District Organization, CEDS may also be obtained at the City, County, or State level.*

If No, then please check one of the indicated options:

B.3.a.i. There is an alternate strategic planning document that will govern this investment. Please identify the strategy and provide a copy of this planning document, either by attaching the document to this application or submitting a hard copy.

B.3.a.ii. This investment is to create a strategy plan to develop, update or refine a CEDS. Please explain how the strategy will expand the capacity of public officials and economic development organizations to work effectively with employers and enable the region to plan and coordinate the use of available resources to support economic recovery and the development of a regional economy and/or develop innovative approaches to economic revitalization in the region.

B.3.b. Briefly describe the economic conditions of the region described in B.1, as well as the economic adjustment problems or economic dislocations the region has experienced (or is about to experience) and the regional impact of these conditions. How does the project address the economic development needs of the region and the goals and objectives of the CEDS for the region or the alternate strategic planning document described in section b below? See 13 C.F.R. part 303.

### B.4. Applicant's capability

Briefly describe the applicant's capability to administer, implement, and maintain the project.

### B.5. List and describe strategic partners and organizations to be engaged in this project

Describe existing regional partnerships (if any) that are directly engaged in supporting the proposed project, including a discussion of the extent of participation of government agencies, private sector interests, education providers, non-profits, community and labor groups, workforce boards, utilities, etc.

### B.6. Describe the investment (project) impact and fit with EDA funding priorities

Concisely document how the proposed project aligns with one or more of EDA's investment priorities. Applicants that propose projects that do not align with EDA's investment priorities will not be as competitive as those that do. Applicants are strongly encouraged to review EDA's investment priorities, as outlined in the applicable Notice of Funding Opportunity (NOFO) announcement on www.Grants.gov.

### B.7. Proposed time schedule for the project

Provide a proposed time schedule for completion of the project, including when (month/year) the project will begin and end. Explain any potential issues that could affect project implementation.

### B.8. Economic impacts of the project

Provide a clear and compelling justification for the long-term potential economic impact of the proposed project, through anticipated job creation or retention, private investment leveraging, number of businesses or collaborations supported, or other appropriate measures. All job and private investment estimates should reflect the anticipated impact within nine years of the potential EDA investment. Applicants must attach letters of commitment from any identified beneficiaries.

For all other measures, applicants should clearly identify the expected time frame. In all cases, applicants must document the benefit and provide third-party data or information available to support these claims.

### B.9. Beneficiaries of the project

If applicants have identified specific private sector employers that are expected to create and/or save jobs as a result of the project, applicants should list those beneficiaries in the table provided. All job and private investment estimates should reflect the anticipated impact within nine years of the potential EDA investment.

NAICS Code: The NAICS code for the major industry category of the beneficiary company (see www.naics.com for a searchable list).

Jobs Created: The number of jobs that the company expects to create as a result of the project.

Jobs Retained: The number of jobs that the company expects to retain as a result of the project.

Private Investment: The amount of private investment that the company expects to make in its business/ community as a result of the project.

Form ED-900B must be completed by each beneficiary that expects to create and/or save fifteen or more jobs as a result of the project.

### B.10. Non-EDA funding for the project

Select the appropriate response to each question. Applicants should identify the source, nature and amount of all non-EDA funds, including in-kind contributions (non-cash contributions of space, equipment, services, or assumptions of debt). Explain the status of all funding commitments, including the date the funds will be available from each source, and describe any conditions or restrictions on the use of such funds. If in-kind contributions are included, explain the basis on which they are valued. If so, please describe the source, amount and any terms and conditions of the funding, and when the funding will be available for use by the applicant. Please attach evidence of commitment from all funding sources. For example, if bonds are contemplated as match, counsel opinion of the applicant's bonding authority and eligibility of the bonds for use as match, along with full disclosure of the type of bonds and the schedule of the applicant's intended bond issue, are required.

### B.11. Justification for sole source procurement

Select the appropriate response to each question.

### B.12. Equipment

Select the appropriate response to each question.

## C. Regional Eligibility

Public Works and Economic Adjustment Assistance projects must satisfy regional eligibility requirements (see NOFO for more details). This section will assist EDA in determining if the proposed project satisfies these eligibility requirements.

Planning and Technical Assistance applications: although meeting specific distress criteria is not a prerequisite for funding under these programs, the economic distress level of the region impacted by a project serves as the basis for establishing the EDA share of the total cost of the project and can inform competitiveness.

Please answer all questions completely and accurately and attach explanations and supporting documentation where applicable.

### C.1. Region

Clearly define the area/region that is the basis for your claim of eligibility.

### C.2. Economic Distress

Check all that apply in establishing regional eligibility (see NOFO for more details):

**C.2.A. Unemployment rate**: The project is located in a region that has an unemployment rate that is, for the most recent 24-month period for which data are available, at least one percentage point above the national unemployment rate.

**C.2.B. Per capita income**: The project is located in a region that has a per capita income that is, for the most recent period for which data are available, 80 percent or less of the national average per capita income.

**C.2.C. Special need**: The project is located in a region that has experienced or is about to experience a "Special Need" (as defined in 13 C.F.R. § 300.3) arising from actual or threatened severe unemployment or economic adjustment problems resulting from severe short-term or long-term changes in economic conditions, including: Substantial out-migration or population loss; Underemployment, that is, employment of workers at less than full-time or at less skilled tasks than their training or abilities permit; Military base closure or realignment, defense contractor reductions-in-force, or U.S. Department of Energy defense-related funding reductions; Natural or other major disasters or emergencies; Extraordinary depletion of natural resources; Closing or restructuring of an industrial firm or loss of other major employer; Negative effects of changing trade patterns; or other circumstances set forth in the applicable NOFO.

### C.3. Substantial Direct Benefit

A project located within an Economic Development District (EDD) that is located in a region that does not meet the economic distress criteria set forth in section C.2 above, is also eligible for EDA investment assistance if EDA determines that the project will be of "substantial direct benefit" to a geographic area within the EDD that meets the distress criteria set forth in question C.2 above by providing significant employment opportunities for unemployed, underemployed, or low-income residents of the distressed geographic area within the EDD. If applicable, identify the EDD in which the proposed project will be located, as well as the geographic area within the EDD that meets the economic distress criteria detailed in section C.2., and explain how the proposed project will provide a substantial direct benefit to this geographic area within the EDD. (See NOFO for more details.)

### C.4. Source of data provided for regional eligibility determination

Check the appropriate box denoting what data source you used to establish eligibility. Please attach data used to establish eligibility.

## D. Budget and Staffing

To be completed by applicants for non-construction assistance only

### D.1. Budget justification

Provide a clear budget justification that identifies how funds in each line item of the budget will be utilized to support the proposed project. Explain the proposed use of any amounts budgeted for "Equipment," "Contractual," or "Other," if any, on Form SF-424A, Budget Information - Non-Construction Programs.

### D.2. Indirect costs

Explain the types of indirect costs, if any, on Form SF-424A. If there are any indirect costs, please submit a copy of the current Indirect Cost Rate Agreement that your organization has with its cognizant Federal agency. Alternatively, applicants must provide supplemental documentation such as: a certificate of indirect costs and acknowledgment letter from the cognizant agency, a cost allocation plan, an indirect cost rate proposal and/or other acceptable documents under Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance) as set forth in 2 C.F.R. part 200 or relevant procurement regulations.

### D.3. Key applicant staff

Identify key applicant staff who will undertake and complete project activities. Include a description of the knowledge, organizational experience, and expertise of individual staff members. In addition, explain how organizational resources will be used to complete project activities. For National Technical Assistance, Training and Research and Evaluation projects, specify which positions will be charged to the federal and non-federal portion of the project budget.

## E. Administrative Requirements

### E.1. Civil rights

Select the appropriate response, providing an explanation if "no."

### E.2. Lobbying certifications

**All applicants** for federal financial assistance must certify that federal funds have not been used and will not be used for lobbying in connection with this request for federal financial assistance (Form CD-511). If non-federal funds have been or are planned to be used for lobbying in connection with this request for federal financial assistance, Form SF-LLL also must be completed. Applicants must comply with 13 C.F.R. § 302.10 regarding attorneys' and consultants' fees and the employment of expediters. This regulation requires that applicants identify and disclose the amount of fees paid to anyone engaged to assist the applicant in obtaining assistance under the Public Works and Economic Development Act of 1965 (PWEDA), as amended.

### E.3. Compliance with Executive Order 12372, State Single Point of Contact (SPOC)

Select the appropriate response to each question, please attach any comments that have been received. If the comment period has not yet expired or comments were not received, attach evidence of your request for comments.

### E.4. Single Audit Act Requirement

Select the appropriate response to each question.

## F. Requirements for Non-Governmental Applicants (Excluding Public Universities and Certain District Organizations)

As indicated, non-governmental applicants must also provide a copy of the requested items, either using the Attachments form that is part of the application package downloaded from www.Grants.gov or submitting a hard copy. Public Universities and Certain District Organizations may be exempt from this requirement, please contact your Regional Office to determine the requirements applicable to your organization.

# Designated Qualified Opportunity Zones

This document was updated **December 14, 2018**, to reflect the final Qualified Opportunity Zone designations for all States.
*Please note that the below list of designated tracts is not the official list. The official list will be published in the Internal Revenue Bulletin at a later date.*

| Click arrow to filter state<br>State | County | Census Tract Number | Tract Type | ACS Data Source |
|---|---|---|---|---|
| Maryland | Baltimore | 24005401507 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005402406 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005404102 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005404202 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005421102 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005421300 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005450501 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005450800 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005451600 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24005492500 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510030100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510040100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510070400 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510080200 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510080400 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510080700 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510080800 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510090800 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510100100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510120500 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510130200 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510130300 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510140200 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510140300 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510150100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510150400 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510150500 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510150600 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510160400 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510160500 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510170200 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510180100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510180300 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510200100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510200200 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510210100 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510230300 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250203 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250204 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250205 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250207 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250301 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250401 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510250500 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510260404 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510260501 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510260605 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510260700 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510270903 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510271600 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510271700 | Low-Income Community | 2011-2015 |
| Maryland | Baltimore | 24510280500 | Low-Income Community | 2011-2015 |

TO: mdp.clearinghouse@maryland.gov
CC: Bastian@kennedykrieger.org

Attached, please find our application to be submitted on October 20, 2020 to the Economic Development Administration in response to Funding Opportunity from the Economic Development Administration - FY20 PWEAA NOFO (copy of announcement also attached for easy reference).

We are submitting for State Clearinghouse review in compliance with Executive order 12372. Please let us know if you need any additional information.

We appreciate your assistance with this review.

Amy J Bastian PhD
Chief Science Officer
Kennedy Krieger Institute
bastian@kennedykrieger.org
Phone: 443-923-9319
Assistant: Angel Liriano

**The following attachment is not included in the view since it is not a read-only PDF file.**

**Upon submission, this file will be transmitted to the Grantor without any data loss.**

**2020-07-31 HWMRI Certificate of Good Standing.pdf**

**The following attachment is not included in the view since it is not a read-only PDF file.**

**Upon submission, this file will be transmitted to the Grantor without any data loss.**

**KKI_Articles_of_Incorporation_and_By_Laws.pdf**

**The following attachment is not included in the view since it is not a read-only PDF file.**

**Upon submission, this file will be transmitted to the Grantor without any data loss.**

**Gold Letterhead_Young_Mayor GOLD_MSWord - Kennedy Krieger Letter of Sup**

**port 10.13.20.docx**

OMB Number: 0610-0094
Expiration Date: 11/30/2021

# ED-900A - Additional EDA Assurances for Construction *Or* Non-Construction Investments

For **ALL** investments: As a duly authorized representative of the applicant, I further certify that the applicant:

1. Understands that attorneys' or consultants' fees, whether direct or indirect, expended for securing or obtaining EDA investment assistance are not eligible costs. See 13 C.F.R. § 302.10(a).
2. Understands that conflicts of interest or appearances of conflicts of interest are prohibited and may jeopardize this application or result in the forfeiture of investment funds. A conflict of interest occurs, for example, where a representative, official, employee, architect, attorney, engineer, or inspector of the applicant, or a representative or official of the federal, State or local government, has a direct or indirect financial interest in the acquisition or furnishing of any materials, equipment, or services to or in connection with the project. See 13 C.F.R. § 302.17.
3. Will comply with the reporting requirements under the Government Performance and Results Act (GPRA) of 1993 and the GPRA Modernization Act of 2010 (GPRAMA) for measuring and reporting project performance.

For **CONSTRUCTION** investments: As a duly authorized representative of the applicant, I further certify that the applicant:

1. Will operate and maintain the facility in accordance with at least the minimum standards as may be required or prescribed by applicable federal, State and local agencies for the maintenance and operation of such facilities.
2. Will require the facility to be designed to comply with the Americans with Disabilities Act of 1990 (ADA) (42 U.S.C. 12101 et seq.), the Architectural Barriers Act of 1968 (42 U.S.C. 4151 et seq.) and the Accessibility Guidelines for Buildings and Facilities regulations, as amended (36 C.F.R. part 1191), and will be responsible for conducting inspections to insure compliance with these requirements.
3. For the two-year period beginning on the date EDA investment assistance is awarded, will refrain from employing, offering any office or employment to, or retaining for professional services any person who, on the date on which the investment assistance is awarded or within the one-year (1) period ending on that date, served as an officer, attorney, agent or employee of the Department of Commerce and occupied a position or engaged in activities that EDA determines involved discretion with respect to the award of investment assistance under PWEDA. See section 606 of PWEDA and 13 C.F.R. §302.10(b).
4. Will have no facilities under ownership, lease or supervision to be utilized in this project that are listed or under consideration for listing on EPA's List of Violating Facilities.
5. Will comply with Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction," which imposes requirements that federally-assisted facilities be designed and constructed in accordance with the most current local building codes determined by the awarding agency or by the Interagency Committee for Seismic Safety in Construction (ICSSC) and the most recent edition of the American National Standards Institute Standards A58, Minimum Design Loads for Buildings and Other Structures.

6. Will observe and comply with federal procurement rules, as set forth in 2 C.F.R. part 200, as applicable, for award of any contracts for architectural engineering, grant administration services, or construction financed with EDA investment assistance

For **NON-CONSTRUCTION** investments: As a duly authorized representative of the applicant, I further certify that the applicant:

1. Will comply with applicable regulations regarding indirect cost rates, if indirect costs are included in the application.
2. Will comply with the requirement that this investment assistance will not provide a proprietary benefit to a private individual, for-profit corporation, or other commercial entity.

| SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL | TITLE |
|---|---|
| Completed on submission to Grants.gov | Assoc. Director, Research Programs |

| APPLICANT ORGANIZATION | DATE SUBMITTED |
|---|---|
| Hugo W. Moser Research Institute at Kennedy Krieger Inc | Completed on submission to Grants.gov |

OMB Number: 0610-0094
Expiration Date: 11/30/2021

# ED-900C – EDA Application Supplement for Construction Programs

## A. Metropolitan Area Review

A.1. Projects involving the development of hospitals, airports, libraries, water supply and distribution facilities, sewage and waste treatment works, highways, transportation facilities, water development, or land conservation within a metropolitan statistical area (MSA) require comments from the metropolitan area clearinghouse/agency. Does the proposed project involve any of the above identified developments within an MSA?

☐ Yes ☒ No

A.2. If Yes, please attach either:

☐ Comments from the responsible metropolitan area clearinghouse/agency and a statement that such comments have been considered; or

☐ An explanation as to why comments are not available; or

☐ A statement indicating the date the application was made available to the appropriate metropolitan area clearinghouse/agency and units of general local government for review and certifying that the application has been before the metropolitan area clearinghouse/agency for a period of 60 days without comments or recommendations.

Add Attachment | Delete Attachment | View Attachment

## B. District Organization Project Administration

B.1. Will the District Organization for the region in which the project will be located administer the project for the applicant?

☐ Yes ☒ No

B.2. If Yes, you must certify to all of the following and indicate your certification by checking each box:

☐ The administration of the project is beyond the capacity of the applicant's current staff and would require hiring additional staff or contracting for such services;

☐ No local organization/business exists that could administer the project in a more efficient or cost-effective manner than the District Organization; and

☐ The District Organization will administer the project without subcontracting the work.

B.3. If the project will be administered by the District Organization and you did not certify to all of the above, explain below.

## C. Preliminary Engineering Report

To be considered for assistance, all construction and design applications must include a **Preliminary Engineering Report (PER)** that at a minimum provides the following information:

C.1. Description of project components. Provide a general description of all project components involved in the project. Indicate whether the project involves the construction of new infrastructure or facilities or the renovation or replacement of existing ones. Describe each of the project components in terms of dimensions, quantities, capacities, square footage, etc.

C.2. A statement verifying that the project components described in the engineering report are consistent with the EDA investment project description that is provided in Section B.2 of Form ED-900. Engineering reports that describe project components that are inconsistent with the EDA investment project description in Section B.2 of Form ED-900 will not be considered valid.

C.3. Drawings showing the general layout and location of the existing site conditions and of the project components as well as location of any project beneficiary identified in Section B.9 of Form ED-900 that provide economic justification for the project, if any. Rough dimensions and quantities for major project components should be shown and labeled on the drawings. Drawings should clearly identify the project components that are being proposed. Applicants are encouraged to clarify such drawings, for example, through color coding, labeling, and other appropriate methods.

C.4. A feasibility analysis for the constructability of the project. Include a review of the existing conditions and note particular features, alignments, and circumstances affecting construction of project components.

C.5. The proposed method of construction. Indicate whether construction procurement will be done through competitive bid or other method. Indicate if any portion of the project is to be done by design/build, construction management at risk, the applicant's own forces, or a third-party construction manager. If an alternate construction procurement method (other than traditional design/bid/build with sealed competitive bid process) is proposed, a construction services procurement plan must be provided to EDA for approval in accordance with EDA's regulation at 13 C.F.R. § 305.6(a).

C.6. The number of construction contracts anticipated. If multiple contracts are proposed, describe the project components included in each contract. If separate contracts are anticipated for demolition or site work, the budget information cost classification should reflect the estimated costs for these components. If project phasing is proposed, a project phasing request must be provided to EDA for approval per EDA's regulation at 13 C.F.R. § 305.9(a).

C.7. A current detailed construction cost estimate for each of the project components. Show quantities, unit prices, and total costs and provide a basis for the determination of construction contingencies. The total of this estimate should match the construction line item of the SF-424C.

C.8. Real property acquisition. If the budget includes costs for acquisition of real property, include a current fair market value appraisal completed by a certified appraiser for the property to be purchased.

C.9. A list of all permits required for the proposed project and their current status. Identify all permits required; include the timeline to obtain the permits and discuss how the permitting relates to the overall project schedule. If the project crosses a railroad right-of-way or is within a railroad right-of-way, explain any permitting or approvals that may be required from the railroad or other authority and the timeframe for obtaining these permits or approvals.

C.10. An overall estimated project schedule. This schedule should agree with the project schedule outlined in the ED-900. Include the number of months for each of the following:

i. design period;
ii. period of time to obtain required permits;
iii. period of time to obtain any required easements or rights-of-way;
iv. solicitation of bids and awarding of contracts, and
v. construction period.

C.11. Overall project budget breakdown. For each "cost classifications" line item that the applicant indicates will be included in the project budget on Form SF-424C, the applicant must provide a breakdown of the proposed project costs and tasks that is consistent with the detailed construction cost estimate for the project provided in the PER.

KKI_PreliminaryEngineeringR | Add Attachment | Delete Attachment | View Attachment

**D. Title Requirements**

D.1. Does the applicant currently hold title to all project facilities, underlying land, necessary easements, and rights-of-way required for the project?

☒ Yes (go to question D.2) ☐ No (explain below)

D.1.a. If No, does the applicant plan to obtain title?

☐ D.1.a.i. Yes

How and when will the applicant obtain title? (After answering, go to question D.2)

☐ D.1.a.ii. No

Please explain why not

D.1.b. If you indicated that the applicant does not currently have title and does not intend to obtain title, does the applicant hold a long-term lease or hold interest in project property for a period not less than the estimated useful life of the project?

☐ D.1.b.i. Yes. Go to question D.2

☐ D.1.b.ii. No. Please explain below how the applicant will satisfy EDA's title regulation at 13 C.F.R. § 314.7.

D.2. EDA regulations normally require recipients to provide a security interest and/or covenant of use in the real property or significant items of tangible personal property acquired or improved with EDA investment assistance (see 13 C.F.R. §§ 314.8 & 314.9). Will you be able to provide the required security interest?

☒ Yes ☐ No (explain how you will satisfy the requirements of 13 C.F.R. §§ 314.8 & 314.9)

D.3. Will real property or project facilities to be acquired or improved with EDA investment assistance, including any industrial or commercial park acreage, be mortgaged or used to collateralize any type of financing, including but not limited to bonds or tax credits, or is any real property to be used for the project currently mortgaged or being used as collateral?

☒ Yes (explain below) ☐ No

The 707 North Broadway building at Kennedy Krieger is part of a deed of trust as a part of our long term debt on the property.

D.4. Describe any required State permits, easements, rights-of-way or leases necessary to construct, operate, and maintain the project.

We will obtain a building permit. All construction is internal to the existing Kennedy Krieger 707 North Broadway building.

D.5. Describe any liens, mortgages, other encumbrances, reservations, reversionary interests or other restrictions on the applicant's interest in the property.

See section D3.

D.6. Is the project located on a military or Department of Energy installation that is closed or scheduled for closure or realignment?

☐ Yes ☒ No

D.7. Does the project involve construction within a railroad's right-of-way or over a railroad crossing?

☐ Yes (explain below) ☒ No

D.8. Does the project include construction of a highway owned by a State or local government (other than the applicant)?

☐ Yes (explain below) ☒ No

**E. Sale or Lease**

E.1. Does the applicant intend to sell, lease, transfer, dedicate or otherwise convey any interest in the project facilities, underlying land, or any land improved with EDA investment assistance?

☐ Yes (explain below) ☒ No

E.2. Is the purpose of the project to construct facilities to serve an industrial or commercial park or sites owned by the applicant for sale or lease to private parties?

☒ No ☐ Yes

Identify the owners of the acreage, provide an estimate of the number of acres benefiting from the proposed investment and explain how EDA's requirements will continue to be met after any sale or lease.

Note: Applicants may be asked to provide documentation that EDA's requirements will continue to be met after the sale or lease of project property.

E.3. Is the purpose of the project to construct facilities to serve a privately owned industrial or commercial party or other privately owned sites for sale or lease?

☒ No ☐ Yes

If Yes, identify the owners of the acreage, estimate the number of acres benefiting from the proposed investment, and explain below how EDA's requirements will continue to be met after the sale or lease. Note that EDA may require that the private owner agree to certain restrictions on the use of the property and may require that those restrictions survive any sale or transfer of the property. In addition, EDA may require evidence that the private party has title to the park or site and may require the private party to provide other assurance that EDA determines are necessary to ensure that the property is used in a manner consistent with the project purpose. See 13 C.F.R. § 314.3(c) and § 314.7.

E.4. For privately owned land improved by the proposed project, is the private owner willing to enter into an agreement to limit the sale price of the improved land to its fair market value before the improvements for a reasonable period of time?

☐ Yes (explain below) ☒ No/Not applicable (no private owners)

E.5. Is the purpose of the project to construct, renovate or purchase a building?

☒ Yes (explain below) ☐ No

The project is to renovate a part of the ground floor of Kennedy Krieger Institute at 707 North Broadway, totaling 1050 sq ft. This will house a new Magnetic Particle Imaging Scanner.

E.5.a. Will the building be leased in whole or in part?

☒ Yes (explain below) ☐ No

The Magnetic Particle Imaging Scanner will be used by multiple parties who pay for use of this space and equipment. This is detailed in section E.5.e.

E.5.b. Is the purpose of the building to provide incubator space to new companies?

☐ Yes (explain below) ☒ No

E.5.c. Will there be limitations on the length of the lease term?

☐ Yes (explain below) ☒ No

E.5.d. Is the purpose of the project to provide building space to a single user or multiple users?

☒ Yes ☐ No

E.5.e. Explain below the terms of any proposed lease.

The MPI scanner will become part of the F.M. Kirby Research Center, which already has in place a clear organization with respect to managing, leasing and maintaining scanners, equal access to these facilities, training of investigators, and providing collaboration for investigators without expertise. Briefly, a prospective user (i.e. lessee) is required to submit an Instrument Utilization Form to the F.M. Kirby Research Center Protocol Review Committee, in order to ensure compliance with standard KKI procedures. The Instrument Utilization Form includes regulatory requirements that must be met prior to working in the facility, billing information and any technical support needed. If necessary, a meeting will be convened with the F.M. Kirby facility staff to formulate a research and training program for the lessee. Once the utilization form is approved, the lessee then has access to schedule the equipment and technical support at his/her convenience and will be billed for use.

## F. State Historic Preservation Requirements

Have comments from the appropriate State Historic Preservation Officer (SHPO) already been received?

☒ Yes (attach comments) ☐ No

Historical_Trust_other.pdf | Add Attachment | Delete Attachment | View Attachment

Note: If comments have not already been received, the applicant will be required to submit materials to SHPO. Regardless of whether the applicant believes historic or archaeological artifacts are present, the applicant will be required work with its SHPO. Specific requirements for states' SHPOs can generally be found on their websites. Applicants can also request additional information from EDA Regional Offices.

Please note that the SHPO clearance process can be lengthy. When submitting this material to the SHPO, the applicant must request that the SHPO submit comments on the proposed project to the EDA Regional Office processing the application.

## G. National Environmental Policy Act (NEPA) Requirements

G.1. Please attach an environmental narrative and applicant certification clause using the template found on www.eda.gov.

KKI_EDA_012_Environmental_N | Add Attachment | Delete Attachment | View Attachment

Federal agencies are required by law to assess the expected environmental impacts associated with proposed federal actions. Depending on its analysis of information submitted by the applicant, EDA may request additional information to better understand the current environmental conditions and the project elements that will affect the environment.

Comprehensive information is required to complete an environmental review in accordance with NEPA. Information must be provided for the:

(i) site where the proposed project facilities will be constructed and the surrounding areas affected by its operation; and

(ii) areas to be affected by any primary beneficiaries of the project.

(iii) The information submitted must be sufficient to evaluate all reasonable alternatives to the proposed project and the direct and indirect environmental impacts of the project, as well as the cumulative impacts on the environment as defined in the regulations for implementing the procedural provisions of NEPA. See 40 C.F.R. parts 1500-1508.

The level of detail should be commensurate with the complexity and size of the project and the magnitude of the expected impact. Previously completed environmental impact documentation (assessments, impact statements, etc.) for activities in the region in which the proposed project will be located may be used as documentation.

### H. Business Incubators and Accelerators

Does the applicant intend to construct or renovate a business incubator, accelerator, commercialization center, or similar project?

☒ No ☐ Yes

Please attach a feasibility study demonstrating the need for the Project and an operational plan based on industry best practices demonstrating the Eligible Applicant's plan for ongoing successful operations. See the applicable NOFO for additional information and guidance.

Add Attachment | Delete Attachment | View Attachment

# Preliminary Engineering Report

## FM Kirby Center: Magnetic Particle Imaging (MPI) Scanner Expansion

August 2020

Bonnie Knight, BS Civil Engineering
Director, Facilities Planning & Engineering
Kennedy Krieger Institute
Office: (443-923-9110)
knightb@kennedykrieger.org

1. Description of Project Components

The MPI project consists of replacing the current vending (food, hot beverages, ice cream and soft drink) machine area with a new MPI scanner suite and associated equipment and storage rooms. The vending components will be relocated elsewhere on the ground level. A new rooftop nano chiller is required to support the MPI and hyper theranostic equipment. The new suite will include silicon steel shielding, new cabinetry, wall protection, stainless steel work table and access to required gases. New finishes (walls, flooring & ceilings) are included in the project. Underslab trenching is required for below-grade plumbing to support the new equipment. Electrical modifications as well as above-ceiling ductwork reconfiguration in the area will also be necessary. There will be wall, floor and ceiling demolition required on the first and second floors of the building to accommodate access into mechanical shafts required to accommodate the new gas lines and infrastructure for the new rooftop chiller. These areas of work will be repaired and finishes replaced once that work has been completed.

2. A statement verifying the project components described in the engineering report are consistent with the EDA investment project description that is provided in Section A.2 of Form ED-900.

The project components described in the engineering report are consistent with the EDA investment project description that is provided in section B.2 of Form ED-900.

3. Sketches of schematics showing the general layout and location of the existing site conditions and of the project components as well as location of project beneficiary(s) identified in Section B.5 of Form ED-900 that provide economic justification for the project, if any.

Please see the attached drawings.

4. A feasibility analysis for the constructability of the project, including a review of the existing conditions and noting particular features, alignments, and events affecting construction of project components.

The existing space is a vending machine and storage area. The area is well situated - close to nearby electrical closets and mechanical shafts which will be integral to completion of the infrastructure required for the new equipment. The access to the work area offers a direct path to the entrance of the building; this will provide easy access for construction personnel and materials in and out of the space. Restrooms are located in close proximity to the project area as well. The inpatient services housed in the building are not a direct adjacency and should not be impacted by the construction.

5. The proposed method of construction.

The construction will be completed by the Whiting-Turner Contracting Co. as the Construction Manager with a guaranteed maximum price. They (Whiting-Turner) will competitively bid the subcontracts involved in the project.

6. The number of construction contracts anticipated.



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Kennedy Krieger Institute will hold one (1) construction contract with the Whiting-Turner Contracting Co. The Whiting-Turner Contracting Co. will hold twenty (20) subcontracts for the various divisions of work on the project.

7. A current detailed construction cost estimate for each of the project components, showing quantities, unit prices, and total costs. Provide a basis for the determination of construction contingencies.

Please see attached Whiting-Turner most current project budget.

8. If the budget includes costs for real property acquisition, the Applicant should include a current fair market value appraisal completed by a certified appraiser for the property to be purchased.

Not applicable.

9. A list of all permits required for the proposed project and their current status.

The building permit for the MPI project has been approved by Baltimore City and is ready to be procured. In addition, the subcontractor permits (electrical, mechanical and fire protection) will be required and procured once the subcontractor contracts have been issued. A street/sidewalk closure permit will be required to install the rooftop chiller.

10. An overall estimated project schedule, including the number of months for each of the following:

    i. design period;
    ii. period of time to obtain required permits;
    iii. period of time to obtain any required easements of rights-of-way;
    iv. solicitation of bids and awarding of contracts, and
    v. construction period.

Please see the attached Whiting-Turner current project schedule with design, permitting and owner occupancy activities added.



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**The Whiting-Turner Contracting Company**
**300 East Joppa Road**
**Baltimore, Maryland**

**Kennedy Krieger Institute**

# MAGNETIC PARTICLE IMAGING (MPI) PROJECT

**Baltimore, Maryland**

## GMP (Version 3)

**August 25, 2020**

**BASED ON DESIGN COST ESTIMATES PREPARED BY:**

**ARCHITECT - Hord Coplan Macht**
**MECHANICAL ENGINEER - Burdette, Koehler, Murphy & Associates**
**ELECTRICAL ENGINEER - Burdette, Koehler, Murphy & Associates**

**THE McGINNIS GROUP**

**D. McGinnis - Vice President**
**J. Ovelman - Project Manager**
**T. Whalen - Project Manager**
**J. Reardon - Project Engineer**



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

August 25, 2020

## CLARIFICATIONS

1 This budget is based on a 5 month construction duration for the renovation of the 707 North Broadway buildings 1st floor to create a new Magnetic Particle Imaging Unit. This budget is based on drawings prepared by Hord Coplan Macht dated 12/20/19.

2 WT excludes the cost of identification / handling / abatement / disposal of contaminated or hazardous substances that may be encountered on the building site.

3 WT includes that the Builders Risk Insurance for the project shall be provided by the owner in accordance with typical AIA contract requirements. No costs are included in this budget for Builder's Risk Insurance coverage.

4 Data / telecommunications work will be supervised and coordinated WT. An allowance for this work should be carried under the owner project budget.

6 See additional clarifications under comments section throughout the body of the budget. These comments shall be considered part of these clarifications by reference.

7 WT does not include any padding on walls or any special MEP devices in this budget.

8 Sales tax is not included in this budget as Kennedy Krieger is a tax exempt entity.

9 This budget does not include provisions for prevailing wage requirements or compliance with Davis Bacon Act.

10 As work is occurring on an occupied and operational campus, utility usage / consumption charges throughout construction are assumed to be by the owner and are not included in this budget ( i.e. water, sewer, electric, natural gas etc. )

11 Testing and inspection and commissioning costs are not included and should be carried under the owner project budget. Budget includes costs to assist the testing and inspection and commissioning agents with interaction and testing of systems installed by applicable contractor only.

12 Building permit costs are not included.

13 WT is committed to including both MBE and WBE contractors whenever possible, however, no specific MBE / WBE requirements have been allowed for in this budget.

14 WT does not include any costs for premium time such as night work, off hours work or overtime in this GMP.

15 WT includes not removing a window as part of its ICRA plan and venting the HEPA filter into the return air plenum.

16



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**Kennedy Krieger Institute**
**MAGNETIC PARTICLE IMAGING (MPI) PROJECT**
**GMP (Version 3)**

Kennedy Krieger Institute

| 541 | Gross Building Square Feet (GBSF) | | Total Cost | Cost Per S.F. | % of Total |
|---|---|---|---|---|---|
| 002 | EXISTING CONDITIONS | | 67,406 | $124.60 | 9.62% |
| 003 | CONCRETE | | 3,556 | $6.57 | 0.51% |
| 004 | MASONRY | | 0 | $0.00 | 0.00% |
| 005 | STEEL | | 28,610 | $52.88 | 4.08% |
| 006 | WOOD, PLASTICS, AND COMPOSITES | | 6,107 | $11.29 | 0.87% |
| 007 | THERMAL AND MOISTURE PROTECTION | | 16,597 | $30.68 | 2.37% |
| 008 | OPENINGS | | 10,250 | $18.95 | 1.46% |
| 009 | FINISHES | | 57,588 | $106.45 | 8.22% |
| 0010 | SPECIALTIES | | 1,325 | $2.45 | 0.19% |
| 0011 | EQUIPMENT | | 0 | $0.00 | 0.00% |
| 0012 | SPECIAL CONSTRUCTION | | 0 | $0.00 | 0.00% |
| 0014 | CONVEYING SYSTEMS | | 0 | $0.00 | 0.00% |
| 0021 | SPRINKLER / FIRE PROTECTION | | 12,934 | $23.91 | 1.85% |
| 0022 | MECHANICAL SYSTEMS | | 212,524 | $392.84 | 30.33% |
| 0026 | ELECTRICAL SYSTEMS | | 58,080 | $107.36 | 8.29% |
| 0031 | EARTHWORK | | 0 | $0.00 | 0.00% |
| 0032 | EXTERIOR IMPROVEMENTS | | 0 | $0.00 | 0.00% |
| 0033 | UTILITIES | | 0 | $0.00 | 0.00% |
| | **SUBTOTAL 001:** | | **475,000** | **$877.96** | **67.78%** |
| 020 | GENERAL CONDITIONS | | 98,900 | $182.81 | 14.11% |
| 030 | GENERAL REQUIREMENTS | | 86,900 | $160.63 | 12.40% |
| 040 | LIABILITY INSURANCE | | 6,600 | $12.20 | 0.94% |
| 050 | LEED PREMIUM | | 0 | $0.00 | 0.00% |
| 060 | SUBCONTRACTOR BONDS (INCLUDED IN SUB PRICING) | | 0 | $0.00 | 0.00% |
| 070 | RENOVATION DESIGN COSTS (BY OWNER) | | 0 | $0.00 | 0.00% |
| 080 | SHIELDING DESIGN COSTS (BY OWNER) | | 0 | $0.00 | 0.00% |
| | **SUBTOTAL 002:** | | **667,400** | **$1,233.60** | **95.23%** |
| 090 | CONSTRUCTION & DESIGN CONTINGENCY | 0.00% | 0 | $0.00 | 0.00% |
| 100 | CM FEE | 5.00% | 33,400 | $61.74 | 4.77% |
| | **SUBTOTAL 003:** | | **700,800** | **$1,295.34** | **100.00%** |
| 2017 | MARKET ESCALLATION ALLOWANCE | 0.00% | 0 | $0.00 | 0.00% |
| | FURNISHINGS / FIXTURES / EQUIPMENT | | By KKI | | |
| | TESTING AND INSPECTIONS | | Not Included | | |
| | BUILDING PERMIT COSTS | | Not Included | | |
| | SOFT COSTS ( Design, Consultants etc. ) | | Not Included | | |
| | OWNER PROJECT CONTINGENCY | | Not Included | | |
| | **TOTAL GMP CONSTRUCTION BUDGET:** | | **700,800** | **$1,295.34** | **100.00%** |



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| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **002** | **EXISTING CONDITIONS** | | | | | **DRAFT** |
| | **Existing Conditions** | | | | | |
| | Temporary construction signage | Allow | 1 | 1,000 | 1,000 | |
| | Demolition Bid | Lump | | | **$15,096** | Potomic |
| | DEMOLITION BIDS RECEIVED | | | | | |
| | Selective Hauling | | | | | |
| | Dynamite Demolition | | | | | |
| | Adam's Demolition | | | | | |
| | Potomic | | | | $ 15,096.00 | |
| | PCS | | | | $ 16,785.00 | |
| | EA Demo | | | | $ 15,496.00 | |
| | Rhino Squared | | | | $ 14,551.00 | Need Health Screening costs added. |
| | Bentleys | | | | $ 19,350.00 | |
| | Crusher Demo | | | | $ 24,040.00 | |
| | Temporary Prot., Dust Barriers, ICRA | Allow | 1 | 10,000 | 10,000 | |
| | Full Time ICRA/ COVID Cleaning Laborer | Month | 5 | 6,062 | 30,310 | |
| | GPR Scanning Of Concrete | Allow | 1 | 2,000 | 2,000 | |
| | Core Drilling Of Concrete | Allow | 1 | 2,000 | 2,000 | |
| | Site Survey / Layout / Plumbness | Visit | 1 | 2,000 | 2,000 | As-builts, QC |
| | Health Screening Allowance | Allow | 1 | 5,000 | 5,000 | |
| | | | | **Subtotal** | **67,406** | 102.13 |
| | **EXISTING CONDITIONS - SUBTOTAL** | | | | **67,406** | 102.13 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **003** | **CONCRETE** | | | | | **DRAFT** |
| | **Concrete** | | | | | |
| | Concrete Leveler Bid | Lump | | | **$3,556** | Excell |
| | CONCRETE LEVELER BIDS RECEIVED | | | | | |
| | Excell Concrete | | | | $ 3,556.00 | |
| | Bay Country Concrete | | | | $ 3,063.00 | |
| | AGJ | | | | $ 3,000.00 | No Bond Included |
| | | | | **Subtotal** | **3,556** | 5.39 |
| | **CONCRETE - SUBTOTAL** | | | | **3,556** | 5.39 |



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **004** | **MASONRY** | | | | | **DRAFT** |
| | **Masonry** | | | | | |
| | NA | | | | | |
| | | | | **Subtotal** | **0** | 0.00 |
| | | **MASONRY - SUBTOTAL** | | | **0** | 0.00 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **005** | **STEEL** | | | | | **DRAFT** |
| | **Steel** | | | | | |
| | Misc. Metals | Lump | | | 6,420 | WB Ironworks |
| | MISC. METALS BIDS RECEIVED | | | | | |
| | WB Ironworks | | | | $ 6,420.00 | Includes health screening. |
| | All Star Welding | | | | $ 8,000.00 | |
| | RF Shielding | Lump | | | 22,190 | Gaven |
| | RF SHIELDING BIDS RECEIVED | | | | | |
| | Gaven Industries | | | | $ 22,190.00 | Includes health screening |
| | Imedco | | | | $ 32,789.00 | |
| | | | | **Subtotal** | **28,610** | 43.35 |
| | | **STEEL - SUBTOTAL** | | | **28,610** | 43.35 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **006** | **WOOD, PLASTICS, AND COMPOSITES** | | | | | **DRAFT** |
| | **Millwork/ Finished Carpentry** | | | | | |
| | Millwork Bid | Lump | | | $6,107 | Hoff Enterprises |
| | MILLWORK BIDS RECEIVED | | | | | |
| | Regency Custom Cabinets | | | | | |
| | Hoff Enterprises | | | | $ 6,107.00 | Includes health screening. |
| | Modern Casework | | | | | |
| | Tops Unlimited | | | | | |
| | GMS Construction Group | | | | $ 8,786.00 | |
| | Homewood | | | | $ 8,080.00 | |
| | Rycon | | | | $ 8,665.00 | No Bond. |
| | Mahogany | | | | $ 11,469.00 | |
| | | | | **Subtotal** | **6,107** | 9.25 |
| | **WOOD, PLASTICS, AND COMPOSITES - SUBTOTAL** | | | | **6,107** | 9.25 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **007** | **THERMAL AND MOISTURE PROTECTION** | | | | | **DRAFT** |
| | **Caulking and Expansion Joints** | | | | | |
| | Interior Architectural Caulking | SF | 660 | 2 | 1,320 | |
| | Firestopping | SF | 0 | 3 | 0 | |
| | | | | **Subtotal** | **1,320** | 2.00 |
| | **Roofing** | | | | | |
| | Roofing | Lump | | | 5,637 | Tecta |
| | Roof Work Safety | Lump | | | 7,000 | Safeway provided railings, Tecta provided warning lines |
| | ROOFING BIDS RECEIVED | | | | | |
| | Tecta America | | | | $ 5,637.00 | Includes health screening |
| | | | | **Subtotal** | **12,637** | 19.15 |
| | **Fireproofing** | | | | | |
| | Fireproofing Patching Allowance | SF | 660 | 4.00 | 2,640 | Davenport |
| | | | | **Subtotal** | **2,640** | 4.00 |
| | **THERMAL AND MOISTURE PROTECTION - SUBTOTAL** | | | | **16,597** | 25.15 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **008** | **OPENINGS** | | | | | **DRAFT** |
| | **DFH** | | | | | |
| | DFH Furnish | Lump | | | **10,250** | AMI |
| | DFH FURNISH BIDS RECEIVED | | | | | |
| | AMI | | | | $ 10,250.00 | |
| | Houston-Starr Company | | | | | |
| | EA Door | | | | $ 8,364.00 | Missing Scope |
| | Palmers | | | | $ 10,513.00 | |
| | | | | **Subtotal** | **10,250** | 15.53 |
| | | **OPENINGS - SUBTOTAL** | | | **10,250** | 15.53 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **009** | **FINISHES** | | | | | **DRAFT** |
| | **Gypsum Wall Board Assemblies Core** | | | | | |
| | Drywall Bid | Lump | | | **$40,902** | Centerline |
| | DRYWALL BIDS RECEIVED | | | | | |
| | Blue Jay Construction | | | | $ 27,642.00 | No Bond |
| | Centerline | | | | $ 40,902.00 | Includes health screening |
| | A & A | | | | $ 51,554.00 | |
| | | | | **Subtotal** | **40,902** | |
| | **Flooring** | | | | | |
| | Resilent Flooring Bid | Lump | | | **$11,962** | Floors Etc. |
| | FLOORING BIDS RECEIVED | | | | | |
| | Carpet Works | | | | $ 7,168.00 | Dropped out due to health screening. |
| | Floors Etc. | | | | $ 11,962.00 | Includes health screening. |
| | | | | **Subtotal** | **11,962** | 18.12 |
| | **Painting** | | | | | |
| | Paint Bid | Lump | | | **$2,724** | B2 Painting |
| | Paint Allowance | Allow | 1 | 2,000 | **$2,000** | |
| | PAINTING BIDS RECEIVED | | | | | |
| | B2 Painting Wall Covering | | | | $ 2,724.00 | Includes health screening |
| | Reliable Painting | | | | | |
| | MET Painting | | | | $ 3,774.00 | Includes health screening |
| | RH Fewster | | | | $ 2,781.00 | Dropped out due to health screening. |
| | The Dakes Company | | | | $ 4,447.00 | |
| | Herrell Contracting | | | | | |
| | Cochran | | | | $ 5,989.00 | |
| | | | | **Subtotal** | **4,724** | 7.16 |
| | | **FINISHES - SUBTOTAL** | | | **57,588** | 87.25 |



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **010** | **SPECIALTIES** | | | | | **DRAFT** |
| | **Toilet & Shower Accessories** | | | | | |
| | Fire Extinguisher Allowance | Allow | 1 | 500 | 500 | |
| | Corner Guard Bid | Lump | | | $550 | Partitions Plus |
| | CORNER GUARD BIDS RECEIVED | | | | | |
| | Partitions Plus | | | | $ 550.00 | |
| | | | | **Subtotal** | **1,050** | **1.59** |
| | **Signage** | | | | | |
| | Interior | Each | 0 | 100 | 0 | |
| | | | | **Subtotal** | **0** | **0.00** |
| | | | **SPECIALTIES - SUBTOTAL** | | **1,325** | **2.01** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **011** | **EQUIPMENT** | | | | | **DRAFT** |
| | **Equipment** | | | | | |
| | - Not Included ( By Owner ) | | | | | |
| | | | | **Subtotal** | **0** | **0.00** |
| | | | **EQUIPMENT - SUBTOTAL** | | **0** | **0.00** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **012** | **SPECIAL CONSTRUCTION** | | | | | **DRAFT** |
| | **Window Shade** | | | | | |
| | NA | | | | | |
| | | | | **Subtotal** | **0** | **0.00** |
| | | | **SPECIAL CONSTRUCTION - SUBTOTAL** | | **0** | **0.00** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **014** | **CONVEYING SYSTEMS** | | | | | **DRAFT** |
| | **Elevators - Freight / Patient** | | | | | |
| | NA | | | | | |
| | | | | **Subtotal** | **0** | 0.00 |
| | **CONVEYING SYSTEMS - SUBTOTAL** | | | | **0** | 0.00 |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **021** | **SPRINKLER / FIRE PROTECTION** | | | | | **DRAFT** |
| | **Sprinkler System** | | | | | |
| | Wet Pipe Sprinkler System Bid | Lump | | | **$12,934** | BFPE |
| | FIRE SUPPRESSION BIDS RECEIVED | | | | | |
| | Commercial Plus Fire Protection | | | | $ 6,114.00 | Includes health screening but never worked with WT before. |
| | BFPE International | | | | $ 12,934.00 | Includes health screening. |
| | American Fire Protection | | | | $ 36,527.00 | |
| | | | | **Subtotal** | **12,934** | **19.60** |
| | **SPRINKLER / FIRE PROTECTION - SUBTOTAL** | | | | **12,934** | **19.60** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **022** | **MECHANICAL SYSTEMS** | | | | | **DRAFT** |
| | **HVAC / Plumbing Systems** | | | | | |
| | Mechanical and Plumbing Bid | Lump | | | **$212,524** | Denver Elek |
| | HVAC/ PLUMBING BIDS RECEIVED | | | | | |
| | Denver Elek | | | | $ 212,524.00 | Includes health screening |
| | MEC2 | | | | $ 223,300.00 | |
| | M Nelson Barnes | | | | $ 279,135.00 | |
| | Calvert | | | | $ 274,476.00 | |
| | | | | **Subtotal** | **212,524** | 322.01 |
| | **MECHANICAL SYSTEMS - SUBTOTAL** | | | | **212,524** | 322.01 |



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **026** | **ELECTRICAL SYSTEMS** | | | | | **DRAFT** |
| | **Electrical Systems** | | | | | |
| | Electrical Systems Bid | Lump | | | $58,080 | Key Systems |
| | ELECTRICAL BIDS RECEIVED | | | | | |
| | Key Systems | | | | $ 58,080.00 | |
| | BoMark | | | | $ 83,013.00 | |
| | Teledata Systems Bid | | | | $0 | **Not In Contract** |
| | | | | **Subtotal** | **58,080** | **88.00** |

Note: These values do not include cabling and/or equipment for systems such as D/T, AV, Security, Telemetry, Nurse Call etc.

**ELECTRICAL SYSTEMS - SUBTOTAL** **58,080** **88.00**

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **031** | **EARTHWORK** | | | | | **DRAFT** |
| | **General Sitework** | | | | | |
| | | | | **Subtotal** | **0** | **0.00** |

**EARTHWORK - SUBTOTAL** **0** **0.00**

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **032** | **EXTERIOR IMPROVEMENTS** | | | | | **DRAFT** |
| | **Landscaping** | | | | | |
| | | | | **Subtotal** | **0** | **0.00** |

**EXTERIOR IMPROVEMENTS - SUBTOTAL** **0** **0.00**



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **033** | **UTILITIES** | | | | | **DRAFT** |
| | **Site Utilities** | | | | | |
| | | | | **Subtotal** | **0** | **0.00** |
| | | **UTILITIES** | **- SUBTOTAL** | | **0** | **0.00** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| | **GENERAL CONDITIONS** | | | | | **DRAFT** |
| | General Conditions Costs | Month | 5 | 19,780 | 98,900 | |
| | | | | **Subtotal** | **98,900** | **149.85** |
| | | **GENERAL CONDITIONS** | **- SUBTOTAL** | | **98,900** | **149.85** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| | **GENERAL REQUIREMENTS** | | | | | **DRAFT** |
| | General Requirements Costs | Month | 5 | 17,380 | 86,900 | |
| | | | | **Subtotal** | **86,900** | **131.67** |
| | | **GENERAL REQUIREMENTS** | **- SUBTOTAL** | | **86,900** | **131.67** |

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **020** | **GENERAL CONDITIONS** | | | | | **DRAFT** |
| | Office Supplies | Month | 5 | 200 | 1,000 | |
| | DSL Line / Internet Access | Month | 5 | 250 | 1,250 | Includes installation charges |
| | Computers | Hrs | 0 | 0.00 | 0 | Rental / Support /Maintenance |
| | Nextel - Phone/Radio | Hrs | 0 | 0.00 | 0 | |
| | Copiers | Each | 0 | 7,500 | 0 | |
| | Copier Maintenance | Month | 5 | 200 | 1,000 | |
| | Fax & Printer | Each | 0 | 750 | 0 | |
| | Drawings and Specifications | Month | 5 | 100 | 500 | |
| | As-builts | Lump | 1 | 500 | 500 | |
| | Postage and Shipping | Month | 5 | 75 | 375 | |
| | Digital Camera | Each | 0 | 350 | 0 | |
| | Progress Photos | Month | 0 | 450 | 0 | |
| | Completion Photos | Lump | 1 | 500 | 500 | |
| | Phone - Connection Fee/Hook-up | Lump | 0 | 2,500 | 0 | |
| | Phone - Monthly Service / Charges | Month | 0 | 400 | 0 | |
| | Legal Expenses Allowance | Allow | 0 | 3,500 | 0 | |
| | Company Vehicles | Hour | 0 | 0.00 | 0 | |
| | Jobsite Fuel | Month | 0 | 0.00 | 0 | |
| | Travel Expenses - Non Company Vehicle | Month | 0 | 200 | 0 | |
| | Misc. Supplies | Month | 5 | 200 | 1,000 | |
| | **Office Labor** | | | | | |
| | Project Manager | Hour | 156 | 109.00 | 16,991 | 2 Day/ Month |
| | Project Engineer | Hour | 935 | 81 | 75,758 | 2 Day/ Week |
| | **GENERAL CONDITIONS - SUBTOTAL** | | | | **98,900** | 149.85 |

GBSF 660 August 25, 2020

| DIV | DESCRIPTION | UNIT | QUANTITY | UNIT COST | AMOUNT | COMMENTS |
|---|---|---|---|---|---|---|
| **020** | **GENERAL REQUIREMENTS** | | | | | **DRAFT** |
| | Company Vehicles ( Field ) | Hour | 0 | 0.00 | 0 | Senior PM and PM |
| | Nextel - Phone/Radio ( Field ) | Hrs | 0 | 0.00 | 0 | |
| | Computers ( Field ) | Hrs | 0 | 0.00 | 0 | Rental / Support /Maintenance |
| | Jobsite Fuel | Month | 0 | 200 | 0 | |
| | Mobilization In / Out | Each | 0 | 5,000 | 0 | |
| | Small Tools & Equipment | Month | 5 | 500 | 2,500 | |
| | Office Furniture | Allow | 0 | 5,000 | 0 | |
| | Field Offices/Trailers Rental | Month | 0 | 1,500 | 0 | |
| | Sanitary Facilities | Month | 0 | 1,300 | 0 | |
| | FE and EHS | Allow | 1 | 3,000 | 3,000 | |
| | Electric - Connection Fee/Hook-up | Lump | 0 | 15,000 | 0 | Part of Electrical Package |
| | Electric - Consumption Charges | Month | 0 | 3,000 | 0 | By Owner |
| | Water Usage Charges | Month | 0 | 400 | 0 | By Owner |
| | Dumpsters | Pull | 20 | 400 | 8,000 | |
| | Expediting Trips | Each | 0 | 1,500 | 0 | |
| | Final Cleaning | GBSF | 541 | 6.00 | 3,246 | |
| | **Field Labor** | | | | | |
| | Field Engineer | Hour | 866 | 81 | 70,146 | 5 Month Construction Schedule |
| | **GENERAL REQUIREMENTS - SUBTOTAL** | | | | **86,900** | 131.67 |



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

Kennedy Krieger Institute

# MPI SCANNER RENOVATION

## 707 NORTH BROADWAY
## BALTIMORE, MD 21205

## CONSTRUCTION DOCUMENTS - 12.20.2019

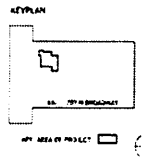

**ARCHITECT**
HORD COPLAN MACHT, INC.
700 E. PRATT STREET SUITE 1200
BALTIMORE, MD 21202
TEL. 410.837.7311
FAX 410.837.6530

**MEP**
BURDETT, KOEHLER, MURPHY & ASSOCIATES, INC.
6300 BLAIR HILL LANE, SUITE 400
BALTIMORE, MD 21209
TEL. 410.323.0600

**STRUCTURE**
MORABITO CONSULTANTS
952 RIDGEBROOK RD, SUITE 1700
SPARKS, MD 21152
TEL. 410.467.2377


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN



Kennedy Krieger Institute

hord | coplan | mach

MPI SCANNER RENOVATION

12.20.2019

COVER SHEET

CS.10

CONSTRUCTION DOCS

## ABBREVIATIONS

| | |
|---|---|
| A | |
| @ | AT |
| ACP | ACOUSTICAL CEILING PANELS |
| ADJ | ADJACENT |
| AFF | ABOVE FINISHED FLOOR |
| ALUM | ALUMINUM |
| ALT | ALTERNATE |
| APR | APPROXIMATE |
| B | |
| BLDG | BUILDING |
| BLKG | BLOCKING |
| BIT | BITUMINOUS |
| BM | BEAM |
| BOT | BOTTOM |
| BU | BUILT-UP |
| C | |
| C | CHANNEL |
| CAB | CABINET |
| CIP | CAST-IN-PLACE |
| CL | CENTERLINE |
| CLG | CEILING |
| CMU | CONCRETE MASONRY UNITS |
| COL | COLUMN |
| CONC | CONCRETE |
| CONST | CONSTRUCTION |
| CJ | CONTROL JOINT |
| CONT | CONTINUOUS |
| CORR | CORRIDOR |
| CPT | CARPET |
| CT | CERAMIC TILE |
| D | |
| Ø, D | DIAMETER |
| D | DEEP |
| DET | DETAIL |
| DIA | DIAMETER |
| DISP | DISPENSER |
| DIM | DIMENSION |
| DN | DOWN |
| DS | DOWNSPOUT |
| DTLS | DETAILS |
| DWGS | DRAWINGS |
| E | |
| EA | EACH |
| EF | EXHAUST FAN |
| ELEC | ELECTRICAL |
| ELEV | ELEVATOR |
| EL | ELEVATION |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| EXIST | EXISTING |
| EXP | EXPOSED |
| EXP JT/EJ | EXPANSION JOINT |
| EXT | EXTERIOR |
| ETR | EXISTING TO REMAIN |
| F | |
| FD | FLOOR DRAIN |
| FE | FIRE EXTINGUISHER |
| FEC | FIRE EXTINGUISHER CABINET |
| FECO2 | FIRE EXTINGUISHER CARBON DIOXIDE |
| FHC | FIRE HOSE CABINET |
| FIN | FINISHED |
| FIXT | FIXTURE |
| FL | FLOOR |
| FOS | FACE OF STUD |
| FP | FIREPROOFING |
| FRT | FIRE RESISTANCE TREATED |
| FTG | FOOTING |
| FURR | FURRING |
| G | |
| GA | GAUGE |
| GALV | GALVANIZED |
| GEN | GENERAL |
| GWB | GYPSUM WALL BOARD |
| GYP BD | GYPSUM BOARD |
| H | |
| HM | HOLLOW METAL |
| HB | HOSE BIB |
| HC | HANDICAPPED |
| HORIZ | HORIZONTAL |
| HP | HIGH POINT |
| HR | HOUR |
| HGT | HEIGHT |
| I | |
| INSUL | INSULATION |
| INT | INTERIOR |
| J | |
| JC | JANITOR'S CLOSET |
| JD | JAMB DEPTH |
| JT | JOINT |
| K | |
| KIT | KITCHEN |
| L | |
| LAM | LAMINATE |
| LAV | LAVATORY |
| LF | LINEAR FEET |
| LP | LOW POINT |
| M | |
| M'S | MEN'S TOILET |
| MACH | MACHINE |
| MAINT | MAINTENANCE |
| MAS | MASONRY |
| MANF | MANUFACTURER |
| MAX | MAXIMUM |
| MECH | MECHANICAL |
| MH | MANHOLE |
| MIN | MINIMUM |
| MR | MOISTURE RESISTANT |
| MO | MASONRY OPENING |
| MISC | MISCELLANEOUS |
| MTG | MOUNTING |
| MTL | METAL |
| MULL | MULLION |
| N | |
| NIC | NOT IN CONTRACT |
| NO | NUMBER |
| NOM | NOMINAL |
| NTS | NOT TO SCALE |
| O | |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OPER | OPERATING |
| OPG | OPENING |
| OPP | OPPOSITE |
| P | |
| PART | PARTITION |
| PASS | PASSAGE |
| PERIM | PERIMETER |
| PL | PLATE/PROPERTY LINE |
| PLAS | PLASTER |
| PLAM | PLASTIC LAMINATE |
| POLY | POLYETHYLENE |
| PREFAB | PREFABRICATED |
| PREP | PREPARATION |
| PT | PRESSURE TREATED |
| PTD | PAINTED |
| Q | |
| QT | QUARRY TILE |
| R | |
| R | RISER |
| RA | RETURN AIR |
| RAD | RADIUS |
| RCP | REFLECTED CEILING PLAN |
| RD | ROOF DRAIN |
| REF | REFERENCE/REFRIGERATOR |
| REINF | REINFORCING |
| RM | ROOM |
| RO | ROUGH OPENING |
| RQD | REQUIRED |
| S | |
| SCHED | SCHEDULE |
| SECT | SECTION |
| SHT | SHEET |
| SIM | SIMILAR |
| SP | STANDPIPE |
| SPECS | SPECIFICATIONS |
| SQ | SQUARE |
| SS | STAINLESS STEEL |
| STL | STEEL |
| ST/STOR | STORAGE |
| STRUCT | STRUCTURAL |
| SUSP | SUSPENDED |
| SW | STORM WATER |
| T | |
| T | TREAD |
| TEL | TELEPHONE |
| TH | THRESHOLD |
| THK | THICKNESS |
| TO | TOP OF |
| T&B | TOP AND BOTTOM |
| T&G | TONGUE AND GROOVE |
| TS | TRANSITION STRIP |
| TYP | TYPICAL |
| U | |
| UL | UNDERWRITER'S LABORATORY |
| UNO | UNLESS NOTED OTHERWISE |
| V | |
| VCT | VINYL COMPOSITION TILE |
| VB | VAPOR BARRIER |
| VERT | VERTICAL |
| VEST | VESTIBULE |
| VR | VAPOR RETARDER |
| W | |
| W | WIDTH |
| W'S | WOMEN'S TOILET |
| WD | WOOD |
| W/ | WITH |
| W/O | WITHOUT |
| WC | WATER CLOSET |
| WP | WATERPROOFING |
| WWF | WELDED WIRE FABRIC |
| WWM | WELDED WIRE MESH |

## MATERIALS LEGEND

BRICK
CMU
CONCRETE
METAL (IN SECTION)
EARTH
POROUS FILL/GRAVEL
GYPSUM BOARD
MORTAR, GROUT, SAND
ROUGH LUMBER OR BLOCKING (CONTINUOUS)
ROUGH LUMBER OR BLOCKING (DISCONTINUOUS)
FINISH CARPENTRY
PLYWOOD
BATT INSULATION
RIGID INSULATION

## GENERAL SYMBOLS

SECTION MARKER
CUTS CONSTRUCTION
SECTION IDENTIFICATION
SHEET WHERE SECTION APPEARS

DETAIL MARKER
DETAIL
DETAIL IDENTIFICATION
SHEET WHERE DETAIL APPEARS

ELEVATION MARKER
SHEET WHERE ELEVATION APPEARS
ELEVATION IDENTIFICATION

INTERIOR ELEVATION MARKER
SHEET WHERE ELEVATION APPEARS
ELEVATION IDENTIFICATION

ROOM MARKER
ROOM NAME
ROOM NUMBER

DOOR MARKER
DOOR NUMBER/OPENING MARK

WINDOW, STOREFRONT, LOUVER MARKER
WINDOW/STOREFRONT/LOUVER MARK

PARTITION MARKER
PARTITION TYPE

HEIGHT, ELEVATION MARKER
HEIGHT/ELEVATION

REVISION MARKER
AREA OF REVISION
REVISION IDENTIFICATION

BUILDING LINE
BUILDING LINE IDENTIFICATION

KEYNOTE MARKER

DEMOLITION KEYNOTE MARKER

ROOM FINISH NUMBER

FLOOR FINISH NUMBER

EXISTING CONSTRUCTION TO BE REMOVED

EXISTING DOOR AND FRAME TO BE REMOVED

EXISTING CONSTRUCTION TO REMAIN

EXISTING DOOR AND FRAME TO REMAIN

NEW CONSTRUCTION

NEW DOOR

## GENERAL NOTES

1. ALL PRODUCTS LISTED IN CONSTRUCTION SET, CONTRACTOR TO FOLLOW MANUFACTURER'S SPECIFICATIONS AND MEET MANUFACTURER'S BASIC WARRANTY REQUIREMENTS.
2. ALL WORK SHALL BE DONE IN WORKMANLIKE MANNER AND IN CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS.
3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL AUTHORITIES, RULES AND REGULATIONS.
4. SURVEY THE AREA OF CONSTRUCTION AND MAKE ALL NOTATIONS NECESSARY FOR SUBMITTING A FIRM BID.
5. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
6. REPORT UNFORESEEN OR UNCLEAR CONDITIONS TO ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING WITH WORK.
7. PAY FOR REQUIRED PERMITS AND INSPECTIONS.
8. ADJACENT AREA WILL REMAIN OPEN AND CONTINUE TO FUNCTION UNINTERRUPTED DURING CONSTRUCTION. PRIOR TO START OF WORK EACH DAY, CO-ORDINATE CONSTRUCTION ACTIVITY WITH OWNER.
9. GUARANTEE THE WORK AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION. CORRECT ALL WORK DEEMED UNSATISFACTORY BY THE OWNER, INCLUDING DAMAGE TO EXISTING FINISHES, AT NO COST TO THE OWNER.
10. MATERIAL SHALL BE NEW AND OF FIRST QUALITY UNLESS RECYCLED CONTENT IS REQUIRED OR ALLOWED IN THE PRODUCT SPECIFICATION. THE QUALITY OF WORKMANSHIP SHALL BE FINEST AND HIGHEST OBTAINABLE IN EACH PARTICULAR TRADE. THE WORKMANSHIP SHALL BE SATISFACTORY TO THE OWNER, AND HIS DECISION AS TO ACCEPTABLE QUALITY IS FINAL.
11. COORDINATE WITH OWNER AND PROVIDE VEHICULAR AND PEDESTRIAN PROTECTION/ BARRICADES AS REQUIRED TO MAINTAIN PUBLIC SAFETY.
12. COORDINATE WORK AND COOPERATE WITH SEPARATE CONTRACTORS ON THE SITE TO FACILITATE EXECUTION OF WORK.
13. PRIOR TO DEMOLITION, MEET WITH THE OWNER FOR THE PURPOSE OF DETERMINING MATERIALS THAT ARE TO BE SALVAGED AND RETURNED TO THE OWNER.
14. TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING ELEMENTS TO REMAIN.
15. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EQUIPMENT AND BUILDING COMPONENTS FROM DUST AND WATER DAMAGE.
16. PROVIDE TEMPORARY PROTECTION FROM CLIMATIC CONDITIONS FOR EXISTING CONSTRUCTION THAT IS EXPOSED TO THE ELEMENTS DUE TO DEMOLITION.
17. REMOVAL OF A PARTICULAR ITEM, I.E., WALLS, DOORS, ETC., SHALL INCLUDE ALL RELATED ITEMS: CORNER GUARDS, ELECTRICAL DEVICES, MECHANICAL, PLUMBING, AND HARDWARE. IT SHALL ALSO INCLUDE PATCHING OF DAMAGE OR HOLES IN THE EXISTING TO REMAIN, AS A RESULT OF REMOVAL. CAP LINES REMAINING AFTER FIXTURES ARE REMOVED. TAKE CARE NOT TO REMOVE MORE THAN NECESSARY TO ACCOMMODATE NEW CONSTRUCTION. RETURN EXISTING SURFACES DISTURBED BY REMOVAL TO A LIKE-NEW CONDITION WITH NEW MATERIAL AND FINISHES TO MATCH SURROUNDING SURFACES.
18. REMOVAL OF CEILING: REMOVE UNUSED SUSPENDED EQUIPMENT, WIRES, ANGLES, ETC. PRIOR TO INSTALLATION OF NEW CEILING.
19. ITEMS, EQUIPMENT, APPLIANCES AND APPARATUS NOT INDICATED TO BE REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER. VERIFY THOSE ITEMS TO REMAIN, CAREFULLY REMOVE AND STORE AS DIRECTED BY THE OWNER. REMOVE MISCELLANEOUS ITEMS IN AN ORDERLY FASHION, SORT, LABEL, BOX, AND DELIVER TO OWNER'S STORAGE SITE.
20. REMOVE DEBRIS PROPERLY FROM SITE. DEMOLISHED MATERIAL EXCEPT THAT LISTED OR MARKED BY ARCHITECT FOR RETENTION, SHALL BECOME THE PROPERTY OF THE CONTRACTOR. LOAD DEMOLISHED MATERIAL DIRECTLY ON TRUCKS OR INTO DUMPSTER FOR REMOVAL. DISPOSE OF DEBRIS LEGALLY. DO NOT BURN ON SITE. DO NOT ALLOW DEBRIS TO ENTER SEWERS. DO NOT LET PILED DEBRIS ENDANGER STRUCTURE, BLOCK EXITS OR ROADWAYS.
21. PATCH, REPAIR, OR REPLACE EXISTING CONSTRUCTION DAMAGED BY DEMOLITION ACTIVITIES AT NO COST TO THE OWNER.
22. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR COORDINATION AND ADDITIONAL DEMOLITION REQUIREMENTS.
23. TAKE PRECAUTIONS NECESSARY WHEN OPEN FLAME OR TORCHES ARE BEING USED DURING CONSTRUCTION. (A BURNING PERMIT IS REQUIRED).
24. PROVIDE MSDS SPECIFICATIONS TO COMPLY WITH OSHA, AS PART OF SUBMITTAL PROCESS.
25. KEEP FLOOR DRAINS FREE AND CLEAR OF DEBRIS.
26. FLASH PATCH HOLES AND DEPRESSED AREAS IN FLOOR. REMOVE HIGH AREAS BY GRINDING PRIOR TO INSTALLATION OF NEW FINISHES.
27. PROVIDE APPROPRIATE BLOCKING IN WALLS FOR WALL HUNG ITEMS NOT ALREADY BACKED IN WALL.
28. REPAIR DAMAGED AREAS IN EXISTING WALLS, CEILINGS, AND FLOORS TO REMAIN TO ORIGINAL CONDITION WITH NEW MATERIALS AND FINISHES TO MATCH EXISTING.
29. INSPECT WALL SURFACES FOR WATER DAMAGE OR LOOSE PAINT, AND MAKE REPAIRS NEEDED TO PROVIDE CONSISTENT FINISH.
30. PATCH OPENINGS IN EXISTING WALLS, FLOORS AND CEILINGS CAUSED BY NEW CONSTRUCTION. PATCHED IN NEW MATERIAL AND FINISHES SHALL MATCH EXISTING UNLESS OTHERWISE NOTED.
31. PREPARE SURFACES DESIGNATED TO RECEIVE NEW FINISHES, INCLUDING FLOORS, WALLS, CEILINGS, TRIM, ETC., PRIOR TO THE FINISH APPLICATION. SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE FINISH MANUFACTURER.
32. REMOVE SURFACE-MOUNTED EQUIPMENT PRIOR TO PREPARING WALLS FOR PAINT OR WALLCOVERING INSTALLATION. BOX EQUIPMENT FOR REINSTALLATION OR FOR TURNOVER TO OWNER.
33. SKIM COAT WALLS THAT HAVE BEEN SCRAPED TO BARE PLASTER DURING DEMOLITION, AND ARE NOT DESIGNATED TO BE FURRED OR OVERLAID, TO PROVIDE A SMOOTH SURFACE FOR FINISH.
34. SAND WALLS TO PROVIDE FIRST QUALITY FINISH RESULTS.
35. AFTER SANDING HAS BEEN COMPLETED, SEAL WALLS WITH PRIMER SEALER SPECIFIED IN CONTRACT DOCUMENTS.
36. THE START OF PRIMING OR FINISHING OF WALL SURFACES REPRESENTS ACCEPTANCE OF THE SUBSTRATE AS SUITABLE FOR PRIMING OR FINISHING.
37. INSTALL SEALANT AT CHANGE IN MATERIALS, AND AS REQUIRED BY MARYLAND STATE HEALTH DEPARTMENT.
38. LOCATE EQUIPMENT TO FACILITATE OPERATION AND MAINTENANCE. EQUIPMENT WILL INCLUDE BUT NOT BE LIMITED TO, CONTROLLERS, DAMPERS, DRAINS, VALVES, ETC. REWORK EQUIPMENT DEEMED INACCESSIBLE BY THE OWNER OR ENGINEER AT NO ADDITIONAL EXPENSE TO THE OWNER.

## HOSPITAL PROCEDURE NOTES

1. ABIDE AT ALL TIMES BY THE REGULATIONS OF THE HOSPITAL AND AMENDMENTS, PARTICULARLY THOSE PERTAINING TO CIRCULATION, NOISE, SANITATION, SAFETY BEHAVIOR, DRESS, AND SMOKING POLICY.
2. INSTRUCT PERSONNEL, INCLUDING SUBCONTRACTORS AND THEIR EMPLOYEES, TO ABIDE BY ALL PUBLISHED REGULATIONS AND DIRECTIVES OF THE OWNER'S REPRESENTATIVE.
3. ANY COMPLAINTS DULY REGISTERED BY THE OWNER OF UNACCEPTABLE NOISE LEVELS SHALL BE CAUSE FOR THE USE OF SPECIAL PRECAUTIONS AND METHODS OF OPERATION BY THE CONTRACTOR TO REDUCE NOISES TO ACCEPTABLE LEVELS.
4. EMPLOYEES OF THE CONTRACTOR AND SUBCONTRACTORS ARE REQUIRED TO WEAR NUMBERED IDENTIFICATION BADGES, ISSUED BY THE OWNER, WHILE ON THE HOSPITAL PREMISES. RETURN BADGES AT END OF PROJECT. BADGES NOT RETURNED SHALL BE BACK CHARGED TO THE CONTRACTOR, AT RATE SET BY THE HOSPITAL.
5. EMPLOYEES OF THE CONTRACTOR OR HIS SUBCONTRACTORS ARE NOT PERMITTED TO PARK THEIR VEHICLES ON HOSPITAL LOTS AT ANY TIME. IN AREAS ASSIGNED FOR CONTRACTOR'S OCCUPANCY, THE CONTRACTOR IS FREE TO ASSIGN PARKING AS HE SEES FIT. ON AS SPACE WILL PERMIT, VEHICLES MARKED IN IMPROPER LOCATIONS ON OWNER'S PROPERTY WILL BE TOWED AT VEHICLE OWNER'S EXPENSE.
6. REMOVED EQUIPMENT REMAINS THE PROPERTY OF THE HOSPITAL. DELIVER THIS EQUIPMENT TO STORAGE AREAS DESIGNATED BY THE OWNER.
7. PROTECT ALL CONDITIONS WHICH ARE TO REMAIN AND WHICH EXISTED BEFORE THE CONTRACT (INTERIOR AND EXTERIOR AREAS). AS WELL AS ALL WORK INCLUDED UNDER THE CONTRACTOR, AND REPAIR OR REPLACE TO ITS ORIGINAL CONDITION DAMAGE OR INJURY CAUSED BY CONSTRUCTION ACTIVITIES, AT NO CHANGE IN THE CONTRACT PRICE.
8. FORMS FOR OUTAGE REQUESTS ARE AVAILABLE FROM THE OWNER. REQUEST FOR OUTAGES WILL NOT BE HONORED UNLESS THEY INCLUDE AN IDENTIFICATION OF ALL AREAS WHICH WILL BE AFFECTED BY THE OUTAGE. MAKE OUTAGE REQUEST AT LEAST 5 WORKING DAYS BEFORE OUTAGE IS DESIRED. SEARCH OUT UTILITY LINES TO DETERMINE THE EFFECT OF ANY OUTAGE UPON HOSPITAL OPERATIONS OUTSIDE LIMIT OF CONSTRUCTION AREAS. NOTIFY OWNER BEFORE STARTING SEARCH.
9. WHEN NECESSARY, THE OWNER WILL ISSUE KEYS TO MECHANICAL SPACES TO THE CONTRACTOR. RETURN THESE KEYS IMMEDIATELY UPON COMPLETION OF PROJECT. KEYS NOT RETURNED SHALL BE BACK CHARGED TO THE CONTRACTOR AT RATE SET BY HOSPITAL.
10. OPEN FLAME BURNING, WELDING, ARC WELDING, OR ANY HEAT PRODUCING EQUIPMENT WILL ONLY BE PERMITTED AFTER THE CONTRACTOR SECURES A BURNING PERMIT FROM THE OWNER. OWNER MAY STOP WORK AT ANY TIME IF UNSAFE CONDITIONS EXIST.
11. PROPER DRESS AND APPEARANCE IS EXPECTED OF ALL WHO WORK ON HOSPITAL CAMPUS. THIS IS MANDATORY FOR ALL WHO UTILIZE THE CAFETERIA AND ALL PUBLIC AREAS WITHIN THE HOSPITAL (NO SHORTS, TANK TOPS, ETC.).
12. SUPPLY ALL NECESSARY TOOLS AND LADDERS TO PERFORM WORK. DO NOT USE TOOLS AND LADDERS THAT ARE PROPERTY OF THE HOSPITAL FOR ANY REASON.
13. FOLLOW LOCK OUT TAG OUT PROCEDURE IN ACCORDANCE WITH OSHA REGULATIONS.
14. THE HOSPITAL IS A NON-SMOKING FACILITY. SMOKING WITHIN ITS PREMISES IS STRICTLY FORBIDDEN. SMOKING IS NOT PERMITTED WITHIN THE BUILDING OR WITHIN 25 FEET OF ENTRANCES, OPERABLE WINDOWS, OR OUTDOOR AIR INTAKES. VIOLATION MAY LEAD TO DISMISSAL OF EMPLOYEES FROM THE JOB SITE.

## DRAWING INDEX


| | |
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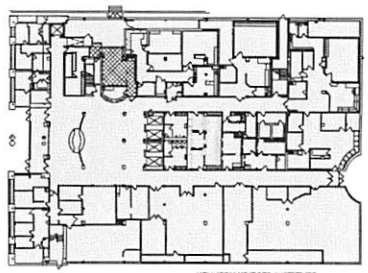
| E1.06 | ELECTRICAL SPECIFICATIONS |
| E1.07 | ELECTRICAL SPECIFICATIONS |

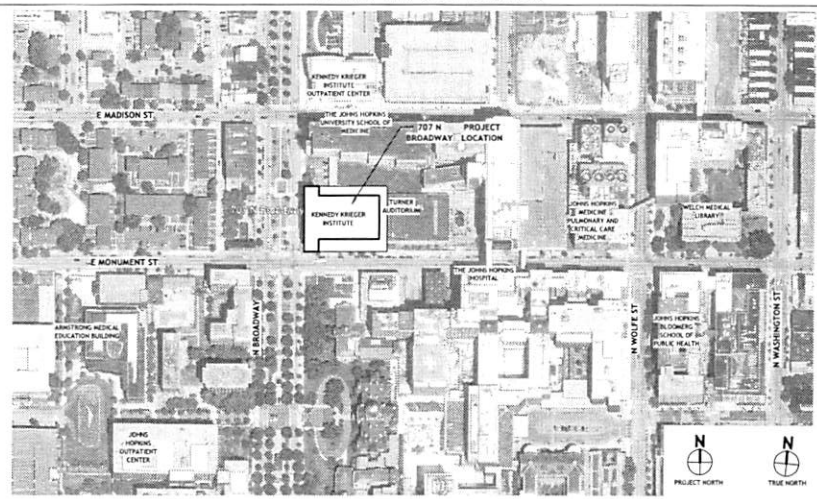

## PROJECT LOCATION (IN EXISTING FLOOR PLAN)



APX. PROJECT AREA

KENNEDY KRIEGER INSTITUTE
707 NORTH BROADWAY STREET
BALTIMORE, MD 21205
RECORD FLOOR PLAN - LEVEL 1

## VICINITY MAP (NOT TO SCALE)



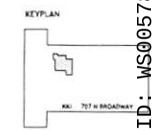

ARCHITECT
Hord Coplan Macht, Inc.
700 E Pratt St, Suite 1200 Baltimore, MD 21202
p 410 837 7311 f 410 837 7315

MEP
Burdette, Koehler, Murphy & Associates
8700 Beer Hill Lane, Suite 105
Baltimore, MD 21208
p 410.323.9600

STRUCTURE
Morabito Consultants
9132 Rialto Blvd, Suite 150
Austin, TX 78748
p 512.263.2101

KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN




Kennedy Krieger Institute

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|

Project Name
MPI SCANNER RENOVATION

Project Number
219260.00

Date
12.20.2019

Scale
As indicated

Drawing
NOTES & SYMBOLS

CS.20

CONSTRUCTION DOCS

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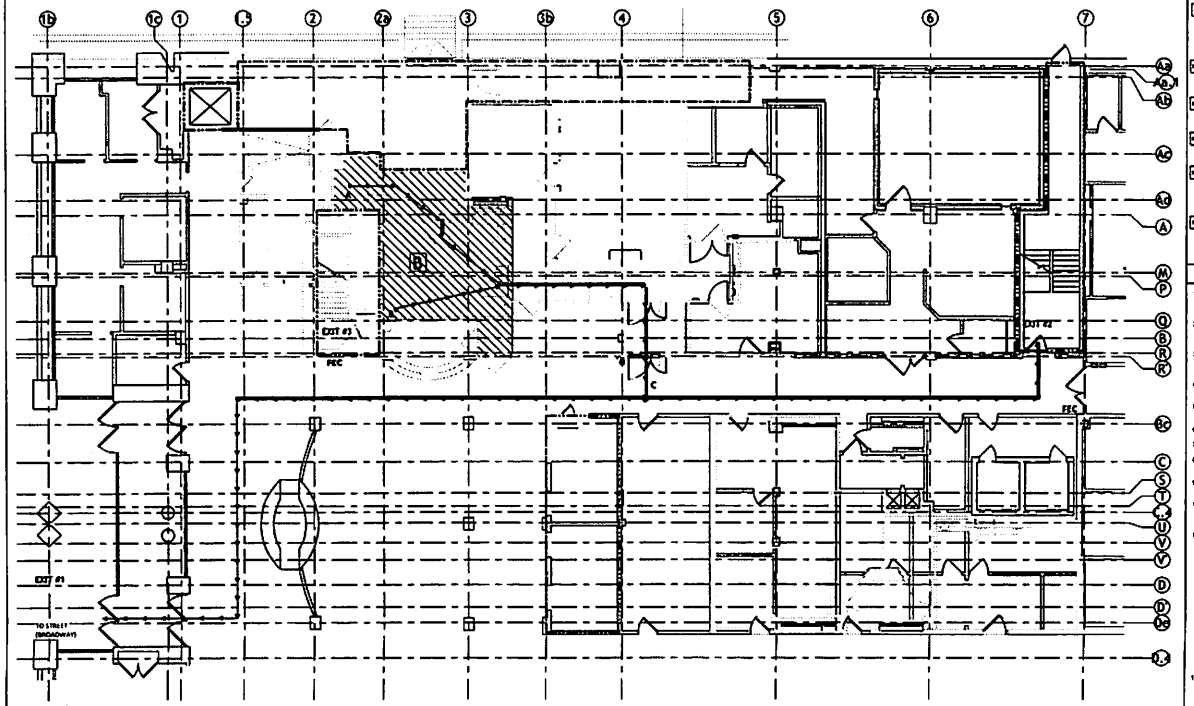
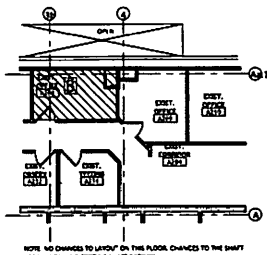
PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Fundingline Number: PWEAA2020

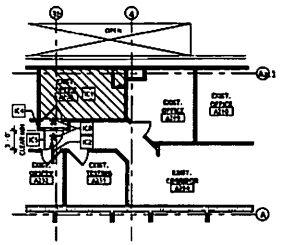
PREVIEW Date: Oct 14, 2020
Workspace ID: WS005789S4 Funding Opportunity Number: PWEAA2020



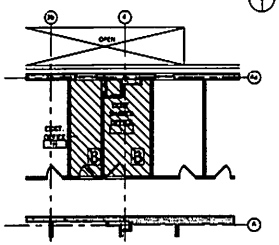

5A GROUND FLOOR - LIFE SAFETY PLAN



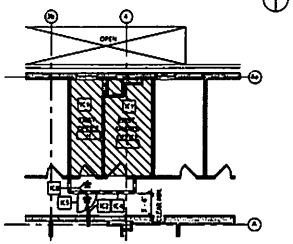
7A INFECTION CONTROL PLAN - LEVEL 2



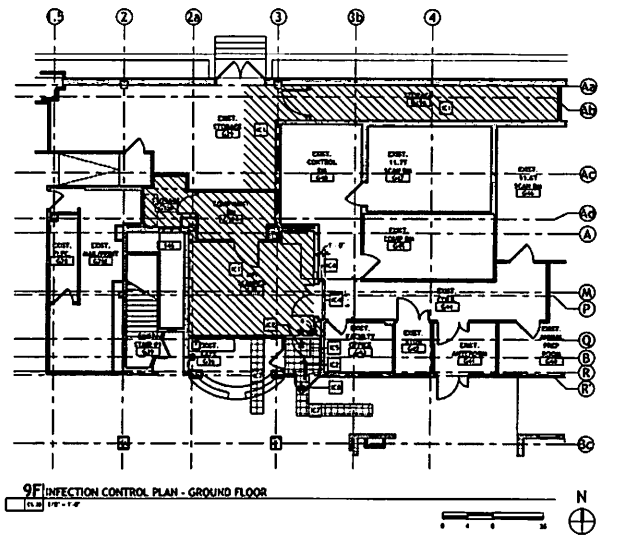
7D INFECTION CONTROL PLAN - LEVEL 2



9A INFECTION CONTROL PLAN - LEVEL 1



9D INFECTION CONTROL PLAN - LEVEL 1



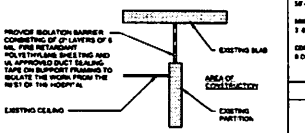
9F INFECTION CONTROL PLAN - GROUND FLOOR

## INFECTION CONTROL LEGEND

- K1 — APPROXIMATE AREA OF INTERIOR RENOVATION COORDINATE WITH THE HOSPITAL
- K2 — CONTRACTOR ENTRANCE
- K3 — CONTAINMENT BARRIER TYPE A ONE ON METAL STUDS TAPED AND SEALED FULL HEIGHT TO DECK ABOVE WITH 3-1/2" ACOUSTICAL BATT INSULATION IN STUD CAVITY
- K4 — 3'-0" X 7'-0" DOOR WITH PERIMETER GASKETING BOTTOM SEAL AND LOCK APPROVED BY THE HOSPITAL
- K5 — APPROXIMATE AREA OF ABOVE CEILING WORK. WORK IN THIS AREA TO BE PERFORMED AFTER HOURS. ACCESS THROUGH CORRIDOR SHOULD NOT BE AFFECTED DURING UNIT OPERATING HOURS. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR EXTENTS
- K6 — WALK OFF MAT

## INFECTION CONTROL GENERAL NOTES

1. OBTAIN AND VERIFY INFECTION CONTROL PROCEDURES, INCLUDING BARRIERS AND MECHANICAL, PLUMBING AND ELECTRICAL REQUIREMENTS WITH THE HOSPITAL INFECTION PREVENTION AND CONTROL STAFF PRIOR TO CONSTRUCTION START
2. MAINTAIN CONSTRUCTION AREA UNDER CONTAINMENT AND NEGATIVE PRESSURE UNTIL CONSTRUCTION IS COMPLETED AND THE AREA HAS BEEN FULLY CLEANED, INSPECTED AND TESTED ACCORDING TO THE HOSPITAL'S INFECTION CONTROL PROCEDURES
3. PLACE ADHESIVE WALK-OFF MATS IN TWO LOCATIONS AT EACH DOOR TO THE CONSTRUCTION AREA. ONE MAT WITHIN THE ONE STAGE DECONTAMINATION ENCLOSURE AND ONE OUTSIDE THE CONSTRUCTION AREA ON THE "CLEAN" SIDE OF THE CONTAINMENT BARRIER
4. SPOON-SWEEP THE CONSTRUCTION AREA AS NEEDED TO CONTROL DUST BUT NOT LESS THAN TWICE PER DAY DURING DEMOLITION ACTIVITIES AND ONCE PER DAY DURING THE REMAINDER OF CONSTRUCTION
5. TRANSPORT DEMOLITION OR CONSTRUCTION MATERIAL BROUGHT THROUGH THE BUILDING TO THE CONSTRUCTION AREA IN TIGHTLY COVERED CARTS. CLOTH OR PLASTIC SHEET COVERINGS ARE NOT ACCEPTABLE
6. MECHANICAL, ELECTRICAL AND PLUMBING (CMP) NOT REQUIRED FOR WORK INSIDE MECHANICAL EQUIPMENT ROOM
7. DO NOT REMOVE TEMPORARY BARRIERS UNTIL WORK IS COMPLETED AND OWNER HAS GRANTED APPROVAL
8. PATCH AND REPAIR CEILING TILE GRID, FLOORING, WALLS, ETC. DAMAGED BY THE CONSTRUCTION OF THE TEMPORARY BARRIERS. FINISHED CONDITIONS TO MATCH EXISTING
9. PERFORM ABOVE CEILING WORK IN EXISTING CORRIDORS AT NIGHT OR ON WEEKENDS. COORDINATE SCHEDULING AND REQUIREMENTS WITH THE HOSPITAL
10. VERIFY AND PROVIDE EXACT NUMBER OF HEPA MODULES REQUIRED TO MAINTAIN 0.02 W.G. NEGATIVE AIR PRESSURE IN THE CONSTRUCTION ZONE. BASE QUANTITY OF HEPA UNITS ON 16 ACHR AND 1,300 CFM PER DUCTED HEPA MODULE
11. INFECTION CONTROL MATERIALS AND EQUIPMENT
    - A. PLASTIC BARRIERS: 6 MIL THICK FIRE-RETARDANT POLYETHYLENE PLASTIC SHEETING
    - B. PORTABLE HEPA AIR SCRUBBERS: AEROCLEAN 2000 AEROSPACE AMERICA OR EQUAL. 2000 CFM PEAK AIRFLOW CAPACITY, 12-INCH DIAMETER EXHAUST OUTLET; HEPA FILTERS CERTIFIED TO REMOVE AT LEAST 99.97 PERCENT OF PARTICULATE IN THE 0.3 MICROMETER SIZE RANGE
    - C. HEPA PORTABLE VACUUM: NILFISK OF AMERICA INC. OR EQUAL, WITH FILTER & BAG INSTALLED
    - D. EXHAUST HOSES: FEDERAL HOSE MFG. CO. OR EQUAL, 12-INCH HEAVY DUTY PVC WIRE-REINFORCED FLEX DUCT OR BETTER
    - E. ADHESIVE WALK-OFF MATS: 3M OR EQUAL; SIMMONS MAT SIZE 24-INCH X 36-INCH
    - F. PORTABLE WORK ENCLOSURE SYSTEM: KONTROL RUBE, FIBERLOCK TECHNOLOGIES, INC. OR EQUAL
    - G. ZIP-UP DOOR SYSTEM: PROTECTIVE PRODUCTS INC., MINTE TECHNOLOGIES INC. OR EQUAL
    - H. PORTABLE DUST CONTAINMENT SYSTEM: ZIP WALL LLC, OR EQUAL
13. WHERE PARTITIONS ARE NOT SEALED TO THE UNDERSIDE OF SLAB ABOVE, PROVIDE AN ISOLATION BARRIER ABOVE THE PARTITION AS SHOWN




## CODE INFO

| | |
|---|---|
| PROJECT NAME: | KENNEDY KRIEGER INSTITUTE MPI SCANNER SUITE RENOVATION |
| PROJECT DESCRIPTION: | PROJECT INCLUDES INTERIOR RENOVATIONS TO EXISTING ROOMS TO CREATE A NEW SCANNER ROOM AND SUPPORTING SPACES. THIS ALTERATION INCLUDES ARCHITECTURAL, MECHANICAL, ELECTRICAL & PLUMBING WORK. PROJECT SCOPE ADDITIONALLY INCLUDES INSTALLATION OF EXTERIOR CONDENSER AND CHILLER |
| PROJECT SIZE: | 541 SF |
| OCCUPANCY USE GROUP: | B: BUSINESS WHOLE BUILDING EXISTING HEALTHCARE (NFPA) 360 FLOOR SEPARATED I-2 OCCUPANCY |
| CONSTRUCTION TYPE: | TYPE I-B (IBC) |
| FIRE SUPPRESSION SYSTEM: | FULLY SPRINKLERED |
| FIRE EXTINGUISHERS: | NO CHANGE TO EXISTING |
| **APPLICABLE CODES & STANDARDS:** | |
| ACCESSIBILITY | COMAR 05.02.02 - MARYLAND ACCESSIBILITY CODE, 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN |
| BUILDING | 2015 INTERNATIONAL BUILDING CODE |
| ELECTRICAL | 2014 NATIONAL ELECTRICAL CODE |
| ENERGY | 2015 INTERNATIONAL ENERGY CONSERVATION CODE |
| FIRE PREVENTION | 2015 INTERNATIONAL FIRE CODE |
| FUEL GAS | 2015 INTERNATIONAL FUEL GAS CODE |
| MECHANICAL | 2015 INTERNATIONAL MECHANICAL CODE |
| PLUMBING | 2015 INTERNATIONAL PLUMBING CODE |
| SUSTAINABILITY | 2012 INTERNATIONAL GREEN CONSTRUCTION CODE AS ADOPTED AND AMENDED BY ORD. 15-0646 |
| REHAB | COMAR 05.06.01 - MARYLAND BUILDING REHABILITATION CODE/ 2015 INTERNATIONAL EXISTING BUILDING CODE |
| HEALTH CARE CODES | 2010 FGI GUIDELINES FOR DESIGN & CONSTRUCTION FOR HEALTHCARE FACILITIES<br>NFPA 99, 2005 EDITION |
| LIFE SAFETY | NFPA 101 LIFE SAFETY CODE, 2015 EDITION AS REQUIRED BY THE JOINT COMMISSION |
| LOCAL SUPPLEMENTS | BALTIMORE CITY, BUILDING, FIRE, & RELATED CODES AS LAST AMENDED BY ORD. 15-0646 |

| OCCUPANCY LOAD: | PER IBC TABLE 1004.1.2 & LSC TABLE 7.3.1.2 | |
|---|---|---|
| RENOVATED AREA | LOAD SF PER OCCUPANT | TOTAL OCCUPANTS |
| 541 SF | 100 | 6 |

**REQUIRED FIRE RESISTANCE RATINGS:**
PER IBC TABLE 601, TABLE 1018.1, 708.4, & LSC 30.3.6

| | |
|---|---|
| STRUCTURAL FRAME: | 2 HR |
| INTERIOR BEARING WALLS: | 2 HR |
| INTERIOR NON-BEARING WALLS & PARTITIONS: | 0 HR |
| FLOOR CONSTRUCTION: | 1 HR |
| CORRIDOR WALLS: | 0 HR |
| SHAFT ENCLOSURES: | 2 HR |

**OCCUPANCY SEPARATION:** PER IBC TABLE 508.4
NON SEPARATED

**MEANS OF EGRESS:**
EXIT ACCESS TRAVEL DISTANCE (IBC TABLE 1016.2 AND LSC 14.2.6.1 AND .2 AND LSC 30.2.6.3)
B OCCUPANCY 200'-0"

MAXIMUM DEAD END CORRIDOR LENGTH (IBC 1018.4, EXCEPTIONS 2 & LSC 30.2.6.3)
50'-0"

MINIMUM CORRIDOR WIDTH (EXCEPTIONS 5.2.1.1)
3'-0"

COMMON PATH OF TRAVEL (IBC 1014.3, EXCEPTION 1 & LSC 30.2.5.3.1)
B OCCUPANCY 100'-0"

## LIFE SAFETY LEGEND

- 2 HOUR FIRE RATED PARTITION
- 1 HOUR FIRE RATED PARTITION
- EXIT
- FEC — FIRE EXTINGUISHER CABINET
- B — OCCUPANCY DESIGNATION (BUSINESS)
- AREA OF RFOUT

| COMMON PATH OF TRAVEL | | TRAVEL DISTANCE | |
|---|---|---|---|
| | POINT "C" | EXIT #1 | EXIT #2 |
| POINT "A" | 70'-0" | 152'-0" | 147'-0" |
| POINT "B" | 57'-0" | 138'-0" | 128'-4" |

## INTERIM LIFE SAFETY MEASURES

IMPLEMENTATION OF INTERIM LIFE SAFETY MEASURES (ILSM) IS REQUIRED IN OR ADJACENT TO ALL CONSTRUCTION AREAS AND THROUGHOUT BUILDINGS WITH EXISTING LIFE SAFETY CODE & NCO DEFICIENCIES. ILSM CONSISTS OF THE FOLLOWING ACTIONS WHICH THE OWNER'S PROJECT TEAM AND THE CONTRACTORS MUST ADDRESS PRIOR TO AND DURING CONSTRUCTION

1. ENSURE EXITS PROVIDE FIRST AND UNOBSTRUCTED EXIT FOR TRAIN OWNER'S PERSONNEL, IF ALTERNATIVE EXITS MUST BE DESIGNATED, INSPECT AND DOCUMENT EXIT ACCESS ON A DAILY BASIS
2. ENSURE FIRE AND UNOBSTRUCTED ACCESS TO EMERGENCY DEPARTMENTS/SERVICES AND FOR EMERGENCY FORCES
3. ENSURE THAT THE BUILDING FIRE DETECTION AND SUPPRESSION SYSTEMS ARE NOT IMPAIRED. INSTALL A TEMPORARY HARDWIRED SMOKE AND/OR HEAT DETECTOR SYSTEM WITHIN THE AREAS AFFECTED BY CONSTRUCTION ACTIVITIES (OR WHERE REQUIRED BY OWNER OR AUTHORITY HAVING JURISDICTION) WHEN THE FIRE DETECTION AND SUPPRESSION SYSTEM IS IMPAIRED. A TEMPORARY SPRINKLER SYSTEM IS ALSO ACCEPTABLE. PROVIDE DOCUMENTATION ON INITIAL TEST AND ON TEMPORARY SYSTEMS ON A MONTHLY BASIS OR MORE FREQUENTLY AS DETERMINED BY THE ILSM TEAM AND PROVIDE WRITTEN DOCUMENTATION OF THE INSPECTION TO THE OWNER
4. ENSURE TEMPORARY CONSTRUCTION PARTITIONS ARE SMOKE TIGHT AND BUILT OF NON-COMBUSTIBLE MATERIALS
5. PROVIDE ADDITIONAL FIRE FIGHTING EQUIPMENT AND TRAIN PERSONNEL IN ITS USE
6. DEVELOP STORAGE, HOUSEKEEPING, AND DEBRIS REMOVAL POLICIES AND PROCEDURES THAT REDUCE THE FLAMMABLE AND COMBUSTIBLE FIRE LOAD TO THE LOWEST LEVEL NECESSARY FOR DAILY OPERATIONS. DOCUMENT AND ENFORCE THESE POLICIES ON A DAILY BASIS
7. CONDUCT AND DOCUMENT HAZARD SURVEYS ONCE ON A DAILY BASIS OF BUILDING GROUNDS AND EQUIPMENT WITH SPECIAL ATTENTION TO EXCAVATIONS, CONSTRUCTION AREAS, CONSTRUCTION STORAGE, AND FIELD OFFICES

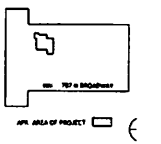
ARCHITECT
Hord Coplan Macht Inc.
700 E. Pratt St. Suite 1203 Baltimore MD
p 410 837 7311 f 410 837 66

MEP
Burdette, Koehler, Murphy & Associates
6300 Stier Hill Lane, Suite 400
Baltimore, MD 21209
p. 410.323.8888

STRUCTURE
Mandilas Consultants
902 Reisterstown Rd. Suite 1700
Baltimore, MD 21208
p 410.486.2377

# KENNEDY KRIEGER INSTITUTE
## MPI SCANNER RENOVATION
## 707 NORTH BROADWAY BALTIMORE, MD 21205

KEYPLAN




Kennedy Krieger Institute

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ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

Project Name: MPI SCANNER RENOVATION
Project Number: 218260.00
Date: 12.20.2019
Scale: As indicated
Drawing: LIFE SAFETY PLAN & INFECTION CONTROL

# CS.30

CONSTRUCTION DOCS

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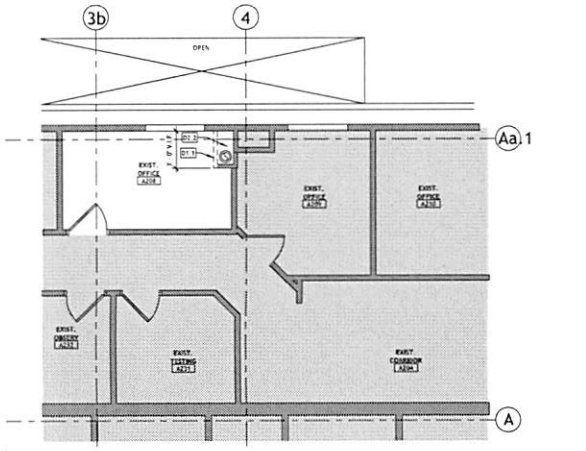
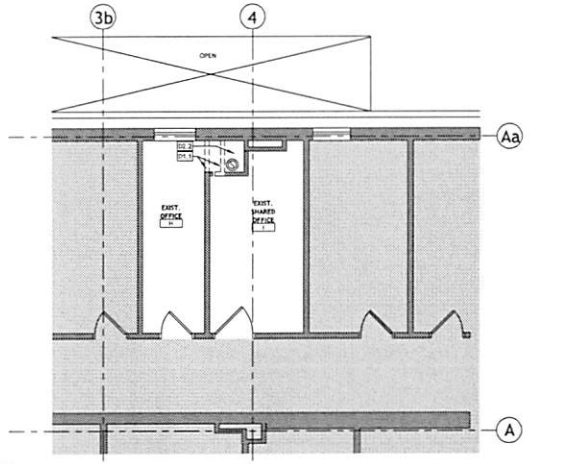
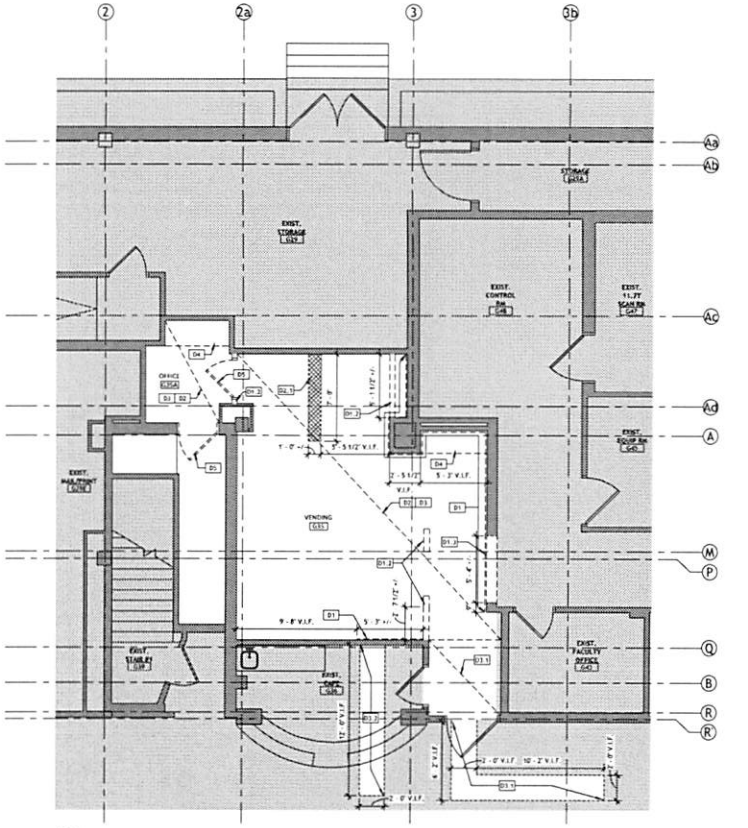
PREVIEW Date: Oct 14, 2020 Workspace ID: WS005789S4 Funding Opportunity Number: PWEAA2020




6A PARTIAL LEVEL 2 - DEMOLITION PLAN
A1.00 1/4" = 1'-0"




8A PARTIAL LEVEL 1 - DEMOLITION PLAN
A1.00 1/4" = 1'-0"




8F PARTIAL GROUND FLOOR - DEMOLITION PLAN
A1.00 1/4" = 1'-0"

## DEMOLITION GENERAL NOTES

1. FIELD VERIFY EXISTING CONSTRUCTION AND RELATED CONDITIONS PRIOR TO START OF DEMOLITION.
2. IMMEDIATELY NOTIFY ARCHITECT OF DISCREPANCIES FOUND BETWEEN DRAWINGS AND EXISTING CONDITIONS.
3. COORDINATE DEMOLITION AND CONSTRUCTION ACTIVITIES WITH THE OWNER TO MINIMIZE DISRUPTION OF NORMAL DAILY FUNCTIONING WITHIN THE OWNER'S OCCUPIED AREAS.
4. MAINTAIN THE EXISTING BUILDING IN A WEATHER TIGHT CONDITION AT ALL TIMES.
5. KEEP NOISE DURING DEMOLITION AND CONSTRUCTION TO A MINIMUM.
6. DASHED LINES INDICATE WALLS AND ITEMS TO BE RE-MOVED.
7. THE ITEMS IDENTIFIED TO BE REMOVED REPRESENT THE MAJOR ITEMS ONLY AND IN NO WAY TRY TO IDENTIFY ALL ASSOCIATED PIECES AND PARTS TO BE REMOVED.
8. PROTECT EXISTING CONSTRUCTION SHOWN AS REMAINING. USE CAUTION WHEN REMOVING PARTITIONS, CEILINGS, AND OTHER CONSTRUCTION ADJACENT TO COLUMNS, BEAMS, AND OTHER STRUCTURAL ELEMENTS. AVOID DAMAGE TO THE EXISTING STRUCTURE TO REMAIN. REPAIR DAMAGE TO THE EXISTING CONSTRUCTION CAUSED BY WORK UNDER THIS CONTRACT. THIS INCLUDES, BUT IS NOT LIMITED TO FIREPROOFING, GYPSUM WALL BOARD, CEILINGS, ETC.
9. PROTECT EXISTING ITEMS, EQUIPMENT, PLUMBING FIXTURES, ETC. INDICATED TO REMAIN IN PLACE FROM DIRT AND DAMAGE DURING DEMOLITION AND CONSTRUCTION. WHEN NECESSARY TO ENSURE PROTECTION, REMOVE ITEMS, SORT, LABEL, BOX, AND STORE AS DIRECTED BY OWNER.
10. PROPERLY STORE AND PROTECT SALVAGED ITEMS IDENTIFIED TO BE REUSED IN THIS PROJECT.
11. THE OWNER SHALL RETAIN SALVAGE THAT IS OF VALUE AS DESIGNATED BY THE OWNER'S REPRESENTATIVE. THE OWNER WILL DIRECT THE CONTRACTOR AS TO THE LOCATION OF STORAGE AREA FOR VARIOUS ITEMS.
12. THE OWNER WILL REMOVE NON-ATTACHED ITEMS SUCH AS MOBILE EQUIPMENT, DESKS, TABLES, CHAIRS, DRAPERIES, ETC. PRIOR TO COMMENCEMENT OF DEMOLITION WORK.
13. SEE SHEET CS.31 FOR TEMPORARY PARTITIONS TO BE BUILT AS PART OF CONTRACTOR'S INFECTION CONTROL MEASURES.
14. REMOVE WALLS INDICATED TO BE DEMOLISHED FROM FLOOR TO STRUCTURE ABOVE AND INCLUDE ALL MECHANICAL, ELECTRICAL, EQUIPMENT, ETC. PREPARE ALL DISTURBED AREAS FOR NEW CONSTRUCTION.
15. REMOVE MISCELLANEOUS EQUIPMENT ATTACHED TO WALLS, FLOORS, AND CEILINGS. COORDINATE WITH THE OWNER FOR ITEMS TO BE RETAINED OR REUSED.
16. REMOVAL OF A PARTICULAR ITEM I.E. WALLS, DOORS, ETC. SHALL INCLUDE ALL RELATED ITEMS. CORNER GUARDS, ELECTRICAL DEVICES, MECHANICAL, PLUMBING, AND HARDWARE. CAP ANY LINES REMAINING AFTER FIXTURES ARE REMOVED. DO NOT REMOVE MORE THAN IS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION.
17. WHERE PARTIAL DEMOLITION OF A WALL IS REQUIRED, COORDINATE EXTENT AND LOCATION OF REMOVED PORTION WITH FLOOR PLAN.
18. WHERE REMOVAL OF FLOOR COVERINGS AND WALL BASE ARE REQUIRED, REMOVE ONLY WHAT IS NECESSARY TO COMPLETE DEMOLITION. DEMOLITION INCLUDES REMOVAL OF ADHESIVES, GROUT BEDS, ETC. SCRAPE FLOORS SMOOTH.
19. ACOUSTICAL PANEL CEILINGS AND RELATED SUPPORT SYSTEMS TO BE REMOVED SHALL INCLUDE, BUT ARE NOT LIMITED TO, CEILINGS PANELS, HANGER WIRE, LIGHT FIXTURES, GRILLES, DIFFUSERS, EXIT SIGNS, COMMUNICATIONS DEVICES, ETC.
20. SAW CUTTING NOTE: DO NOT OVER-CUT OPENING SIZE. DO NOT EXTEND SAW BLADE PAST OPENING BOUNDARY. CHIP OUT CORNERS TO OBTAIN REQUIRED OPENING DIMENSIONS.
21. PROVIDE NEAT, CLOSE FITTING OPENINGS FOR MECHANICAL, PLUMBING, AND ELECTRICAL PENETRATIONS.
22. COORDINATE REMOVAL OF TELEPHONES, PA SYSTEMS, INTERCOMS, NURSE CALL SYSTEMS, ETC. WITH THE OWNER.
23. REMOVE DIRT, DEBRIS, AND FOREIGN MATTER FROM EXISTING SURFACES TO RECEIVE NEW DIRECT APPLIED FINISHES.
24. REMOVE PORTIONS OF CEILING AND WALL ON FLOORS ABOVE AND BELOW AS NECESSARY TO ACCESS THE WORK. SAVE ACOUSTICAL PANELS, SUSPENSION SYSTEM COMPONENTS, AND OTHER FINISHES TO REPLACE WHEN ACCESS IS COMPLETE.
25. REMOVE DEBRIS PROPERLY FROM SITE. DEMOLISHED MATERIAL, EXCEPT THAT LISTED OR MARKED BY ARCHITECT FOR SALVAGE, SHALL BECOME THE PROPERTY OF THE CONTRACTOR. DISPOSE OF DEBRIS LEGALLY. DO NOT BURN ON SITE. DO NOT ALLOW DEBRIS TO ENTER SEWERS OR STORM DRAINS. DO NOT LET PILED DEBRIS ENDANGER STRUCTURE OR BLOCK EXITS OR ROADWAYS.
26. SEE STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR COORDINATION AND ADDITIONAL DEMOLITION REQUIREMENTS.

## DEMO KEYNOTES

| | |
|---|---|
| D1 | REMOVE GWB DOWN TO FACE OF EXISTING STUD AND REMOVE EXISTING WALL BASE TO EXTENTS SHOWN. |
| D1.1 | REMOVE PORTION OF WALL AND SLAB AS NEEDED TO EXPAND EXISTING CHASE AND PROVIDE FOR MEP WORK. COORDINATE WITH MEP DRAWINGS. PROVIDE NEW CONCRETE SLAB LEVELER AS REQUIRED FOR NEW FLOORING INSTALLATION. |
| D1.2 | REMOVE EXISTING WALL COMPLETELY FROM FLOOR SLAB TO STRUCTURE ABOVE, INCLUDING BUT NOT LIMITED TO WALL FINISHES AND WALL MOUNTED COMPONENTS FOR EXTENTS SHOWN. |
| D1.3 | REMOVE PORTION OF EXISTING WALL FOR INSTALLATION OF DOOR. |
| D2 | REMOVE EXISTING WALL BASE, FLOORING, AND ADHESIVES DOWN TO STRUCTURAL SLAB BELOW FOR EXTENTS SHOWN. |
| D2.1 | REMOVE EXISTING CONCRETE SLAB ON GRADE TO EXTENTS SHOWN WHERE HATCHED. COORDINATE WITH PLUMBING DRAWINGS. VERIFY LOCATION IN FIELD. PROVIDE NEW CONCRETE SLAB LEVELER AS REQUIRED FOR NEW FLOORING INSTALLATION. |
| D2.2 | COORDINATE CORE DRILLING LOCATIONS WITH PERMITTED LOCATIONS IN EXISTING PRECAST CONCRETE PLANKS. |
| D3 | REMOVE EXISTING CEILING SYSTEM INCLUDING BUT NOT LIMITED TO A.C.P. GRID SYSTEMS, GWB BULKHEADS, SUPPORT MEMBERS AND ASSOCIATED CEILING MOUNTED DEVICES. REMOVE MECHANICAL AND ELECTRICAL SYSTEMS IN CEILING AS NOTED ON MECHANICAL AND ELECTRICAL DEMOLITION DRAWINGS. |
| D3.1 | REMOVE & REPLACE ACOUSTICAL CEILING PANELS FOR INSTALLATION OF MECHANICAL ELECTRIC & PLUMBING WORK. DOCUMENT LOCATIONS AND INFORM ARCHITECT OF DAMAGED PANELS PRIOR TO REMOVAL. |
| D3.2 | REMOVE PORTION OF EXISTING GWB CEILINGS INCLUDING BUT NOT LIMITED TO BULKHEADS, SUPPORT MEMBERS AND ASSOCIATED CEILING MOUNTED DEVICES AS NECESSARY FOR REMOVAL AND INSTALLATION OF MECHANICAL, ELECTRIC & PLUMBING WORK. PROTECT SPRINKLER SYSTEM, MECHANICAL, AND ELECTRICAL INFRASTRUCTURE DURING DEMOLITION AND THROUGHOUT CONSTRUCTION. TO BEST EXTENTS POSSIBLE AND IN CONJUNCTION WITH APPLICABLE FIRE CODES, MAINTAIN SYSTEM FUNCTIONALITY DURING CONSTRUCTION. |
| D4 | REMOVE EXISTING PLASTIC LAMINATE CLAD CABINETRY INCLUDING BASE CABINETS, WALL CABINETS, SUPPORT PANELS, COUNTERTOP AND BACKSPLASH, AND KNEE WALL. |
| D5 | REMOVE AND SALVAGE EXISTING DOOR AND FRAME. SALVAGE HARDWARE, COVER WITH PROTECTIVE WRAPPING, BOX AND DELIVER TO OWNER'S STORAGE FACILITY. |

## DRAWING LEGEND

- - - - - - SEE KEYNOTE D1

ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St. Suite 1200 Baltimore, MD
p. 410. 837. 7311 f. 410. 837. 65

MEP
Burditt, Koehler, Murphy & Associates
6300 Blair Hill Lane, Suite 400
Baltimore, MD. 21209
p. 410.323.9600

STRUCTURE
Morabito Consultants
952 Hebelstreet Rd. Suite 1700
Soarks, MD. 21152
p. 410.465.2377

# KENNEDY KRIEGER INSTITUTE
# MPI SCANNER RENOVATION
## 707 NORTH BROADWAY BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institu

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| no. | date | revision |
|---|---|---|

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CONSTRUCTION DOCS

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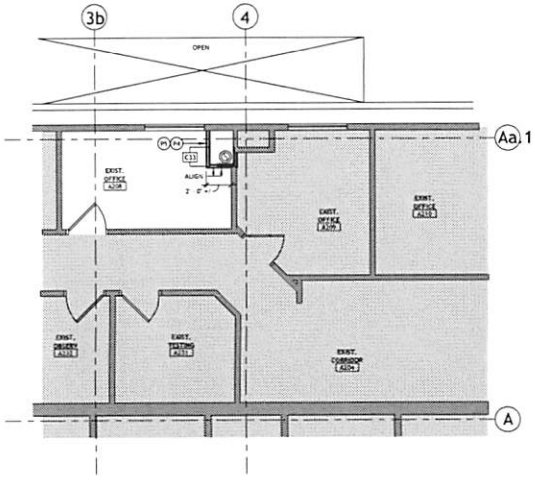
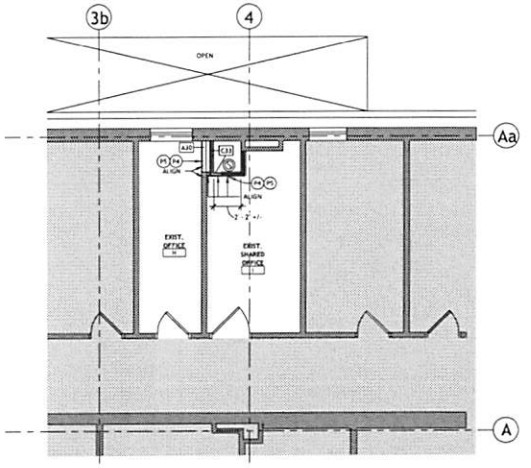


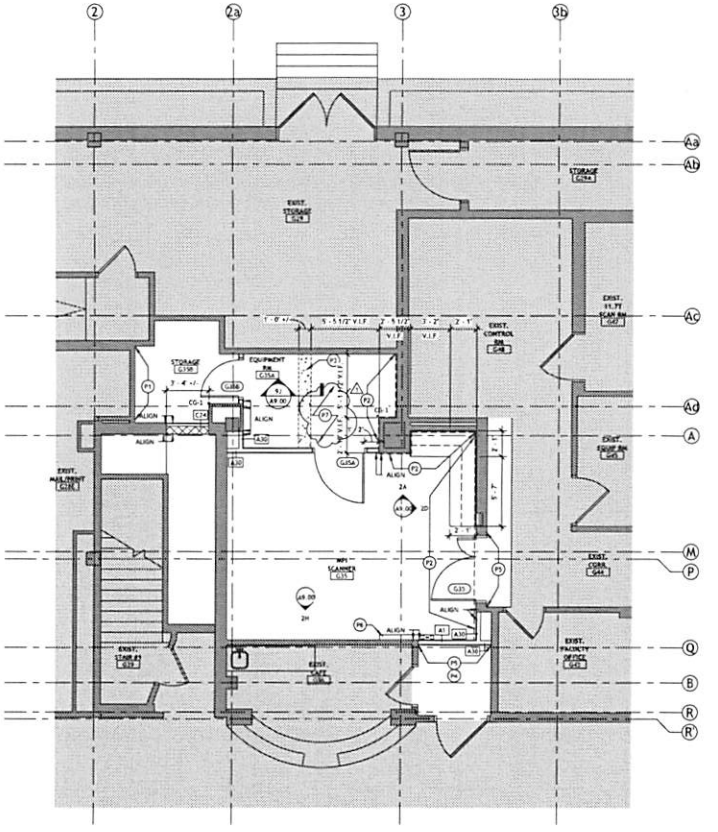

6A PARTIAL LEVEL 2 - NEW WORK

A2.00 1/4" = 1'-0"




8A PARTIAL LEVEL 1 - NEW WORK

A2.00 1/4" = 1'-0"




8F PARTIAL GROUND FLOOR - NEW WORK PLAN

A2.00 1/4" = 1'-0"

## GENERAL PLAN NOTES

1. FIELD VERIFY EXISTING OR CURRENT CONSTRUCTION RELATED CONDITIONS PRIOR TO THE START OF NEW CONSTRUCTION.
2. IMMEDIATELY NOTIFY ARCHITECT OF DISCREPANCIES FOUND BETWEEN FIELD CONDITIONS AND DRAWINGS.
3. DIMENSIONS SHOWN ARE TO FACE OF FINISHED GYPSUM BOARD.
4. EVERY EFFORT HAS BEEN MADE TO IDENTIFY THOSE DIMENSIONS WHICH MAY VARY WITH V.I.F. DIMENSIONS NOT SO NOTED ARE INTENDED TO BE HELD AS INDICATED. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OR INSTALLATION OF BUILDING COMPONENTS.
5. MECHANICAL, ELECTRICAL, AND PLUMBING (M.E.P.) ITEMS AND EQUIPMENT APPEARING ON ARCHITECTURAL DRAWINGS ARE SHOWN FOR CLARITY AND ARE NOT MEANT TO BE ALL INCLUSIVE. SEE APPROPRIATE M.E.P. SHEETS FOR ADDITIONAL INFORMATION.
6. FOR PARTITION TYPES AND DOOR TYPES, SEE SHEET A10.00.
7. "WALL" AND "PARTITION" ARE USED IN DRAWING SET TO DENOTE EITHER WALLS OR PARTITIONS INTERCHANGEABLY. REFER TO FLOOR PLANS FOR LOCATION OF PARTITIONS AND LIFE SAFETY PLAN FOR FIRE RATINGS.
8. WALLS WITHOUT PARTITION TAGS TO BE TYPE A1 UNLESS ADJACENT PARTITION REQUIRES DIFFERENT FIRE RATING. TYPICAL DETAILS APPLY TO ALL PARTITION TYPES U.N.O.
9. WHERE ROOMS WITH DIFFERENT PARTITION REQUIREMENTS ARE ADJACENT, INSTALL A PARTITION WITH THE GREATER FIRE RATING, PRESSURE RATING AND STC RATING BETWEEN THEM.
10. AT INTERSECTION OF DISSIMILAR PARTITION TYPES, HIGHEST RATED PARTITION SHALL RUN THROUGH THE INTERSECTION TO MAINTAIN ENCLOSURE. MAINTAIN RATING OF RATED PARTITION AT INTERSECTION WITH COLUMN ENCLOSURES BY EXTENDING ENCLOSURE AROUND COLUMN.
11. WHERE TWO DIFFERENT PARTITION SYSTEMS ABUT, THE FINISH GYPSUM BOARD FACE SHALL BE FLUSH.
12. CONSTRUCT ADJACENT WALLS THAT APPEAR TO ALIGN IN PLAN TO ALIGN IN PLAN.
13. HOLD NEW FURRED PARTITIONS TIGHT TO EXISTING STRUCTURE UNLESS NOTED OTHERWISE.
14. CONSTRUCT FIRE-RATED PARTITIONS ACCORDING TO THE FIRE TEST INDICATED. NO SUBSTITUTIONS OF MATERIALS OR DEVIATIONS FROM CONSTRUCTION ARE ALLOWED EXCEPT THAT THICKER GWB AND/OR DEEPER STUDS MAY BE USED. AND SOUND ATTENUATION BLANKETS MAY BE ADDED, AS PERMITTED BY THE APPLICABLE FIRE TEST.
15. LOCATE STUDS SO AS NOT TO CONFLICT WITH FLUSH-MOUNTED ITEMS SUCH AS FIRE HOSE CABINETS, TOILET ACCESSORIES, AND SIMILAR ITEMS. PROVIDE BLOCKING, METAL SUPPORT STRAPS OR OTHER HARDWARE CAPABLE OF SUPPORTING THE LOAD SAFELY.
16. WHERE SPACE IS TOO TIGHT TO ALLOW STUDS TO BYPASS STRUCTURAL ELEMENTS SUCH AS COLUMNS OR STRUCTURAL BRACING, CONFIGURE FRAMING AS AN INFILL BETWEEN THOSE ELEMENTS, ALLOWING THE WALLBOARD TO BYPASS THE INTERRUPTION. PROVIDE ADDITIONAL SUPPORT IF THE STUD OR TRACK SPACING EXCEEDS 16 INCHES.
17. WHERE A FIRE RATING IS INDICATED FOR AN EXISTING WALL OR FLOOR/CEILING ASSEMBLY, FIRESTOP ALL PENETRATIONS (EXISTING AND NEW) WITHIN THE DEFINED SCOPE OF WORK) PER THE WALL RATING REQUIREMENT.
18. CLOSE OFF AND PATCH OPENINGS AND VOIDS LEFT BY THE REMOVAL OF EXISTING CONSTRUCTION, EQUIPMENT, PIPING, DUCTS, ELECTRICAL DEVICES, ETC. TO MAINTAIN REQUIRED FIRE RATING IN A RATED ASSEMBLY. PREPARE PATCHED AREAS TO RECEIVE NEW FINISHES TO MATCH EXISTING ADJACENT FINISHES.
19. WHERE GWB CONTROL JOINTS ARE NEEDED TO COMPLY WITH SPECIFIED REQUIREMENTS, LOCATE JOINT AT HINGE SIDE OF NEAREST DOOR AND ALIGN WITH THE INSIDE EDGE OF DOOR FRAME. WHERE CONFLICTS ARISE OR NO DOORS ARE WITHIN SPECIFIED LIMITS, REQUEST LOCATION OF CONTROL JOINT FROM ARCHITECT.
20. PROVIDE BLOCKING TO SUPPORT WALL MOUNTED EQUIPMENT, CASEWORK, AND ACCESSORIES. COORDINATE SPECIFIC PLACEMENT OF BLOCKING WITH EQUIPMENT AND ACCESSORIES REQUIREMENTS.
21. PROTECT OPENINGS FOR ITEMS RECESSED INTO RATED PARTITIONS (SUCH AS OUTLET BOXES, PANEL BOXES, ETC.) WITH BACK-UP MATERIALS SO AS TO RETAIN THE INTEGRITY OF THE PARTITION RATING.
22. FIRESTOP PENETRATIONS IN FIRE RATED AND SMOKE PARTITIONS. IN NON-FIRE-RATED AND SMOKE PARTITIONS, SEAL PENETRATIONS WITH AN ACOUSTICAL SEALANT AND FILL WITH SOUND ATTENUATION BLANKETS.
23. REVIEW EXISTING WALLS TO REMAIN THAT ARE FIRE-RATED OR SMOKE-TIGHT, AND NOTIFY THE AE TEAM OF ANY PENETRATIONS WITHOUT APPROPRIATE CLOSURE ASSEMBLIES OR DUCTS WITHOUT FIRE/SMOKE DAMPERS.
24. REPAIR SPRAY-ON FIREPROOFING DAMAGED DURING CONSTRUCTION. TO REQUIRED EXISTING HOUR RATING.
25. CONFIRM EACH LOCATION FOR WALL MOUNTED ITEMS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, ACCESSORIES, OUTLETS, CALL BUTTONS, ETC. WITH THE OWNER PRIOR TO INSTALLATION.
26. COORDINATE WITH MAE REQUIREMENTS FOR CONDITIONS THAT WILL DISTURB EXISTING CONDITIONS AND WHICH WILL REQUIRE SELECTIVE DEMOLITION, CUTTING AND PATCHING, AND FINISHING OUTSIDE OF THAT SHOWN ON THE DRAWINGS.
27. PATCH EXISTING CONCRETE FLOOR SLAB AS NECESSARY TO PRODUCE A FLAT, LEVEL SURFACE FOR APPLICATIONS OF NEW FINISHES. WHERE GAPS IN SURFACE EXIST FOLLOWING REMOVAL OF PARTITIONS OR OTHER CONSTRUCTION, FILL WITH MATERIAL COMPATIBLE WITH EXISTING SLAB. CUT OUT AREAS TOO DAMAGED TO PROVIDE SMOOTH FINISH SUBSTRATE AND REPLACE WITH NEW CONSTRUCTION. PREPARE SLAB SURFACE TO RECEIVE NEW FINISHES. CONCRETE SLABS SHALL BE CLEAN, DRY, FREE OF CRACKS, MOISTURE, OIL, GREASE, DIRT AND ANY FOREIGN MATERIALS.
28. WHERE PATCHING OR RESURFACING OF EXISTING FLOOR IS REQUIRED, SLOPING OR RAMPING SHALL NOT EXCEED 1/8 INCH PER FOOT.

## NEW WORK KEYNOTE

| | |
|---|---|
| P1 | PATCH AND FIX ANY PENETRATIONS, AND PREP EXISTING GWB TO RECEIVE NEW PRIMER AND PAINT. |
| P2 | PROVIDE AND INSTALL 2 LAYERS OF SILICON STEEL OVER 1/4" FIRE RATED PLYWOOD AND FINISH WITH NEW 1 LAYER OF GWB AT EXISTING STUDS. SILICON STEEL TO BE INSTALLED WITH OVERLAPPING SEAMS. WELDED JOINTS OR HEAT SEALED JOINTS ARE NOT PERMITTED. REFER TO DETAIL 9A/ A20.00. |
| P3 | BACKFILL EXISTING SLAB ON GRADE WITH A 35 MIL VAPOR BARRIER, GRAVEL AS REQUIRED FOR BACKFILL AND 3000 PSI LIGHTWEIGHT CONCRETE WITH 6X6 W2.0 X W2.0 WWF TIED TO #3 REBAR WITH 6" EPOXY EMBEDMENT INTO THE EXISTING SLAB AT 12" O.C. ALONG THE LENGTH OF THE TRENCH. PROVIDE NEW CONCRETE SLAB LEVELER AS REQUIRED FOR NEW FLOORING INSTALLATION. |
| P4 | MODIFY CEILING TILE AND GRID AS NECESSARY AT NEW WALL. |
| P5 | PATCH AND REPAIR FLOOR AND WALL BASE DUE TO DEMOLITION AND NEW WORK. FLOORING AND WALL BASE TO MATCH ADJACENT EXISTING FINISHES. |
| P6 | EXPOSED TUBULAR LIGHTING ACS MOUNTING DUCT. COORDINATE LOCATION AND INSTALLATION WITH STANDARD STEEL TUBULAR DUCT DRAWINGS. |
| P7 | PATCH, SEAL AND PROVIDE NECESSARY FIRE STOPPING/PROTECTION AT ANY WALL PENETRATIONS. |

DRAWING LEGEND

SEE KEYNOTE P2

ARCHITECT
Hord Coplan Macht, Inc.
750 E. Pratt St. Suite 1200 Baltimore, MD
p. 410 837 7311 f. 410 837 65

MEP
Burdette, Koehler, Murphy & Associates
6300 Bier Hill Lane, Suite 400
Baltimore, MD 21209
p. 410.323.2600

STRUCTURE
Morabito Consultants
952 Ridgebrook Rd, Suite 1700
Sparks, MD 21152
p. 410.465.2377

KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

APX. AREA OF PROJECT

Kennedy Krieger Institu

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| no. | date | revision |
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MPI SCANNER RENOVATION

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Drawing
NEW WORK PLANS

A2.00

CONSTRUCTION DOCS

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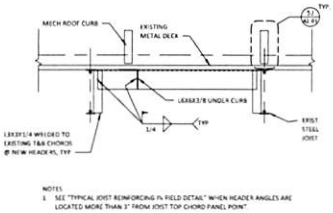
Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

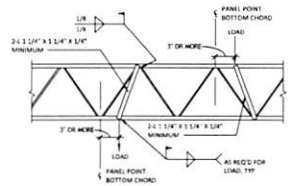
| GENERAL PLAN NOTES |
|---|
| 1. REFER TO SHEET A2.00 FOR GENERAL PLAN NOTES |

| STRUCTURAL PLAN NOTES |
|---|
| 1. EXISTING ROOF DECK IS 1 1/2" X 22 GAUGE METAL DECK.<br>2. EXISTING STRUCTURAL STEEL: S A 572, GRAE 50<br>3. EXISTING INFORMATION IS BASED ON EXISTING DRAWINGS COMPLETED BY MORABITO CONSULTANT'S DATED: 1/18/2002 |

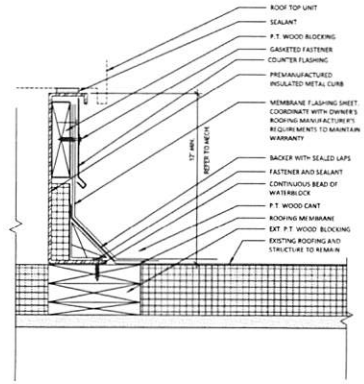
| NEW WORK KEYNOTE | |
|---|---|
| P7 | GALVANIZED UNISTRUT SUPPORT FRAMING ON TOP OF CURB, TYP |
| P8 | UNDER DECK ANGLE SUPPORTING FRAME, TYP |
| P9 | PATCH EXISTING PITCH POCKET VERIFY LOCATIONS AND DIMENSIONS IN FIELD. COORDINATE ROOF WORK WITH MEP AND EXISTING UTILITY CHASE. COORDINATE WORK WITH OWNER'S ROOFING MANUFACTURER'S REQUIREMENTS TO MAINTAIN WARRANTY. |



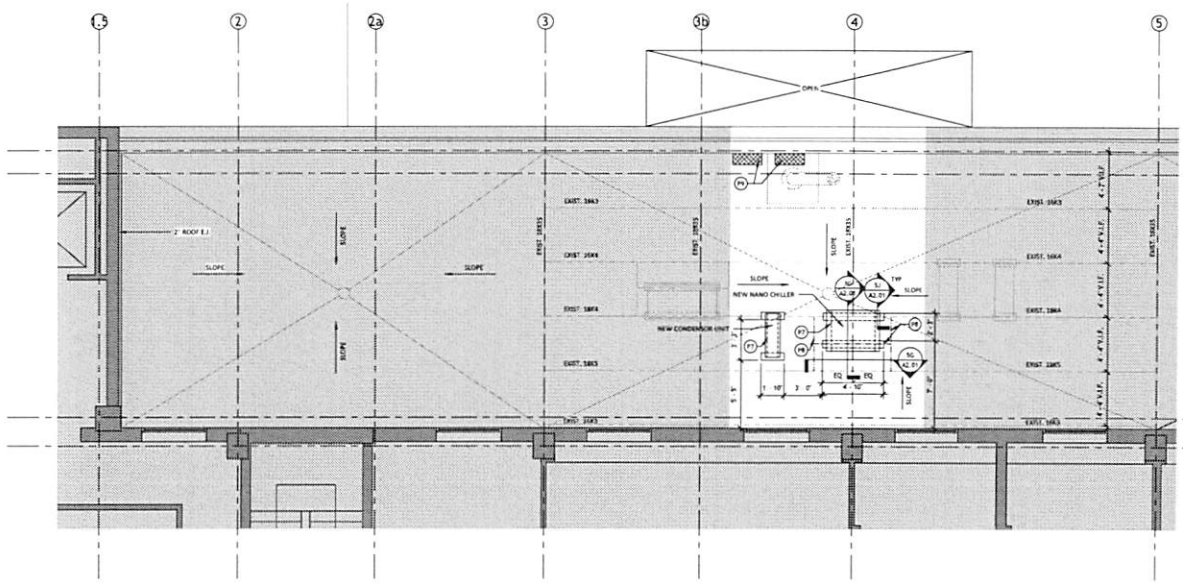

3G EQUIPMENT CURB SUPPORT
A2.01 A2.01 3/4" = 1'-0"




5G TYPICAL JOIST REINFORCEMENT IN FIELD
A2.01 A2.01 3/4" = 1'-0"




5J TYPICAL EQUIPMENT CURB DETAIL
A2.01 A2.01 3" = 1'-0"




8C PARTIAL ROOF PLAN - NEW WORK
A2.01 3/4" = 1'-0"


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St. Suite 1200
p. 410. 837. 7311
Baltimore, MD 21202
f. 410. 837. 7315

MEP
Burdette, Koehler, Murphy & Associates
6700 Blair Hill Lane, Suite 400
Baltimore, MD. 21209
p. 410.323.9000

STRUCTURE
Morabito Consultants
952 Ridgehouse Rd. Suite 1700
Ellicott City, MD. 21152
p. 410.465.2377


# KENNEDY KRIEGER INSTITUTE
## MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|

Project Name
MPI SCANNER RENOVATION

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Scale
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Drawing
NEW WORK ROOF PLAN & STRUCTURAL DETAILS

A2.01

CONSTRUCTION DOCS

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PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Number: PWEAA2020

PREVIEW Date: Oct 14, 2020 Workspace ID: WS005789S4 Funding Opportunity Number: PWEAA2020

## EQUIPMENT KEY

| ITEM | DESCRIPTION | PROVIDED BY | INSTALLED BY |
|---|---|---|---|
| CRT-09 | METRO CART 24" X 60" | OWNER | OWNER |
| IT-12 | MPI SCANNER CONSOLE | OWNER | OWNER |
| M-001 | MPI SCANNER | MANUFACTURER | MANUFACTURER |
| M-002 | MPI ELECTRONICS RACK | MANUFACTURER | MANUFACTURER |
| M-003 | MPI OIL CHILLER | MANUFACTURER | MANUFACTURER |
| M-004 | STAINLESS STEEL TABLE - REGENCY 24" X 48" 18 GA. 304 STAINLESS STEEL COMMERCIAL WORK TABLE W/ UNDERSHELF, BACKSPLASH, AND CASTERS | OWNER | OWNER |
| M-005 | WHYER THERANOSTIC SYSTEM | MANUFACTURER | MANUFACTURER |

## REFLECTED CEILING PLAN NOTES

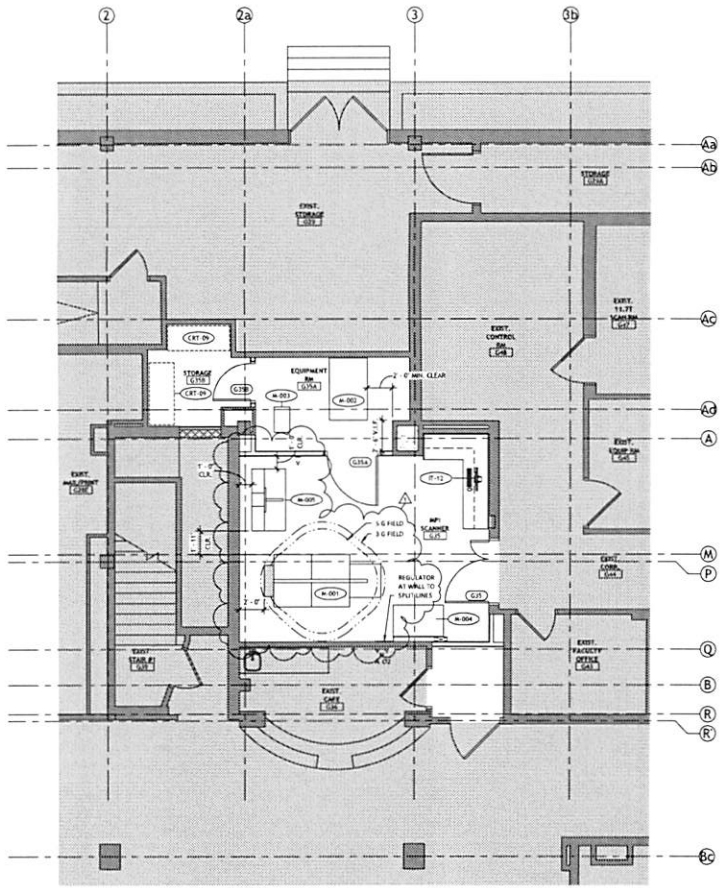
1. TYPICAL CEILING HEIGHT SHALL BE 9'-0" A.F.F. UNO
2. COORDINATE CEILING WORK WITH DEMOLITION AND NEW CONSTRUCTION PLANS, INCLUDING, BUT NOT LIMITED TO: RADIANT PANELS, MECHANICAL & ELECTRICAL WORK
3. CENTER CEILING GRIDS IN ROOM UNLESS SHOWN OTHERWISE
4. SEE ELECTRICAL DRAWINGS FOR LIGHT FIXTURE TYPES
5. CENTER SPRINKLER HEADS WITHIN THE APPROPRIATE CEILING PANELS OR LOCATE IN A SYMMETRICAL PATTERN IN A GYPSUM BOARD CEILING.
6. DO NOT PLACE SPRINKLER LINES OR HEADS OVER ANY EQUIPMENT.
7. CENTER CEILING PANEL LAYOUT WITHIN EACH ROOM WITHIN THE MAJOR RECTANGULAR SPACE UNO
8. COORDINATE PARTIAL REMOVAL/DEMOLITION OF EXISTING CEILING TO REMAIN NECESSARY AS A RESULT OF MEP INSTALLATION WITH THE MEP DRAWINGS. NOTIFY ARCHITECT OF DAMAGED PANELS PRIOR TO REMOVAL
9. REFER TO FINISH SCHEDULE FOR ACOUSTICAL PANEL TYPES AND PAINTED GYPSUM BOARD SURFACES FOR FINISH TYPE, STILE, AND COLOR INFORMATION
10. LOCATE CEILING DEVICES IN THE CENTER OF CEILING PANELS, UNO.
11. COORDINATE ALL TRADES INVOLVED IN ABOVE-CEILING WORK TO ENSURE CLEARANCE FOR FIXTURES, DUCTS, CEILING, ETC., NECESSARY TO MAINTAIN THE SPECIFIED CEILING HEIGHT ABOVE THE FINISHED FLOOR. NOTIFY ARCHITECT OF ANY CONFLICTS.

## REFLECTED CEILING PLAN LEGEND

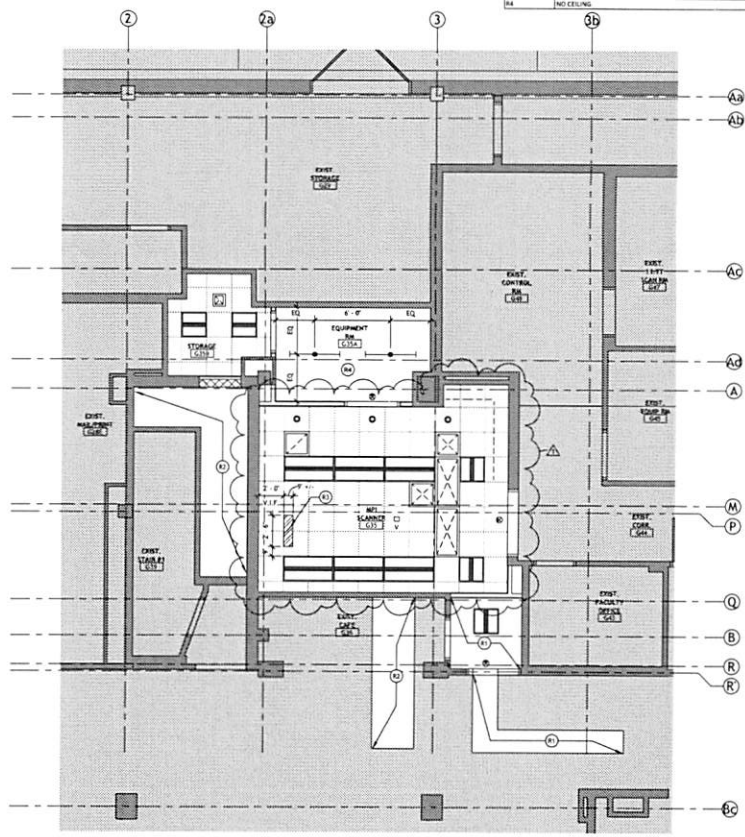
- 2' x 4' INDIRECT RECESSED LIGHT
- 2' x 2' INDIRECT RECESSED LIGHT
- LINEAR LIGHT
- EXIT SIGNS
- RECESSED DOWN LIGHT
- V VACUUM CEILING OUTLET
- RETURN DIFFUSER
- EXHAUST DIFFUSER
- SUPPLY DIFFUSER
- 2' x 2' CEILING GRID
- HEIGHT CEILING HEIGHT TAG

## NEW WORK KEYNOTE

| | |
|---|---|
| #1 | REINSTALL SALVAGED EXISTING ACOUSTICAL CEILING PANELS AFTER INSTALLATION OF MEP WORK. MAINTAIN EXISTING GRID WHERE POSSIBLE. DOCUMENT LOCATIONS AND INFORM ARCHITECT OF DAMAGED PANELS PRIOR TO REMOVAL. REPLACE PANELS AND GRID DAMAGED DURING CONSTRUCTION. |
| #2 | PATCH AND REPAIR CEILING AND SOFFITS WHERE REMOVED OR DAMAGED DUE TO DEMOLITION AND AT AREAS OF REMOVAL OF MEP WORK. CEILING TO MATCH ADJACENT EXISTING CONSTRUCTION AND FINISHES. |
| #3 | APPROXIMATE AREA TO REMAIN CLEAR FOR WIRING TO OVERHEAD CABLE TRAY. COORDINATE WITH MEP DRAWINGS AND EQUIPMENT MANUFACTURER. VERIFY FINAL LOCATION IN FIELD |
| #4 | NO CEILING |




8B PARTIAL GROUND FLOOR - EQUIPMENT PLAN




8H PARTIAL GROUND FLOOR RCP -NEW WORK PLAN

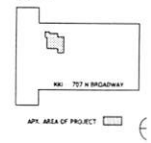
ARCHITECT
Hord Coplan Macht, Inc.
750 E. Pratt St. Suite 1200 Baltimore, MD
p 410 837 7311 f 410 837 65

MEP
Burdette, Koehler, Murphy & Associates
6300 Bier Hill Lane Suite 400
Baltimore, MD 21209
p 410.323.9000

STRUCTURE
Morabito Consultants
952 Ridgebrook Rd. Suite 1700
Sparks, MD 21152
p 410.465.2377

# KENNEDY KRIEGER INSTITUTE
## MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN




Kennedy Krieger Institu

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|
| 1 | 08.14.2020 | ASI 1 |

Project Name
MPI SCANNER RENOVATION

Project Number
219260.00

Date
12.20.2019

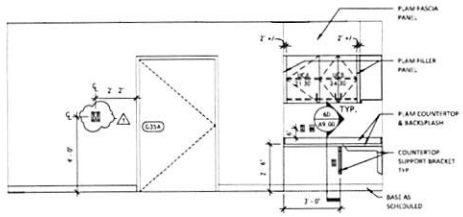
Scale
As indicated

Drawing
RCP & EQUIPMENT PLAN

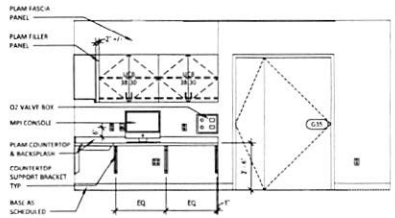
A3.00

CONSTRUCTION DOCS

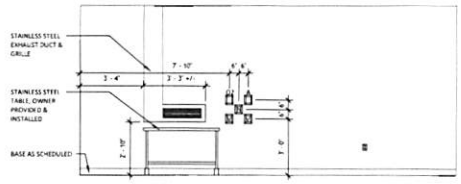
© Hord Coplan Macht, I



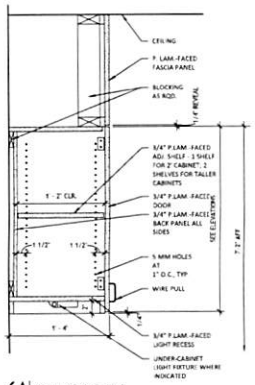

2A MPI SCANNER ROOM - NORTH
A2.00 A9.00 3/8" = 1'-0"



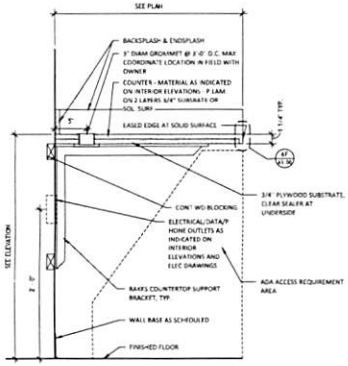

2D MPI SCANNER ROOM - EAST
A2.00 A9.00 3/8" = 1'-0"



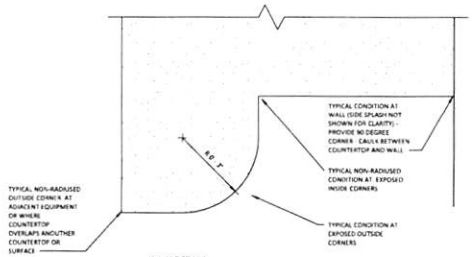

2H MPI SCANNER ROOM - SOUTH
A2.00 A9.00 3/8" = 1'-0"



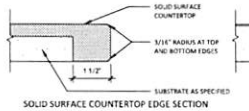

6A UCA/UCB SECTION
A9.00 A9.00 1 1/2" = 1'-0"



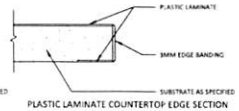

6D TYP. COUNTER SUPPORT
A9.00 A9.00 1 1/2" = 1'-0"




PLAN DETAILS

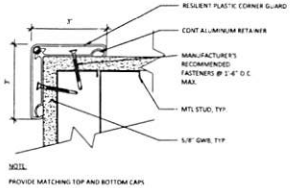



SOLID SURFACE COUNTERTOP EDGE SECTION

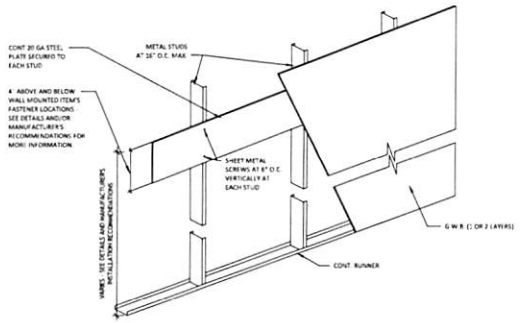



PLASTIC LAMINATE COUNTERTOP EDGE SECTION

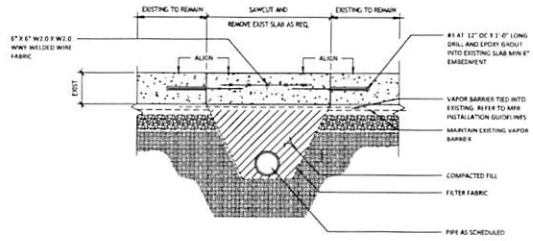
6F COUNTERTOP EDGE DETAILS
A9.00 A9.00 6" = 1'-0"




6K CORNER GUARD - PLASTIC, 90 DEGREE - CG-1
A9.00 6" = 1'-0"




9D SHEET METAL BLOCKING DETAIL
A9.00 1/4" = 1'-0"




**GENERAL NOTES:**
CONTRACTOR TO PATCH AND REPAIR EXISTING SLAB AFTER INSTALLATION OF NEW PIPING SYSTEMS AND REMOVAL OF EXISTING PIPING SYSTEMS.

SEE MECHANICAL DRAWINGS FOR UNDERSLAB PIPE LOCATIONS

CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS DURING EXCAVATION SO THAT EXISTING FOOTINGS ARE NOT UNDERMINED

**VAPOR RETARDER:**
POLYETHYLENE SHEET, ASTM D 4397, NOT LESS THAN 10 MILS (0.25 mm) THICK, OR PLASTIC SHEET, ASTM E 1745, CLASS C.

INSTALL, PROTECT, AND REPAIR VAPOR RETARDER ACCORDING TO ASTM E 1643. PLACE SHEETS IN POSITION WITH LONGEST DIMENSION PARALLEL WITH DIRECTION OF POUR. LAP JOINTS 6 INCHES (150 mm) AND SEAL WITH MANUFACTURER'S RECOMMENDED ADHESIVE OR JOINT TAPE.

PROVIDE PRODUCT DATA WITH SECTION 03 00 00 "CAST IN PLACE CONCRETE"

**FILTER FABRIC:**
FABRIC OF PP OR POLYESTER FIBERS OR COMBINATION OF BOTH, WITH FLOW RATE RANGE FROM 110 TO 330 gpm/sq. ft. (4480 to 13 440 L/min. per sq. m) WHEN TESTED ACCORDING TO ASTM D 4491.

STRUCTURE TYPE: NONWOVEN, NEEDLE-PUNCHED CONTINUOUS FILAMENT

SURVIVABILITY: AASHTO M 288 Class 2
STYLE: FLAT AND STOCK

PROVIDE PRODUCT DATA WITH SECTION 03 00 00 "CAST IN PLACE CONCRETE"

9J TRENCH INFILL DETAIL
A2.00 A9.00 1 1/2" = 1'-0"

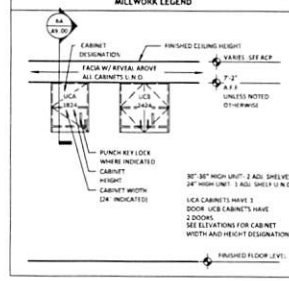
## OUTLET KEY

- TELEPHONE OUTLET
- DATA OUTLET
- VOICE & DATA OUTLET
- DUPLEX OUTLET - NORMAL POWER
- QUAD OUTLET - NORMAL POWER
- SW SWITCH
- AIR
- N NITROGEN
- O2 OXYGEN
- V VACUUM

## INTERIOR ELEVATION NOTES

1. SEE CASEWORK SCHEDULE ON SHEET A9.00 FOR CABINET LEGEND AND DETAIL REFERENCES.
2. SEE MOUNTING HEIGHT SCHEDULE ON SHEET A10.00 FOR TYPICAL DEVICE, ACCESSORY AND EQUIPMENT MOUNTING HEIGHTS.
3. SEE EQUIPMENT PLAN ON SHEET A3.90 FOR ADDITIONAL EQUIPMENT INFORMATION.

## MILLWORK LEGEND





ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St. Suite 1200 Baltimore, MD
p. 410. 837. 7315 f. 410. 837. 68

MEP
Burdette, Koehler, Murphy & Associates
6700 Deer Hill Lane, Suite 400
Baltimore, MD 21209
p. 410.323.0900

STRUCTURE
Morabito Consultants
902 Ridgebrook Rd, Suite 1790
Sparks, MD 21152
p. 410.465.2377


# KENNEDY KRIEGER INSTITUTE
# MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

APL AREA OF PROJECT

Kennedy Krieger Institute

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|
| 1 | 06.14.2020 | ASI 1 |

Project Name
MPI SCANNER RENOVATION

Project Number
219260.00

Date
12.20.2019

Scale
As indicated

Drawing
ELEVATIONS & DETAILS

A9.00

CONSTRUCTION DOCS

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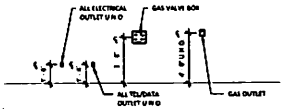
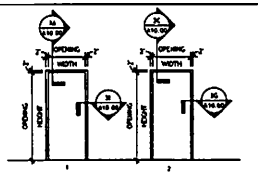
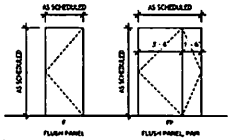
PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Fund: 0100 Number: PWEA2020



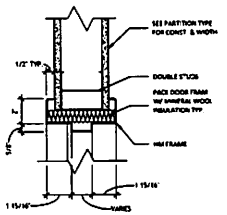

2B MOUNTING HEIGHT SCHEDULE
AIA 1/4" = 1'-0"



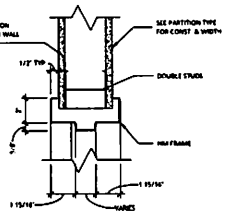

2D DOOR FRAME LEGEND
AIA 1/4" = 1'-0"



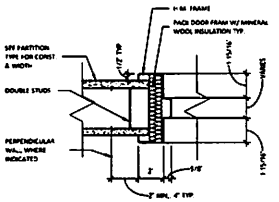

2E DOOR PANEL LEGEND
AIA 1/4" = 1'-0"



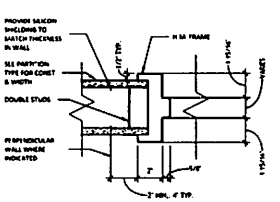

3A DOOR HEAD
AIA 3" = 1'-0"



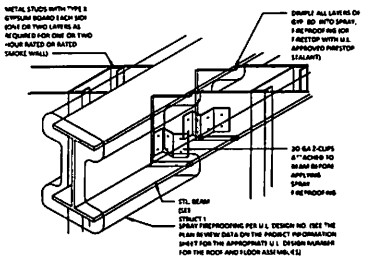

3C DOOR HEAD @ INTERIOR WITH SHIELDING
AIA 3" = 1'-0"



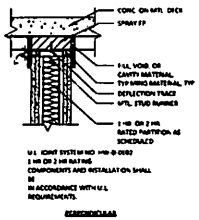

3E DOOR JAMB
AIA 3" = 1'-0"

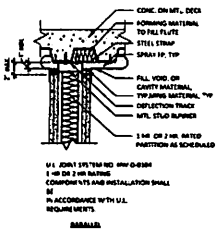



3G DOOR JAMB @ INTERIOR WITH SHIELDING
AIA 3" = 1'-0"

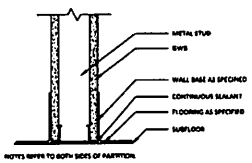



6A ATTACHMENT OF RATED WALLI, RATED SMOKE WALL OR NON RATED SMOKE TIGHT WALL TO WEB OR BEAMS
AIA 3" = 1'-0"

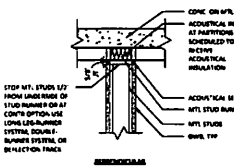


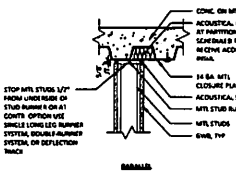




6D FIRE-RATED WALL @ METAL DECK - PERPENDICULAR & PARALLEL TO DECK FLUTES
AIA 3" = 1'-0"

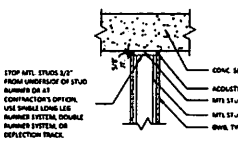



7A TYP. WALL BASE DETAIL
AIA 3" = 1'-0"

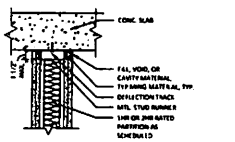


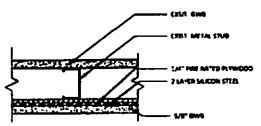

7D NON-RATED PARTITION @ METAL DECK - PERPENDICULAR & PARALLEL TO DECK FLUTES
AIA 1 1/2" = 1'-0"




7H NON-RATED PARTITION @ CONCRETE SLAB
AIA 1 1/2" = 1'-0"




7L FIRE-RATED WALL @ CONCRETE SLAB
AIA 1 1/2" = 1'-0"




9A SILICON STEEL SHEILDING PARTITION DETAIL
AIA 3" = 1'-0"

## DOOR SCHEDULE

| DOOR NUMBER | ROOM NAME | WIDTH | HEIGHT | SINGLE/PAIR | DOOR TYPE | DOOR MATERIAL | DOOR FINISH | DOOR THICKNESS | FRAME MATERIAL | FRAME FINISH | FRAME TYPE | DETAILS | FIRE RATING | HARDWARE | REMARKS | DOOR NUMBER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G35 | MPI SCANNER | 5' - 0" | 7' - 0" | P | FP | HM | PTD | 1 3/4" | HM | PTD | 2 | | - | 1 | | G35 |
| G35A | EQUIPMENT RM | 4' - 0" | 7' - 0" | S | F | WD | STD | 1 3/4" | HM | PTD | 1 | | - | 2 | 1 | G35A |
| G35B | STORAGE | 3' - 0" | 7' - 0" | S | F | WD | STD | 1 3/4" | HM | PTD | 1 | | - | 3 | | G35B |

DOOR AND HARDWARE GENERAL NOTES:

1. ALL DOORS AND HARDWARE TO COMPLY WHT FACILITY STANDARDS, TO COMPLY WITH ADA STANDARDS, AND TO BE APPROVED BY FACILITIES
2. LOCATE HINGE SIDE OF DOOR 8" AWAY FROM ADJACENT WALL UNLESS NOTED OTHERWISE IN THE DRAWINGS
3. SEE TYPICAL DETAILS ON THIS SHEET FOR DOORS AND FRAMES
4. VERIFY IN FIELD EXISTING WALL RATING FOR NEW DOOR OPENINGS NOTIFY ARCHITECT OF ANY DISCREPANCIES

MATERIAL LEGEND

| | |
|---|---|
| EX | EXISTING |
| HM | HOLLOW METAL |
| WD | SOLID CORE WOOD |
| MTL | METAL |

FINISH LEGEND

| | |
|---|---|
| PTD | PAINTED |
| STD | STAINED |

REMARKS

1. PROVIDE MANSHIELD SOUND RETARDANT DOOR WITH AN STC RATING OF 47 INSTALLATION TO COMPLY WITH MANUFACTURER'S REQUIREMENTS NECESSARY TO MEET SPECIFIED STC RATING

HARDWARE SCHEDULE

HARDWARE SET #1

| | | | |
|---|---|---|---|
| 6 | HINGES | HA BB1279 4 1/2 X 4 1/2 US26D | |
| 1 | C.LASSROOM LE" | CR ML2055 AGA CT68 M17 | |
| 1 | MANUAL CONCEALED PLUSH BOLT | HA 2820 | |
| 1 | CLOSER W/ HOLD OPEN (42" LEAF) | CR DC82 30 US26D | |
| 1 | ASTRAGAL | PE 1771 BL | |
| 2 | KICKPLATE | HA 1905 US32D | |
| 2 | MOP PLATE | HA 1905 US32D | |
| 1 | MORTISED AUTOMATIC DOOR BOTTOM GASETT SF#6 S | PE 411 APKL<br>PE 588 BL | |

HARDWARE SET #2

| | | | |
|---|---|---|---|
| 3 | HINGES | HA BB1279 4 1/2 X 4 1/2 US26D | |
| 1 | PASSAGE SET | CR ML2030 AGA M17 SA 626 | |
| 1 | SMAL STOP | HA 2988 US26D | |
| 1 | KICK PLATE | HA 1905 US32D | |
| 1 | MOP PLATE | HA 1905 US32D | |
| 3 | SILENCERS | RO 608 | |
| 1 | MORTISED AUTOMATIC DOOR BOTTOM | PE 411 APKL | |

HARDWARE SET #3

| | | | |
|---|---|---|---|
| 6 | HEAVY DUTY HINGES | HA BB1279 4 1/2 X 4 1/2 US26D | |
| 1 | C.LASSROOM SET | CR ML2055 AGA CT68 M17 | |
| 1 | OVERHEAD STOP | RO OH100 US26D | |
| 1 | KICK PLATE | HA 1905 US32D | |
| 1 | MOP PLATE | HA 1905 US32D | |
| 1 | MORTISED AUTOMATIC DOOR BOTTOM GASKETS | PE 411 APKL<br>PE 588 BL | |

## FINISH LEGEND

| TYPE | CODE | MATERIAL | MANUFACTURER | PRODUCT | COLOR |
|---|---|---|---|---|---|
| FLOOR | | | | | |
| BASE | SD 1 | STAINE DESIGNTINE TILE | JOHNSONITE | 4G BRAINT SB, SIZE 24" X 24", INSTALLATION MONOLITHIC | 0453 NAMINAL GW |
| | W 3 | WALL BASE | JOHNSONITE | 4" TALL COVED TOE PROFILE, RUBBER ROLL GOOD | 152 HARD ROCK WB |
| WALLS | | | | | |
| | P-1 | PAINT | SHERWIN WILLIAMS | HARMONY NOW V O C , FINISH EGGSHELL | MODEST WHITE, SW6966 |
| CEILING | | | | | |
| | ACP 1 | ACOUSTICAL CEILING PANEL | ARMSTRONG | OPTIMA PANEL 1 DSI SQUARE LAY-IN, SIZE 24 X 24 X 3/4" GRID 15/16" CO-EXTRUDED CLEAN ROOM (NON MAGNETIC) | 763 WHITE, GRID WHITE |
| DOORS AND FRAME | | | | | |
| | P-2 | PAINT - DOOR FRAME | SHERWIN WILLIAMS | HARMONY NOW V O C , FINISH SEMI-GLOSS | MATCH DUROX #79966A VALHALLA |
| | P-3 | PAINT - METAL DOOR | SHERWIN WILLIAMS | HARMONY NOW V O C , FINISH SEMI-GLOSS | MATCH DUROX #6851W SAND TAN |
| | STD 1 | STAIN - WOOD DOOR | | TINT WITH CLEAR TOP SEALER COAT | TINT TO MATCH DUROX #6851W SAND TAN |
| MISC | | | | | |
| | PL 1 | PLASTIC LAMINATE HORIZONTAL | NEVAMAR | HPL ARMORED PROTECTION, FINISH TEXTURED/SEMI DULL 30, TOUCHBAND AT ALL SIDES, 3MM PVC, 1-MOLD, COLOR TO MATCH LAMINATE | MR3001T FRENCH BLUE MATTED |
| | PL-2 | PLASTIC LAMINATE - VERTICAL | NEVAMAR | HPL FINISH FINE VELVET TEXTURE, EDGEBAND AT ALL SIDES, 3MM PVC, 1-MOLD, COLOR TO MATCH LAMINATE | 4861-48 DESERT ZEPHYR |

## ROOM FINISH SCHEDULE

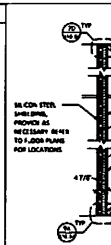
| ROOM NUMBER | ROOM NAME | FLOOR | BASE | WALL | CEILING | MILLWORK | DOOR FRAME |
|---|---|---|---|---|---|---|---|
| G35 | MPI SCANNER | SDT-1 | B-1 | P-1 | ACP-1 | PL-1/ PL-2 | P-2 |
| G35A | EQUIPMENT RM | SDT-1 | B-1 | P-1 | ACP-1 | - | P-2 |
| G35B | STORAGE | SDT-1 | B-1 | P-1 | ACP-1 | | P-2 |

## GENERAL NOTES - FINISHES

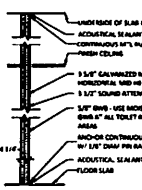
1. REFER TO ROOM FINISH SCHEDULE AND FINISH LEGEND FOR ADDITIONAL MATERIAL INFORMATION
2. REFER TO ELEVATIONS FOR ADDITIONAL INFORMATION
3. WALLS TO RECEIVE EGGSHELL FINISH UNLESS OTHERWISE NOTED
4. ALL CEILING SUPPTS TO RECEIVE FLAT FINISH PAINT
5. COORDINATE FLOORING INSTALLATION WITH MILLWORK INSTALLATION
6. ALL FLOOR MATERIAL TRANSITIONS TO OCCUR AT CENTER OF DOOR UNLESS OTHERWISE NOTED
7. PAINTS ARE TO BE NON V O C AS SPECIFIED IN FINISH LEGEND
8. SEALANT SHALL COMPLY WITH REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S "STANDARD METHOD FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMICAL EMISSIONS AND INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS"
9. FLOORING PRODUCTS SHALL COMPLY WITH REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S "STANDARD METHOD FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMICAL EMISSIONS AND INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS"

## GENERAL PARTITION NOTES

1. IDENTIFY ALL FIRE-RATED OR SMOKE-LIMITING PARTITIONS AS SUCH ABOVE THE CEILING LINE USING STENCILING WITH 3-INCH-HIGH BLOCK LETTERING AND HIGH-CONTRAST PAINT COLOR.
2. WHERE NEW PARTITIONS ARE INFILLING BETWEEN EXISTING WALLS, ALIGN THE FINISH FACE ON BOTH SIDES OF THE NEW PARTITIONS WITH FACES OF EXISTING WALLS
3. CAULK GYPSUM BOARD PARTITIONS AT PERIMETER AND STAGGER JOINTS ON EITHER SIDE OF PARTITION
4. SEPARATE JUNCTION BOXES LOCATED ON OPPOSITE SIDES OF FIRE-RATED PARTITIONS BY 24 INCHES HORIZONTALLY
5. EXTEND ALL PARTITIONS TO UNDERSIDE OF SLAB ABOVE, UNLESS NOTED OTHERWISE
6. PARTITION TYPES INDICATED ARE CONTINUOUS TO A CORNER OR AN INTERSECTING PARTITION, UNLESS INDICATED OTHERWISE. WHERE PARTITIONS OF DIFFERENT THICKNESSES MEET, MAINTAIN A FLUSH CONTINUOUS SURFACE ON THE EXPOSED SIDE, UNLESS NOTED OTHERWISE.
7. FINISH EDGES OF GYPSUM WALLBOARD LEFT EXPOSED TO VIEW OR ABUTTING DISSIMILAR MATERIAL WITH METAL TRIM BEAD AND COMPOUND UNLESS NOTED OTHERWISE.




A1 NON-RATED Interior Partition

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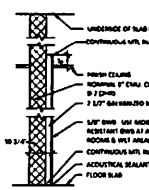
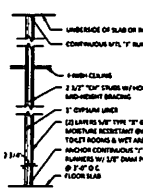



C24 2-HOUR-RATED U.L. Design No. U905 (DIM.) Interior Partition




C33 2-HOUR-RATED U.L. Design No. U415 SYSTEM 6 Interior Partition

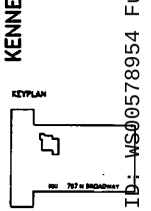

ARCHITECT
Hord Coplan Macht, Inc.
708 E. Pratt St. Suite 1200
Baltimore, MD 21202
p 410 837 7311

MEP
Burkette, Rauhiser, Murphy & Associates
6309 Blair Hill Lane Suite 400
Baltimore, MD 21209
p. 410.323.2800

STRUCTURE
Morrison Consultants
852 Hollybrook Rd. Suite 1700
Towson, MD 21152
p 410 466.2377


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN




Kennedy Krieger Institute

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ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|

Project Name
MPI SCANNER RENOVATION

Project Number
219260.00

Date
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Scale
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Drawing
SCHEDULES

A10.00

CONSTRUCTION DOCS

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PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Fund Number: PIA2020

PREVIEW Date: Oct 14, 2020
Workspace ID: WS0057895 4 Funding Opportunity Number: PWEAA2020

## MECHANICAL ABBREVIATIONS

| | | | | | |
|---|---|---|---|---|---|
| AIR CHANGES / HOUR | AC / HR | FOOT PER MINUTE | FPM | SUPPLY AIR | SA |
| AIR COOLED CONDENSING UNIT | ACCU | FEET | FT | STATIC PRESSURE | SP |
| AIR FOIL | AF | FACE VELOCITY | FV | STEAM | STM |
| ABOVE FINISHED FLOOR | AFF | GALLONS | GAL | TESTING AND BALANCING | TAB |
| AIR FLOW MONITOR | AFM | GALLONS PER MINUTE | GPM | TOTAL STATIC PRESSURE | TSP |
| AIR HANDLING UNIT | AHU | HEIGHT | H | TYPICAL | TYP |
| AIR PRESSURE DROP | APD | HORSEPOWER | HP | UNLESS OTHERWISE NOTED | UON |
| ARCHITECTURAL | ARCH | HEATING WATER SUPPLY | HS | VOLTS | V |
| AUTOMATIC TEMPERATURE CONTROLS | ATC | HEATING WATER RETURN | HR | VARIABLE AIR VOLUME | VAV |
| BUILDING AUTOMATION SYSTEM | BAS | HEATER | HTR | VARIABLE FREQUENCY DRIVE | VFD |
| BACK FLOW PREVENTER | BFP | HEAT EXCHANGER | HX | WIDTH | W |
| BRAKE HORSEPOWER | BHP | HERTZ | HZ | WET BULB | WB |
| BACKWARD INCLINED | BI | (INCHES) | IN | WATER COLUMN | WC |
| BRITISH THERMAL UNIT | BTU | KILOWATT | KW | WATER GAUGE | WG |
| BRITISH THERMAL UNITS PER HOUR | BTUH | LENGTH | L | WATER PRESSURE DROP | WPD |
| CAPACITY | CAP | LEAVING AIR TEMPERATURE | LAT | | |
| CUBIC FOOT PER HOUR | CFH | POUNDS | LBS | | |
| CUBIC FEET PER MINUTE | CFM | LOCKED ROTOR AMPS | LRA | | |
| COLD WATER (DOMESTIC) | CW | LOW PRESSURE STEAM | LPS | | |
| CHILLED WATER SUPPLY | CWS | LEAVING WATER TEMPERATURE | LWT | | |
| CHILLED WATER RETURN | CWR | MAXIMUM | MAX | | |
| CONNECT TO EXISTING | CX | THOUSAND BRITISH THERMAL UNITS PER HOUR | MBH | | |
| DRY BULB | DB | MINIMUM CIRCUIT AMPACITY | MCA | | |
| DESCRIPTION | DESC | MECHANICAL EQUIPMENT ROOM | MER | | |
| DOMESTIC HOT WATER | DHW | MAXIMUM FUSE SIZE | MFS | | |
| DIAMETER | DIA | MINIMUM | MIN | | |
| DOWN | DN | MAXIMUM OVERCURRENT PROTECTION | MOP | | |
| DIFFERENTIAL PRESSURE SENSOR | DPS | NORMALLY CLOSED | NC | | |
| DRAWINGS | DWG | NOTIN CONTRACT | NIC | | |
| EXHAUST AIR | EA | NORMALLY OPEN / NUMBER | NO | | |
| ENTERING AIR TEMPERATURE | EAT | OUTSIDE AIR | OA | | |
| ENERGY EFFICIENCY RATIO | EER | OPEN END DUCT | OED | | |
| EXHAUST FAN | EF | POUNDS PER SQUARE INCH | PSI | | |
| ENERGY MANAGEMENT CONTROL SYSTEM | EMCS | PRESSURE | PRESS | | |
| EXTERNAL STATIC PRESSURE | ESP | QUANTITY | QTY | | |
| EXISTING TO REMAIN | ETR | RETURN AIR | RA | | |
| ENTERING WATER TEMPERATURE | EWT | RELATIVE HUMIDITY | RH | | |
| FLEXIBLE CONNECTION / FORWARD CURVED | FC | REVOLUTIONS PER MINUTE | RPM | | |
| FULL LOAD AMPS | FLA | ROOF TOP UNIT | RTU | | |
| FINISH PERIMETER | FIN | REMOVE EXISTING | RE | | |

## MECHANICAL LEGEND

| | | | | | |
|---|---|---|---|---|---|
| COLD WATER (CW) | | CHECK VALVE | | SUPPLY AIR DUCT UP (CASING SIDES FOR DOWN) | |
| HOT WATER (HW) | | BALL VALVE | | RETURN DUCT UP (CASING SIDES FOR DOWN) | |
| HOT WATER RECIRCULATION (HWR) | | GATE VALVE | | OUTSIDE AIR & EXHAUST DUCT UP (CASING SIDES FOR DOWN) | |
| CHILLED WATER SUPPLY | CWS | BUTTERFLY VALVE | | FLEXIBLE CONNECTION | |
| CHILLED WATER RETURN | CWR | GLOBE VALVE | | FLEXIBLE DUCT | |
| HEATING WATER SUPPLY | HS | BALANCING VALVE W/ FLOW METER (TEND INSTRUT TYPE) | | DOUBLE T-CHANGES TURNING VANES | |
| HEATING WATER RETURN | HR | MULTI-PURPOSE VALVE | | NEW DUCTWORK | |
| CONDENSER WATER SUPPLY | CS | 3-PORT MODULATING CONTROL VALVE | | EXISTING DUCTWORK | |
| CONDENSER WATER RETURN | CR | 2-PORT MODULATING CONTROL VALVE | | DUCTWORK TO BE REMOVED | |
| GLYCOL WATER SUPPLY | GWS | RELIEF VALVE | | OPEN ENDED DUCT | |
| GLYCOL WATER RETURN | GWR | BACKFLOW PREVENTER | | DUCTWORK WITH SOUND LINING | |
| REFRIGERANT SUCTION | RS | BUCKET STRAINER | | FLEXIBLE DUCT AND EQUIPMENT CONNECTOR | |
| REFRIGERANT SOLID | RL | Y-STRAINER WHOLE-END VALVE | | DUCT TRANSITION ROUND TO RECTANGULAR | |
| CONDENSATE DRAIN LINE | CD | PLANGED CONNECTION | | DUCT TRANSITION | |
| STORM WATER PIPING | SW | | | CHANGEOVER DUCT ELEVATION (FIRST DROP) | |
| SANITARY PIPING | | GAUGE AND VALVE | | DUCT SIZE (FIRST FIGURES SIDE SHOWN) | |
| VENT PIPING | | PUMP (CIRCULATING PUMP) | | BALANCING DAMPER | |
| FIRE LINE | F | TEMPERATURE/PRESSURE TEST PORT | | MOTOR OPERATED DAMPER | |
| SPRINKLER PIPING | SP | TEE | | FIRE DAMPER WITH ACCESS PANEL | |
| COMPRESSED AIR (LAB SERVICE) | LA | THERMOMETER | | COMBINATION FIRE/SMOKE DAMPER WITH SMOKE DETECTORS AND ACCESS PANEL | |
| VACUUM (LAB SERVICE) | LV | UNION | | BACKDRAFT DAMPER | |
| OXYGEN | O2 | PIPING CAP | | SMOKE DETECTOR | |
| NITROGEN | N | CONCENTRIC REDUCER | | THERMOSTAT | |
| PIPING ELBOW DOWN | | ECCENTRIC REDUCER | | SHUT OF DEMOLISH | |
| PIPING ELBOW UP | | MANUAL AIR VENT | | CONNECT TO EXISTING | |
| PIPE CONNECTION BOTTOM | | AUTOMATIC AIR VENT | | FAN SWITCH | |
| PIPE CONNECTION TOP | | PIPE GUIDE OR SLEEVE | | DOOR LOUVER | |
| | | FLOOR CLEANOUT | CO | UNDERCUT DOOR | |
| | | WALL CLEANOUT | CO | | |
| | | HOSE-END VALVE | | | |
| | | VALVE IN VERTICAL POSITION | | | |
| | | HEAT TRACED INSULATED PIPE | | | |
| | | ROOF DRAIN | RD | | |
| | | FLOOR DRAIN | FD | | |
| | | WATER LEAK DETECTOR | W | | |

## MECHANICAL GENERAL NOTES

1. THE MECHANICAL AND PLUMBING CONTRACT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE SCOPE AND THE GENERAL ARRANGEMENT OF THE SYSTEMS, WHERE APPLICABLE THE FOLLOWING NOTES SHALL APPLY TO ALL MECHANICAL, HVAC, PLUMBING, PIPING AND FIRE PROTECTION SYSTEMS.
2. THOUGH SOME DUCTWORK AND PIPING OFFSETS AND TRANSITIONS ARE INDICATED THEY ARE NOT THE INTENT OF THE DRAWINGS TO SHOW ALL OFFSETS AND TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE MECHANICAL WORK WITH THE STAFF AND WITH THE WORK OF ALL OTHER TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS WITHOUT INTERFERENCES.
3. PROVIDE APPROVED FIRE STOPPING MATERIAL AROUND ALL DUCTWORK AND PIPING PENETRATIONS (NEW AND EXISTING) THROUGH FIRE RATED FLOORS AND WALLS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED FLOORS AND WALLS. PROVIDE FIRE DAMPERS AT ALL DUCT PENETRATIONS THROUGH FLOORS AND FIRE RATED WALLS AND FIRE SMOKE DAMPERS AT ALL PENETRATIONS THROUGH SHAFT ENCLOSURES.
4. SUPPORT ALL EQUIPMENT (I.E. FANS, ETC.) FROM STRUCTURE WITH SPECIFIED VIBRATION ISOLATION.
5. PROVIDE ACCESS PANELS WHERE REQUIRED FOR ADEQUATE ACCESS TO ALL CONCEALED EQUIPMENT, VALVES, DAMPERS AND CONTROLS.
6. ALL DUCT SIZES REFER TO INTERNAL FREE AREA. REFER TO DRAWINGS AND SPECIFICATIONS FOR INTERNAL INSULATION AND SOUND LINING PRIOR TO FABRICATION.
7. ALL DUCTWORK SHALL BE CONSTRUCTED OF RIGID SHEET METAL, UNLESS OTHERWISE NOTED.
8. REFER TO DOOR SCHEDULE ON ARCHITECTURAL DRAWINGS FOR UNDER CUT DIMENSIONS AND DOOR LOUVER SIZES.
9. COORDINATE DIFFUSER, REGISTER AND GRILLE LOCATIONS AND BORDER TYPES WITH ARCHITECTURAL REFLECTED CEILING PLAN.
10. INSTALL DUCTWORK AND PIPING MAINS TIGHT TO UNDERSIDE OF STRUCTURE UNLESS OTHERWISE INDICATED.
11. PROVIDE CONDENSATE DRAIN PIPING FROM EACH AIR CONDITIONING UNIT TO NEAREST FLOOR DRAIN. PROVIDE CLEAN OUT AT EACH ELBOW. SIZE PER MANUFACTURER'S RECOMMENDATIONS.
12. PATCH AND SEAL ALL REMAINING OPENINGS (NEW AND EXISTING) THROUGH FLOORS, CEILINGS, WALLS, AND ROOF REMAINING FROM DEMOLISH OR NEW WORK WITH MATERIALS AND FINISHES TO MATCH EXISTING CONSTRUCTION AND FIRE RATING.
13. AS AN INTEGRAL PART OF THESE DOCUMENTS, THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
14. PRIOR TO THE BALANCING OF SYSTEMS BY THE AABC CERTIFIED BALANCING CONTRACTOR, ALL HIGH PRESSURE AND LOW PRESSURE SYSTEMS SHALL BE TESTED BY THE MECHANICAL CONTRACTOR FOR DUCT LEAKAGE. DUCT LEAKAGE SHALL NOT EXCEED 1% FOR A DURATION OF TEN (10) MINUTES. SEE SPECIFICATIONS FOR ADDITIONAL TESTING CRITERIA. INSULATION MATERIALS SHALL NOT BE APPLIED UNTIL SYSTEMS HAVE BEEN WITNESSED, DOCUMENTED AND SUBMITTED TO MEET THE ABOVE TESTING REQUIREMENTS. REFER SPECIFICATIONS FOR SYSTEMS INDICATED AS LOW PRESSURE OR HIGH PRESSURE. THE BALANCE CONTRACTOR SHALL WITNESS AND CERTIFY ALL DUCT PRESSURE TESTS.
15. CONTRACTOR SHALL VISIT THE SITE AND VERIFY EXISTING CONDITIONS PRIOR TO THE BEGINNING OF ANY WORK. FAILURE TO VISIT THE SITE SHALL IN NO WAY RELIEVE THE CONTRACTOR FROM ANY RESPONSIBILITY.
16. CONTRACTOR SHALL USE CARE WHEN PERFORMING SELECTIVE DEMOLISH. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO BUILDING FINISHES, EQUIPMENT, FURNITURE, STRUCTURE, AND MECHANICAL/ELECTRICAL SYSTEMS AND EQUIPMENT. SHOULD ANY DAMAGE OCCUR THE CONTRACTOR SHALL RESTORE DAMAGED AREA TO ORIGINAL CONDITION TO MEET THE OWNER'S SATISFACTION.
17. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE OWNER ANY UTILITY OUTAGES. OWNER SHALL BE GIVEN A MINIMUM OF 72 HOURS NOTICE (THREE WORKING DAYS) FOR ANY OUTAGES.
18. HVAC SHALL BE MAINTAINED TO ALL AREAS OUTSIDE OF THE CURRENT PHASE OF THE RENOVATED AREA AT ALL TIMES. PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO COORDINATE OUTAGES WITH THE OWNER A MINIMUM OF 72 HOURS (THREE WORKING DAYS) IN ADVANCE.
19. DEMOLISH AND NEW WORK THAT WILL REMAIN IN DOWN SHUT OF SERVICES (HVAC, PLUMBING, MEDICAL/LAB GASES, ETC.) SHALL BE PERFORMED AT PREMIUM TIME AS REQUIRED TO MINIMIZE DOWN TIME TO ADJACENT SPACES. COORDINATE ALL OUTAGES WITH OWNER.
20. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL PHASING INFORMATION. ALL WORK AND ASSOCIATED OUTAGES SHALL BE COORDINATED WITH THE PHASING SCHEDULE AND THE OWNER.
21. SCHEDULE ALL WORKING OCCUPIED SPACES WITH OWNER AT LEAST TWO (2) WEEKS PRIOR TO CONSTRUCTION.
22. CONTRACTOR SHALL TEST/BALANCE ALL AIR AND HYDRONIC EQUIPMENT AND DEVICES INDICATED ON THE DOCUMENTS. AIR SYSTEM EQUIPMENT AND DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, AIR HANDLING EQUIPMENT, FANS, AIR DEVICES, DUCT MOUNTED VOLUME DAMPERS, ETC. HYDRONIC EQUIPMENT AND DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, CHILLERS, HYDRONIC COILS, BALANCING VALVES, ETC. BALANCE ALL EQUIPMENT AND DEVICES TO THE AIR/WATER FLOWS (CFM OR GPM/GAGE) ON THE DOCUMENTS (WHERE FLOWS ARE NOT CLEARLY INDICATED: CONTACT THE AE FOR CLARIFICATION).
23. WHERE PIPING PENETRATES CONCRETE WALL AND SLABS, PROVIDE GROUND PENETRATING RADAR (GPR) SCAN TO DETERMINE THE LOCATION OF REBAR. SUBMIT RESULTS TO OWNER AND ENGINEER FOR REVIEW.
24. PROTECT THE ROOF FROM DAMAGE DURING THE ENTIRE CONSTRUCTION PROCESS. CONTRACTOR SHALL TAKE PROTECTIVE MEASURES THAT ARE ACCEPTABLE TO THE ROOF MANUFACTURER TO MAINTAIN THE WARRANTY, WHERE APPLICABLE. ALL DAMAGES AND ALTERATIONS TO THE ROOF DURING CONSTRUCTION SHALL BE REPAIRED AND APPROVED/CERTIFIED BY THE ROOF SYSTEM MANUFACTURER.
25. ROOF PATCHING SHALL INCLUDE ALL GROUT JOINTS, INSULATION, ROOF MEMBRANE, FLASHING, AGGREGATE, ETC. TO MATCH ROOFING MATERIALS AND MAINTAIN THE WARRANTY, WHERE APPLICABLE.
26. ALL ROOF PENETRATIONS AND ACCESSORIES (DUCTWORK, PIPING, CONDUIT, ETC.) SHALL BE INSTALLED, FLASHED AND COUNTERFLASHED IN COMPLIANCE WITH THE CURRENT EDITIONS OF N.R.C.A. ROOFING AND WATERPROOFING MANUAL, AS WELL AS SMACNA.
27. SEE ARCHITECTURAL DOCUMENTS FOR ADDITIONAL ROOFING REQUIREMENTS.
28. UNLESS INDICATED OTHERWISE, ALL EXPOSED PIPING IN ALL FINISHED AREAS SHALL BE COVERED WITH A 16-GAUGE STEEL PRIMED AND PAINTED WHITE COVER. THE COVER SHALL BE SECURED TO AN ADJACENT STRUCTURE AND PAINTED TO MATCH ADJACENT SURFACES.

## PLUMBING GENERAL NOTES

1. SHUT SANITARY AND WASTE PIPING DEAD END TO 12INCHES FROM MAIN OR MAIN BRANCH.
2. PROVIDE A MINIMUM OF 24INCHES CLEARANCE FOR ROODING OF CLEANOUTS.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER DISCIPLINES PRIOR TO CONSTRUCTION.
4. ACCESS SHALL BE PROVIDED FOR ALL CONCEALED VALVES, CLEANOUTS ETC. LOCATED IN CEILINGS, WALLS OR FLOORS.
5. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF AIR, VACUUM, OXYGEN OUTLET, PLUMBING FIXTURES, FLOOR DRAINS AND OTHER EQUIPMENT.
6. ALL FLOOR DRAINS AND SHOWER DRAINS CONNECTED TO THE SANITARY SHALL BE PROVIDED WITH A PRIMED TRAP UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL FLUSH TYPE CLEANOUTS WITH WALLS & EQUIPMENT, DUCTWORK, PIPE, STRUCTURAL MEMBERS, ETC.
8. ALL SPECIFICATIONS AND DRAWINGS (I.E. ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL) ARE COMPLEMENTARY AND MUST BE USED IN CONJUNCTION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION.
9. COORDINATE ALL PIPING TO BE INSTALLED WITH OTHER TRADES (I.E., MECHANICAL, FIRE PROTECTION AND ELECTRICAL) TO ASSURE THAT ALL PIPING SYSTEMS ARE INSTALLED ABOVE FINISHED CEILING LINE IN A CONCEALED SPACE. ALL CEILING HEIGHTS INDICATED ON ARCHITECTURAL AND INTERIOR DESIGN DRAWINGS AND MINIMUM CLEARANCES REQUIRED BY LOCAL CODES SHALL BE MAINTAINED THROUGHOUT THE BUILDING.
10. ALL CUTTING, DRILLING AND PATCHING OF WALLS, FLOORS OR STRUCTURAL MEMBERS FOR THE INSTALLATION OF THE PLUMBING SYSTEMS SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR. STRUCTURAL COMPONENTS SHALL NOT BE CUT, DRILLED OR MODIFIED IN ANY WAY WITHOUT THE STRUCTURAL ENGINEER'S REVIEW AND APPROVAL.
11. PROVIDE ONE (1) TRAP PRIMER VALVE FOR EACH FLOOR DRAIN WITHOUT A CONSTANT SOURCE OF WATER SUPPLY TO MAINTAIN TRAP SEAL. PRIMER VALVE SHALL BE LOCATED IN AN ACCESSIBLE AREA AND CONNECTED TO THE NEAREST 3/4" COLD WATER LINE SERVING A FIXTURE.
12. ALL PIPING SYSTEMS, VALVES AND EQUIPMENT SHALL BE PROPERLY SUPPORTED.
13. COLD WATER SUPPLY MAINS AND BRANCHES SHALL BE INSULATED IN ACCORDANCE WITH THE SPECIFICATIONS.
14. ALL PIPING VALVES, AND ACCESSORIES OF PIPING EQUIPMENT SHALL BE INSTALLED TO ALLOW SERVICING OR REMOVAL WITHOUT DISCONNECTING ALL PIPING ACCESSORIES.
15. ALL VALVES SHALL HAVE THEIR NORMAL IN OPERATION POSITIONS INDICATED SUCH AS "NORMALLY OPEN" OR "NORMALLY CLOSED".
16. ALL ROUGHIN AND FINAL CONNECTION FOR EQUIPMENT SPECIFIED BY OTHERS SHALL BE PROVIDED.
17. ALL HORIZONTAL PIPING LINES EXTENDED AND CONNECTED TO EQUIPMENT SHALL BE INSTALLED AT THE HIGHEST POSSIBLE ELEVATION AND NOT LESS THAN 6" ABOVE FLOOR.
18. VERIFY EQUIPMENT LOCATIONS WITH OTHER CONSULTANTS OR SUPPLIERS BEFORE PROCEEDING WITH ANY ROUGHIN.
19. ALL PIPING SHALL BE INSTALLED ABOVE CEILING OR IN A CONCEALED SPACE UNLESS NOTED OR INDICATED OTHERWISE.
20. SUPPLY TO ALL AIR AND OXYGEN OUTLETS SHALL BE 1.2" SUPPLY TO ALL VACUUM OUTLETS SHALL BE 3/4".
21. THOUGH SOME PIPING OFFSETS INDICATED THEY ARE NOT THE INTENT OF THE DRAWINGS TO SHOW ALL OFFSETS THAT ARE REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES TO PROVIDE COMPLETE SYSTEM WITHOUT INTERFERENCES.
22. REMOVE ALL EXISTING PIPING ABOVE CEILINGS OR EXPOSED NOT TO REMAIN IN USE. DISCONNECT ABANDONED PIPING IN WALLS OR BELOW SLAB FROM DISTRIBUTION SYSTEM.
23. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING LOCATIONS AND SIZES OF PIPES, DUCTWORK, PIPING AND STRUCTURAL MEMBERS PRIOR TO CONSTRUCTION.

## SPRINKLER GENERAL NOTES

1. ALL PENETRATIONS IN EXISTING OR NEW FIRE RATED WALLS, CEILINGS AND FLOORS SHALL BE SEALED TO THE FULL THICKNESS OF THE PENETRATION WITH A MATERIAL OF EQUAL FIRE RESISTANCE.
2. ALL CUTTING, DRILLING AND PATCHING OF WALLS, FLOORS OR STRUCTURAL MEMBERS FOR THE INSTALLATION OF THE SPRINKLER SYSTEM SHALL BE PROVIDED BY THE SPRINKLER CONTRACTOR. STRUCTURAL COMPONENTS SHALL NOT BE CUT, DRILLED OR MODIFIED IN ANY WAY WITHOUT THE STRUCTURAL ENGINEER'S REVIEW AND APPROVAL.
3. ALL CEILINGS, WALLS, FLOORS AND FINISHES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND PAINTED TO MATCH EXISTING CONDITIONS AND FIRE RATING.
4. ACTUAL LOCATION OF EXISTING CEILING MOUNTED LIGHTS, RETURN AND SUPPLY DUCTS, AIR GRILLES AND DIFFUSERS, SPRINKLER HEADS, PIPING AND STRUCTURAL SUPPORTS SHALL BE VERIFIED THE FIELD BY THE CONTRACTOR.
5. ALL SPRINKLER PIPING INSTALLED IN FINISHED AREAS SHALL BE CONCEALED.
6. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES OR OMISSIONS ON THE DRAWINGS GIVEN THE SPECIFICATIONS, HE SHALL NOTIFY THE ENGINEER OF SUCH CONDITIONS PRIOR TO THE BID DATE OTHERWISE IT WILL BE UNDERSTOOD THAT THE DRAWINGS AND SPECIFICATIONS ARE CLEAR AS TO WHAT IS INTENDED AND SHALL BE AS INTERPRETED BY THE ENGINEER.
7. EXISTING SYSTEMS SHALL REMAIN IN SERVICE UNTIL NEW WORKS TESTED AND ACCEPTED. INTERRUPTION OF PROTECTION FOR THE PURPOSES OF MAKING TIES OF EXISTING PIPING OR MAKING INTERCONNECTIONS IS THEREFORE AND EXISTING WORK SHALL BE COORDINATED IN ADVANCE WITH THE OWNER.
8. CONTRACTOR SHALL MAKE MODIFICATIONS TO EXISTING SPRINKLER SYSTEM AS REQUIRED TO PROVIDE COVERAGE FOR THE NEW ARCHITECTURAL ARRANGEMENT (INCLUDING ALL OBSTRUCTIONS, SUCH AS BOXING FIXTURES, ETC.) IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 13 AND LOCAL AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO COMMENCING WORK. NEW SPRINKLER HEADS, WHERE NECESSARY SHALL BE PROVIDED TO MATCH EXISTING STYLE. CONTRACTOR SHALL CENTER SPRINKLER HEADS IN CEILING TILES. RELOCATE EXISTING BRANCH PIPING OR HEADS AS REQUIRED TO ACCOMMODATE DIFFUSER AND LIGHTING FIXTURE LAYOUTS.
9. THE SPRINKLER SYSTEM SHALL REMAIN IN SERVICE AS LONG AS POSSIBLE DURING DEMOLISH ON THE FLOOR WHEN THE SYSTEMS TAKEN OUT OF SERVICE THE OCCUPIED PORTION OF THE FLOOR SHALL REMAIN IN SERVICE. THE UNOCCUPIED PORTIONS SHALL HAVE A FIRE WATCH WHENEVER THE BUILDINGS OCCUPIED. THE FIRE WATCH INSTRUCTIONS CAN BE OBTAINED FROM THE UNIVERSITY FIRE MARSHAL.
10. SPRINKLER LAYOUT SHALL BE FULLY COORDINATED WITH ALL CASEWORK, CABINETS AND SHELVING INDICATED ON THE ARCHITECTURAL DRAWINGS TO PROVIDE APPROPRIATE SPRINKLER COVERAGE IN ACCORDANCE WITH NFPA REQUIREMENTS AND THE LOCAL AUTHORITY HAVING JURISDICTION. NOTE THAT SOME CABINETS, CASEWORK AND SHELVING ARE LOCATED WITHIN 18" OF THE CEILING.

ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
p 410.837.7215 f 410.837.6530

MEP ENGINEER
Gordian, Gardner, Murphy & Associates, Inc.
6300 Ilex Hill Lane Suite 400
Baltimore, MD 21209
p 410.321.9400

KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

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Project Name
MPI SCANNER RENOVATION
Project Number
219260.00
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12.20.2019
Scale
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Drawn by

MECHANICAL LEGEND, ABBREVIATIONS, AND GENERAL NOTES

M0.01

CONSTRUCTION DOCUMENTS

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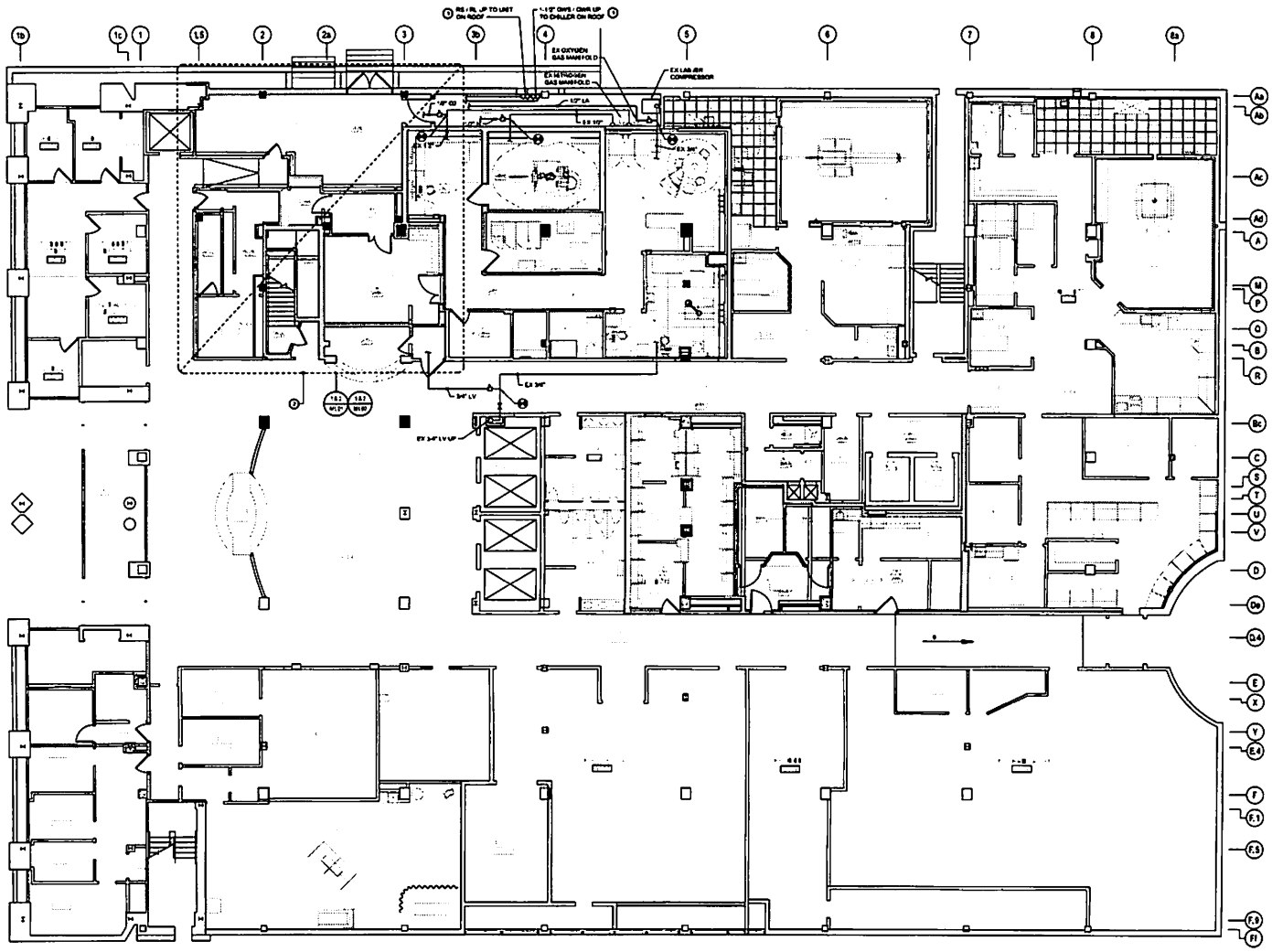

## 1 GROUND FLOOR PLAN - MECHANICAL - NEW WORK

SCALE: 1/8" = 1'-0"

### GENERAL NOTES:

1. REFER TO M0.01 FOR MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.

### DRAWING NOTES:

1. RISING AND CONDUIT SHALL BE ROUTED UP TO ROOF THROUGH PIPE CHASE LOCATED ON LEVELS 1 & 2 ABOVE.
2. MODIFY EXISTING SPRINKLER SYSTEM DURING THE RENOVATION AREA AS REQUIRED TO PROVIDE PROPER SPRINKLER COVERAGE. REMOVE EXISTING SPRINKLERS AND BRANCH RISING. EXISTING MAIN CAN BE REUSED IF THEY DO NOT INTERFERE WITH NEW WORK AND ARE ADEQUATE SIZE.

SCALE: 1/8" = 1'-0"


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
p 410 837 7911 f 410 837 8536

MEP ENGINEER
Bonstra, Haller, Murphy & Associates, P.A.
6300 Star Hill Lane, Suite 400
Baltimore, MD 21209
p 410 323 8400


# KENNEDY KRIEGER INSTITUTE
# MPI SCANNER RENOVATION
## 707 NORTH BROADWAY
## BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

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Project Name: MPI SCANNER RENOVATION
Project Number: 219260.00
Date: 12.20.2019
Scale: As Noted
Drawing: GROUND FLOOR PLAN MECHANICAL NEW WORK

# M1.00

CONSTRUCTION DOCUMENTS

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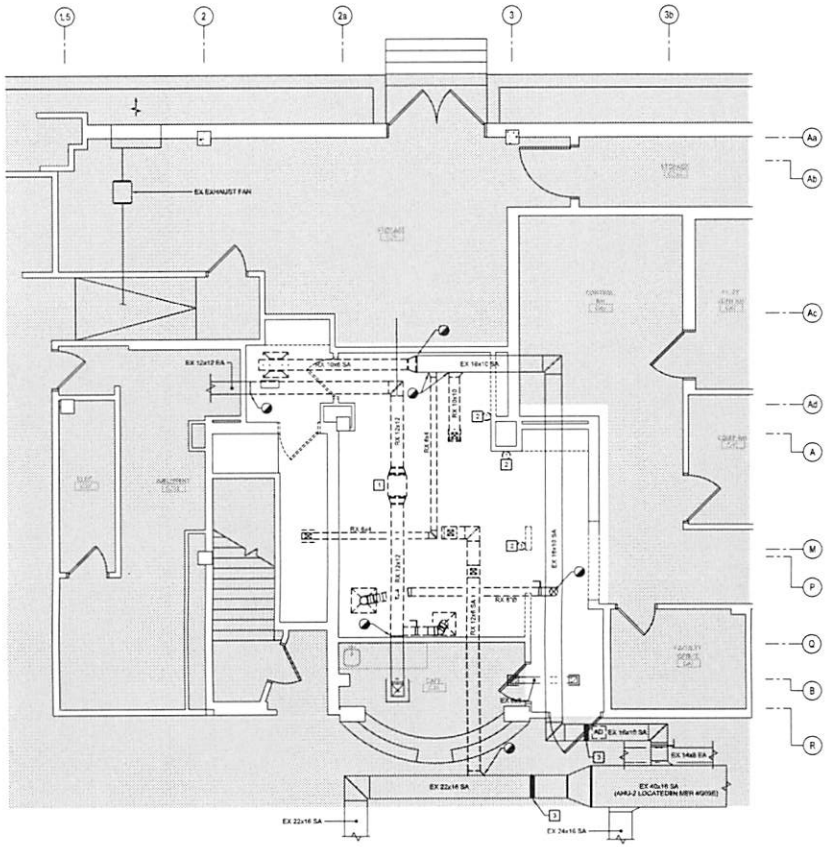
PREVIEW Date: Oct 14, 2020
Workspace ID: WS005789S4 Funding Opportunity Number: PWEAA2020




## 1 PART GROUND FLOOR PLAN - DUCTWORK - DEMOLITION

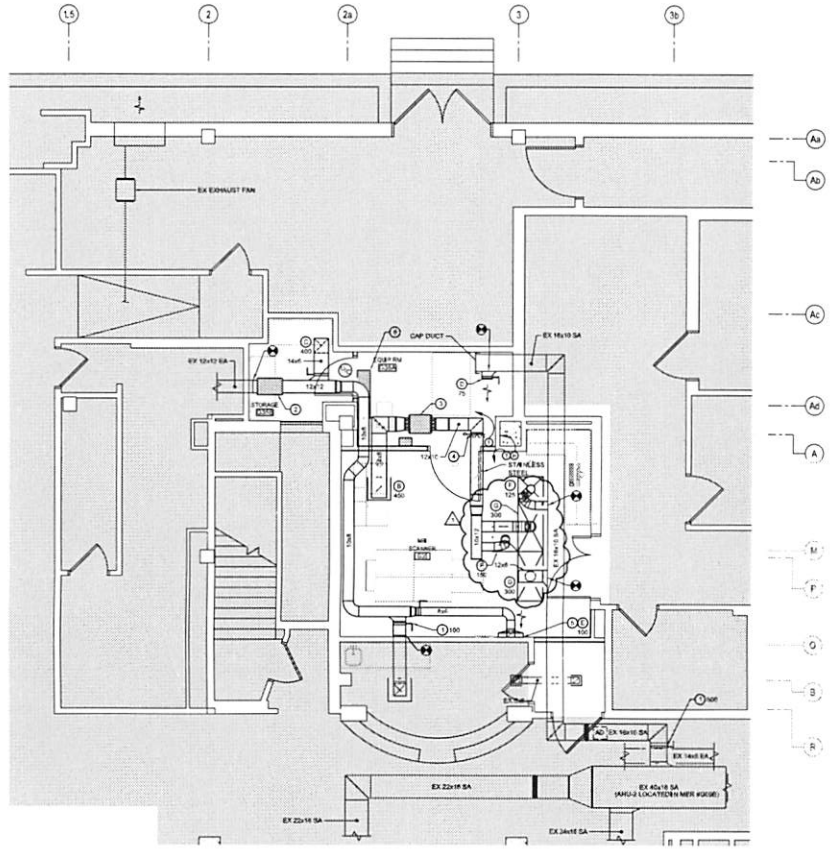
SCALE: 1/4" = 1'-0"

### DEMOLITION DRAWING NOTES:

1. REMOVE EXISTING EXHAUST FAN.
2. REMOVE EXISTING THERMOSTAT (HONEYWELL) TRACE CONTROL WIRING BACK TO SOURCE EQUIPMENT PRIOR TO REMOVAL.
3. EXISTING DUCT HEATING COIL TO REMAIN.

### GENERAL NOTES:

1. REFER TO M0.01 FOR MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.




## 2 PART GROUND FLOOR PLAN - DUCTWORK - NEW WORK

SCALE: 1/4" = 1'-0"

### NEW WORK DRAWING NOTES:

1. BALANCE DUCT TO INDICATED AIRFLOW.
2. PROVIDE IN-LINE EXHAUST FAN, EF-1.
3. PROVIDE IN-LINE FAN AND FILTER HOUSING UNIT, FF-1. PROVIDE 2" MERV 8 FILTER IN DUCT-MOUNTED HOUSING PRIOR TO FAN. PROVIDE SUFFICIENT CLEARANCE FOR FILTER ACCESS.
4. DUCT-MOUNTED STEAM DISPERSION PANEL. REFER TO PIPING PLAN FOR HUMIDIFIER LOCATION.
5. ROUTE EXHAUST AIR DUCT EXPOSED ON WALL TO EXHAUST AT TABLE. TRANSITION DUCT IN VERTICAL TO 24x4. ALL EXPOSED DUCT SHALL BE STAINLESS STEEL AND INSTALLED TIGHT TO WALL. GROUT EDGE BETWEEN DUCT AND WALL. GRILLE SHALL BE LOCATED AT FACE OF DUCT AT 8' ABOVE TABLE (APPROX. 38" AFF). COORDINATE INSTALLATION WITH PROCEDURE TABLE. PROVIDED UNDER A SEPARATE DIVISION.
6. PROVIDE WALL MOUNTED, SPLIT SYSTEM AIR CONDITIONING UNIT, AC-1. MOUNT ABOVE DOOR HEIGHT.

N

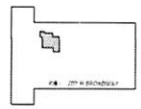
SCALE: 1/4" = 1'-0"

ARCHITECT
Hord Coplan Macht, Inc.
700 E Pratt St, Suite 1200 Baltimore, MD 2120
p 410 837 7311 f 410 837 8580

MEP ENGINEER
Burderite, Koehler, Murphy & Associates, Inc.
6300 Blair Hill Lane, Suite 400
Baltimore, MD 21209
p 410 321 0600

# KENNEDY KRIEGER INSTITUTE
# MPI SCANNER RENOVATION
## 707 NORTH BROADWAY
## BALTIMORE, MD 21205

KEYPLAN



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Project Number
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12.20.2019

Scale
As Noted

Drawing
PART GROUND FLOOR PL/
DUCTWORK
DEMO & NEW WORK

# M1.01

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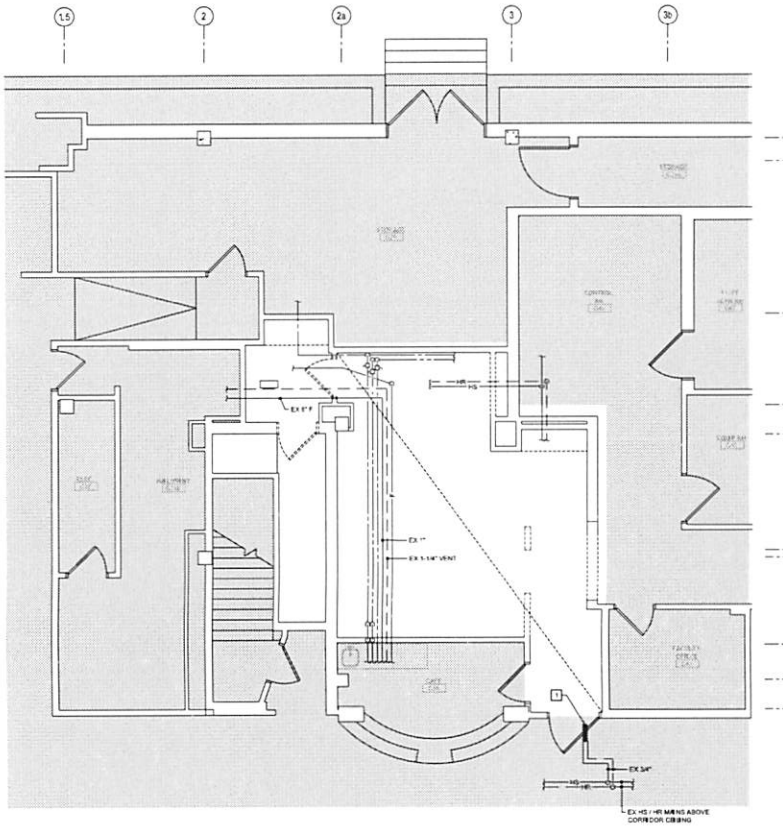



## 1 PART GROUND FLOOR PLAN - PIPING - DEMOLITION

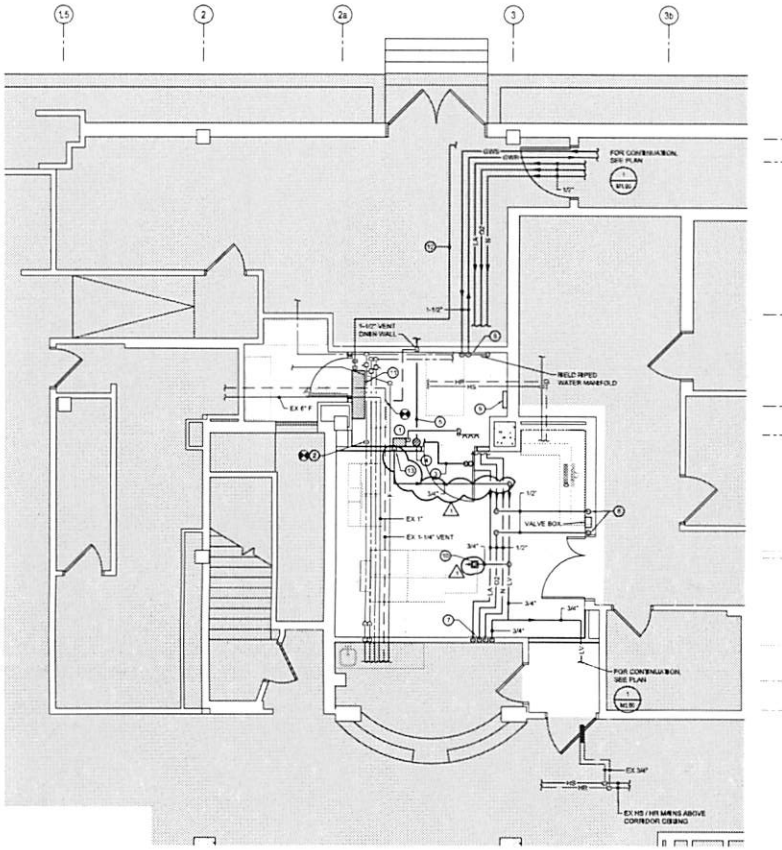
SCALE: 1/4" = 1'-0"

### DEMOLITION DRAWING NOTES:

1. EXISTING DUCT HEATING COIL TO REMAIN.

### GENERAL NOTES:

1. REFER TO M0.01 FOR MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.




## 2 PART GROUND FLOOR PLAN - PIPING - NEW WORK

SCALE: 1/4" = 1'-0"

### NEW WORK DRAWING NOTES:

1. PROVIDE WALL-MOUNTED ELECTRIC HUMIDIFIER, H-1. EXTEND STEAM PIPING TO DUCT-MOUNTED STEAM DISPERSION PANEL.
2. PROVIDE 3/4" TAP FROM CW WITH SHUT OFF VALVE. EXTEND 1/2" TO TRAP PRIMER FOR FLOOR DRAIN AND EXTEND 1/2" CW TO HUMIDIFIER.
3. PROVIDE 1" DRAIN FROM DUCT DRAIN PAN. CONNECT TO HUMIDIFIER AFTER COOLER.
4. PROVIDE 2" FUNNEL FLOOR DRAIN WITH TRAP PRIMING LINE.
5. 2" SAN BELOW FLOOR SLAB ON GRADE. TRENCH FLOOR AND CONNECT TO EXISTING SAN PIPING. *LOCATION OF EX SANITARY PIPING IN UNKNOWN AND MUST BE FIELD VERIFIED BY CONTRACTOR.
6. 1/2" O2 DOWN WALL TO VALVE BOX. PROVIDE VALVE BOX.
7. 1/2" LA, 1/2" O2, 1/2" N, & 3/4" LV DOWN WALL. PROVIDE (1) LA, (1) O2, (1) N, & (2) LV GAS OUTLETS (DISS CONNECTION).
8. GLYCOL WATER PIPING TO SCANNER EQUIPMENT CONNECTION. PIPING SHALL BE EXPOSED AND INSTALLED TIGHT TO WALL. COORDINATE LOCATION OF WATER MANIFOLD WITH EQUIPMENT AND INSTALL PER SCANNER MANUFACTURER'S RECOMMENDATIONS.
9. REMOTE DISPLAY / CONTROL PANEL PROVIDED BY CHILLER MANUFACTURER.
10. PROVIDE (1) LV CEILING OUTLET (DISS CONNECTION) WITH HOSE DROP.
11. PROVIDE WALL-MOUNTED, SPLIT-SYSTEM AIR CONDITIONING UNIT, AC-1 MOUNT ABOVE DOOR HEIGHT. EXTEND 1" CONDENSATE PIPING TO DISCHARGE ABOVE FLOOR DRAIN.
12. REFRIGERANT (RS/RL) PIPING FOR SPLIT-SYSTEM UNIT SHALL BE SIZED PER THE MANUFACTURER'S RECOMMENDATIONS. ROUTE PIPING FROM INDOOR UNIT TO OUTDOOR UNIT ON ROOF.
13. 3/4" LV DOWN WALL. PROVIDE (1) LV GAS OUTLET (DISS CONNECTION).

SCALE: 1/4" = 1'-0"

ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
p 410 837 7311 f 410 837 8580

MEP ENGINEER
Burdette, Keehner, Murphy & Associates, Inc.
6300 Blair Hill Lane, Suite 400
Baltimore, MD 21209
p 410 323 0600

# KENNEDY KRIEGER INSTITUTE MPI SCANNER RENOVATION

707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institut

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| 1 | 06.14.2020 | ASI 1 |

Project Name: MPI SCANNER RENOVATION
Project Number: 219260.00
Date: 12.20.2019
Scale: As Noted
Drawing: PART GROUND FLOOR PLA PIPING DEMO & NEW WORK

# M1.02

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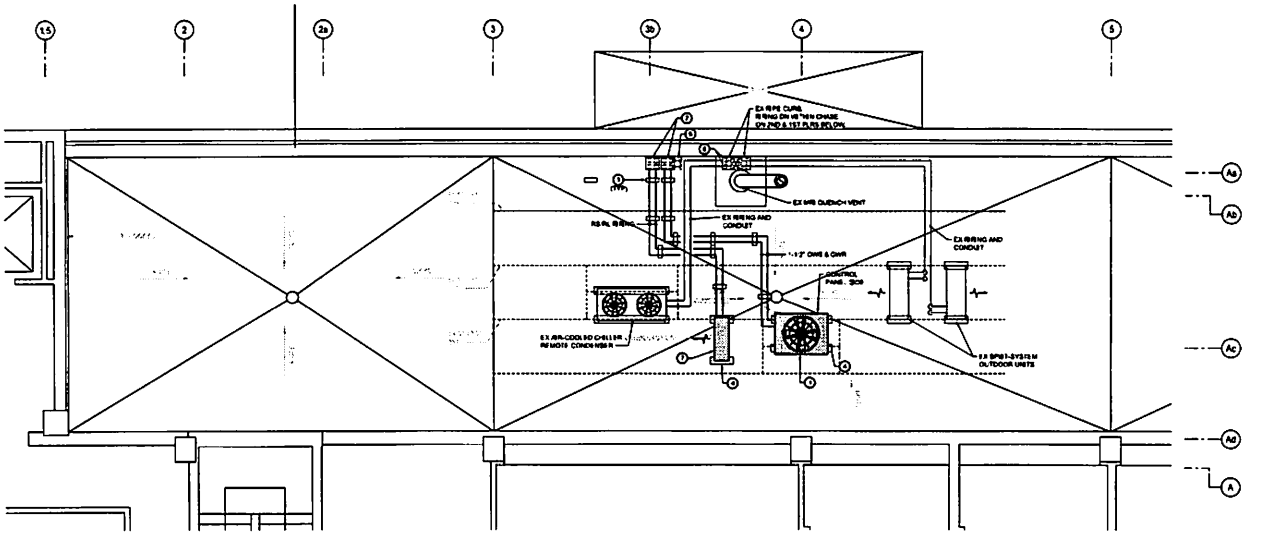


## 1 PART ROOF PLAN - MECHANICAL - NEW WORK

SCALE 1/4" = 1'-0"

### GENERAL NOTES:

1. REFER TO M0.01 FOR MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.

### DRAWING NOTES:

1. PROVIDE PACKAGED AIR COOLED CHILLER, PACK-1. CHILLER SHALL INCLUDE PUMP PACKAGE.
2. PROVIDE RPS CURB, PATE OR APPROVED EQUAL. PROVIDE ADDITIONAL BOOTS FOR ELECTRICAL AND POWER WIRING/CONDUIT.
3. PROVIDE RPS SUPPORT, DURABLE DEK OR APPROVED EQUAL.
4. PROVIDE EQUIPMENT SUPPORT CURB. CURB SHALL BE FIELD-ERECTED OR MANUFACTURED BY PATE OR APPROVED EQUAL.
5. ROUTE NEW WIRING WITHIN CEILING SPACE OF SECOND FLOOR TO THE EXISTING RPS CHASE.
6. (3) 5-1/2" MODULES OF THE EXISTING RPS CURB ARE AVAILABLE AND CAN BE USED AT CONTRACTOR'S OPTION. ALL EXISTING WIRING SHALL REMAIN AND SERVICE SHALL NOT BE INTERRUPTED.
7. PROVIDE SPLIT-SYSTEM CONDENSING UNIT, CU-1.

N

SCALE 1/4" = 1'-0"

ARCHITECT
Hord Coplan Macht, Inc.
700 E Pratt St, Suite 1200 Baltimore, Maryland
p 410 837 7111 f 410 837 4580

MEP ENGINEER
Burdette, Keathley, Murphy & Associates, Inc.
6300 Blue Hill Lane, Suite 400
Baltimore, MD 21209
p 410 323 0400

# KENNEDY KRIEGER INSTITUTE
## MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

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Project Name: MPI SCANNER RENOVATION
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# M1.03

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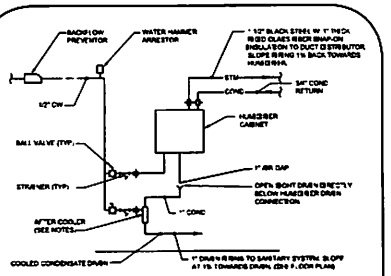
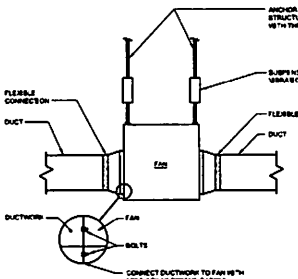
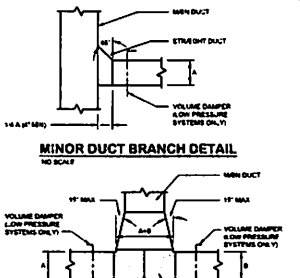



1 WALL MOUNTED ELECTRIC HUMIDIFIER DETAIL
NO SCALE

NOTES:
1. UNIT SHALL BE MOUNTED ON WALL 5'-0" ABOVE FINISHED FLOOR.
2. STEAM & COND RETURN LINES SHALL BE SLOPED BACK TO HUMIDIFIER.
3. 1" COND LINE SHALL BE SLOPED TO AFTER COOLER.
4. AFTER COOLER SHALL BE INTERNAL TO THE HUMIDIFIER CABINET OR FURNISHED WITH HUMIDIFIER FOR INSTALLATION BY CONTRACTOR (AS SHOWN). MAXIMUM DISCHARGE TEMPERATURE TO SANITARY SYSTEMS 120°F.
5. MAKE ALL FINAL CONNECTIONS PER HUMIDIFIER MANUFACTURER'S RECOMMENDATIONS.

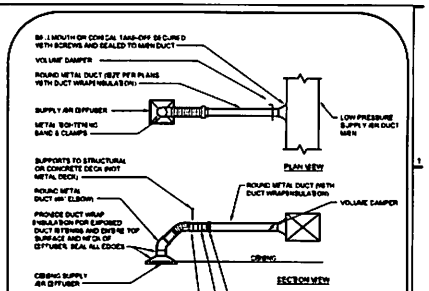



2 CENTRIFUGAL IN-LINE FAN DETAIL
NO SCALE

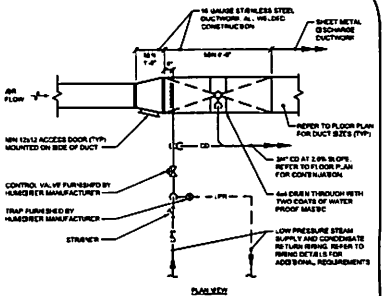



3 RECTANGULAR ELBOW DUCT TEE DETAIL
NO SCALE

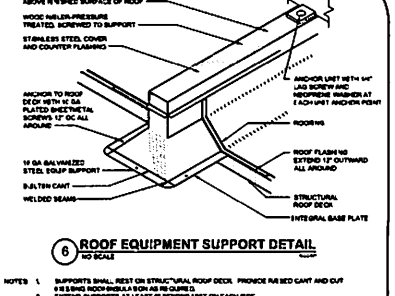
NOTE: THIS DETAIL APPLIES TO BOTH RECTANGULAR & TRIANGULAR AND HORIZONTAL APPLICATIONS.




4 ROUND NECK DIFFUSER DETAIL
NO SCALE

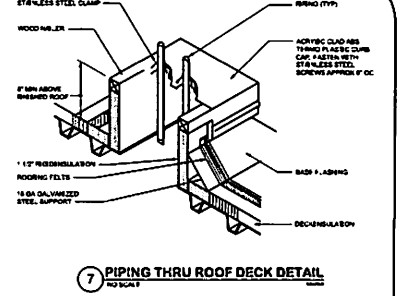



5 DUCT MOUNTED STEAM HUMIDIFIER DETAIL
NO SCALE



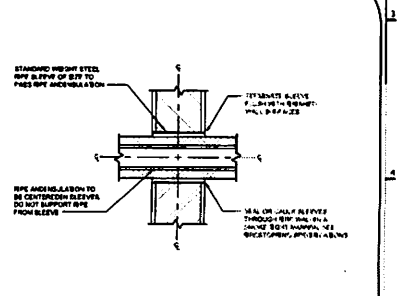

6 ROOF EQUIPMENT SUPPORT DETAIL
NO SCALE

NOTES:
1. SUPPORTS SHALL REST ON STRUCTURAL ROOF DECK. PROVIDE RAISED CANT AND CUT OFF SING ROOF INSULATION AS REQUIRED.
2. EXTEND SUPPORTS AT LEAST 9" BEYOND UNIT ON EACH SIDE.
3. WHERE APPLICABLE, DUCTWORK SHALL BE INSTALLED SUCH THAT THE CENTERLINE OF THE DUCT AND THE INLET OF THE ASSOCIATED FAN ARE AT THE SAME ELEVATION. DUCTWORK SHALL BE A MINIMUM OF 18" ABOVE FINISHED SURFACE OF ROOF TO ALLOW FOR ROOF MAINTENANCE.
4. PROVIDE ROOF SUPPORTS FOR DUCTWORK AT 8' O.C.
5. REFER TO ARCHITECTURAL CONSTRUCTION DOCUMENTS FOR ROOF CONSTRUCTION AND DETAILS OF ALL REQUIRED ROOF WORK INCLUDING BUT NOT LIMITED TO FLASHING AND COUNTER FLASHING OF CURBS, PENETRATIONS, ETC.

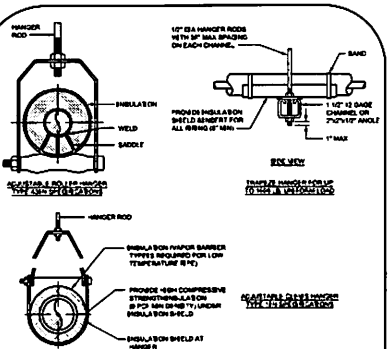



7 PIPING THRU ROOF DECK DETAIL
NO SCALE

NOTES:
1. CURB SHALL BE MANUFACTURED BY PATE, THYCURB OR EQUIVALENT.
2. REFER TO ARCHITECTURAL CONSTRUCTION DOCUMENTS FOR ROOF CONSTRUCTION AND DETAILS OF ALL REQUIRED ROOF WORK INCLUDING BUT NOT LIMITED TO FLASHING AND COUNTER FLASHING OF CURBS, PENETRATIONS, ETC.
3. PROVIDE ADDITIONAL BOOTS FOR ELECTRICAL AND POWER WIRING CONDUIT. COORDINATE WITH ELECTRICAL CONTRACTOR.



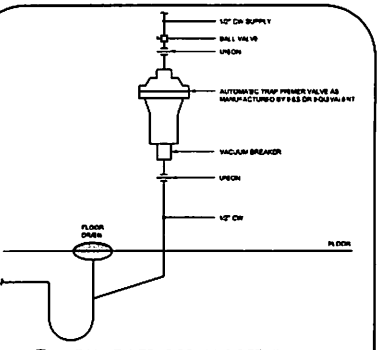

8 PIPE SLEEVE DETAIL
NO SCALE




| MAXIMUM PIPE/TUBING SUPPORT SPACING, FEET | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NOM. SIZE (IN) | THRU 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 |
| PIPE | 7 FT | 7 | 7 | 8 | 10 | 11 | 12 | 14 | 16 | 17 |
| TUBING | 6 FT | 6 | 7 | 8 | 8 | 9 | 10 | 12 | 13 | 14 |

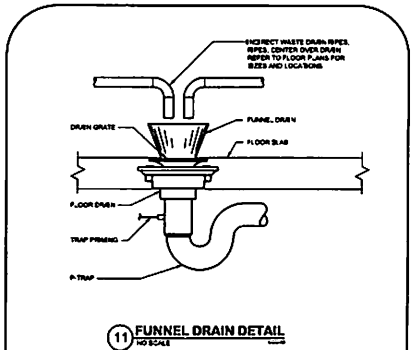
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.

9 TYPICAL PIPE HANGERS DETAIL
NO SCALE

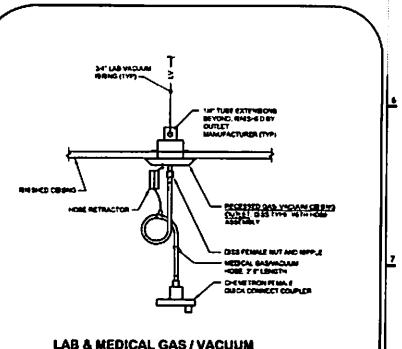



10 AUTOMATIC TRAP PRIMING DETAIL
NO SCALE

NOTE: AUTOMATIC TRAP PRIMER VALVE SHALL BE MOUNTED 1" ABOVE THE TRAP TO ENSURE PROPER FLOW OF WATER.




11 FUNNEL DRAIN DETAIL
NO SCALE




12 LAB & MEDICAL GAS / VACUUM CEILING OUTLET INSTALLATION DETAIL
NO SCALE

NOTE: CONTRACTOR SHALL PROVIDE HOSE ASSEMBLY FOR ALL LAB & MEDICAL GAS/VACUUM CEILING OUTLETS


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
P 410 837 7111 F 410 837 0180

MEP ENGINEER
Burdette, Keathley, Murphy & Associates, Inc.
6300 Blair Mill Lane, Suite 400
Baltimore, MD 21209
P 410 323 9600


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

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Project Name
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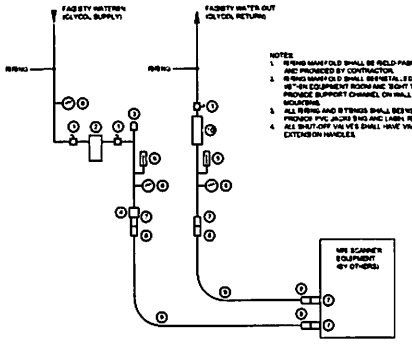



NOTES:
1. RISING MANIFOLD SHALL BE FIELD FABRICATED AND PROVIDED BY CONTRACTOR.
2. RISING MANIFOLD SHALL BE INSTALLED EXPOSED 18"-24" IN EQUIPMENT ROOM AND SIGHT TO WALL PROVIDE SUPPORT CHANNEL ON WALL FOR MOUNTING.
3. ALL RISING AND STRINGS SHALL BE INSULATED PROVIDE PVC JACKETING AND LABEL RISING.
4. ALL SHUT-OFF VALVES SHALL HAVE VALVE EXTENSION HANDLES.

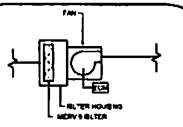
## MANIFOLD COMPONENT SCHEDULE

| DESIG | DESCRIPTION | EXAMPLE PART MANUFACTURER & MODEL |
|---|---|---|
| 1 | SHUTOFF VALVE | MCMASTER-CARR 4708K25 |
| 2 | FILTER | MCMASTER-CARR 44775K13 |
| 3 | WATER HAMMER ARRESTOR | WATTS LF1000 |
| 4 | FLOW RESTRICTOR | 10 GPM FRESH WATER SYSTEMS FR33-10-FHPT<br>15 GPM FRESH WATER SYSTEMS FR36-15-FHPT-PT |
| 5 | TEMPERATURE GAUGE | MCMASTER-CARR 2995K11 |
| 6 | PRESSURE GAUGE | MCMASTER CARR 4939K61 |
| 7 | 3/4" FNPT FITTING | STANDARD |
| 8 | 3/4" MNPT SWIVEL FITTING | ANDERSON METALS 77062-12J |
| 9 | 3/4" REINFORCED FLEX HOSE | PARKER DURAMAND RIBBER REINFORCED POLYURETHANE 9979-12-24 |
| 10 | FLOW METER | MCMASTER-CARR 8701K65 |
| | | |

NOTES:
1. SAMPLE PARTS ARE PROVIDED FOR REFERENCE AND MATCH RECOMMENDATIONS THE MPI SYSTEM SITE PREPARATION MANUAL.
2. CONTRACTOR SHALL SUBMIT WATER MANIFOLD COMPONENTS UNDER A SEPARATE SUBMITTAL FOR REVIEW.

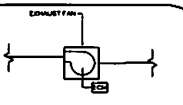
## MPI SCANNER - WATER MANIFOLD PIPING SCHEMATIC DIAGRAM

NO SCALE




## FAN FILTER UNIT CONTROL

OPERATION:
1. FAN SHALL OPERATE CONTINUOUSLY.
2. FAN SHALL BE PROVIDED WITH CONTROLLER FOR CONSTANT VOLUME AIRFLOW CONTROL.




## EXHAUST FAN CONTROL

OPERATION:
1. FAN SHALL OPERATE CONTINUOUSLY.
2. FAN SHALL BE PROVIDED WITH CONTROLLER FOR CONSTANT VOLUME AIRFLOW CONTROL.

## SPACE CONTROL

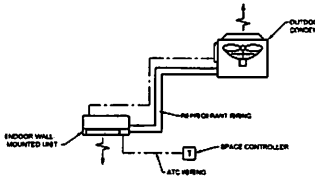
A. EXISTING DUCT MOUNTED HEATING COIL:
1. ON A FALLING TEMPERATURE THERMOSTAT/SENSOR SHALL MODULATE HEATING COIL CONTROL VALVE TO MAINTAIN SETPOINT.
2. ON A RISING TEMPERATURE THE OPPOSITE SHALL OCCUR.

B. GENERAL:
1. EACH THERMOSTAT/SENSOR SHALL HAVE INDIVIDUAL OCCUPIED AND UNOCCUPIED HEATING AND COOLING SETPOINTS. ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH THE EMCS. DEFAULT VALUES SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:

| | |
|---|---|
| HEATING - OCCUPIED | 70°F (ADJUSTABLE) |
| HEATING - UNOCCUPIED | 60°F (ADJUSTABLE) |
| COOLING - OCCUPIED | 75°F (ADJUSTABLE) |
| COOLING - UNOCCUPIED | 80°F (ADJUSTABLE) |

## ATC GENERAL NOTES

1. THE ATC WORK SHALL INCLUDE PROVIDING FOR A COMPLETE AND OPERABLE CONTROL SYSTEM INCLUDING ALL DEVICES REQUIRED TO ACHIEVE THE SEQUENCES AND FUNCTIONS INDICATED THROUGHOUT THE CONTRACT DOCUMENTS.
2. THE ATC CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRICAL WIRING AND CONDUIT FROM POWER SOURCE INCLUDING TERMINATION ON TO ALL REQUIRED ATC RELATED POWER CONNECTIONS INCLUDING BUT NOT LIMITED TO DDC CONTROLLERS (PROVIDE LOW VOLTAGE CONTROLLER FOR AIR TERMINAL UNITS INCLUDING TRANSFORMERS AND DISCONNECT SWITCHES AS REQUIRED), SENSORS, VALVE AND DAMPER ACTUATORS (INCLUDING SMOKE DAMPERS), AIR FLOW MONITORS, ATC PANELS, ETC. THE ATC CONTRACTOR SHALL OBTAIN A SEPARATE ELECTRICAL PERMIT AS REQUIRED BY THE LOCAL AUTHORITY. THE ATC CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR ALL POWER REQUIREMENTS NECESSARY FOR A COMPLETE INSTALLATION FROM THE POWER SOURCE TO ALL ATC RELATED CONNECTIONS.
3. THE ATC CONTRACTOR SHALL COORDINATE AND VERIFY THAT ALL CONTROLLERS, DEVICES AND ACCESSORIES ARE PROVIDED AS REQUIRED TO ACCOMPLISH ALL CONTROL FUNCTIONS AND SEQUENCES INDICATED IN THE CONTRACT DOCUMENTS. WHERE CONTROL RELATED DEVICES ARE NOT PROVIDED BY AN EQUIPMENT MANUFACTURER, IT SHALL BE THE RESPONSIBILITY OF THE ATC CONTRACTOR TO PROVIDE THE CONTROL DEVICES REQUIRED TO ACCOMPLISH THE FUNCTIONS AND SEQUENCES INDICATED.
4. THE ATC CONTRACTOR SHALL PROVIDE ALL CONTROLLERS, DEVICES, POINTS, ETC. REQUIRED TO ACCOMPLISH THE CONTROL SEQUENCES AND FUNCTIONS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. ALL POINTS SHALL BE BROUGHT TO THE ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) IN ADDITION, THE ATC CONTRACTOR SHALL PROVIDE ALL CONTROLLERS, DEVICES, POINTS, ETC REQUIRED TO CONTROL, OPERATE AND MONITOR ALL EQUIPMENT, AIR TERMINAL UNITS, VALVES, DAMPERS, SENSORS, ETC. INDICATED THROUGHOUT THE CONTRACT DOCUMENTS.
5. ALL ATC DEMOLITION SHALL BE PERFORMED BY THE ATC CONTRACTOR ONLY. ALL THE PNEUMATICALLY CONTROLLED EQUIPMENT THAT IS NOT REMOVED UNDER THIS PROJECT SHALL REMAIN IN OPERATION. ALL PNEUMATIC WIRING, EQUIPMENT, ETC. NOT REQUIRED TO BE IN SERVICE AT THE COMPLETION OF THIS PROJECT SHALL BE REMOVED BY THE ATC CONTRACTOR.
6. ALL SETPOINTS INDICATED ON THE SEQUENCES SHALL BE ADJUSTABLE.
7. ALL ATC WIRING SHALL BE INSTALLED IN CONDUIT.
8. WHERE INDICATED ON THE DRAWINGS, REMOVE EXISTING ATC DEVICE AND ALL ASSOCIATED PNEUMATIC TUBING AND/OR WIRING NOT TO BE REUSED UNDER THIS PROJECT. BACK TO THE MAIN. IMMEDIATELY CAP AND SEAL ALL OPEN ENDED TUBING TO PREVENT COMPRESSED AIR LEAKAGE. UNDER NO CIRCUMSTANCES SHALL ATC SERVICE TO OTHER OCCUPIED AREAS OF THE FACILITY AND/OR BUILDING BE ADVERSELY AFFECTED BY DEMOLITION UNDER THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO EXISTING HVAC SYSTEMS, EQUIPMENT OR RELATED SERVICE WORK. REBUILDING PROMPTLY REDEMOLISHING ATC SYSTEMS. REFER TO ATC SPECIFICATION FOR PNEUMATIC TUBING INSPECTION PRIOR TO ANY HVAC SERVICES.




## DUCTLESS SPLIT-SYSTEM AIR CONDITIONING UNIT CONTROL

SEQUENCE OF OPERATION:
1. THE SYSTEM SHALL BE PROVIDED WITH A REMOTE SPACE TEMPERATURE CONTROLLER TO OPERATE THE SYSTEM AS FOLLOWS:
2. SPACE CONTROLLER SHALL CYCLE THE OUTDOOR UNIT AND ASSOCIATED INDOOR UNIT TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 69°F (ADJUSTABLE).

GENERAL:
1. ALL ATC WIRING SHALL BE INSTALLED IN CONDUIT.


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1300 Baltimore, MD 21202
p 410 837 7311 f 410 837 0480

MEP ENGINEER
Burdette, Keathley, Murphy & Associates, Inc.
6300 Stevenson Lane, Suite 400
Baltimore, MD 21209
p 410 323 8400


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|

Project Name: MPI SCANNER RENOVATION
Project Number: 219260.00
Date: 12.20.2019
Scale: As Noted
Drawing: MECHANICAL DIAGRAMS & CONTROLS

M3.01

CONSTRUCTION DOCUMENTS


PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Fundingline Number: PWAA2020

## AIR DEVICE SCHEDULE

| DESIG | DUTY | SIZE (IN) | CFM RANGE | SHEET / NECK SIZE (IN) | MAX SP | MAX NC | DESCRIPTION | BASIS OF DESIGN | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | MANUFACTURER | MODEL | |
| A | SUPPLY | 24 x 24 MODULE | 0 - 120 | 6"Ø | 0.10" | 25 | (10 x 10 NECK W/ FACTORY MOUNTED SQUARE - ROUND TRANSITION) | STUS | TDC | |
| A | SUPPLY | 24 x 24 MODULE | 121 - 210 | 8"Ø | 0.10" | 25 | (10 x 10 NECK W/ FACTORY MOUNTED SQUARE - ROUND TRANSITION) | STUS | TDC | |
| A | SUPPLY | 24 x 24 MODULE | 211 - 320 | 10"Ø | 0.10" | 25 | (10 x 10 NECK W/ FACTORY MOUNTED SQUARE - ROUND TRANSITION) | STUS | TDC | |
| B | RETURN | 24 x 24 MODULE | 0 - 120 | 6 x 6 | 0.10" | 25 | PERFORATED FACE - GRILLE (FLUSH) | STUS | PAR | |
| B | RETURN | 24 x 24 MODULE | 121 - 220 | 8 x 8 | 0.10" | 25 | PERFORATED FACE - GRILLE (FLUSH) | STUS | PAR | |
| B | RETURN | 24 x 24 MODULE | 221 - 340 | 10 x 10 | 0.10" | 25 | PERFORATED FACE - REGISTER (FLUSH) | STUS | PAR | |
| B | RETURN | 24 x 24 MODULE | 341 - 500 | 12 x 12 | 0.10" | 25 | PERFORATED FACE - REGISTER (FLUSH) | STUS | PAR | |
| C | EXHAUST | 10 x 10 | 0 - 250 | 10 x 10 | 0.20" | 25 | FIXED LOUVER, 30° DEFLECTION 3/4" SPACING - GRILLE | STUS | 350 FL | |
| C | EXHAUST | 12 x 12 | 250 - 440 | 12 x 12 | 0.20" | 25 | FIXED LOUVER, 30° DEFLECTION 3/4" SPACING - GRILLE | STUS | 350 FL | |
| C | EXHAUST | 14 x 14 | 441 - 610 | 14 x 14 | 0.20" | 25 | FIXED LOUVER, 30° DEFLECTION 3/4" SPACING - GRILLE | STUS | 350 FL | |
| C | SUPPLY | 12 x 6 | 0 - 250 | 12 x 6 | 0.10" | 25 | SINGLE DEFLECTION REGISTER 3/4" SPACING | STUS | 271 RS | |
| E | EXHAUST | 24 x 6 | 100 - 440 | 24 x 6 | 0.20" | 25 | FIXED LOUVER, 30° DEFLECTION 3/4" SPACING - GRILLE (STAINLESS STEEL) | STUS | 350 RL-SS | |
| F | SUPPLY | 24 x 24 MODULE | 0 - 100 | 10"Ø | 0.10" | 35 | TERMINAL HEPA DIFFUSER WITH ROOMSIDE 2" REPLACEABLE FILTER | CLEANROOM INTERNATIONAL | DS | NOTE 1 & 2 |
| G | SUPPLY | 24 x 48 MODULE | 101 - 325 | 10"Ø | 0.10" | 35 | TERMINAL HEPA DIFFUSER WITH ROOMSIDE 2" REPLACEABLE FILTER | CLEANROOM INTERNATIONAL | DS | NOTE 1 & 2 |

NOTES:
TYPICAL MANUFACTURERS MAY PROVIDE ALUMINUM OR STEEL AIR DEVICES UNLESS OTHERWISE INDICATED.
1. PROVIDE FILTERS AND (1) ADDITIONAL SPARE FILTER PER AIR DEVICE.
2. FILTER AIR DEVICE SHALL HAVE INTEGRAL DAMPER.

## PACKAGED AIR-COOLED CHILLER SCHEDULE

| DESIG | LOCATION | SERVICE | REFRIGERANT | MBH | FLUID TYPE | PUMP | | RESERVOIR VOLUME (GAL) | OUTDOOR AMBIENT | ELECTRICAL | | | | APPROX. SIZE (L x W x H) (IN) | APPROX. OPERATING WEIGHT (LBS) | BASIS OF DESIGN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | GPM | HP | | | VOLTS | PHASE | MCA | RLA | | | MANUFACTURER | MODEL |
| PACC-1 | EQUIP RM | MRI SCANNER | R410A | 100.0 | 35% PG | 26.1 | 1-1/2 | 42.3 | 5°F TO 105°F | 460 | 3 | 26.7 | - | 91 x 39 x 93 | 1,200 | NANO | NCS 0101 |

NOTES:
1. CHILLER DEDICATED TO SERVE MOMENTUM MRI SCANNER.
2. PROVIDE ADDITIONAL DISPLAY / CONTROL PANEL FOR REMOTE INSTALLATION WITHIN BUILDING. PANEL SHALL BE POWERED BY LOW-VOLTAGE FEED FROM CHILLER, LOCATE PANEL WITHIN MRI SCANNER EQUIPMENT ROOM. SEE PLANS.
3. PROVIDE BASIS OF DESIGN. NO SUBSTITUTIONS FOR THIS EQUIPMENT WILL BE ACCEPTED.

## ELECTRODE STEAM HUMIDIFIER SCHEDULE

| DESIG | SERVICE | STEAM CAPACITY | | ELECTRICAL | | | | BASIS OF DESIGN | |
|---|---|---|---|---|---|---|---|---|---|
| | | CAPACITY (LBS/HR) | MAX ABSORPTION DISTANCE (IN) | INPUT POWER (kW) | MAX AMPS | VOLTS / PHASE | | MANUFACTURER | MODEL |
| H-1 | EQUIP RM | 14 | 17 | 3.3 | 4 | 480 / 3 | | DRISTEEM | X1-003 |

NOTES:
1. UNIT SHALL BE PROVIDED WITH A CONDENSATE DRAIN COOLER, MODULATING CONTROL, DUCT-MOUNTED HUMIDITY TRANSMITTER, MULTI-TUBE DISPERSION TUBE SYSTEM WITH INSULATED TUBE OPTION AND HARD PIPE KIT.
2. PROVIDE UNIT WITH OPTIONAL VAPOR-LOGIC CONTROLLER WITH SACHET CAPABILITY.

## DUCT CONSTRUCTION SCHEDULE

| SYSTEM | DUCT PRESSURE CLASS (IN WC) | DUCT SEAL CLASS | TEST PRESSURE | MAXIMUM ALLOWABLE LEAKAGE | NOTES |
|---|---|---|---|---|---|
| LOW PRESSURE SUPPLY | 2" | A | 2" | 1% | 1 & 2 |
| LOW PRESSURE EXHAUST | 2" | A | 2" | 1% | 1 & 2 |
| LOW PRESSURE RETURN | 2" | A | 2" | 1% | 1 & 2 |

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL DUCTWORK REQUIREMENTS AS WELL AS DETAILED PRODUCT AND INSTALLATION REQUIREMENTS. WHERE DRAWINGS AND SPECIFICATIONS CONFLICT, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
2. SUCCESSFUL COMPLETION OF DUCT PRESSURE TESTING SHALL OCCUR PRIOR TO THE INSTALLATION OF INSULATION. VERIFICATION OF SUCCESSFUL PRESSURE TEST RESULTS SHALL BE SUBMITTED TO THE A/E AND INCLUDED IN THE PROJECT O & M MANUALS.
3. DUCT SEAL CLASS SHALL BE AS PER THE MOST CURRENT EDITION OF SMACNA STANDARDS.

## DUCTLESS SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

| AREA SERVED | DESIGNATION | | INDOOR UNIT TYPE | COOLING | | ELECTRICAL CHARACTERISTICS | | | | | | BASIS OF DESIGN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INDOOR UNIT | OUTDOOR UNIT | | TOTAL MBH | SENSIBLE MBH | INDOOR | | OUTDOOR | | | | MANUFACTURER | MODEL |
| | | | | | | MIN AMPACITY | VOLTS / PH | MIN AMPACITY | VOLTS / PH | MOCP | | | |
| LAN ROOM | AC-1 | CU-1 | WALL-MOUNTED | 36 | 25.2 | 1 | 208 / 1 | 25 | 208 / 1 | 31 | MITSUBISHI MH SERIES | MSZ-FH | MUZ-FH |

NOTES:
1. PROVIDE DOUBLE SUCTION REFRIGERANT PIPING RISERS AND TRAPS AS RECOMMENDED BY MANUFACTURER. QUANTITY AND SIZES OF REFRIGERANT PIPING SHALL BE AS RECOMMENDED BY MANUFACTURER.
2. PROVIDE INDOOR UNIT WITH CONDENSATE PUMP.
3. INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT THROUGH FIELD-SUPPLIED INTERCONNECTED WIRING. INDOOR UNIT SHALL BE PROVIDED WITH DISCONNECT. DISCONNECT FOR OUTDOOR UNIT SHALL BE PROVIDED UNDER ELECTRICAL DIVISION.
4. COOLING CAPACITY INDICATED BASED ON INDOOR: 80°F DB / 67°F WB; OUTDOOR: 95°F DB / 75°F WB.

## FAN SCHEDULE

| DESIG | LOCATION | SERVICE | CFM | ESP (IN) | MOTOR | | | | | RPM | MIN FAN DIA | WHEEL TYPE | CLASS | DRIVE TYPE | METHOD OF CONTROL | MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | HP | MAX BHP | VOLTS | PHASE | VFD | | | | | | | | | |
| ET-1 | EQUIP RM | SUPPLY - MRI SCANNER RM | 400 | 1.5 | 0.75 | 0.61 | 115 | 1 | NA | 2170 | - | B | - | DIRECT | CONSTANT AIRFLOW | GREENHECK | SQ | 1 & 3 |
| ET-1 | STORAGE RM | EXHAUST | 600 | 1.5 | 0.75 | 0.46 | 115 | 1 | NA | 2110 | | B | - | DIRECT | CONSTANT AIRFLOW | GREENHECK | SQ | 1 & 2 |

NOTES:
1. PROVIDE DIRECT-DRIVE CENTRIFUGAL INLINE FAN WITH ECM MOTOR, CONSTANT VOLUME AIRFLOW CONTROL, AND INTEGRAL TOGGLE DISCONNECT.
2. PROVIDE WITH MOUNTING HARDWARE AND SPRING ISOLATORS FOR DUCT-MOUNTED HORIZONTAL INSTALLATION.
3. PROVIDE WITH FILTER BOX WITH 8IN MERV 8 FILTERS. PROVIDE (1) SPARE SET OF REPLACEMENT FILTERS.


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
P 410 837 7215 F 410 837 0282

MEP ENGINEER
Burdette, Keathley, Murphy & Associates, Inc.
6300 Blair Hill Lane Suite 400
Baltimore, MD 21209
P 410 323 8600


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

hord | coplan | macht
ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
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| 1 | 05.14.2020 | ASI 1 |

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Drawing: MECHANICAL SCHEDULES

M4.01

CONSTRUCTION DOCUMENTS


PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Fundingcode: PWAA2020 Number: PW

PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

# MECHANICAL SPECIFICATIONS

## 1 - BASIC MECHANICAL REQUIREMENTS

### 1.1 CONTRACT DOCUMENTS

A. CONTRACT DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC SCHEMATIC TO CONVEY SCOPE AND GENERAL ARRANGEMENT. CONTRACTOR SHALL REVIEW AND COORDINATE ROUTING OF NEW WORK TO CLEAR EXISTING PIPING, DUCT, ELECTRICAL STRUCTURE, ETC. AT NO COST TO THE OWNER. ALL DIMENSIONS OF EXISTING CONDITIONS SHALL BE CONSIDERED APPROXIMATE (PERFORMANCE SPECIFICATION ONLY). ALL DIMENSIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.

B. CONTRACT DOCUMENT INTERPRETATION/DISCREPANCIES

1. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES OR OMISSIONS ON THE DRAWINGS OVER THE SPECIFICATIONS, HE SHALL NOTIFY THE ARCHITECT/ENGINEER AND/OR SUCH CONDITIONS PRIOR TO THE BID DATE. OTHERWISE, IT WILL BE UNDERSTOOD THAT THE DRAWINGS AND SPECIFICATIONS ARE CLEAR AS TO WHAT IS INTENDED AND SHALL BE INTERPRETED BY THE AE.

2. IN ADDITION, SHOULD ANY CONTRACTOR AMBIGUITY, INCONSISTENCY, DISCREPANCY OR CONFLICT APPEARING OR BETWEEN ANY OF THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL, BEFORE PROCEEDING WITH THE WORK IN QUESTION, NOTIFY THE AE AND REQUEST INTERPRETATION. IN NO CASE SHALL HE PROCEED WITH THE AFFECTED WORK UNTIL ADVISED BY THE AE.

3. IF THE CONTRACTOR FAILS TO MAKE A REQUEST FOR INTERPRETATION OF DISCREPANCIES OR CONFLICTS IN THE DRAWINGS OR SPECIFICATIONS, HE/SHE WILL BE ACCEPTED FOR FAILURE TO CARRY OUT THE WORK IN A SATISFACTORY MANNER. ASSUMED TO BE THE AE IN ALL CASES. THE CONTRACTOR WILL BE OBLIGATED TO HAVE SUBMITTED THE MOST STRINGENT MATERIALS AND METHODS & THE HIGHEST QUALITY MATERIALS AND MOST EXPENSIVE MANNER OF COMPLETING THE WORK UNLESS HE HAS REQUESTED AND OBTAINED WRITTEN AUTHORIZATION AS TO WHICH METHODS OR MATERIALS WILL BE REQUIRED.

4. EACH AND EVERY TRADE OR SUBCONTRACTOR WILL BE DEEMED TO HAVE FAMILIARIZED THEMSELVES WITH ALL DRAWINGS OF THIS PROJECT INCLUDING ARCHITECTURAL, MECHANICAL, ELECTRICAL INFORMATION TECHNOLOGY, ETC. SO AS TO AVOID COORDINATION ERRORS, OMISSIONS, AND MISINTERPRETATIONS. NO ADDITIONAL COMPENSATION WILL BE AUTHORIZED FOR ALLEGED ERRORS, OMISSIONS AND MISINTERPRETATION, WHETHER THEY ARE A RESULT OF FAILURE TO OBSERVE THESE REQUIREMENTS OR NOT.

C. THE COMPLETE SET OF ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS APPLY TO THIS WORK.

### 1.2 SUBMITTALS

A. A DETAILED SUBMITTAL REVIEW SCHEDULE INDICATING PRIORITY SUBMITTALS FOR CRITICAL PATH OR LONG LEAD SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER AND AGREED TO PRIOR TO THE START OF ANY SUBMITTAL REVIEWS. THE ENGINEER SHALL BE PROVIDED UP TO TEN (10) BUSINESS DAYS TO PROVIDE THE REVIEW, PROCESSING, AND RETURN ANY SUBMITTALS OR RESUBMITTALS. ADDITIONAL REVIEW/PROCESSING TIME MAY BE NEEDED FOR CONCURRENT REVIEW OF MULTIPLE SUBMITTALS BY MORE THAN ONE AND ARE REQUIRED ON THE SAME DAY.

B. SUBMITTALS WILL BE CHECKED ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND ARE SUBJECT TO THE ORIGINAL CONTRACT DOCUMENTS, AS WELL AS ANY CORRECTIONS AND COMMENTS NOTED. COMMENTS NOTED BY ANY WILL NOT BE CONSIDERED A COMPLETE LIST OF ALL OMISSIONS, DEVIATIONS AND CORRECTIONS NECESSARY TO MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR WILL BE RESPONSIBLE TO CONFIRM THAT THE FINAL PRODUCT AND INSTALLATION WILL BEEN CONFORMANCE WITH THE CONTRACT DOCUMENTS THEIR ENTIRETY, INCLUDING THE RESPONSIBILITY TO FULLY COORDINATE ALL WORK WITH OTHER TRADES AND TO CONFIRM THE CORRECTNESS OF DIMENSIONS, QUANTITIES, AND CAPACITIES. SUBMITTAL REVIEW DOES NOT AUTHORIZE OR CONSTITUTE A CHANGE TO THE CONTRACT REQUIREMENTS AND DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO CONFORM TO THE CONTRACT REQUIREMENTS. REQUIREMENTS OF THE CONTRACT ARE NOT WAIVED BY REVIEW OF ANY AND ALL SUBSTITUTIONS. THE CONTRACTOR MUST FULFILL THE TERMS OF THE CONTRACT.

C. ACCEPTANCE WILL NOT CONSTITUTE WAIVER OF CONTRACT REQUIREMENTS UNLESS DEVIATIONS ARE SPECIFICALLY INDICATED AND CLEARLY NOTED.

D. ALL MECHANICAL EQUIPMENT SHALL BE APPROVED AND LISTED BY UNDERWRITERS LABORATORIES (UL) OR ETL, AND SHALL BEAR NAMEPLATE INDICATING THE SAME.

E. ACCEPTANCE WILL NOT CONSTITUTE A WAIVER OF SYSTEM PERFORMANCE.

### 1.3 MANUFACTURER'S RECOMMENDATIONS

A. INSTALLATION PROCEDURES ARE REQUIRED TO BEGIN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED.

### 1.4 ACCESSIBILITY

A. INSTALL EQUIPMENT AND MATERIALS TO PROVIDE REQUIRED ACCESS FOR SERVICING AND MAINTENANCE. COORDINATE THE FINAL LOCATION OF CONCEALED EQUIPMENT REQUIRING ACCESS WITH FINAL LOCATION OF REQUIRED ACCESS PANELS AND DOORS. ALLOW AMPLE SPACE FOR REMOVAL OF ALL PARTS THAT REQUIRE REPLACEMENT OR SERVICING.

### 1.5 COORDINATION

A. COORDINATE ALL WORK AND COOPERATE WITH ALL OTHER TRADES TO FACILITATE SUCCESSFUL COMPLETION OF WORK.

### 1.6 SITE EXAMINATION

A. FAILURE TO VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING PROJECT CONDITIONS PRIOR TO BIDDING WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLYING WITH THE CONTRACT DOCUMENTS.

### 1.7 QUALITY ASSURANCE

A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF MECHANICAL PRODUCTS OF TYPES AND SIZES REQUIRED, WHOSE PRODUCTS HAVE BEEN SATISFACTORILY USED IN SIMILAR SERVICE FOR NOT LESS THAN FIVE (5) YEARS.

B. INSTALLER'S QUALIFICATIONS: FIRMS WITH AT LEAST FIVE (5) YEARS SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH MECHANICAL PRODUCTS SIMILAR TO THAT REQUIRED FOR THIS PROJECT.

### 1.8 REGULATIONS AND PERMITS

A. WORK SHALL COMPLY WITH ALL APPLICABLE STATE, LOCAL AND FEDERAL CODES/REGULATIONS. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS.

### 1.9 PRE-CONSTRUCTION

A. UPON COMPLETION OF WORK, INSTRUCT OWNER'S REPRESENTATIVES ON THE PROPER OPERATION AND MAINTENANCE OF THE MECHANICAL AND ELECTRICAL SYSTEMS.

### 1.10 GUARANTEE

A. EACH CONTRACTOR SHALL FURNISH A GUARANTEE COVERING ALL LABOR AND MATERIALS FURNISHED BY HIM FOR A PERIOD OF TWO (2) YEARS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK, AND HE SHALL AGREE TO REPAIR AND MAKE GOOD AT HIS OWN EXPENSE ANY AND ALL DEFECTS WHICH MAY APPEAR IN THE WORK DURING THAT TIME (IN THE JUDGMENT OF THE ENGINEER). SUCH DEFECTS ARE BE FROM DEFECTIVE WORKMANSHIP AND/OR IMPERFECT ORIGINAL MATERIAL.

B. THE ABOVE SHALL NOTE IN ANY WAY VOID OR ABROGATE EQUIPMENT MANUFACTURER'S GUARANTEE OR WARRANTY. CERTIFICATES OF GUARANTEE SHALL BE DELIVERED TO THE OWNER.

C. WITHIN THE TWO (2) YEAR WARRANTY/GUARANTEE PERIOD, MANUFACTURER'S RECOMMENDED MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR.

### 1.11 CONTRACTOR INSTALLATION DRAWINGS

A. PRIOR TO FABRICATION AND INSTALLATION, SUBMIT SHOP DRAWINGS (MIN. SCALE - 1/8" = 1'-0") ILLUSTRATING ALL DUCTWORK, PLUMBING PIPING, LIGHTING FIXTURES, CABLE TRAY, CONDUIT, EXPANSION LOOPS, SUPPORTS, AND HANGERS, BODIES AND FIRE PROTECTION COORDINATED WITH EACH OTHER AND WITH THE STRUCTURE. INSTALLATION DRAWINGS SHALL BE REVIEWED BY OWNER'S REPRESENTATIVE PRIOR TO FABRICATION AND INSTALLATION OF ANY NEW WORK AND PRIOR TO THE ORDERING OF ANY MECHANICAL EQUIPMENT.

B. SHOULD THE CONTRACTOR NOT PROVIDE THE COORDINATED INSTALLATION DRAWINGS REQUIRED ABOVE, THE FOLLOWING SHALL APPLY:

1. THE CONTRACTOR SHALL ACCEPT FULL AND ABSOLUTE RESPONSIBILITY FOR THE COORDINATION OF ALL PROJECT MATERIALS AND EQUIPMENT TO BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS.

2. PROPOSED CHANGE ORDERS AND/OR TIME EXTENSIONS WILL NOT BE ACCEPTED FOR ANY ADDITIONAL WORK THAT RESULTS FROM COORDINATION RELATED CHANGES.

3. A CREDIT SHALL BE ISSUED TO THE OWNER FOR THE VALUE OF THE COORDINATED INSTALLATION DRAWINGS. THE VALUE OF THE CREDIT TO THE OWNER SHALL BE AS DETERMINED BY THE AE.

## 2 - PIPING

### 2.1 PIPE AND FITTINGS

A. PROVIDE ASTM APPROVED PIPE AND FITTINGS FOR EACH SERVICE INDICATED BELOW:

1. DOMESTIC WATER PIPING

A) INTERIOR PIPING (2" AND SMALLER) (50 MM AND SMALLER): TYPE "L" COPPER, WROUGHT-COPPER FITTINGS, SOLDER-JOINTS.

2. HYDRONIC PIPING

A) CHILLED - GLYCOL WATER SUPPLY AND RETURN (2" AND SMALLER): TYPE "L" COPPER, WROUGHT-COPPER FITTINGS, SOLDER-JOINTS.

B. AIR CONDITIONING CONDENSATE: TYPE "M" COPPER, WROUGHT-COPPER FITTINGS, SOLDER-JOINTS.

3. REFRIGERANT PIPING

A) PIPING SHALL BE REFRIGERANT GRADE HARD DRAWN TYPE "L" SEAMLESS COPPER TUBE. ALL CONNECTIONS OR JOINTS SHALL BE SILVER SOLDERED OR BRAZED.

4. FIRE PROTECTION PIPING

A) 2" (50 MM) AND SMALLER: SCHEDULE 40 BLACK STEEL, CAST IRON THREADED OR ROLL-GROOVED FITTINGS.

B) 2-1/2" (65 MM) AND LARGER: SCHEDULE 10 BLACK STEEL, WELDED OR ROLL-GROOVED FITTINGS.

C. PIPING AND FITTINGS SHALL BE PAINTED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 13.

5. SANITARY AND VENT PIPING

A. ABOVEGROUND INSIDE BUILDING: 4" (100 MM) AND SMALLER: SERVICE WEIGHT HUBLESS CASTIRON SOIL PIPE. HUBLESS CAST IRON SOIL PIPE AND FITTINGS, NO-HUB JOINTS.

6. GAS & MEDICAL GAS / VACUUM PIPING

A. AIR, OXYGEN AND VACUUM: TYPE "K" COPPER, WROUGHT-COPPER FITTINGS, SOLDER-JOINTS IN ACCORDANCE WITH NFPA 99.

B. PROVIDE VALVE TYPES ABBREVIATED ON PLANS. ALL VALVES SHALL COMPLY WITH APPLICABLE MSS AND ANSI STANDARDS.

C. CLEANING, FLUSHING & INSPECTING

1. GENERAL: CLEAN EXTERIOR SURFACES OF INSTALLED PIPING SYSTEMS OF SUPERFLUOUS MATERIALS AND PREPARE FOR APPLICATION OF SPECIFIED COATINGS (IF ANY). FLUSH OUT PIPING SYSTEMS WITH CLEAN WATER BEFORE PRESSURE TESTING. WITH REQUIRED TESTS ENDS CLEAN SUCH FOR EACH SYSTEM FOR COMPLETION OF JOINTS, SUPPORTS AND ACCESSORIES TIME.

2. INSPECT PRESSURE PIPING IN ACCORDANCE WITH PROCEDURES OF ASME B31.

3. DISINFECT WATER MAINS AND WATER SERVICE PIPING IN ACCORDANCE WITH AWWA C601.

4. GAS & MEDICAL GAS / VACUUM PIPING SHALL BE CLEANED, INSTALLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE MOST CURRENT VERSION OF NFPA 99.

D. DIELECTRIC FITTINGS: PROVIDE ASSEMBLY OR FITTING HAVING INSULATING MATERIAL TO ISOLATE DISSIMILAR METALS TO PREVENT GALVANIC ACTION AND STOP CORROSION.

1. DIELECTRIC NIPPLES: ELECTROPLATED STEEL NIPPLE, HANDSHAKE AND NON-CORROSIVE THERMOPLASTIC LINING, WITH CONSTRUCTION OF PLAIN, THREADED, OR GROOVED END TYPES AND 300-PSIG (2070 KPA) WORKING PRESSURE AT 225°F (107°C) TEMPERATURE.

2. DIELECTRIC UNIONS SHALL NOT BE ACCEPTABLE.

E. PIPE TESTING

1. PRIOR TO THE BALANCING OF SYSTEMS BY THE AABC CERTIFIED BALANCING CONTRACTOR, THE MECHANICAL CONTRACTOR SHALL HYDROSTATICALLY TEST THE FOLLOWING SYSTEMS IN ACCORDANCE WITH THE LATEST ASME B31 (ASME CODE FOR PRESSURE PIPING) AND NFPA REQUIREMENTS:

A. AIR TEST

1) AIR, GAS AND VACUUM

2) REFRIGERATION (LIQUID AND SUCTION) PIPING

B) HYDROSTATIC TEST

1) DOMESTIC WATER

2) CHILLED / GLYCOL WATER SUPPLY AND RETURN PIPING

2. PRESSURE TESTS SHALL ALSO BE PERFORMED PRIOR TO THE INSTALLATION OF ALL INSULATION MATERIALS.

3. HYDROSTATIC TEST: PROVIDE TEMPORARY EQUIPMENT FOR TESTING INCLUDING PUMP AND GAGES. TEST PIPING SYSTEM BEFORE INSULATION IS INSTALLED. WHENEVER FEASIBLE, AND REMOVE CONTROL DEVICES BEFORE TESTING. TEST EACH NATURAL SECTION OR EACH PIPING SYSTEM INDEPENDENTLY, BUT DO NOT LIKE PIPING SYSTEM VALVES TO ISOLATE SECTIONS WHERE TEST PRESSURE EXCEEDS VALVE PRESSURE RATING. ALL EACH SECTION WITH WATER AND PRESSURIZE FOR INDICATED PRESSURE AND TIME.

A. REQUIRED TEST PERIODS FOUR (4) HOURS.

B) HYDROSTATICALLY TEST EACH PIPING SYSTEM AT 150% OF OPERATING PRESSURE INDICATED, BUT NOT LESS THAN 100 PSI (690 KPA) TEST PRESSURE.

C. OBSERVE EACH TEST SECTION FOR LEAKAGE AT END OF TEST PERIOD. TESTS FOR LEAKAGES OBSERVED CONSTANT PRESSURE DROP EXCEEDS 5% OF TEST PRESSURE.

D) UPON COMPLETION OF ROUGHING-IN AND BEFORE SETTING FIXTURES, THE ENTIRE NEW DOMESTIC WATER SYSTEM SHALL BE TESTED, WHERE A PORTION OF THE WATER PIPING SYSTEMS TO BE CONCEALED BEFORE COMPLETION, THEY PORTION SHALL BE TESTED SEPARATELY AS A MINIMUM DESCRIBED FOR THE ENTIRE SYSTEM.

E) PRIOR TO TESTING, VERIFY THE PRESSURE STATED ABOVE ARE IN ACCORDANCE WITH THE LATEST ASME B31 CODE AND NFPA. SHOULD A DISCREPANCY EXIST BETWEEN THE ASME B31 CODE, NFPA AND/OR THE PRESSURES INDICATED ABOVE, CONTACT THE ENGINEER PRIOR TO TESTING.

4. AIR TEST

A. AIR, GAS AND VACUUM PIPING SHALL BE AIR TESTED AT 200 PSI (1380 KPA).

B) REFRIGERANT PIPING SHALL BE AIR TESTED AT 400 PSI (2757 KPA).

C. PRIOR TO TESTING, VERIFY THE PRESSURES STATED ABOVE ARE IN ACCORDANCE WITH THE LATEST ASME B31 CODE AND NFPA. SHOULD A DISCREPANCY EXIST BETWEEN THE ASME B31 CODE, NFPA AND/OR THE PRESSURES INDICATED ABOVE, CONTACT THE ENGINEER PRIOR TO TESTING.

5. SANITARY AND VENT PIPING SYSTEMS

A) ALL SOIL, WASTE, AND VENT PIPING SHALL BE TESTED BY THE CONTRACTOR AND REVIEWED BY THE ARCHITECT BEFORE ACCEPTANCE. THE COSTS OF ALL EQUIPMENT REQUIRED FOR TESTS ARE TO BE INCLUDED UNDER THE CONTRACT PRICE.

B) THE ENTIRE NEW DRAINAGE SYSTEM AND VENTING SYSTEM SHALL HAVE ALL NECESSARY OPENINGS PLUGGED AND FILLED WITH WATER TO THE LEVEL OF THE HIGHEST VENT STACK ABOVE THE ROOF. THE SYSTEM SHALL HOLD THIS WATER FOR FOUR (4) HOURS WITHOUT SHOWING ANY DROPS WATER LEVEL. WHERE A PORTION OF THE SYSTEMS TO BE TESTED. THE TEST SHALL BE CONDUCTED IN THE SAME MANNER AS DESCRIBED FOR THE ENTIRE SYSTEM EXCEPT A VERTICAL STACK 10 FEET (3000 MM) ABOVE THE HIGHEST HORIZONTAL LINE TO BE TESTED MAY BE INSTALLED AND FILLED WITH WATER TO MEET THIS SUFFICIENT PRESSURE. ON A PUMP MAY BE USED TO SUPPLY THE REQUIRED PRESSURE.

6. DRAIN TEST WATER FROM PIPING SYSTEMS AFTER TESTING AND REPAIR WORK HAS BEEN COMPLETED.

7. REPAIR PIPING SYSTEMS SECTIONS WHICH FAIL REQUIRED PIPING TEST BY DISASSEMBLY AND REINSTALLATION USING NEW MATERIALS TO EXTENT REQUIRED TO OVERCOME LEAKAGE. DO NOT USE CHEMICALS, STOPPING COMPOUNDS, MASTICS, OR OTHER TEMPORARY REPAIR METHODS.

8. CALC FIRE COMPLIANCE ALL COMPONENTS ASSOCIATED WITH POTABLE WATER SYSTEMS (INCLUDING, BUT NOT LIMITED TO VALVES, END USE DEVICES/FIXTURES, PIPE, PIPE FITTINGS, SOLDER/FLUX, ETC. SHALL BE LEAD-FREE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES, AS WELL AS REFLECTED 372 (REF 51-0).

## 3 - VIBRATION ISOLATION

### 3.1 GENERAL

A. ENGAGE MANUFACTURER TO PROVIDE TECHNICAL SUPERVISION OF SELECTION AND INSTALLATION OF VIBRATION ISOLATION EQUIPMENT INDICATED/CITED TO BE PROVIDED.

B. COMPLY WITH MANUFACTURER'S RECOMMENDATIONS FOR SELECTION AND APPLICATION OF VIBRATION ISOLATION MATERIALS AND UNITS.

## 4 - INSULATION

### 4.1 PIPING

A. PROVIDE CLASS FIBERGLASS PIPE INSULATION WITH ALL-SERVICE JACKETS (TYPE II, VAPOR BARRIER). INSULATION SHALL HAVE A FLAME SPREAD INDEX OF 25 OR LESS, A SMOKE DEVELOPED INDEX OF 50 OR LESS, AND A MINIMUM R-VALUE OF 0.23 AT 75 DEGREES F. PROVIDE INSULATION THICKNESS FOR PIPING SYSTEMS INDICATED BELOW:

| | | |
|---|---|---|
| CHILLED / GLYCOL WATER | ALL PIPE SIZES | 1-1/2" THICK |
| DOMESTIC COLD WATER | ALL PIPE SIZES | 1" THICK |
| REFRIGERANT PIPING (SUCTION) | 1" PIPE AND SMALLER | 1" THICK ELASTOMERIC CLOSED CELL |
| A/C CONDENSATE | ALL PIPE SIZES | 1/2" THICK ELASTOMERIC CLOSED CELL |

B. ALL EXPOSED PIPE INSULATION SHALL BE PROVIDED WITH ALUMINUM STRUCTURE (REF) OR PVC PROTECTIVE COVERS (INTERIOR REF). ALL EDGES SHALL BE HEMMED AND ALL SEAMS SHALL BE CONCEALED.

C. ENCASE EXTERIOR PIPE INSULATION WITH 26 GAUGE (0.5 MM) CORRUGATED ALUMINUM JACKET WITH WEATHERPROOF CONSTRUCTION.

D. INSULATION SHALL BE AS MANUFACTURED BY OWENS CORNING, MANVILLE, CERTAINTEED OR ARMAFLEX.

### 4.2 DUCTWORK

A. PROVIDE CLASS B (4.75 LBS/FT³) (1.2 KG/M³) FLEXIBLE FIBERGLASS INSULATION, 2" (50 MM) THICKNESS FOR THE FOLLOWING DUCTWORK SYSTEMS:

1. HVAC SUPPLY DUCTWORK FROM AIR HANDLING UNIT TO AIR DEVICES.

2. DO NOT INSULATE EXHAUST DUCTWORK LOCATED INSIDE THE BUILDING.

## 5 - VIBRATION ISOLATION FOR PIPING AND EQUIPMENT

A. PROVIDE VIBRATION ISOLATION FOR ALL PIPING, DUCTWORK, VALVES, AND EQUIPMENT TO MATCH EXISTING VIBRATION ISOLATION.

B. IF NEW DEVIATIONS CURRENTLY EXISTING IN THE BUILDING PROVIDE THE FOLLOWING:

1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURER'S PRODUCTS WHICH MAY BE INCORPORATED INTO THE WORKING INCLUDE BRADY, SETON AND BUNTING.

2. PIPE AND DUCT MARKERS

A) SNAP-ON TYPE PROVIDE PRE-PRINTED, SEMI-RIGID, SNAP-ON COLOR CODED DIVERSION SLEEVES COMPLYING WITH ANSI A13.1. THIS TYPE SHALL BE USED FOR INSULATED PIPE SIZES 2" AND SMALLER.

B) PRESSURE SENSITIVE TYPE: PROVIDE PRE-PRINTED, PERMANENT ADHESIVE, COLOR CODED, PRESSURE SENSITIVE VINYL MARKERS CONFORMING TO ANSI A13.1. THIS STYLE MARKER SHALL BE APPLIED TO ALL UNINSULATED PIPING, INSULATED PIPING 2-1/2" AND LARGER, AND ALL DUCTWORK.

C) FLOW DIRECTION: PROVIDE FLOW DIRECTIONAL ARROWS EITHER AS PART OF MARKERS, OR SEPARATELY ATTACHED TO PIPES AND DUCTS.

3. VALVE TAGS

A) BRASS VALVE TAGS: PROVIDE 19-GAUGE (1.2 MM) POLISHED BRASS VALVE TAGS WITH STAMP ENGRAVED PIPING SYSTEM ABBREVIATION AND 1/4" (6 MM) HIGH LETTERS AND BE ENCLOSED VALVE NUMBERS 1/2" (13 MM) HIGH AND WITH 3/32" (4 MM) HOLE FOR FASTENER.

1) PROVIDE 1-1/2" (40 MM) DIAMETER TAGS, EXCEPT AS OTHERWISE INDICATED.

B) VALVE TAG FASTENERS: PROVIDE MANUFACTURER'S STANDARD SCREW BRASS CHAIN WIRE PIN OR BRAZED TYPE, OR SCREW BRASS SHACKLE OF THE SIZE REQUIRED FOR PROPER ATTACHMENT OF TAGS TO VALVES, AND MANUFACTURER SPECIFICALLY FOR THAT PURPOSE.

4. PLASTIC EQUIPMENT MARKERS

A) GENERAL: PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC COLOR CODED EQUIPMENT MARKERS.

B) NOMENCLATURE: INCLUDE THE FOLLOWING, MATCHING TERMINOLOGY ON SCHEDULES AS CLOSELY AS POSSIBLE:

1) NAME AND SCHEDULE NUMBER

2) EQUIPMENT SERVICE

5. LETTERING AND GRAPHICS

A) GENERAL: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL WORK WITH THOSE USED IN WORK WITH OTHER TRADES ON THE DRAWINGS. PROVIDE NAMEPLATES, LETTERING AND WORKING ASSIGNATIONS ONLY BUT NOT OTHERWISE SPECIFICATED AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER OPERATION AND OPERATOR UNDERSTANDING OF MECHANICAL SYSTEMS AND EQUIPMENT.

1. PROVIDE LOW AMBIENT COOLING CONTROLS TO 0 DEGREES F.

B. ALL WORK SHALL COMPLY WITH ANSI A13.1 OR OWNER'S STANDARDS FOR LETTERING SIZE, LENGTH OR COLOR FOR ID. COLORS AND WARNING ANGLES OF DIVERSION CAUTION DEVICES.

## 6 - FIRE PROTECTION

### 6.1 DESCRIPTION

A. IN ACCORDANCE WITH THE LOCAL AUTHORITY AND THE MOST CURRENT VERSION OF NFPA STANDARDS, DESIGN, FURNISH AND INSTALL THE COMPLETE FIRE PROTECTION SYSTEM AS INDICATED ON THE DRAWINGS.

## 7 - AIR DISTRIBUTION

### 7.1 LOW PRESSURE DUCTWORK

A. TYPES OF LOW PRESSURE DUCTWORK REQUIRED FOR THIS PROJECT INCLUDE THE FOLLOWING:

1. SUPPLY AIR DUCTWORK

2. EXHAUST AIR DUCTWORK

3. AIR TRANSFER DUCTWORK

B. FABRICATION AND INSTALLATION OF LOW PRESSURE DUCTWORK SHALL BEGIN COMPLIANCE WITH APPLICABLE SMACNA AND ASHRAE STANDARDS. DUCTWORK SHALL BE GALVANIZED SHEET METAL UNLESS OTHERWISE NOTED.

C. WHERE INDICATED, PROVIDE FACTORY-INSULATED FLEXIBLE DUCTWORK BETWEEN LOW PRESSURE SUPPLY DUCTWORK AND ROUNDED SIDEWALL DIFFUSERS. PROVIDE SINGLE FITTING WITH DAMPER AS SHOWN. THE FLEXIBLE DUCT AND THE SHEET METAL DUCTWORK. THE MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5-6' (1515 MM).

D. SEAL DUCTWORK AFTER INSTALLATION TO SMACNA SEAL CLASS "A".

### 7.2 DUCT TESTING

1. PRIOR TO THE BALANCING OF SYSTEMS BY THE AABC CERTIFIED BALANCING CONTRACTOR, ALL LOW PRESSURE DUCTWORK SHALL BE TESTED BY THE MECHANICAL CONTRACTOR FOR DUCT LEAKAGE. DUCT LEAKAGE SHALL NOT EXCEED 1%. IN ADDITION, CURRENT SMACNA AND AABC STANDARDS SHALL APPLY, WHERE APPLICABLE. TO MEET THE MAXIMUM 1% LEAKAGE, DUCT LEAKAGE SHALL NOT EXCEED 1% OF DESIGN CFM FOR A DURATION OF TEN (10) MINUTES. TEST PRESSURES SHALL BE NOT LESS THAN THE FOLLOWING:

DUCTWORK SYSTEMS LESS THAN 2 (50 MM) WG (0.5 KPa): TEST TO 2(50 MM)

INSULATION MATERIALS SHALL NOT BE APPLIED UNTIL SYSTEMS HAVE BEEN WITNESSED, DOCUMENTED AND SUBMITTED TO MEET THE ABOVE TESTING REQUIREMENTS.

2. THE BALANCE CONTRACTOR SHALL WITNESS AND CERTIFY ALL DUCT PRESSURE TESTS.

### 7.3 DUCTWORK ACCESSORIES

A. INSTALL BALANCING DAMPERS WHERE INDICATED, AND AT EACH DUCTED SUPPLY, RETURN AND OUTLET. DAMPERS ARE NOT REQUIRED WHERE A SINGLE AIR OUTLET OCCURS DOWNSTREAM OF AN AIR TERMINAL (MIX BOXES, ETC.).

B. INSTALL TURNING VANES IN SQUARE OR RECTANGULAR 90 DEGREE ELBOWS IN SUPPLY, RETURN AND EXHAUST AIR SYSTEMS, AND ELSEWHERE INDICATED.

C. PROVIDE FLEXIBLE DUCT CONNECTIONS WHERE VIBRATION CONNECTS TO VIBRATION ISOLATED EQUIPMENT. CONSTRUCT FLEXIBLE CONNECTIONS OF NEOPRENE-COATED FIBERGLASS FLAME RETARDANT FABRIC REINFORCED DUCT JOINTS FOR ATTACHMENT TO DUCT AND EQUIPMENT. MINIMUM WEIGHT 20 OZ/YD. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW THE THERMAL AXIAL, TRANSVERSE, AND TORSIONAL MOVEMENT AND ALSO CAPABLE OF ABSORBING VIBRATIONS OF CONNECTED EQUIPMENT.

D. FLEXIBLE DUCTWORK: PROVIDE INSULATED FLEXIBLE DUCTWORK WHERE INDICATED ON DRAWINGS. AS MANUFACTURED BY FLEX MASTER TYPE 6B OR HOUSEHOLD. FLEXIBLE DUCTWORK SHALL BEGIN COMPLIANCE WITH UL-181 CLASS 1 AIR DUCT. FABRICATED WITH AN ACOUSTICALLY TRANSPARENT POLYOMINER FABRIC.

1. INNER: NYLON FABRIC, MECHANICALLY LOCKED WITHOUT ADHESIVES.

2. HELIX: CORROSION RESISTANT GALVANIZED STEEL; FORMED AND MECHANICALLY LOCKED TO FABRIC.

3. VAPOR BARRIER: BLACK REFLECTANT POLYETHYLENE.

4. INSULATION: 1" THICK, R-VALUE OF 4.6.

5. PRESSURE RATING: 6" WG POSITIVE.

6. SOUND ATTENUATION: FLEXIBLE DUCTWORK SHALL HAVE SOUND ATTENUATING CAPABILITIES AS INDICATED BELOW FOR NOMINAL THREE FEET OF STRAIGHT DUCT:

| DUCT | INSERTION LOSS (DB) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| 6 | 3 | 6 | 16 | 11 | 12 | 12 | 12 |
| 8 | 3 | 6 | 8 | 10 | 10 | 12 | 12 |
| 10 | 3 | 6 | 8 | 9 | 10 | 11 | 16 |
| 12 | 3 | 6 | 8 | 8 | 9 | 11 | 8 |

### 7.3 DIFFUSERS, REGISTERS AND GRILLES

A. DIFFUSERS, REGISTERS AND GRILLES SHALL BE TESTED AND RATED IN COMPLIANCE WITH ARI 880 AND ASHRAE STANDARDS.

B. PROVIDE DIFFUSERS, REGISTERS AND GRILLES WITH BORDER STYLES COMPATIBLE WITH ADJACENT SURFACES. REFER TO ARCHITECTURAL PLANS.

C. DIFFUSER, REGISTER AND GRILLE MATERIALS

1. STEEL CONSTRUCTION: MANUFACTURER'S STANDARD STAMPED SHEET STEEL FRAME AND ADJUSTABLE BLADES.

D. DIFFUSER TYPES

1. SQUARE: SQUARE HOUSING, CORE OF SQUARE CONCENTRIC LOUVERS, SQUARE OR ROUND DUCT CONNECTION. (SEE DRAWINGS).

2. PERFORATED: SQUARE HOUSING COVERING WITH REMOVABLE PERFORATED PANELON FRAME. CONCEAL DAMPER OR DEVICES ABOVE PANEL.

E. REGISTER AND GRILLE TYPES

1. HORIZONTAL SIZE BLADES: HORIZONTAL BLADES FIXED AT 34 DEGREES WITH 3/4" (20 MM) SPACING. BLADES SHALL BE PARALLEL TO LONG DIMENSION.

2. REGISTERS AND GRILLE PATTERNS

A) SINGLE DEFLECTION: 1-3/8" (35 MM) FACE.

F. DIFFUSERS, REGISTERS AND GRILLES SHALL BE AS MANUFACTURED BY STUS, KRUEGER, PRICE OR NAILOR.

## 8 - EQUIPMENT

### 8.1 EFFICIENCY FOR MOTORS 1 HORSEPOWER (.7 KW) OR HIGHER. PROVIDE MOTORS WITH MINIMUM EFFICIENCY ACCORDANCE WITH IEEE STANDARD 112, TEST METHOD B.

A. WHERE FAN OR PUMP MOTORS ARE USED IN CONJUNCTION WITH OR CONTROLLED BY A VARIABLE FREQUENCY DRIVE (VFD), MOTORS SHALL BE SUITABLE FOR VFD OPERATION (INVERTER DUTY MOTORS).

B. FOR MOTORS LESS THAN 1 HORSEPOWER (.7 KW), PROVIDE MOTORS WITH HIGHER EFFICIENCY THAN "AVERAGE STANDARD INDUSTRY MOTORS" IN ACCORDANCE WITH IEEE STANDARD 112, TEST METHOD B.

C. POWER FACTOR: ALL MOTORS ONE (1) HORSEPOWER AND ABOVE SHALL HAVE A MINIMUM POWER FACTOR OF 0.90.

### 8.2 AIR COOLED CONDENSING UNITS (SPLIT-SYSTEM UNITS) TO 7 TONS

A. GENERAL: PROVIDE FACTORY-ASSEMBLED AND TESTED AIR COOLED CONDENSING UNITS OF QUANTITIES AND CAPACITIES SCHEDULED ON THE DRAWINGS, AND MATCHED BY THE MANUFACTURER TO THE EVAPORATOR CHARACTERISTICS.

B. CASING: PROVIDE CASINGS OF 18-GAUGE GALVANIZED STEEL WITH BAKED ENAMEL OR AIR-DRIED POWDER FINISH. CADMIUM P

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## ELECTRICAL LEGEND

- DRAWING NOTE (APPLIES TO THIS DRAWING ONLY)
- DETAIL SECTION OR ELEVATION NUMBER / DRAWING NUMBER
- REVISION NUMBER • CLOUDED AREA ON DRAWING CONTAINS REVISION
- RACEWAY • 2 #12 • #12 GW IN 3/4" CONDUIT UON
- HOMERUN TO PANELBOARD • ARROWS INDICATE NUMBER OF CIRCUITS. SLASHES INDICATE CIRCUIT CONDUCTORS. NO SLASH INDICATES TWO CIRCUIT CONDUCTORS. PROVIDE GROUNDING CONDUCTOR. NOT SHOWN
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- UNDERGROUND CONDUIT
- UPPER CASE • FIXTURE TYPE (TYPICAL FOR ALL LIGHTING FIXTURES) • SPACE LIGHTING FIXTURE SCHEDULE
- LIGHTING FIXTURE (DOWN, LIGHT 2 x 4 x 2 x 2)
- LOWER CASE • INDICATES CONTROLLING SWITCHES / AND/OR LIGHTING CONTROL SYSTEM DEVICES. PROVIDE SWITCHED POWER CIRCUIT FROM CONTROL DEVICE TO FIXTURE. (TYPICAL FOR ALL LIGHTING FIXTURES)
- FLUORESCENT LIGHTING FIXTURE
- FLUORESCENT LIGHTING FIXTURE, INDUSTRIAL TYPE
- EMERGENCY LIGHTING FIXTURE CONNECTED TO GENERATOR SUPPLIED EMERGENCY LIGHTING CIRCUIT. "N" DESIGNATION DENOTES FIXTURE SHALL BE UNSWITCHED "NIGHT LIGHT" FIXTURE. CONNECT TO UNSWITCHED EMERGENCY CIRCUIT AS NOTED.
- LIGHTING FIXTURE, WALL MOUNTED • SEE LIGHTING FIXTURE SCHEDULE
- EXIT LIGHT • DARKENED SECTION INDICATES FACE WITH DIRECTIONAL ARROWS AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE
- SELF-CONTAINED BATTERY POWERED EMERGENCY LIGHT WITH TWIN LAMPHEAD. SEE LIGHTING FIXTURE SCHEDULE
- TOGGLE SWITCH TO BE DEMOLISHED
- SINGLE POLE TOGGLE SWITCH • SUBSCRIPT INDICATES FIXTURES CONTROLLED BY THE SWITCH (TYPICAL FOR ALL LIGHTING SWITCHES). 48" A.F.F., U.O.N.
- SINGLE POLE DIMMER SWITCH
- THREE WAY TOGGLE SWITCH 48" A.F.F., U.O.N.
- JUNCTION BOX CEILING, WALL OR FLUSH FLOOR MOUNTED
- DUPLEX RECEPTACLE • 2P, 3W, 20A, 125V, NEMA 5-20R IN RECESSED OUTLET BOX, 18" A.F.F., U.O.N. • WP • WEATHERPROOF • GFCI GROUND FAULT CIRCUIT INTERRUPTER
- DUPLEX RECEPTACLE • 2P, 3W, 20A, 125V, NEMA 5-20R IN RECESSED OUTLET BOX, MOUNTED 6" ABOVE COUNTERTOP BACK SPLASH, U.O.N. • GFCI GROUND FAULT CIRCUIT INTERRUPTER • GP • GENERAL PURPOSE • WP • WEATHERPROOF
- DUPLEX RECEPTACLE • 2P, 3W, 20A, 125V, NEMA 5-20R IN SURFACE OUTLET BOX, SURFACE MOUNTED 18" A.F.F., U.O.N.
- TWO DUPLEX RECEPTACLES WITH COMMON FACEPLATE 2P, 3W, 20A, 125V, NEMA 5-20R IN RECESSED THROWING OUTLET BOX, 18" A.F.F., U.O.N.
- TWO DUPLEX RECEPTACLES WITH COMMON FACEPLATE IN SURFACE OUTLET BOX, SURFACE MOUNTED 18" A.F.F., U.O.N.
- RECESSED FLOOR BOX AS NOTED
- PANELBOARD, RECESSED OR SURFACE MOUNTED
- ELECTRICAL MOTOR
- MOTOR SWITCH WITH THERMAL OVERLOAD
- WP SERVICE
- LIGHTING CONTROL SYSTEM CONTROL SWITCH

## ELECTRICAL LEGEND

- COMBINATION MAGNETIC MOTOR STARTER WITH MCP OR FUSIBLE DISCONNECT SWITCH
- MAGNETIC MOTOR CONTROLLER/STARTER
- FUSED DISCONNECT SWITCH, UPPER NUMERAL INDICATES SWITCH SIZE, LOWER NUMERAL INDICATES FUSE SIZE
- NON-FUSED DISCONNECT SWITCH, NUMERAL INDICATES SIZE
- VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT
- FIRE ALARM VISUAL DEVICE, SUBSCRIPT DENOTES CANDELA RATING, 60" A.F.F. OR 6" BELOW CEILING WHICHEVER IS LOWER. "C" INDICATES DEVICE INSTALLED AT CEILING UNLESS OTHERWISE NOTED
- FIRE ALARM SPEAKER WITH VISUAL DEVICE, SUBSCRIPT DENOTES CANDELA RATING, 80" A.F.F. OR 6" BELOW CEILING WHICHEVER IS LOWER. "C" INDICATES DEVICE INSTALLED AT CEILING UNLESS OTHERWISE NOTED
- FIRE ALARM SYSTEM SPEAKER, 80" AFF OR 6" BELOW CEILING WHICHEVER IS LOWER. "C" INDICATES DEVICE INSTALLED AT CEILING UNLESS OTHERWISE NOTED
- FIRE ALARM SYSTEM MANUAL PULL STATION
- FIRE ALARM SYSTEM HEAT DETECTOR
- DIGITAL ALARM COMMUNICATOR TRANSMITTER
- FIRE ALARM CONTROL PANEL
- FIRE ALARM ANNUNCIATOR PANEL
- NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
- FIRE ALARM SYSTEM MONITOR MODULE
- FIRE ALARM SYSTEM CONTROL MODULE
- FIRE ALARM SYSTEM SMOKE DETECTOR ELEVATOR
- FIRE ALARM SYSTEM SMOKE DETECTOR
- FIRE ALARM SYSTEM SMOKE DETECTOR, DUCT TYPE
- FUSE • NUMERAL INDICATES FUSE AMPERE RATING
- LOW VOLTAGE MOLDED CASE CIRCUIT BREAKER, RATING AS INDICATED. SEE SCHEDULE FOR TYPE AND ACCESSORIES
- LOW VOLTAGE DRAWOUT CIRCUIT BREAKER, RATING AS INDICATED. SEE SCHEDULE FOR TYPE AND ACCESSORIES
- TRANSFORMER, TYPE AS NOTED ON DRAWING
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- GROUNDING
- AUTOMATIC TRANSFER SWITCH
- KEY INTERLOCK
- HANDHOLE
- SURGE PROTECTION DEVICE
- FIRE SPRINKLER: SCOPE OF WORK BY OTHERS UNLESS NOTED OTHERWISE.
- MOTION DETECTOR: SCOPE OF WORK BY OTHERS UNLESS NOTED OTHERWISE.
- OCCUPANCY SENSOR: SCOPE OF WORK BY OTHERS UNLESS NOTED OTHERWISE.
- CLOCK: SCOPE OF WORK BY OTHERS UNLESS NOTED OTHERWISE.
- CCTV CAMERA: SCOPE OF WORK BY OTHERS UNLESS NOTED OTHERWISE.
- EMERGENCY POWER OFF PUSHBUTTON
- COMBINATION VOICE/DATA OUTLET AT 18" AFF UON. PROVIDE EMPTY 4" SQUARE BOX WITH SINGLE GANG LATHE MEDIUM WITH 1" CONDUIT FROM BOX TO ACCESSIBLE CEILING SPACE WITH PULL STRING. CABLE, JACKS AND FACEPLATES PROVIDED BY OTHERS. COORDINATE MOUNTING HEIGHTS OF VOICE/DATA OUTLETS SHOWN WITH ARCHITECT'S DRAWINGS. COORDINATE FINAL REQUIREMENTS WITH SYSTEM PROVIDER/INSTALLER.

## ELECTRICAL ABBREVIATIONS

| | |
|---|---|
| A | AMPERE |
| AC | ALTERNATING CURRENT |
| APC | ABOVE FINISHED COUNTER |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHU | AIR HANDLING UNIT |
| AIC | AMPERE INTERRUPTING CAPACITY |
| ANSI | AMERICAN NATL STANDARDS INSTITUTE |
| ASYM | ASYMMETRICAL |
| ATC | AUTOMATIC TEMPERATURE CONTROL (SYSTEM) |
| AWG | AMERICAN WIRE GAUGE |
| BATT | BATTERY |
| BLDG | BUILDING |
| BAS | BUILDING AUTOMATION SYSTEM |
| C | CONDUIT |
| CB | CIRCUIT BREAKER |
| CKT | CIRCUIT |
| CLG | CEILING |
| CT | CURRENT TRANSFORMER |
| CTR | CENTER |
| CU | COPPER |
| CX | CONNECT TO EXISTING |
| DB | DIRECT BURIAL |
| DIA | DIAMETER |
| DN | DOWN |
| DWG | DRAWING |
| ECB | ENCLOSED CIRCUIT BREAKER |
| EF | EXHAUST FAN |
| ELEC | ELECTRIC / ELECTRICAL |
| EMER | EMERGENCY |
| EMT | ELECTRICAL METALLIC TUBING |
| EPO | EMERGENCY POWER OFF |
| EQUIP | EQUIPMENT |
| EXTR | EXISTING TO REMAIN |
| EWC | ELECTRIC WATER COOLER |
| EX | EXISTING |
| EGB | EXTERNAL GROUND BUS BAR |
| FA | FIRE ALARM |
| FAA | FIRE ALARM ANNUNCIATOR PANEL |
| FACP | FIRE ALARM CONTROL PANEL |
| FC | FOOT CANDLE |
| FCU | FAN COIL UNIT |
| FDR | FEEDER |
| F | FUSED OR FUSIBLE |
| FLA | FULL LOAD AMPERAGE |
| FES | FUSED SAFETY SWITCH |
| FVNR | FULL VOLTAGE NON-REVERSING |
| GFI | GROUND FAULT CIRCUIT INTERRUPTER |
| GW | GROUND WIRE |
| GND | GROUND |
| HOA | HAND-OFF-AUTOMATIC |
| HP | HORSEPOWER |
| HZ | HERTZ |
| IPBB | INTERNAL PERIMETER GROUND BUS (CONDUCTOR) |
| JB | JUNCTION BOX |
| KCMIL | THOUSAND CIRCULAR MILS |
| KEC | KEYED EQUIPMENT CONTRACTOR |
| KVA | KILOVOLT-AMPERE |
| KW | KILOWATT |
| LTG | LIGHTING |
| MCB | MAIN CIRCUIT BREAKER |
| MGB | MASTER GROUND BUS BAR |
| MCC | MOTOR CONTROL CENTER |
| MCP | MOTOR CIRCUIT PROTECTOR |
| MDP | MAIN DISTRIBUTION PANEL |
| MECH | MECHANICAL |
| MH | MANHOLE |
| MLO | MAIN LUGS ONLY |
| MTD | MOUNTED |
| MTG HT | MOUNTING HEIGHT |
| NAC | NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUF. ASSOC. |
| NI | NOT INSTALLED |
| NFSS | NON-FUSED SAFETY SWITCH |
| NIC | NOT IN CONTRACT |
| NIH | NATIONAL INSTITUTE OF HEALTH |
| NL | NIGHT LIGHT |
| NTS | NOT TO SCALE |
| PH or ø | PHASE |
| P | POLE |
| PB | PUSH BUTTON |
| PNL | PANEL |
| PVC | POLYVINYL CHLORIDE |
| REL | RELOCATE EXISTING |
| RM | ROOM |
| RX | REMOVE EXISTING |
| SW | SWITCH |
| SCHED | SCHEDULE |
| SD | SMOKE DAMPER |
| SEC | SECONDARY |
| SFA | SPRINKLER FLOW ALARM |
| SS | SAFETY SWITCH |
| SYM | SYMMETRICAL |
| SGB | SYSTEM GROUND BUS BAR |
| TBD | TO BE DETERMINED |
| TEL | TELEPHONE |
| TTB | TELEPHONE TERMINAL BOARD |
| TYP | TYPICAL |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UON | UNLESS OTHERWISE NOTED |
| UPS | UNINTERRUPTIBLE POWER SYSTEM |
| V | VOLT |
| VPS | VALVE POSITION (TAMPER) SWITCH |
| W | WIRE |
| WP | WEATHERPROOF |
| XFMR | TRANSFORMER |

## GENERAL NOTES

1. PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, COORDINATION, ACCESSORIES, DESIGN AND ALL INCIDENTALS NECESSARY TO PROVIDE COMPLETE AND OPERABLE SYSTEMS AS DETAILED ON PLANS AND SPECIFICATIONS TO THE SATISFACTION OF THE ENGINEER AND THE OWNER. COORDINATE ALL WORK WITH THE OWNER BEFORE THE START OF WORK. ALL WORK SHALL BE PERFORMED BY A QUALIFIED ELECTRICAL CONTRACTOR LICENSED IN THE STATE OF MARYLAND THAT HAS PREVIOUSLY PERFORMED WORK OF THIS SIZE AND TYPE.
2. INFORMATION SHOWN ON THE DRAWINGS PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERALLY ELIGIBLE PHOTOGRAPHS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR GENERALITY. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
3. PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THE BID ALL MATERIAL, LABOR AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY CALLED FOR OR NOT.
4. ALL EQUIPMENT AND CONDUIT ROUTING SHOWN IS DIAGRAMMATIC AND IS NOT INTENDED TO SHOW ALL REQUIRED JUNCTION BOXES, OFFSETS AND BENDS. COORDINATE CONDUIT ROUTING WITH OTHER TRADES AND EXISTING FIELD CONDITIONS.
5. UNLESS OTHERWISE NOTED ON THE CONTRACT DRAWINGS, ALL RACEWAYS SHALL BE INSTALLED CONCEALED IN FLOORS, CEILINGS AND WALLS OR PARTITIONS OF THE BUILDING, AND IN SUCH A MANNER AS NOT TO IMPAIR THE INTEGRITY OF THE STRUCTURE.
6. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. ELECTRICAL EQUIPMENT AND DEVICES WITHIN DEMOLITION AREA SHOWN TO BE DEMOLISHED OR RELOCATED SHALL BE DEMOLISHED ALONG WITH ALL ASSOCIATED FEEDER/BRANCH CIRCUITS AND CONDUITS UNLESS OTHERWISE NOTED. WIRING SHALL BE REMOVED BACK TO SOURCE.
8. EXISTING ELECTRICAL SYSTEMS PASSING THROUGH AREAS OF DEMOLITION TO SERVE EQUIPMENT BEYOND THE DEMOLITION AREAS SHALL REMAIN IN SERVICE, OR BE TEMPORARILY RELOCATED AND RESTORED TO NORMAL OPERATION THROUGHOUT THE DEMOLITION AND RECONSTRUCTION OF THE AREA. THE CONTRACTOR SHALL INVESTIGATE AND IDENTIFY SUCH EQUIPMENT PRIOR TO DEMOLITION.
9. PROVIDE TEMPORARY ELECTRICAL SERVICE TO EQUIPMENT DISTURBED BY THE DEMOLITION UNTIL SUCH TIME AS THE PERMANENT SERVICE CAN BE RESTORED.
10. RECONNECT ANY EXISTING INFORMATION DEVICES AND EQUIPMENT THAT ARE DISCONNECTED RESULTING FROM PRODUCT DEMOLITION. PROVIDE CIRCUIT MODIFICATIONS TO RETURN DEVICES/EQUIPMENT BACK TO ORIGINAL CONDITIONS.
11. WHERE CONDUIT AND WIRING TO REMAIN ARE DAMAGED/NEWLY DAMAGED OR DISTURBED, CUT OUT AND REMOVE DAMAGED PORTION AND ALL DAMAGED WIRING FROM THE SOURCE SWITCHBOARD, PANELBOARD OR PULLBOX TO THE DESTINATION CONNECTION POINT. PROVIDE NEW WIRING OF EQUAL CAPACITY.
12. EXPOSED CONDUIT TO BE DEMOLISHED SHALL BE REMOVED IN ITS ENTIRETY. CONCEALED CONDUIT ABANDONED IN PLACE SHALL BE CUT OUT APPROXIMATELY TWO INCHES BEYOND THE FACE OF ADJACENT CONSTRUCTION, PLUGGED AND THE ADJACENT SURFACE PATCHED TO MATCH EXISTING.
13. WIRING TO BE DEMOLISHED SHALL BE REMOVED FROM BOTH CONCEALED AND EXPOSED CONDUIT. NO WIRING WHICH BECOMES UNUSED AS A RESULT OF THE CONTRACT SHALL BE ABANDONED IN PLACE.
14. EQUIPMENT SPECIFIED OR INDICATED TO BE DEMOLISHED SHALL BE REMOVED FROM THE PROJECT SITE AND SHALL NOT BE REUSED.
15. ANY OUTAGES IN SYSTEMS SHALL BE COORDINATED WITH THE OWNER. WHERE DURATION OF PROPOSED OUTAGE CANNOT BE TOLERATED BY THE OWNER, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.
16. PROVIDE TEMPORARY POWER DURING CONSTRUCTION.
17. ALL CURRENT CARRYING CONDUCTORS SHALL BE COPPER FOR ALL EQUIPMENT.
18. PROVIDE ALL WALL AND FLOOR PENETRATIONS AND SUPPORTS REQUIRED FOR CONDUIT PENETRATION. RETURN AREA TO ORIGINAL CONDITIONS. PROVIDE THE SERVICES OF A STRUCTURAL ENGINEER IF REQUIRED TO EVALUATE STRUCTURAL SUPPORT FOR PENETRATIONS.
19. PROVIDE FIRE STOPPING FOR ALL WALL PENETRATIONS.

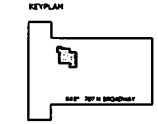
NOTE:
SOME SYMBOLS MAY NOT BE USED ON THIS PROJECT.

ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
p 410 837 7311 f 410 837 6530

MEP ENGINEER
Burdette, Keathley, Murphy & Associates, Inc.
6300 Bear Hill Lane, Suite 400
Baltimore, MD 21209
p 410 323 0000

KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

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LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|

Project Name
MPI SCANNER RENOVATION
Project Number
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Date
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Scale
As Noted
Drawing
ELECTRICAL LEGEND, ABBREVIATIONS & GENERAL NOTES

# E0.01

CONSTRUCTION DOCUMENT

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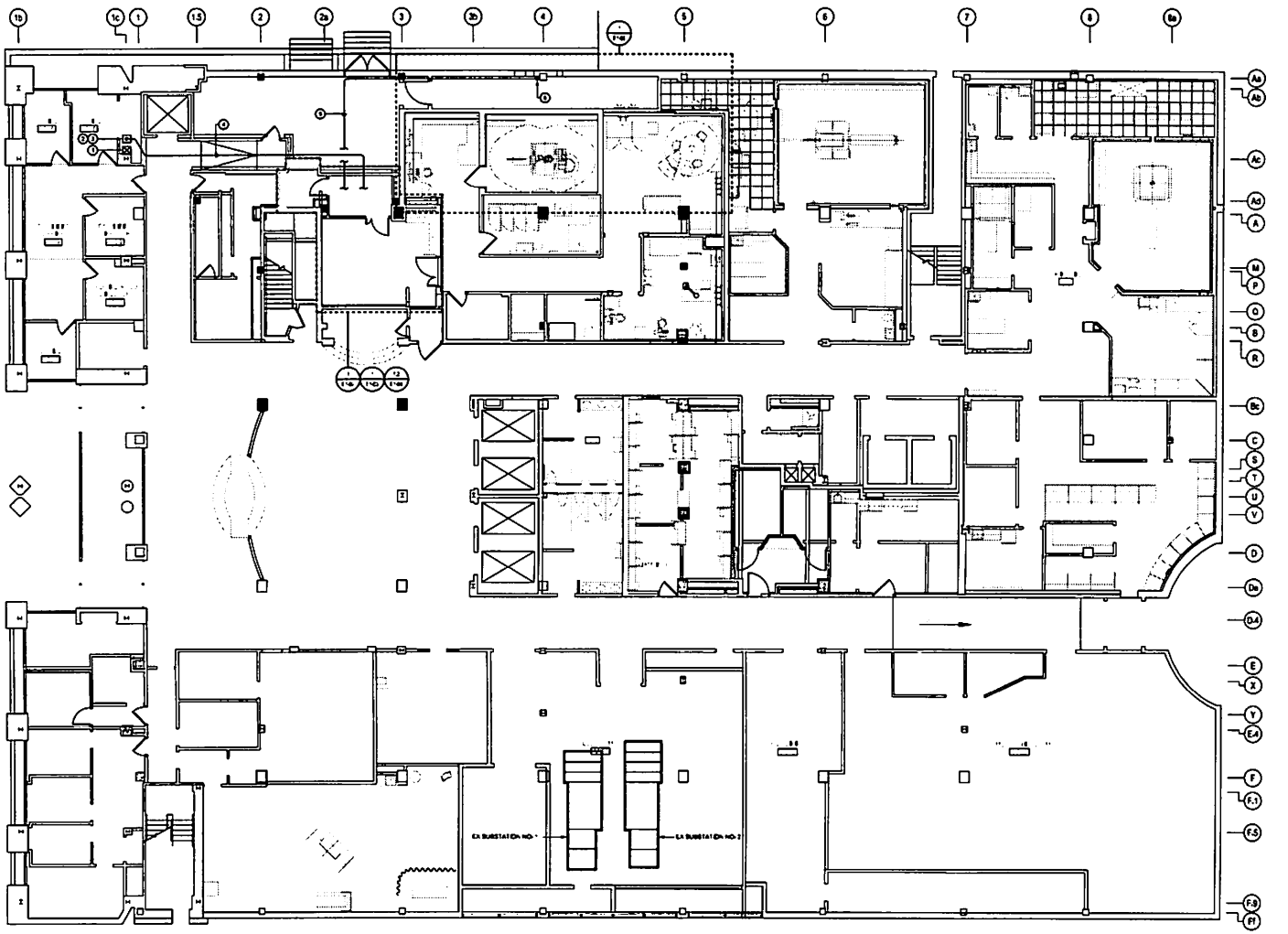


## 1 GROUND FLOOR PLAN - ELECTRICAL

SCALE: 1/8" = 1'-0"

### GENERAL NOTES:

1. REFER TO E0.01 FOR ELECTRICAL LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. UNLESS NOTED OTHERWISE, ELECTRICAL ITEMS SHOWN HEAVY DASHED (— — —) SHALL BE REMOVED. ELECTRICAL ITEMS SHOWN HEAVY SOLID (———) SHALL BE NEW AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (———) SHALL BE EXISTING TO REMAIN.

### NEW WORK DRAWING NOTES:

1. EXISTING 1,200A, 480VAC/277V SUBWAY FEEDER LOCATED IN FIRST FLOOR ELECTRICAL ROOM SUPPLIED FROM EXISTING SUBSTATION NO. 1.
2. PROVIDE 480V, 3P, 1600A (NO) OBRO CIRCUIT BREAKER SUBWAY PLUG CONNECTED TO EXISTING 1,200A SUBWAY TO SUPPLY FEEDER FOR MPI ELECTRICAL SUPPORT RACKS. EXISTING SUBWAY IS WESTINGHOUSE POWERWAY SUBWAY.
3. PROVIDE CORE DRILL REQUIRED TO INSTALL MPI ELECTRICAL SUPPORT RACKS FEEDER FROM FIRST FLOOR DOWN INTO GROUND FLOOR CRAWL SPACE.
4. PROVIDE (4) 1" OR 2" CONDUIT IN CRAWL SPACE FOR MPI ELECTRICAL SUPPORT RACKS. COORDINATE FEEDER ROUTE IN THE FIELD WITH THE OWNER DURING CONSTRUCTION PHASE. PROTECT AND RE-INSTALL EXISTING CRAWL TUBES AS REQUIRED FOR INSTALLATION OF FEEDER.
5. APPROXIMATE ROUTE FOR ELECTRICAL CONDUITS FROM SPACE UP TO ROOF MECHANICAL EQUIPMENT. COORDINATE ROUTE WITH OWNER AND MECHANICAL SYSTEMS PIPING.
6. APPROXIMATE LOCATION FOR ELECTRICAL CONDUITS TURNING UP INTO CHASE UP TO ROOF MECHANICAL EQUIPMENT. PROVIDE CONDUITS UP TO 2ND FLOOR ROOF (3 LEVELS) INSIDE OF EXISTING UTILITY CHASE WITH MECHANICAL EQUIPMENT. COORDINATE ROUTE WITH OWNER AND MECHANICAL SYSTEMS PROVIDER/INSTALLER.

N

SCALE: 1/8"=1'-0"

KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

hord | coplan | mach

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Date
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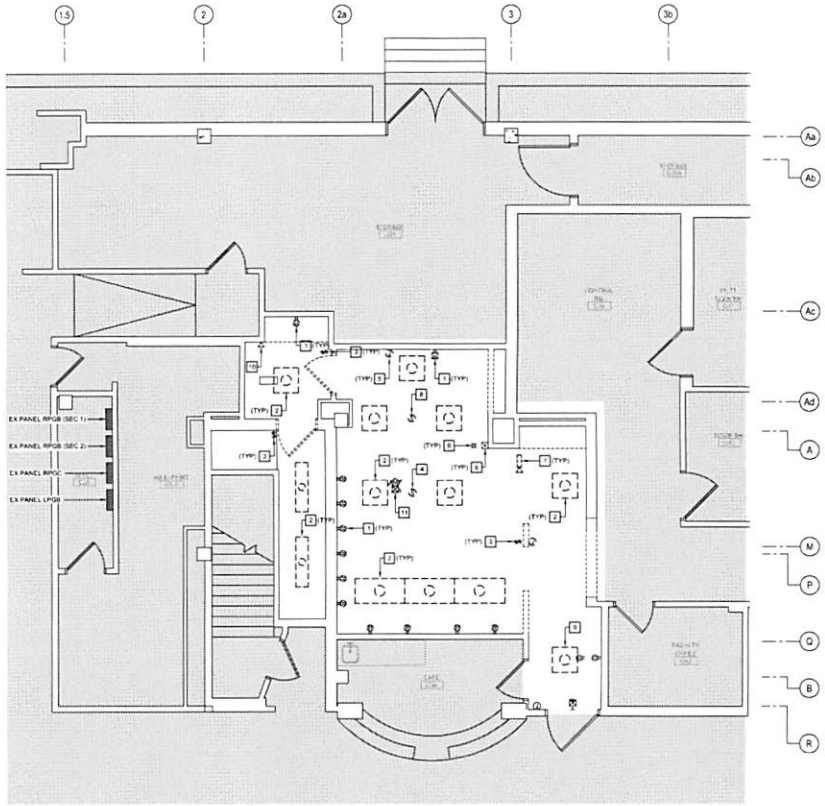
As Noted
Drawn
GROUND FLOOR PLAN - ELECTRICAL

E1.01

CONSTRUCTION DOCUMENTS

PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Number: PMAA2020




1 PART GROUND FLOOR PLAN - ELECTRICAL - DEMOLITION

SCALE: 1/4" = 1'-0"

## GENERAL NOTES:

1. REFER TO E0.01 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. UNLESS NOTED OTHERWISE, ELECTRICAL ITEMS SHOWN HEAVY DASHED (— — —) SHALL BE REMOVED. ELECTRICAL ITEMS SHOWN HEAVY SOLID (———) SHALL BE NEW AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (———) SHALL BE EXISTING TO REMAIN.

## DEMOLITION NOTES (APPLICABLE FOR ALL PROJECT DEMOLITION):

1. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. ELECTRICAL EQUIPMENT AND DEVICES WITHIN DEMOLITION AREA SHOWN TO BE DEMOLISHED OR RELOCATED, SHALL BE DEMOLISHED ALONG WITH ALL ASSOCIATED FEEDER/BRANCH CIRCUITS AND CONDUITS UNLESS OTHERWISE NOTED. WIRING SHALL BE REMOVED BACK TO SOURCE.
3. EXISTING ELECTRICAL SYSTEMS PASSING THROUGH AREAS OF DEMOLITION TO SERVE EQUIPMENT BEYOND THE DEMOLITION AREAS SHALL REMAIN IN SERVICE, OR BE SUITABLY RELOCATED AND RESTORED TO NORMAL OPERATION THROUGHOUT THE DEMOLITION AND RECONSTRUCTION OF THE AREA. THE CONTRACTOR SHALL INVESTIGATE AND IDENTIFY SUCH EQUIPMENT PRIOR TO DEMOLITION.
4. PROVIDE TEMPORARY ELECTRICAL SERVICE TO EQUIPMENT DISTURBED BY THE DEMOLITION UNTIL SUCH TIME AS THE PERMANENT SERVICE CAN BE RESTORED.
5. WHERE CONDUIT AND WIRING TO REMAIN ARE INADVERTENTLY DAMAGED OR DISTURBED, CUT OUT AND REMOVE DAMAGED PORTION AND ALL DAMAGED WIRING FROM THE SOURCE SWITCHBOARD, PANELBOARD OR PULLBOX TO THE DESTINATION CONNECTION POINT. PROVIDE NEW WIRING OF EQUAL CAPACITY.
6. EXPOSED CONDUIT TO BE DEMOLISHED SHALL BE REMOVED IN ITS ENTIRETY. CONCEALED CONDUIT ABANDONED IN PLACE SHALL BE CUT OUT APPROXIMATELY TWO INCHES BEYOND THE FACE OF ADJACENT CONSTRUCTION, PLUGGED, AND THE ADJACENT SURFACE PATCHED TO MATCH EXISTING.
7. WIRING TO BE DEMOLISHED SHALL BE REMOVED FROM BOTH CONCEALED AND EXPOSED CONDUIT. NO WIRING WHICH BECOMES UNUSED AS A RESULT OF THE CONTRACT SHALL BE ABANDONED IN PLACE.
8. EQUIPMENT SPECIFIED OR INDICATED TO BE DEMOLISHED, SHALL BE REMOVED FROM THE PROJECT SITE AND SHALL NOT BE REUSED.
9. ANY OUTAGES IN SYSTEMS SHALL BE COORDINATED WITH THE OWNER. WHERE DURATION OF PROPOSED OUTAGE CANNOT BE TOLERATED BY THE OWNER, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.
10. PROVIDE TEMPORARY POWER DURING CONSTRUCTION.
11. FIELD TRACE AND DOCUMENT ALL POWER, FIRE ALARM, VOICE/DATA AND SPECIAL SYSTEM DEVICES LOCATED WITHIN THE PROJECT AREA. IDENTIFY SOURCE ORIGIN AND INDICATE CABLE ROUTING. PROVIDE THIS INFORMATION TO THE OWNER DURING THE DEMOLITION PHASE OF THE PROJECT.
12. MODIFY EXISTING SUPPLY CIRCUIT TO RESUPPLY ALL EXISTING/TO REMAIN DEVICES AFFECTED BY WORK PERFORMED AS PART OF THIS PROJECT.

## DEMOLITION DRAWING NOTES:

1. REMOVE EXISTING RECEPTACLE.
2. REMOVE EXISTING LIGHT FIXTURE.
3. REMOVE EXISTING LIGHT SWITCH.
4. EXISTING PA SYSTEM SPEAKER REMOVED BY OTHERS.
5. REMOVE EXISTING JUNCTION BOX.
6. REMOVE EXISTING FIRE ALARM DEVICE.
7. EXISTING SECURITY CAMERA REMOVED BY OTHERS.
8. REMOVE EXISTING FIRE ALARM SYSTEM SPEAKER.
9. REMOVE, PROTECT AND REINSTALL EXISTING LIGHT FIXTURE AS REQUIRED FOR DEMOLITION WORK IN THE AREA. REFER TO DRAWING E1.03 FOR ADDITIONAL INFORMATION.
10. REMOVE EXISTING VOICE/DATA DEVICE.
11. REMOVE EXISTING COMBINATION STARTER FOR EXHAUST FAN.

ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD
p 410 837 7311 f 410 837 6594

MEP ENGINEER
Burdette, Keehner, Murphy & Associates, Inc.
6300 Blair Hill Lane, Suite 400
Baltimore, MD 21209
p 410 323 0600

KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY

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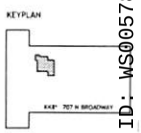


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Drawing
PART GROUND FLOOR PL - ELECTRICAL - DEMOLITION
E1.02

CONSTRUCTION DOCUME

BKMA 19158-01 © Hord Coplan

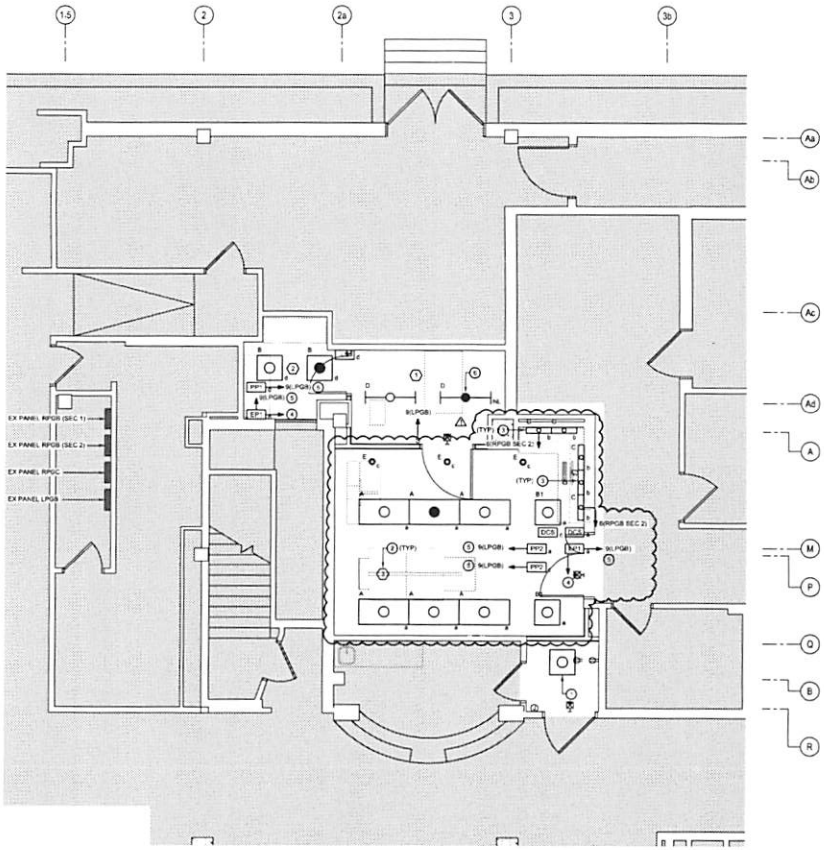
PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

| LIGHTING FIXTURE SCHEDULE | | | | | | | |
|---|---|---|---|---|---|---|---|
| TYPE | DESCRIPTION | LENSE/ LOUVER | MOUNTING | VOLTS | LAMP WATTAGE/ TYPE | MANUFACTURER & CATALOG NO. | NOTES |
| A | NOMINAL 2'X4' LAY-IN VOLUMETRIC TROFFER FOR GRID TYPE CEILINGS. ONE PIECE COLD-ROLLED STEEL REFLECTOR ASSY. 7200 LUMENS. 4000K | ACRYLIC | CR | 277 | 71.08W LED | LITHONIA 2RTL4 72L EZ1 LP840 | 3 |
| B | NOMINAL 2'X2' LAY-IN VOLUMETRIC TROFFER FOR GRID TYPE CEILINGS. ONE-PIECE COLD-ROLLED STEEL REFLECTOR ASSY. 2000 LUMENS. 4000K | ACRYLIC | CR | 277 | 20.2W LED | LITHONIA 2RTL2 20L EZ1 LP840 | 3 |
| C | 24" LED CABINET LIGHT, LOW PROFILE, HIGH-EFFICIENCY DRIVER, ON/OFF ROCKER SWITCH, SWIVEL HEAD. 3000K | ACRYLIC | CS | 120 | 12.5W LED | LITHONIA UCLD 24 30K 90CRI SWR WH | 2 |
| D | 4' ARCHITECTURAL LED STRIP LIGHT, COMPACT DESIGN, HIGH OUTPUT LED, SYMMETRIC REFLECTOR. 4500 LUMENS. 4000K | ACRYLIC | CS | 277 | 39W LED | LITHONIA ZL1R L48 SYM 4500LM MDD MVOLT 40K 80CRI WH | 3 |
| E | 6" RECESSED LED DOWNLIGHT, IP66 RATED, POLYCARBONATE LENS INTEGRAL TO LIGHT ENGINE. 1500 LUMENS. 4000K | ACRYLIC | CS | 277 | 19.4W LED | GOTHAM EVO6P 40/15 6OFF SMO MVOLT EZ1 | 3 |
| | LED EXIT SIGN. LEDS MOUNTED ON PRINTED CIRCUIT BOARDS. REINFORCED, IMPACT-RESISTANT COLOR PANELS | - | - | 277 | LED | LITHONIA LQM | 1 |

MOUNTING:
CS - CEILING SURFACE
CR - CEILING RECESSED ACT
CG# - CEILING, SUSPENDED # FEET A.F.F.
CG - CEILING, RECESSED
WS# - WALL MTD. SURFACE, # UCP - UNDER CANOPY
WR# - WALL, RECESSED, # FEET A.F.F.
P# - POLE MOUNT, # FEET A.F.G.

## LIGHTING FIXTURE NOTES:

1. PROVIDE MOUNTING TYPES, DIRECTIONAL ARROWS AND FACE QUANTITIES (SINGLE / DOUBLE) AS INDICATED ON DRAWING. COORDINATE LETTERING COLOR OF THE EXIT SIGN WITH AUTHORITY HAVING JURISDICTION.
2. VERIFY COLOR AND/OR FINISH SELECTION WITH ARCHITECT PRIOR TO ORDER.
3. PROVIDE 0-10V DIMMING DRIVER. FIXTURE SHALL ALSO BE CAPABLE OF ON/OFF LINE VOLTAGE SWITCHING.




1 PART GROUND FLOOR PLAN - LIGHTING - NEW WORK
SCALE: 1/4" = 1'-0"

## GENERAL NOTES:

1. REFER TO E0.01 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. UNLESS NOTED OTHERWISE, ELECTRICAL ITEMS SHOWN HEAVY DASHED (— — —) SHALL BE REMOVED. ELECTRICAL ITEMS SHOWN HEAVY SOLID (———) SHALL BE NEW AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (———) SHALL BE EXISTING TO REMAIN.
3. ALL EQUIPMENT INSTALLATION AND METHODS SHALL BE IN ACCORDANCE WITH MPI SCANNER MANUFACTURER REQUIREMENTS. COORDINATE ALL EQUIPMENT INSTALLATION AND METHODS WITH THE MPI SCANNER MANUFACTURER PROVIDER/INSTALLER.

## ○ DRAWING NOTES:

1. REINSTALL EXISTING LIGHT FIXTURE AS REQUIRED FOR NEW WORK IN THIS AREA. PROVIDE/MODIFY SUPPLY CIRCUIT AS REQUIRED FOR EXISTING LIGHT FIXTURE.
2. LIGHTING CONTROL SEQUENCE OF OPERATION TAG (TYP.): REFER TO LIGHTING SEQUENCE OF OPERATION SHOWN ON THIS DRAWING FOR ADDITIONAL INFORMATION.
3. UNDERCABINET LIGHTING SHALL HAVE INTEGRAL MANUAL ON/OFF SWITCH. PROVIDE HOMERUN TO SPARE CIRCUIT POSITION SHOWN IN EXISTING PANEL RPGB SEC 2.
4. PROVIDE CONNECTION TO EXISTING GENERATOR SUPPLIED EMERGENCY LIGHTING CIRCUIT SUPPLYING THE AREA.
5. PROVIDE HOMERUN TO EXISTING CIRCUIT POSITION SHOWN IN EXISTING PANEL LPGB.
6. PROVIDE CONNECTION TO EXISTING EMERGENCY LIGHTING CIRCUIT SUPPLYING THE AREA AHEAD OF ANY LIGHTING CONTROL DEVICES.

| LIGHTING CONTROL SEQUENCE OF OPERATION | | |
|---|---|---|
| LIGHTING CONTROL SEQUENCE TAG | SEQUENCE OF OPERATION | NOTES |
| 1 | LIGHTS CONTROLLED BY: MANUAL SWITCHES; EMERGENCY LIGHT(S): WILL GO TO FULL ILLUMINATION UPON LOSS OF NORMAL POWER TO THIS AREA (AS APPLICABLE) | 1,2 |
| 2 | LIGHTS CONTROLLED BY: OCCUPANCY SENSOR(S) AND MANUAL SWITCHES; SINGLE LEVEL SWITCHING (100%); MANUAL ON/OFF; AUTOMATIC OFF BASED ON ROOM OCCUPANCY (20 MINUTES AFTER ROOM IS NOT OCCUPIED); EMERGENCY LIGHT(S) WILL GO TO FULL ILLUMINATION UPON LOSS OF NORMAL POWER TO THIS AREA (AS APPLICABLE) | 1,2 |
| 3 | LIGHTS CONTROLLED BY: MANUAL SWITCHES/DIMMERS; MULTIPLE SWITCHING ZONES (e.g. etc.); FULL RANGE DIMMING; MANUAL ON/OFF; EMERGENCY LIGHT(S) WILL GO TO FULL ILLUMINATION UPON LOSS OF NORMAL POWER TO THIS AREA (AS APPLICABLE) | 1,2 |

## LIGHTING SEQUENCE NOTES:

1. STAND ALONE ROOM LIGHTING CONTROL SYSTEM.
2. ALL STAND ALONE LIGHTING CONTROL SYSTEM DEVICES SHALL BE BY THE SAME MANUFACTURER.

## LIGHTING CONTROL SYSTEM NOTES:

1. EACH ROOM/SPACE CONTAINS A LIGHTING CONTROL SEQUENCE TAG WHICH MATCHES THE CORRESPONDING TAG DESCRIPTION AND SEQUENCE OF OPERATION SHOWN IN THE LIGHTING CONTROL SEQUENCE OF OPERATION SCHEDULE SHOWN ON THIS SHEET. LIGHTING CONTROL SYSTEM SHALL PROVIDE LIGHTING CONTROL SEQUENCE OF OPERATION SHOWN ON THE LIGHTING CONTROL SEQUENCE OF OPERATION ON THIS DRAWING FOR EACH ROOM/SPACE.
2. PROVIDE ALL LABOR, MATERIALS, TOOLS, ADDITIONAL SYSTEM DESIGN AND ALL INCIDENTALS TO PROVIDE A COMPLETE AND OPERABLE LIGHTING CONTROL SYSTEM AS SHOWN AND TO THE SATISFACTION OF THE OWNER AND ENGINEER.
3. NOTE: ONLY MAJOR LIGHTING CONTROL SYSTEM COMPONENTS AND SEQUENCES ARE SHOWN ON THIS DRAWING IN ORDER TO CONVEY SYSTEM DESIGN INTENT. CERTAIN LIGHTING CONTROL SYSTEM COMPONENTS INCLUDING, BUT NOT LIMITED TO, POWER/RELAY PACKS, BRIDGES, OCCUPANCY SENSORS, INTERFACE DEVICES, POWER SUPPLIES, INTERFACE DEVICES AND LOW VOLTAGE INTERCONNECT CABLES (IE: CATSE CABLE) ARE NOT SHOWN IN THE DRAWING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE LIGHTING CONTROL SYSTEM MANUFACTURER TO DETERMINE ALL REQUIRED COMPONENTS AND TO INCLUDE ALL REQUIRED COMPONENTS IN THE PROJECT BID PRICE.
4. LIGHTING CONTROL SYSTEM BASIS OF DESIGN IS SENSOR SWITCH, INC. (NLIGHT PRODUCT LINE). REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

| LIGHTING CONTROL SYSTEM LEGEND | |
|---|---|
| LIGHTING CONTROL SYSTEM BASIS OF DESIGN IS SENSOR SWITCH, INC. (NLIGHT PRODUCT LINE). REFER TO LIGHTING CONTROL SYSTEM SPECIFICATION SECTION FOR ADDITIONAL INFORMATION AND REQUIREMENTS. | |
| LS* | LIGHTING CONTROL SYSTEM - WALL SWITCH SENSOR WITH MANUAL ON/OFF CAPABILITY. SENSOR SWITCH (NLIGHT) WSX SERIES. |
| DCS | LIGHTING CONTROL SYSTEM - DIMMING ON/OFF SWITCH SENSOR SWITCH (NLIGHT) NPODM SERIES. |
| PP1* | LIGHTING CONTROL SYSTEM - 1 RELAY POWER/RELAY PACK (FOR LIGHTING CONTROL). LOWER CASE SUBSCRIPT INDICATES CONTROLLING SWITCH(S). SENSOR SWITCH (NLIGHT) MODEL #NPP16. LOCATE LIGHTING CONTROL SYSTEM COMPONENTS IN CONCEALED ACCESSIBLE CEILING LOCATION. |
| PP2* | LIGHTING CONTROL SYSTEM - (HI0VDC DIMMING PACK (FOR LIGHTING CONTROL). LOWER CASE SUBSCRIPT INDICATES CONTROLLING SWITCH(S). SENSOR SWITCH (NLIGHT) MODEL #NPP16 D. LOCATE LIGHTING CONTROL SYSTEM COMPONENTS IN CONCEALED ACCESSIBLE CEILING LOCATION. |
| EP1 | LIGHTING CONTROL SYSTEM - POWER PACK FOR EMERGENCY LIGHTING OPERATION. SENSOR SWITCH (NLIGHT) MODEL #NPP16 ER. LOCATE LIGHTING CONTROL SYSTEM COMPONENTS IN CONCEALED ACCESSIBLE CEILING LOCATION. |
| * SUBSCRIPT INDICATES FIXTURES CONTROLLED BY THE SWITCH. IF NO SUBSCRIPT IS SHOWN, THEN ALL FIXTURES IN THE ASSOCIATED ROOM/SPACE ARE CONTROLLED BY THE SAME SWITCH. | |

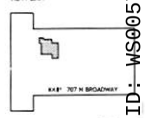
SCALE: 1/4" = 1'-0"


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD
p: 410 837 7311 f: 410 837 6580

MEP ENGINEER
Burdette, Koehler, Murphy & Associates, Inc.
6300 Blair Hill Lane Suite 400
Baltimore, MD 21209
p: 410 323 0600


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

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Project Name
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Drawing
PART GROUND FLOOR PLAN - LIGHTING - NEW WORK

E1.03

CONSTRUCTION DOCUMENTS

BKMB 1915601

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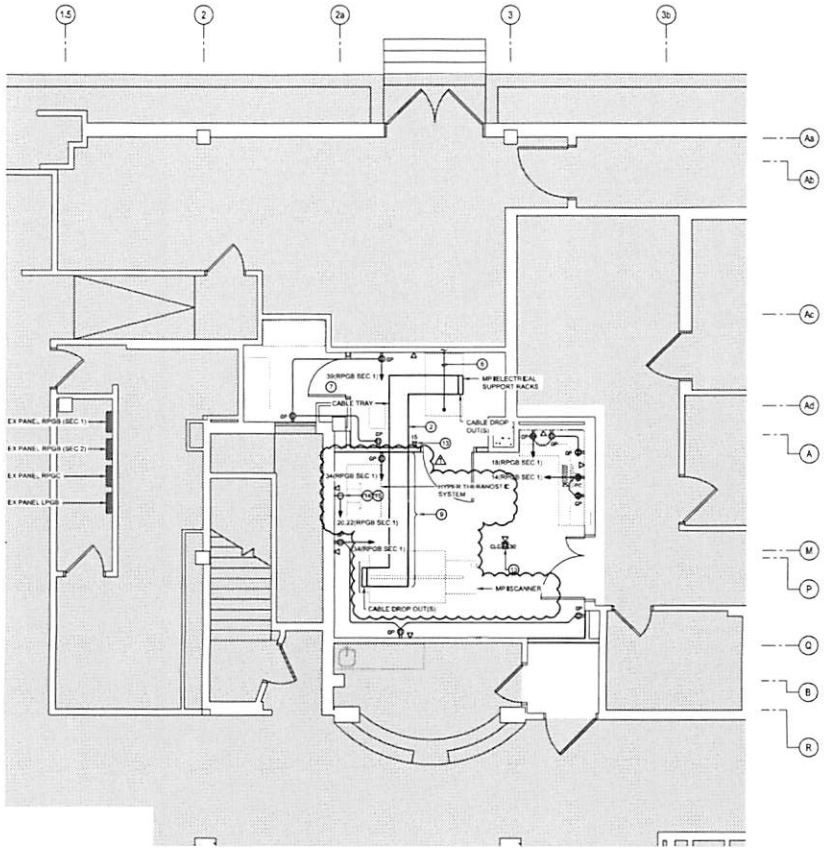
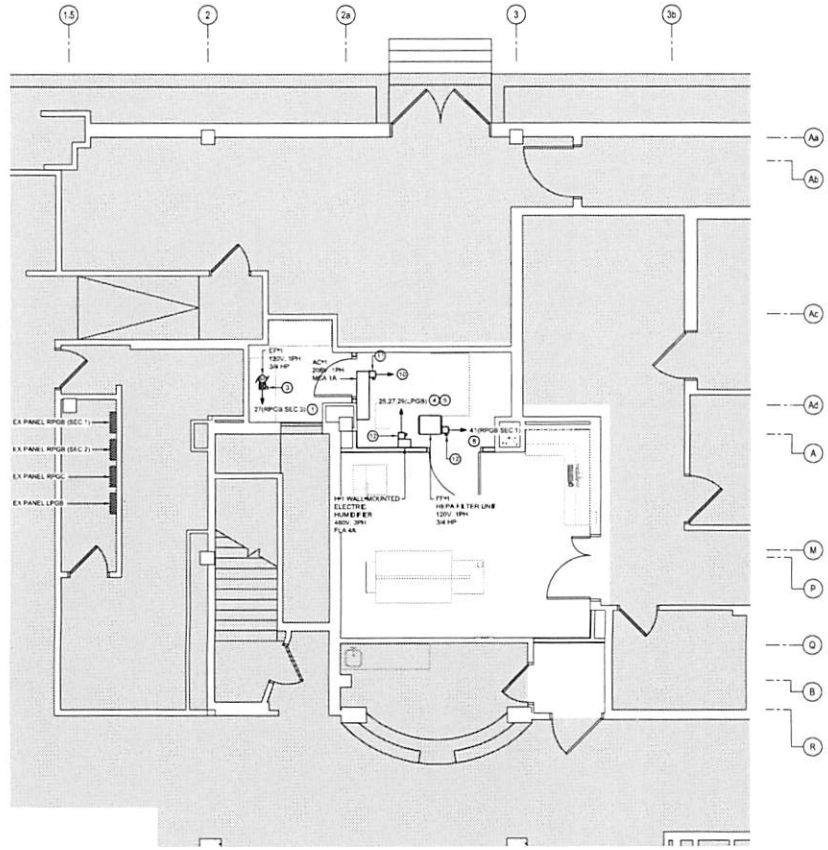
PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020




1 PART GROUND FLOOR PLAN - POWER - NEW WORK
SCALE: 1/4" = 1'-0"




2 PART GROUND FLOOR PLAN - MECHANICAL POWER - NEW WORK
SCALE: 1/4" = 1'-0"

## GENERAL NOTES:

1. REFER TO E-0-01 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. UNLESS NOTED OTHERWISE, ELECTRICAL ITEMS SHOWN HEAVY DASHED (— — —) SHALL BE REMOVED; ELECTRICAL ITEMS SHOWN HEAVY SOLID (———) SHALL BE NEW AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (———) SHALL BE EXISTING TO REMAIN.
3. ALL EQUIPMENT INSTALLATION AND METHODS SHALL BE IN ACCORDANCE WITH MPI SCANNER MANUFACTURER REQUIREMENTS. COORDINATE ALL EQUIPMENT INSTALLATION AND METHODS WITH THE MPI SCANNER MANUFACTURER PROVIDER/INSTALLER.

## NEW WORK DRAWING NOTES:

1. RECONNECT TO EXISTING CIRCUIT MADE SPARE BY DEMOLITION OF ORIGINAL EXHAUST FAN. ACTUAL CIRCUIT NUMBER MAY CHANGE DUE TO EXISTING FIELD CONDITIONS.
2. PROVIDE 18" WIDE CABLE TRAY (MCMASTER-CARR PART NUMBER 3006ST13); CABLE DROP OUT(S) (MCMASTER-CARR PART NUMBER 3006ST651); HANGING CLAMPS (MCMASTER-CARR PART NUMBER 3006ST516); HANGING BAR (MCMASTER-CARR PART NUMBER 3006ST224); BENDS, THREADED RODS, AND ALL ASSOCIATED EQUIPMENT REQUIRED FOR PROPER INSTALLATION. COORDINATE FINAL CABLE TRAY CONFIGURATION AND LAYOUT WITH MPI EQUIPMENT PROVIDER/INSTALLER.
3. COMBINATION STARTER SUPPLIED UNDER DIVISION 23 AND INSTALLED UNDER DIVISION 26.
4. PROVIDE HOMERUN TO EXISTING CIRCUIT POSITIONS SHOWN IN EXISTING PANEL LPGB. REMOVE EXISTING 277V, 1P, 20A CIRCUIT BREAKER IN POSITION 25 IN EXISTING PANEL LPGB. PROVIDE 480V, 3P, 15A CIRCUIT BREAKER IN CIRCUIT POSITIONS SHOWN IN EXISTING PANEL LPGB. MATCH EXISTING MANUFACTURER AND AIC RATING OF EXISTING PANEL LPGB. EXISTING PANEL LPGB IS CUTLER HAMMER, TYPE PRL3A.
5. PROVIDE (3)#12 & (1)#12 GRD IN 3/4" CONDUIT. PROVIDE FINAL CONNECTION TO EQUIPMENT.
6. PROVIDE HOMERUN FOR MPI ELECTRICAL SUPPORT RACKS. REFER TO DRAWING E-1.01 FOR CONTINUATION.
7. PROVIDE HOMERUN TO EXISTING CIRCUIT POSITION SHOWN IN EXISTING PANEL RPGB SEC 1. REMOVE EXISTING 208V, 2P, 20A CIRCUIT BREAKER IN POSITION 20,41 IN EXISTING PANEL RPGB SEC 1. PROVIDE 120V, 1P, 20A CIRCUIT BREAKER IN CIRCUIT POSITION SHOWN IN EXISTING PANEL RPGB SEC 1. MATCH EXISTING MANUFACTURER AND AIC RATING OF EXISTING PANEL RPGB SEC 1. EXISTING PANEL RPGB SEC 1 IS CUTLER HAMMER, TYPE PRL1.
8. PROVIDE HOMERUN TO EXISTING CIRCUIT POSITION SHOWN IN EXISTING PANEL RPGB SEC 1. PROVIDE 120V, 1P, 20A CIRCUIT BREAKER IN CIRCUIT POSITION SHOWN IN EXISTING PANEL RPGB SEC 1. MATCH EXISTING MANUFACTURER AND AIC RATING OF EXISTING PANEL RPGB SEC 1. EXISTING PANEL RPGB SEC 1 IS CUTLER HAMMER, TYPE PRL1.
9. CABLE TRAY SHALL BE LOCATED ABOVE THE CEILING. COORDINATE CABLE TRAY INSTALLATION WITH ALL EQUIPMENT IN THE AREA AND WITH OPENING IN CEILING. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING OPENING LOCATION.
10. PROVIDE WIRING AND CONDUIT FOR ALL ELECTRICAL INTERCONNECTIONS FROM AC UNIT TO ASSOCIATED CU UNIT LOCATED ON ROOF TOP. PROVIDE POWER SUPPLY FROM PANELBOARD OR FROM ASSOCIATED OUTDOOR UNIT AS REQUIRED BY FINAL EQUIPMENT INSTALLED. COORDINATE WITH EQUIPMENT PROVIDER/INSTALLER.
11. PROVIDE 208V, 2P, 30A DISCONNECT SWITCH IN NEMA 1 ENCLOSURE.
12. DISCONNECT SWITCH SUPPLIED UNDER DIVISION 23 AND INSTALLED UNDER DIVISION 26.
13. PROVIDE FIRE ALARM SYSTEM DEVICE CONNECTED TO BUILDING MAIN FIRE ALARM SYSTEM.
14. PROVIDE NEMA L6-20R RECEPTACLE FOR HYPER THERMOSTATIC SYSTEM. COORDINATE FINAL RECEPTACLE CONFIGURATION WITH HYPER THERMOSTATIC SYSTEM PROVIDER/INSTALLER.
15. REMOVE EXISTING 120V, 1P CIRCUIT BREAKER FROM EXISTING SPARE POSITIONS 20,22 IN EXISTING PANEL RPGB SEC 1. PROVIDE 208V, 2P, 30A CIRCUIT BREAKER IN CIRCUIT POSITIONS SHOWN IN EXISTING PANEL RPGB SEC 1. PROVIDE (2)#10 & (1)#10 GRD IN 3/4" CONDUIT. MATCH EXISTING MANUFACTURER AND AIC RATING OF EXISTING PANEL RPGB SEC 1. EXISTING PANEL RPGB SEC 1 IS CUTLER HAMMER, TYPE PRL1.

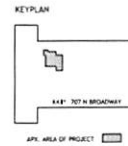
SCALE: 1/4" = 1'-0"


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
p. 410.837.7811 f. 410.837.6338

MEP ENGINEER
Burdette, Koehler, Murphy & Associates, Inc.
6300 Blair Hill Lane, Suite 400
Baltimore, MD 21209
p. 410.323.0600


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN

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Drawing
PART GROUND FLOOR PLAN - POWER - NEW WORK

E1.04

CONSTRUCTION DOCUMENTS

BHMM 19156.01

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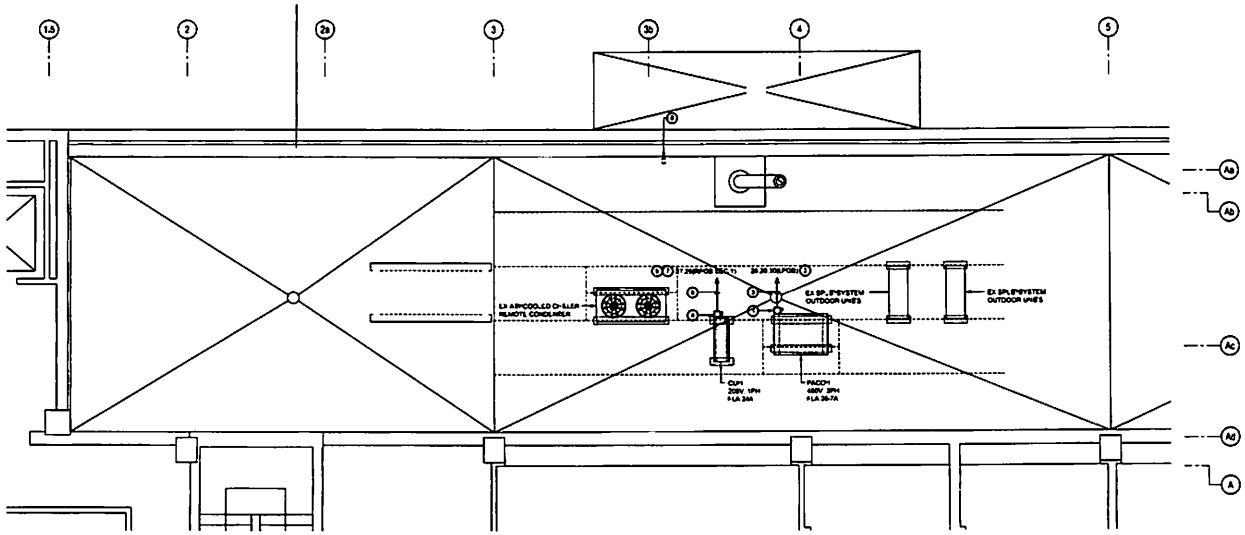
PREVIEW Date: Oct 14, 2020
Workspace ID: WS005789S4 Funding Opportunity Number: PWEAA2020




## 1 PART ROOF PLAN - ELECTRICAL - NEW WORK

SCALE: 1/4" = 1'-0"

### GENERAL NOTES:

1. REFER TO E-0.0 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. UNLESS NOTED OTHERWISE: ELECTRICAL ITEMS SHOWN HEAVY DASHED (— — —) SHALL BE REMOVED. ELECTRICAL ITEMS SHOWN HEAVY SOLID (———) SHALL BE NEW AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (———) SHALL BE EXISTING TO REMAIN.

### DRAWING NOTES:

1. PROVIDE 480V 3P 60A FUSED DISCONNECT SWITCH IN A NEMA 4X STAINLESS STEEL ENCLOSURE. PROVIDE 40A FUSES.
2. PROVIDE HOMERUN TO EXISTING CIRCUIT POSITIONS SHOWN IN EXISTING PANEL LP0B. REMOVE EXISTING 277V 1P 20A CIRCUIT BREAKER IN POSITION 36 IN EXISTING PANEL, LP0B. PROVIDE 480V 3P 40A CIRCUIT BREAKER IN CIRCUIT POSITIONS SHOWN IN EXISTING PANEL LP0B. MATCH EXISTING MANUFACTURER AND AIC RATING OF EXISTING PANEL, LP0B. EXISTING PANEL LP0B IS CUTLER HAMMER, TYPE PRL3A.
3. PROVIDE (3)#8 & (1)#10 GRD IN 3/4" CONDUIT. PROVIDE FINAL CONNECTION TO EQUIPMENT.
4. PROVIDE 208V 1P 20A DISCONNECT SWITCH IN NEMA 4X STAINLESS STEEL ENCLOSURE.
5. PROVIDE HOMERUN TO EXISTING SPARE CIRCUIT SHOWN IN EXISTING PANEL RP0B (SEC 1). REMOVE EXISTING 208V, 3P, 30A CIRCUIT BREAKER IN POSITIONS 27,29 IN EXISTING PANEL, RP0B (SEC 1). PROVIDE 208V, 3P, 30A CIRCUIT BREAKER IN POSITIONS SHOWN. IN EXISTING PANEL, RP0B (SEC 1). MATCH EXISTING MANUFACTURER AND AIC RATING OF EXISTING PANEL RP0B (SEC 1). EXISTING PANEL RP0B (SEC 1) IS CUTLER HAMMER, TYPE PRL1.
6. PROVIDE (2)#10 & (1)#10 GRD IN 3/4" CONDUIT. PROVIDE FINAL CONNECTION TO EQUIPMENT.
7. PROVIDE ALL POWER AND CONTROL CONNECTIONS FROM CU UNIT TO ASSOCIATED AC UNIT LOCATED INSIDE OF BUILDING ON THE GROUND FLOOR. REFER TO DRAWING E-04 FOR ADDITIONAL INFORMATION.
8. APPROXIMATE LOCATION OF CONDUIT ENTRY POINT ON ROOF AT UNIT BY CHASE LOCATION. REFER TO DRAWING E1.01 FOR ADDITIONAL INFORMATION.

N

0 2' 4' 8' 12'
SCALE: 1/4" = 1'-0"

ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1200 Baltimore, MD 21202
p 410 837.7311 f 410 837.6580

MEP ENGINEER
Burdette, Koehler, Murphy & Associates, Inc.
6320 Dorsey Hill Lane, Suite 400
Ellicott City, MD 21209
p 410 321 0600

# KENNEDY KRIEGER INSTITUTE
# MPI SCANNER RENOVATION
## 707 NORTH BROADWAY
## BALTIMORE, MD 21205

KEYPLAN

Kennedy Krieger Institute

hord | coplan | macht

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|---|---|---|

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Scale
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Drawing
PART ROOF PLAN
ELECTRICAL - NEW WORK

# E1.05

CONSTRUCTION DOCUMENTS

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ELECTRICAL SPECIFICATIONS

1.0 BASIC ELECTRICAL REQUIREMENTS

1.1 GENERAL

A. GENERAL PROVISIONS OF THE CONTRACT APPLY. ALL WORK PERFORMED AND MATERIALS PROVIDED SHALL CONFORM TO ALL APPLICABLE CODES AND STANDARDS AND THE NATIONAL ELECTRICAL CODE (NEC).

B. PRIOR TO STARTING WORK, CAREFULLY INSPECT THE INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THE INSTALLATION MAY PROPERLY COMMENCE.

C. AVOID INTERFERENCE WITH STRUCTURE AND WITH WORK OF OTHER TRADES. PRESERVING ADEQUATE HEADROOM AND CLEARING ALL DOORS AND PASSAGEWAYS.

D. COORDINATE THE LOCATIONS OF ALL EXISTING UTILITIES. REPAIR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY CONSTRUCTION FORCES.

E. LEAVE ALL AREAS BROOM CLEAN DAILY. REMOVE ALL CONSTRUCTION DEBRIS AND TRASH FROM THE SITE DAILY.

F. BEFORE ORDERING ANY MATERIALS OR EQUIPMENT, SUBMIT TO THE ENGINEER DATA FOR ALL MATERIALS AND EQUIPMENT. CHECK EQUIPMENT DIMENSIONS OF PROPOSED SUBSTITUTE EQUIPMENT. THE COST OF ANY REDESIGNING CAUSED BY A SUBSTITUTION SHALL BE BORNE BY THE CONTRACTOR.

G. CONTRACTOR SHALL DO ALL CUTTING, DRILLING AND PATCHING REQUIRED BY HIS WORK. ALL REPAIRS TO FINISH SHALL BE OF LIKE KIND, COLOR AND QUALITY AS EXISTING. STRUCTURAL MEMBERS SHALL NOT BE CUT WITHOUT APPROVAL FROM THE ARCHITECT.

H. PROVIDE TEMPORARY POWER AS MAY BE REQUIRED FOR CONSTRUCTION OR AS MAY BE REQUIRED TO MAINTAIN CRITICAL OPERATIONS DURING CHANGEOVER OF FEEDERS OR SERVICES. PROVIDE ALL EQUIPMENT, MAKE ALL ARRANGEMENTS AND MAKE ALL CONNECTIONS REQUIRED FOR TEMPORARY POWER. REMOVE ALL PROVISIONS FOR TEMPORARY POWER UPON COMPLETION OF THE PROJECT.

I. SCHEDULE IN ADVANCE ALL OUTAGES OF BUILDING UTILITIES. OUTAGES SHALL BE AS SHORT AS POSSIBLE. ALL SERVICES SHALL BE RESTORED AND PLACED IN OPERATION WHEN CONTRACTOR'S PERSONNEL LEAVE THE SITE EACH DAY.

J. TAKE NECESSARY PRECAUTIONS TO PROTECT BUILDING'S OCCUPANTS AND CONTENTS, AND PREVENT THE SPREAD OF DUST AND DIRT INTO OCCUPIED AREAS.

K. THE CONTRACTOR SHALL MAINTAIN A SET OF APPROVED CONSTRUCTION DOCUMENTS WITH ALL APPROVED REVISIONS. AT THE SITE AS A RECORD MARK-UP OF ABNULT CONDITIONS. THESE RECORDED PLANS SHALL BE SUBMITTED AS PART OF THE O & M MANUALS.

L. DESIGNATED PARTITIONS WHERE HORIZONTAL SEPARATION OF OPPOSITE FACING ELECTRICAL BOXES IS LESS THAN 24 INCHES. PROVIDE UL LISTED FIRESTOP AROUND ELECTRICAL BOXES AS REQUIRED TO MAINTAIN FIRE RATING OF WALL.

M. ALL CURRENT CARRYING CONDUCTORS FOR ALL EQUIPMENT SHALL BE COPPER UNLESS NOTED OTHERWISE.

1.2 CONTRACT DOCUMENTS

A. CONTRACT DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC. INTENDED TO COMPLY SCOPE AND GENERAL ARRANGEMENT.

B. CORRECTION OF FAULTY WORK DUE TO RESOLVING DISCREPANCIES WITHOUT AUTHORIZATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

C. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES OR OMISSIONS ON THE DRAWINGS OR IN THE SPECIFICATIONS, HE SHALL NOTIFY THE ENGINEER OF SUCH CONDITIONS PRIOR TO THE BID DATE. OTHERWISE IT WILL BE UNDERSTOOD THAT THE DRAWINGS AND SPECIFICATIONS ARE CLEAR AS TO WHAT IS INTENDED AND SHALL BE AS INTERPRETED BY THE ENGINEER.

1.3 SUBMITTALS

A. SUBMIT SHOP DRAWINGS, MANUFACTURER'S DATA AND CERTIFICATES FOR EQUIPMENT, MATERIALS AND FINISH AND PERTINENT DETAILS FOR EACH SYSTEM AND OBTAIN APPROVAL BEFORE PROCUREMENT, FABRICATION, OR DELIVERY OF THE ITEMS TO THE JOB SITE. PARTIAL SUBMITTALS ARE NOT ACCEPTABLE AND WILL BE RETURNED WITHOUT REVIEW.

B. SUBMITTALS SHALL INCLUDE THE MANUFACTURER'S NAME, TRADE NAME, CATALOG MODEL OR NUMBER, NAMEPLATE DATA, SIZE, LAYOUT DIMENSIONS, CAPACITY, PRODUCT SPECIFICATION AND PARAGRAPH REFERENCE, APPLICABLE PUBLICATION REFERENCES, YEARS OF SATISFACTORY SERVICE, AND OTHER INFORMATION NECESSARY TO ESTABLISH CONTRACT COMPLIANCE OF EACH ITEM THE CONTRACTOR PROPOSES TO FURNISH.

C. SUBMITTALS WILL BE REVIEWED FOR GENERAL COMPLIANCE WITH DESIGN CONCEPT IN ACCORDANCE WITH CONTRACT DOCUMENTS, BUT DIMENSIONS, QUANTITIES OR OTHER DETAILS WILL NOT BE VERIFIED.

D. ACCEPTANCE WILL NOT CONSTITUTE WAIVER OF CONTRACT REQUIREMENTS UNLESS DEVIATIONS ARE SPECIFICALLY INDICATED AND CLEARLY NOTED.

E. ALL ELECTRICAL EQUIPMENT SHALL BE APPROVED AND LISTED BY UNDERWRITERS' LABORATORIES (UL) AND SHALL BEAR NAMEPLATE INDICATING SAME.

F. ACCEPTANCE WILL NOT CONSTITUTE A WAIVER OF SYSTEM PERFORMANCE.

G. THE ENGINEER WILL PROVIDE A MAXIMUM OF TWO (2) SUBMITTAL REVIEWS PER EQUIPMENT SUBMITTAL. THE INITIAL REVIEW PLUS ONE (1) RESUBMITTAL. SHOULD THE RESUBMITTAL BE RETURNED "NOT ACCEPTABLE" OR "REVISE AND RESUBMIT", THE CONTRACTOR SHALL CHOOSE ONE OF THE FOLLOWING COURSES OF ACTION:

1. PROVIDE THE EXACT MANUFACTURER AND MODEL, INDICATED IN THE CONTRACT DOCUMENTS AS THE BASIS OF DESIGN, OR
2. REIMBURSE THE ENGINEER FOR ALL ADDITIONAL REVIEW TIME REQUIRED TO ACHIEVE A SUBMITTAL REVIEW FROM THE ENGINEER OF "NO EXCEPTIONS TAKEN".

SHOULD THE CONTRACTOR CHOOSE OPTION 2 ABOVE, THE ENGINEER SHALL BE REIMBURSED AT AN HOURLY RATE OF $175 PER HOUR WITH PAYMENT DUE PRIOR TO THE RETURN OF THE FINAL SUBMITTAL. IN ADDITION, THE CONTRACTOR SHALL ACCEPT COMPLETE RESPONSIBILITY FOR ALL DELAYS RESULTING FROM THE SUBMITTAL REVIEW PROCESS EXTENDING BEYOND TWO (2) REVIEWS PER EQUIPMENT SUBMITTAL.

H. PRIOR TO FINAL ACCEPTANCE, SUBMIT OPERATION AND MAINTENANCE MANUALS, WHICH INCLUDE TESTING REPORTS AND ALSO SUBMIT AS-BUILT PLANS.

1.4 MANUFACTURER'S RECOMMENDATIONS

A. INSTALLATION PROCEDURES ARE REQUIRED TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED.

1.6 COORDINATION

A. COORDINATE ALL WORK AND COOPERATE WITH ALL OTHER TRADES TO FACILITATE EXECUTION OF WORK.

1.6 SITE EXAMINATION

A. FAILURE TO VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING PROJECT CONDITIONS PRIOR TO BIDDING WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLYING WITH THE CONTRACT DOCUMENTS.

1.7 QUALITY ASSURANCE

A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL PRODUCTS OF TYPES AND SIZES REQUIRED. WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS (5 YEARS).

B. INSTALLER'S QUALIFICATIONS: FIRMS WITH AT LEAST FIVE (5) YEARS SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL PRODUCTS SIMILAR TO THAT REQUIRED FOR THIS PROJECT.

1.8 REGULATIONS AND PERMITS

A. WORK SHALL COMPLY WITH ALL APPLICABLE STATE, LOCAL AND FEDERAL CODES/REGULATIONS. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS.

1.10 FIELD INSTRUCTION

A. UPON COMPLETION OF WORK, INSTRUCT OWNER'S REPRESENTATIVE IN THE PROPER OPERATION AND MAINTENANCE OF THE ELECTRICAL SYSTEMS.

1.10 GUARANTEE

A. EACH CONTRACTOR SHALL FURNISH A GUARANTEE COVERING ALL LABOR AND MATERIALS FURNISHED BY HIM FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK, AND HE SHALL AGREE TO REPAIR AND MAKE GOOD AT HIS OWN EXPENSE ANY AND ALL DEFECTS WHICH MAY APPEAR IN HIS WORK DURING THAT TIME IF, IN THE JUDGMENT OF THE ENGINEER, SUCH DEFECTS ARISE FROM DEFECTIVE WORKMANSHIP AND/OR IMPERFECT OR INFERIOR MATERIAL.

B. THE ABOVE SHALL NOT IN ANY WAY VOID OR ABROGATE EQUIPMENT MANUFACTURER'S GUARANTEE OR WARRANTY. CERTIFICATES OF GUARANTEE SHALL BE DELIVERED TO THE OWNER.

1.12 DEMOLITION

A. THE ELECTRICAL DEMOLITION IN AREAS INDICATED ON THE DRAWINGS SHALL BE COMPLETE AND INCLUDE ALL ELECTRICAL WORK IN THE AREA UNLESS NOTED OTHERWISE.

B. ELECTRICAL EQUIPMENT AND DEVICES SHOWN TO BE DEMOLISHED SHALL BE DEMOLISHED ALONG WITH ALL SUPPLY CONDUCTORS AND RACEWAYS BACK TO SUPPLY SOURCE UNLESS OTHERWISE NOTED.

C. FIELD VERIFY SUPPLY SOURCE FOR ALL EQUIPMENT SHOWN TO BE DEMOLISHED.

D. UPDATE ALL AFFECTED PANEL DIRECTORIES TO INCLUDE NEW CIRCUIT INFORMATION AND SPARE POLE ENDS.

E. EXISTING ELECTRICAL SYSTEMS PASSING THROUGH AREAS OF DEMOLITION TO SERVE EQUIPMENT BEYOND THE DEMOLITION AREAS SHALL REMAIN IN SERVICE, OR BE SUITABLY RELOCATED TO NORMAL OPERATION. THROUGHOUT THE DEMOLITION AND RECONSTRUCTION OF THE AREA, THE CONTRACTOR SHALL INVESTIGATE AND IDENTIFY SUCH EQUIPMENT PRIOR TO DEMOLITION.

F. PROVIDE TEMPORARY ELECTRICAL SERVICE TO EQUIPMENT DISTURBED BY THE DEMOLITION UNTIL SUCH TIME AS THE PERMANENT SERVICE CAN BE RESTORED.

G. WHERE CONDUIT AND WIRING TO REMAIN ARE INADVERTENTLY DAMAGED OR DISTURBED, CUT OUT AND REMOVE DAMAGED PORTION AND ALL DAMAGED WIRING FROM THE SOURCE SWITCHBOARD, PANELBOARD OR PULLBOX TO THE DESTINATION CONNECTION POINT. PROVIDE NEW WIRING OF EQUAL CAPACITY.

H. EXPOSED CONDUIT TO BE DEMOLISHED SHALL BE REMOVED IN ITS ENTIRETY. CONCEALED CONDUIT ABANDONED IN PLACE SHALL BE CUT OUT APPROXIMATELY TWO INCHES BEYOND THE FACE OF ADJACENT CONSTRUCTION, PLUGGED AND THE ADJACENT SURFACE PATCHED TO MATCH EXISTING.

I. WIRING TO BE DEMOLISHED SHALL BE REMOVED FROM BOTH CONCEALED AND EXPOSED CONDUIT. NO WIRING WHICH BECOMES UNUSED AS A RESULT OF THE CONTRACT SHALL BE ABANDONED IN PLACE.

J. EQUIPMENT SPECIFICATION INDICATED TO BE DEMOLISHED SHALL BE REMOVED FROM THE PROJECT SITE AND SHALL NOT BE REUSED UNLESS NOTED OTHERWISE.

K. ANY OUTAGES IN SYSTEMS SHALL BE COORDINATED WITH THE OWNER. WHERE DURATION OF PROPOSED OUTAGE CANNOT BE TOLERATED BY THE OWNER, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.

2.0 RACEWAY

2.1 GENERAL

A. ELECTRICAL METALLIC TUBING WITH STEEL, INSULATED THROAT COMPRESSION FITTINGS SHALL BE USED IN ALL LOCATIONS EXCEPT WHERE NOTED OTHERWISE. ALL WIRING SHALL BE INSTALLED IN RACEWAY UNLESS OTHERWISE NOTED. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR POWER CIRCUITS AND 1/2" FOR CONTROL CIRCUITS.

B. GALVANIZED RIGID STEEL SHALL BE USED IN EXTERIOR LOCATIONS ABOVE GRADE, ALL EXPOSED LOCATIONS SUBJECT TO DAMAGE OR BELOW 10 FEET IN VEHICLE OR CART TRAFFIC AREAS, IN CRAWL SPACES, IN DAMP OR WET LOCATIONS, IN CONCRETE OR MASONRY CONSTRUCTION, BELOW SLAB ON GRADE, AND WHERE REQUIRED BY THE NEC.

C. PVC SCHEDULE 40 SHALL BE USED FOR UNDERGROUND DUCTBANKS.

D. ELECTRICAL RACEWAY CONNECTIONS TO VIBRATING EQUIPMENT AND MACHINERY SUCH AS MOTORS, DRY TYPE TRANSFORMERS, ETC. SHALL BE MADE WITH FLEXIBLE METAL CONDUIT & QUICKFIT IN OUTDOOR OR UNDER FLOOR LOCATIONS. FLEXIBLE CONNECTIONS TO MOTORS SHALL CONTAIN A BONDING BAND.

E. FINAL CONNECTION TO LIGHT FIXTURES SHALL BE MADE USING EITHER MC CABLE OR FLEXIBLE METAL CONDUIT. FINAL CONNECTION TO LIGHT FIXTURES SHALL NOT EXCEED 6 FEET.

F. SURFACE METAL RACEWAYS SHALL NOT BE USED.

2.2 RACEWAY

2.3 GENERAL

A. ALL NEW RACEWAYS IN FINISHED AREAS SHALL BE CONCEALED UNLESS SPECIFICALLY NOTED OTHERWISE.

B. GROUT AROUND ALL CONDUITS AT CEILING, FLOOR AND WALL PENETRATIONS TO PROVIDE AIRTIGHT SEAL. ALL FLOOR SLAB AND FIRERATED WALL PENETRATIONS SHALL BE SEALED WITH FIREPROOF COMPOUND.

C. ALL CONDUITS SHALL BE RIGIDLY SUPPORTED TO BUILDING STRUCTURE. CONDUITS SHALL NOT BE SUPPORTED FROM SUSPENDED CEILING SUPPORT WIRES. SUPPORT CONDUITS USING STEEL BOLTED TYPE SUPPORTS, FLEX TYPE HANGER/SUPPORTS SHALL NOT BE USED.

3.0 BOXES

3.1 GENERAL

A. INTERIOR OUTLET BOXES SHALL BE GALVANIZED STEEL, MINIMUM 14 GAUGE, NO LESS THAN 4" SQUARE WITH EXTENSION RINGS AND MOUNTING BRACKETS.

B. JUNCTION AND PULL BOXES SHALL HAVE SCREW-ON COVERS OR LOCKING HINGED COVERS. NEMA 1 BOXES SHALL BE USED INDOORS. NEMA 3R BOXES WITH THREADED HUBS SHALL BE USED OUTDOORS.

C. BOXES BELOW RAISED FLOORS SHALL BE CAST METAL, THREADED HUB TYPE UNLESS THE BOX IS MOUNTED 18" OR MORE ABOVE THE SLAB. IN WHICH CASE NEMA 1 BOXES OR INTERIOR OUTLET BOXES MAY BE USED.

D. OUTLET BOXES SHALL BE RIGIDLY AND SECURELY FASTENED IN PLACE.

E. OUTLET BOXES IN FINISHED AREAS SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED.

F. BOXES SHALL BE SIZED IN ACCORDANCE WITH NEC ARTICLE 314.

G. ALL CONDUIT CONNECTORS AND ENTRY HUBS SHALL BE INSULATED OR HAVE INSULATED BUSHINGS.

H. OUTLETS SHOWN ADJACENT TO ONE ANOTHER ON THE PLANS AT THE SAME MOUNTING HEIGHT SHALL BE GANGED EXCEPT WHERE NOTED.

I. OUTLETS SHOWN ADJACENT TO ONE ANOTHER ON THE PLANS AT DIFFERENT MOUNTING HEIGHTS SHALL BE LOCATED WITH THE UPPER OUTLET CENTERED DIRECTLY OVER THE LOWER OUTLET.

4.0 WIRE AND CABLE

4.1 GENERAL

A. ALL WIRE SHALL BE COPPER WITH INSULATION RATED AT 600 VOLTS, 75 DEGREES CELSIUS MINIMUM.

B. MINIMUM WIRE SIZES SHALL BE #12 FOR POWER WIRING, #14 FOR CONTROL WIRING AND AS SPECIFICALLY NOTED FOR SYSTEMS WIRING.

C. WIRE SHALL BE TYPE THHN OR THWN UP TO SIZE 10 AWG AND STRANDED TYPE THWN, XHHW, OR THHN FOR SIZES 8 AWG AND LARGER UNLESS NOTED OTHERWISE.

D. MC CABLE MAY BE USED FOR LIGHTING WHIPS. MAXIMUM 6 FOOT LENGTH. IN ACCESSIBLE LOCATIONS.

E. MOLDED CONNECTORS (WIRE NUTS) MAY BE USED FOR SPLICING SIZE 10 AWG OR SMALLER WIRES ON LIGHTING AND RECEPTACLE CIRCUITS ONLY. ALL OTHER WIRING SHALL BE SPLICED ONLY WITH LUGS AND/OR TERMINAL BLOCKS.

F. TERMINAL LUGS SHALL BE MECHANICAL CLAMP OR COMPRESSION TYPE UNLESS PART OF A CIRCUIT BREAKER OR SWITCH ASSEMBLY. SET SCREW TYPE LUGS IN WHICH THE SET SCREW BEARS DIRECTLY ON THE CONDUCTOR SHALL NOT BE USED.

G. SPECIAL LUGS MAY BE REQUIRED TO ACCOMMODATE CONDUCTOR SIZES SHOWN ON THE DRAWINGS. CONTRACTOR SHALL VERIFY LUG REQUIREMENTS FOR ALL CIRCUIT BREAKERS AND LOW POWER TERMINALS AND SHALL PROVIDE CORRECT LUGS AS REQUIRED.

H. PRE-INSULATED CRIMP CONNECTORS AND TERMINALS SHALL BE USED ON ALARM WIRING.

I. PROTECT AND SUPPORT ALL NEW AND EXISTING LOW VOLTAGE WIRING USING APPROPRIATE CABLE FASTENERS IN ALL AREAS AFFECTED BY PROJECT CONSTRUCTION.

J. UNDER NO CIRCUMSTANCES SHALL FEEDERS BE SPLICED.

K. ALL WIRING FOR LIGHTING AND POWER CIRCUITS SHALL BE SIZED AS FOLLOWS UNLESS OTHERWISE INDICATED:

| 120 VOLT BRANCH CIRCUIT LENGTH | WIRE SIZE |
|---|---|
| 0'-75' (0'-23.0m) | #12 |
| 75'-100' (23.0'-30.5m) | #10 |
| OVER 100' (OVER 30m) | #8 |

| 277VOLT BRANCH CIRCUIT LENGTH | WIRE SIZE |
|---|---|
| 0'-200' (0'-60.0m) | #12 |
| OVER 200' (OVER 60m) | #10 |

IN ACCORDANCE WITH THE ABOVE, WHERE THE SIZE OF BRANCH CIRCUIT CONDUCTORS IS INCREASED BY THE MINIMUM REQUIRED BY THE NEC FOR THE BRANCH CIRCUIT RATING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT THE TERMINATION PROVISIONS OF ALL EQUIPMENT CONNECTED TO SUCH CIRCUITS ARE LISTED AS SUITABLE FOR THE CONDUCTOR SIZES SPECIFIED.

L. COLOR CODE THE ENTIRE POWER WIRING SYSTEM AS FOLLOWS:

| 120/208 VOLT SYSTEM | 277/480 VOLT SYSTEM |
|---|---|
| PHASE A = BLACK | PHASE A = BROWN |
| PHASE B = RED | PHASE B = ORANGE |
| PHASE C = BLUE | PHASE C = YELLOW |
| NEUTRAL = WHITE | NEUTRAL = GRAY |
| GROUND = GREEN | GROUND = GREEN |

5.0 GROUNDING

5.1 GENERAL

A. PROVIDE A COMPLETE EQUIPMENT SAFETY GROUND SYSTEM ("GROUNDING" GROUNDS) FOR THE ENTIRE ELECTRICAL SYSTEM AS REQUIRED BY ARTICLE 250 OF THE NEC AND AS SPECIFIED HEREIN.

B. PROVIDE ADDITIONAL GROUNDING AS INDICATED ON THE PLANS.

C. ALL GROUNDING WIRE, LUGS, JUMPERS AND BUS SHALL BE COPPER.

D. ALL FEEDER AND BRANCH CIRCUITS SHALL CONTAIN AN EQUIPMENT GROUND WIRE. NO CONDUIT OR RACEWAY OF ANY SIZE OR LENGTH SHALL BE USED AS THE EQUIPMENT GROUNDING CONDUCTOR.

E. EQUIPMENT GROUNDING CONDUCTORS AND STRAPS SHALL BE SIZED IN ACCORDANCE WITH THE NEC. REFER TO FEEDER SCHEDULES FOR GROUND WIRE REQUIREMENTS WHICH EXCEED THE NEC. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE PROVIDED WITH GREEN INSULATION EQUIVALENT TO THE INSULATION ON THE ASSOCIATED PHASE CONDUCTORS.

F. THE EQUIPMENT GROUNDING SYSTEM SHALL BE INSTALLED SO ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS, PIPING, SYSTEMS, JUNCTION BOXES, OUTLET BOXES, CABINETS, MOTOR FRAMES AND TERMINALS SUPPLIED EQUIPMENT FRAMES OPERATE CONTINUOUSLY AT GROUND POTENTIAL AND PROVIDE A LOW IMPEDANCE PATH FOR GROUND FAULT CURRENTS.

G. WHERE PARALLEL FEEDERS ARE USED EACH RACEWAY SHALL CONTAIN AN EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH NEC 250-122 FOR THE COMBINED PARALLEL CIRCUIT AMPERAGE.

H. GROUNDING CONDUCTORS SHALL BE CONTINUOUS AND NO SPLICE SHALL BE ALLOWED.

I. RECEPTACLES SHALL BE BONDED TO THEIR OUTLET BOXES WITH #12 COPPER STRAPS.

J. BOND ALL SEPARATELY DERIVED POWER SOURCES IN ACCORDANCE WITH NEC 250.

K. PROVIDE FLEXIBLE GROUNDING JUMPERS BETWEEN EACH PIECE OF COMPUTER EQUIPMENT AND THE RAISED FLOOR. PROVIDE TWO GROUNDING JUMPERS PER CABINET, ATTACHED AT OPPOSITE CORNERS. IF SEVERAL CABINETS ARE BOLTED TOGETHER IN A STRING, ONLY ONE JUMPER AT EACH END OF THE STRING IS REQUIRED. USE OLT-BOLT NO-2 AND OF THE GROUNDING JUMPER AT THE COMPUTER CABINETS AND BOLT TO A METAL FRAME MEMBER AT THE RAISED FLOOR END, BOLT TO A PEDESTAL. DO NOT USE STRINGER BOLT FOR ATTACHING GROUNDING JUMPER. GROUNDING JUMPER SHALL BE STRANDED COPPER.

6.0 EQUIPMENT

6.1 GENERAL

A. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL EQUIPMENT SHOWN ON THE DRAWINGS. ALL MANUFACTURERS' SPECIFICATIONS SHALL BE FOLLOWED IN REGARD TO THE INSTALLATION OF ALL EQUIPMENT. ANY SPECIAL MANUFACTURER REQUIREMENTS NECESSARY FOR PROPER OR SAFE INSTALLATION OF EQUIPMENT REGARDLESS OF WHETHER THE APPURTENANCES SPECIAL REQUIREMENTS ARE INDICATED ON THE DRAWINGS SHALL BE AT THE EXPENSE AND RESPONSIBILITY OF THE CONTRACTOR.

B. THE CONTRACTOR IS RESPONSIBLE FOR THE PURCHASE, RIGGING, ERECTION, INSTALLATION, AND FUNCTIONAL OPERATION OF ALL ELECTRICAL EQUIPMENT EXCEPT WHERE NOTED. MATERIALS AND EQUIPMENT SHALL WHEN INSTALLED IS NORMAL FOR THE PARTICULAR CLASS OF MATERIAL OR EQUIPMENT, BE LISTED AND LABELED BY UL OR A NRTL.

C. MAKE FINAL ELECTRICAL CONNECTIONS TO ALL ITEMS OF MECHANICAL EQUIPMENT.

D. ALL LOCATIONS OF EQUIPMENT AND FIXTURES ARE APPROXIMATE AND MAY REQUIRE MINOR ADJUSTMENT TO SUIT FIELD CONDITIONS. ALL ADJUSTMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

E. NOT ALL LOCATIONS WHERE MOTOR DISCONNECT SWITCHES ARE REQUIRED MAY BE SHOWN ON THE DRAWINGS. PROVIDE DISCONNECTS AT ALL LOCATIONS REQUIRED BY CODE WHETHER SHOWN OR NOT WHEN REQUIRED. EACH MOTOR SHALL BE EQUIPPED WITH A TWO OR THREE POLE FUSED HEAVY-DUTY DISCONNECT SWITCH SIZED TO MATCH THE MOTOR.

EXCEPTIONS: FRACTIONAL HP MOTORS SHALL BE EQUIPPED WITH TOGGLE TYPE DISCONNECT SWITCHES. EQUIPMENT WITH INTEGRAL DISCONNECTING MEANS THAT SATISFY NEC AND LOCAL AUTHORITY REQUIREMENTS FOR MOTOR SAFETY DISCONNECTS SHALL NOT REQUIRE A SEPARATE DISCONNECT SWITCH.

F. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY, HORSEPOWER RATED, QUICK-MAKE, QUICK BREAK TYPE WITH SPRING RELEASED WIPE GRIPS AND SELF-CLEANING SWITCH CONTACTS. SWITCHES SHALL BE ENCLOSED IN A HEAVY SHEET METAL ENCLOSURE WITH HINGED INTERLOCKING COVER WHICH SHALL PREVENT THE COVER BEING OPENED WHEN SWITCH IS "ON". PROVIDE NEMA 3R WEATHERPROOF ENCLOSURES FOR OUTDOOR AND WET LOCATION APPLICATIONS. NEMA 1 FOR DRY INDOOR APPLICATIONS, AND CLASS R RECEPTACLES ON ALL FUSE HOLDERS.

G. COORDINATE ALL RECEPTACLES, PLUGS, WIRING AND LOCATIONS WITH THE EQUIPMENT PROVIDED PRIOR TO ROUGH-IN.

H. THE CONTRACTOR SHALL RECEIVE, STORE, UNPACK AND INSTALL ALL BATTERIES IN COMPLETE ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND IEEE STANDARDS 484 AND 484. THE SUPPLIER OF THE BATTERIES SHALL PROVIDE TESTS TO IEEE 484. THE CONTRACTOR SHALL REMOVE CONNECTORS AND METAL REPLACEMENT BATTERIES AS NECESSARY TO MEET IEEE AND METALLICAN REQUIREMENTS.

7.0 DEVICES

7.1 GENERAL

A. ALL WIRING DEVICES SHALL BE HOSPITAL GRADE MANUFACTURED BY LEGRAND, HUBBELL, ARROWHART OR LUTRON. ALL DEVICES SHALL BE BY THE SAME MANUFACTURER UNLESS NOTED OTHERWISE.

B. THE CONTRACTOR SHALL VERIFY LOCATION AND MOUNTING HEIGHT OF ALL DEVICES PRIOR TO INSTALLATION.

C. WIRING DEVICES SHALL BE IVORY WITH BRUSHED STAINLESS STEEL COVER PLATES.

D. RECEPTACLES SHALL BE FLUSH HOSPITAL GRADE, DUPLEX, GROUNDING TYPE, 20 AMP, 3P, 3W, 120VAC, NEMA 5-20R STRAIGHT BLADE, NYLON OR HIGH STRENGTH THERMOPLASTIC MATERIAL UNLESS INDICATED AS SPECIAL PURPOSE OUTLET. RECEPTACLES SHALL BE DESIGNED TO ACCEPT STANDARD TWO WIRE, PARALLEL CONNECTOR CAPS AND SHALL GRIP BOTH SIDES OF THE CONNECTOR WIRE.

E. SINGLE THROW LIGHT SWITCHES SHALL BE QUIET TYPE, SPECIFICATION GRADE, 20A, 1P, 120/277VAC, RULE TO ACCOMMODATE UP TO TWO CONDUCTORS AND DESIGNED FOR REACTIVE LIGHTING LOADS.

F. THREEWAY TOGGLE SWITCHES SHALL BE QUIET TYPE, SPECIFICATION GRADE, 20A, 120/277VAC. SWITCHES SHALL BE POSITIVE ACTION TYPE AND SHALL NOT PERMIT A MAINTAINED NEUTRAL POSITION.

G. FOUR-WAY TOGGLE SWITCHES SHALL BE QUIET TYPE, SPECIFICATION GRADE, 20A, 120/277VAC. SWITCHES SHALL BE POSITIVE ACTION TYPE AND SHALL NOT PERMIT A MAINTAINED NEUTRAL POSITION.

H. CONVENIENCE RECEPTACLES SERVING BATHROOMS, TOILETS, OUTDOOR AND WET LOCATIONS AND CONSTRUCTION SITES SHALL BE GROUND FAULT INTERRUPTER TYPE, SPECIFICATION GRADE, 20A, 3P, 3W, 120VAC, NEMA 5-20R, STRAIGHT BLADE, NYLON OR HIGH STRENGTH THERMOPLASTIC MATERIAL.

I. PROVIDE 304 INCH THICK SATIN FINISH, TYPE 302 STAINLESS STEEL PLATES SATISFACTORY FOR ALL RECEPTACLE AND SWITCH OUTLETS UNLESS OTHERWISE SPECIFIED. PROVIDE GALVANIZED STEEL PLATES IN UNFINISHED SPACES.

J. GANG MULTIPLE OUTLETS AT ONE LOCATION UNDER A SINGLE MULTIGANG COVER PLATE.

K. SWITCHES SHALL BE MOUNTED VERTICALLY. NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE ROUGHING IN OUTLETS AND OBTAIN A WALK LOCATION. GANG MULTIPLE SWITCHES AT ONE LOCATION UNDER A SINGLE MULTIGANG PLATE. LOCATE SWITCHES ON STRIKE SIDE OF DOOR BETWEEN 6" AND 12" FROM EDGE OF DOOR FRAME.

L. DEVICE PLATES SHALL BE FASTENED TIGHT TO THE WALL. PROVIDE LABEL INDICATING CIRCUIT ORIGIN ON EACH FACEPLATE.

M. DELAY INSTALLATION OF DEVICE PLATES UNTIL PAINTING IS COMPLETE.

N. MOUNTING HEIGHT OF DEVICES SHALL BE TO THE CENTER LINE UNLESS OTHERWISE NOTED.

8.0 IDENTIFICATION

8.1 GENERAL

A. COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN ELECTRICAL WORK WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERING, LETTERING AND WORDING AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION MAINTENANCE OF ELECTRICAL SYSTEMS AND EQUIPMENT.

B. DELAY INSTALLATION OF IDENTIFICATION UNTIL PAINTING IS COMPLETE.

C. COMPLY WITH GOVERNING REGULATIONS AND REQUESTS OF GOVERNING AUTHORITIES FOR IDENTIFICATION OF ELECTRICAL WORK.

D. INSTALL ENGRAVED PLASTIC LAMINATE NAMEPLATES ON ALL SWITCHBOARDS, MOTOR CONTROL CENTERS, STARTERS, PANELBOARDS, TELEPHONE CABINETS, DISCONNECT SWITCHES AND OTHER ELECTRICAL BOXES AND CABINETS INSTALLED UNDER THIS CONTRACT (BLACK LETTERS ON WHITE BACKGROUND).

E. INSTALL ENGRAVED PLASTIC LAMINATE NAMEPLATES AT EACH PROTECTIVE DEVICE IN ALL SWITCHBOARDS IDENTIFYING CIRCUIT SERVED (BLACK LETTERS ON WHITE BACKGROUND).

F. WHERE ELECTRICAL CONDUIT IS EXPOSED, APPLY IDENTIFICATION ON CONDUIT EXCEPT AS OTHERWISE INDICATED, USE PERMANENT VINYL, SELF-ADHERING MARKERS WITH BLACK LETTERS ON ORANGE BACKGROUND.

G. APPLY SELF-ADHERING VINYL OR HEAT-SHRINK PLASTIC CABLE CONDUCTOR IDENTIFICATION MARKERS ON EACH CABLE AND CONDUCTOR IN EACH BOX, ENCLOSURE OR CABINET WHERE THREE OR MORE THIN ONE CIRCUIT ARE PRESENT, EXCEPT WHERE ANOTHER FORM OF IDENTIFICATION (SUCH AS COLOR-CODED CONDUCTORS) IS PROVIDED. MATCH IDENTIFICATION WITH MARKING SYSTEM USED IN PANELBOARDS. SHOP DRAWINGS AND CONTRACT DOCUMENTS.

H. WHEREVER REASONABLY REQUIRED TO ENSURE SAFE AND EFFICIENT OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS AND ELECTRICALLY CONNECTED MECHANICAL SYSTEMS, INSTALL SELF-ADHESIVE PLASTIC SIGNS WITH APPROPRIATE INSTRUCTIONS OR WARNINGS. WHERE OPTIONAL INSTRUCTIONS OR EXPLANATIONS ARE NEEDED, PROVIDE PLASTICCEED TAGS WITH CLEARLY WRITTEN MESSAGES ADEQUATE FOR INTENDED PURPOSE.

I. INSTALL WARNING SIGNS AT THE ENTRANCES TO ALL ROOMS AND SPACES IN WHICH ELECTRICAL CONDUCTORS OR EQUIPMENT ARE INSTALLED (WHITE LETTERS ON RED BACKGROUND).

J. ALL FIELD INSTALLED CONTROL CIRCUITS SHALL HAVE TUBULAR

1.03 SUBMITTALS

A. SUBMIT PROJECT SPECIFIC ENGINEERED DRAWINGS DETAILING WIRING DIAGRAMS SHOWING DEVICE AND INTERCONNECTIONS FOR ALL DEVICE LOCATIONS.

B. SUBMIT PROJECT SPECIFIC SEQUENCE OF OPERATIONS LISTING THE SEQUENCE OF OPERATIONS FOR EACH AND EVERY SPACE THE PROJECT. SEQUENCE OF OPERATIONS SHALL BE IN A FORMAT THAT IS EASY TO INTERPRET AND IS INTENDED FOR SYSTEM END USER AND NOT FOR SYSTEM PROGRAMMING. THIS WILL BE STRICTLY ENFORCED.

C. MANUFACTURER SHALL PROVIDE ANY ADDITIONAL INFORMATION OR FACTORY DEMONSTRATIONS AS REQUIRED BY THE SPECIFICATION TO DEMONSTRATE CONFORMANCE WITH PART 2 OF THIS SPECIFICATION. ALL DEMONSTRATIONS MUST BE AT A LOCATION THAT AND IN A MANNER CHOSEN BY THE SPECIFIER.

1.04 QUALITY ASSURANCE

A. MANUFACTURER SHALL HAVE A MINIMUM OF TEN (10) YEARS CONTINUOUS EXPERIENCE IN THE MANUFACTURING OF LIGHTING CONTROLS.

B. LIGHTING CONTROL SYSTEM SHALL BE UL LISTED SPECIFICALLY FOR THE REQUIRED LOADS (INCANDESCENT, MAGNETIC AND ELECTRONIC LOW VOLTAGE FLUORESCENT, HID, CFL). MANUFACTURER SHALL PROVIDE EVIDENCE OF COMPLIANCE ON REQUEST.

1.05 PROJECT CONDITIONS

A. LIGHTING CONTROL SYSTEM SHALL OPERATE IN AN AMBIENT TEMPERATURE RANGE OF 0°C (32°F) TO 40°C (104°F) AND 90% NON-CONDENSING RELATIVE HUMIDITY WITHOUT THE REQUIREMENT OF A REGULARLY SCHEDULED MAINTENANCE PROGRAM FOR AIR FILTRATION COMPONENTS.

1.06 WARRANTY

A. MANUFACTURER SHALL PROVIDE A FULL TWO (2) YEAR WARRANTY. THE WARRANTY SHALL COVER 100% OF THE COST TO REPAIR OR REPLACE ANY PARTS REQUIRED OVER THE FIRST TWO (2) YEARS, WHEN AND DIRECTLY ATTRIBUTABLE TO THE MANUFACTURER.

1.07 COMMISSIONING

A. THE CONTRACTOR SHALL PROVIDE THE MANUFACTURER WITH TEN (10) WORKING DAYS' NOTICE OF THE SCHEDULED COMMISSIONING DATE.

B. UPON COMPLETION OF THE INSTALLATION, THE SYSTEM SHALL BE COMPLETELY COMMISSIONED BY A FACTORY-EMPLOYED ENGINEER. THE CHECKOUT WILL BE PERFORMED AFTER ALL LOADS HAVE BEEN TESTED, BUT FOR CONTINUITY AND FREEDOM FROM DEFECTS AND THAT ALL CONTROL WIRING HAS BEEN CONNECTED AND CHECKED FOR PROPER CONTINUITY. THE FACTORY-EMPLOYED ENGINEER SHALL DEMONSTRATE AND EDUCATE THE OWNER'S REPRESENTATIVE(S) ON THE SYSTEM CAPABILITIES, OPERATION AND MAINTENANCE.

C. MANUFACTURER SHALL OFFER EXTENDED WARRANTY BASED UPON SUCCESSFUL FACTORY COMMISSIONING.

D. A FACTORY EMPLOYED ENGINEER SHALL VISIT THE SITE SIX (6) MONTHS AFTER INITIAL COMMISSIONING/ACCEPTANCE TO MAKE ANY SYSTEM ADJUSTMENTS & PROGRAMMING REQUIRED BY THE OWNER.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS (SHALL MEET ALL SPECIFICATION REQUIREMENTS)

A. BASIS OF DESIGN

1. SENSOR SWITCH, INC. (NLIGHT PRODUCT LINE) (NO SUBSTITUTIONS PERMITTED)

B. THE LIGHTING CONTROL SYSTEMS SPECIFICATIONS AND THE DRAWINGS REPRESENT THE BASIS OF DESIGN.

C. THE LIGHTING CONTROL SYSTEM SPECIFIED IN THIS SECTION SHALL PROVIDE TIME-BASED, SENSOR-BASED (OCCUPANCY CONTROL AND DAYLIGHT CONTROL) AND MANUAL LIGHTING CONTROL. THE SYSTEM SHALL BE CAPABLE OF TURNING LIGHTING LOADS ON/OFF AS WELL AS DIMMING LIGHTS THAT ARE CAPABLE OF BEING DIMMED. ALL SYSTEM DEVICES SHALL BE NETWORKED TOGETHER ON A PER ROOM BASIS, INCLUDING DIGITAL COMMUNICATION AND SHALL BE INDIVIDUALLY ADDRESSABLE. THE SYSTEM ARCHITECTURE SHALL BE CAPABLE OF ENABLING STANDALONE GROUPS (SUCH AS ROOMS) OF DEVICES. THE SYSTEM SHALL NOT REQUIRE ANY CENTRALLY HARDWIRED SWITCHING EQUIPMENT.

D. THE SYSTEM SHALL HAVE AN ARCHITECTURE THAT IS BASED ON SEPARATE PARTS OF THE SYSTEM: INTELLIGENT LIGHTING CONTROL DEVICES, STANDALONE LIGHTING CONTROL ZONES AND A PER ROOM CONNECTIVITY.

E. INTELLIGENT LIGHTING CONTROL DEVICES SHALL CONSIST OF ONE OR MORE BASE LIGHTING CONTROL COMPONENTS WHICH SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: OCCUPANCY SENSORS, PHOTOCELL SENSORS, RELAYS, DIMMING OUTPUTS, MANUAL SWITCHES AND MANUAL DIMMING STATIONS. COMBINING ONE OR MORE OF THESE COMPONENTS INTO A SINGLE DEVICE ENCLOSURE SHOULD BE PERMISSIBLE SO AS TO MINIMIZE OVERALL DEVICE COUNT OF THE SYSTEM.

F. LIGHTING CONTROL ZONES SHALL CONSIST OF ONE OR MORE INTELLIGENT LIGHTING CONTROL COMPONENTS. BE CAPABLE OF STANDALONE OPERATION AND BE CAPABLE OF BEING CONNECTED TO A HIGHER LEVEL NETWORK BACKBONE (IF NEEDED FOR FUTURE CONNECTION).

G. ALL DEVICES WITH A LIGHTING CONTROL ZONES SHALL BE CONNECTED WITH CAT5E LOW VOLTAGE CABLE. THE DEVICES SHALL BE CAPABLE OF BEING CONNECTED IN ANY ORDER.

H. LIGHTING CONTROL ZONE SHALL BE CAPABLE OF AUTOMATICALLY CONFIGURING ITSELF FOR DEFAULT OPERATION WITHOUT ANY STARTUP LABOR REQUIRED. ZONES SHALL BE CAPABLE OF PROVIDING A USER DEFINED DEFAULT LEVEL OF LIGHTING CONTROL IN THE EVENT OF A SYSTEM COMMUNICATION FAILURE WITH THE BACKBONE NETWORK OR THE MANAGEMENT SOFTWARE.

I. LIGHTING COMPONENTS SHALL CONSIST PRIMARILY OF LOW VOLTAGE DEVICES. THE LOW VOLTAGE DEVICES SHALL BE PROVIDED WITH POWER OF ETHERNET FROM EITHER A SWITCHING OR DIMMING RELAY OR FROM THE NETWORK BACKBONE.

2.02 SYSTEM DESCRIPTION

A. ALL SWITCHING AND DIMMING FOR A SPECIFIC LIGHTING ZONE SHALL TAKE PLACE LOCALLY IN THE SPACE AS OPPOSED TO REMOTELY FROM A CENTRALIZED PANEL TO FACILITATE SYSTEM ROBUSTNESS AND MINIMIZE WIRING REQUIREMENTS.

11 FIRE ALARM SYSTEM

11.1 GENERAL

A. COORDINATE ALL FIRE ALARM SYSTEM WORK WITH THE EXISTING FIRE ALARM SYSTEM MANUFACTURER.

B. THERE IS AN EXISTING FIRE ALARM SYSTEM AT THIS FACILITY MANUFACTURED BY EDWARDS. THE SCOPE OF WORK FOR THIS PROJECT IS AS FOLLOWS:

1. REMOVE EXISTING FIRE ALARM SYSTEM DEVICES AS SHOWN ON DRAWINGS.
2. PROVIDE NEW FIRE ALARM SYSTEM DEVICES LOCATED AS SHOWN ON THE DRAWINGS.
3. VERIFY THE NEED FOR AND PROVIDE BOOSTER PANEL(S) ("NAC" PANEL(S)) FOR NOTIFICATION DEVICES IF REQUIRED.
4. MODIFY THE GRAPHIC ANNUNCIATOR AS REQUIRED TO INCLUDE ANY SYSTEM MODIFICATIONS RESULTING FROM THIS PROJECT.
5. PROVIDE REQUIRED FIRE ALARM SYSTEM PROGRAMMING TO INCLUDE ANY SYSTEM MODIFICATIONS RESULTING FROM THIS PROJECT.
6. RECOMMISSION AND DEMONSTRATE PROPER OPERATION OF THE ENTIRE FIRE ALARM SYSTEM FOR BUILDING FACILITY PERSONNEL, AND THE AUTHORITY HAVING JURISDICTION.
7. ALL PROPOSED FIRE ALARM SYSTEM EQUIPMENT SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM. THE COMPLETED SYSTEM, INCLUDING ALL EXISTING AND PROPOSED EQUIPMENT SHALL BE A UL LISTED AND LABELED ASSEMBLY. PROVIDE A LETTER FROM THE FIRE ALARM SYSTEM FACTORY AUTHORIZED REPRESENTATIVE THAT STATES THE COMPLETE SYSTEM IS DESIGNED AND INSTALLED IN ACCORDANCE WITH THE FIRE ALARM SYSTEM MANUFACTURERS RECOMMENDATIONS AND IS A UL LISTED AND LABELED ASSEMBLY.
8. PERFORMANCE OF ADDITIONAL FIRE ALARM SYSTEM DESIGN, SHOP DRAWINGS, CALCULATIONS AND PROGRAMMING SHALL BE PERFORMED BY THE EXISTING FIRE ALARM SYSTEM MANUFACTURER AUTHORIZED DEALER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE DEALER AND INCLUDE ALL ASSOCIATED COSTS IN THE BID PRICE.
9. SUBMIT FIRE ALARM SYSTEM SHOP DRAWINGS AND DESIGN CALCULATIONS TO THE BALTIMORE CITY FIRE MARSHALL'S OFFICE. FIRE ALARM SYSTEM SHOP DRAWINGS AND CALCULATIONS SHALL BE APPROVED BY THE BALTIMORE CITY FIRE MARSHAL BEFORE THE PURCHASE OF ANY MATERIALS OR ANY SYSTEM INSTALLATION.
10. OPERATION AND SEQUENCES OF NEW DEVICES AND FIRE ALARM SYSTEM SHALL MATCH THAT OF EXISTING INSTALLED EQUIPMENT. DETERMINE OPERATION OF EXISTING FIRE ALARM SYSTEM BY MEANS OF FIELD SURVEY.

C. STROBES SHALL BE SEMI-FLUSH MOUNTED WITH COVERS AND CLEAR STROBE LENS TO MATCH EXISTING CONDITIONS. HORN/STROBE SIGNALS SHALL COMPLY WITH THE REQUIREMENTS OF THE ADA.

D. STROBE LINES SHALL CONSIST OF A COVER AND CLEAR LENS TO MATCH EXISTING CONDITIONS. STROBE SIGNALS SHALL COMPLY WITH THE REQUIREMENTS OF THE ADA.

E. STROBES SHALL BE PROVIDED WITH A CANDELA RATING AS INDICATED.

F. ANALOG SMOKE DETECTORS SHALL BE ADDRESSABLE, IONIZATION (OR PHOTOELECTRIC WHERE INDICATED ON THE DRAWINGS), PLUG-IN TYPE WITH BASE. THE DETECTOR BASE SHALL BE OF THE TWISTLOCK TYPE WITH SCREW TERMINALS FOR FIELD WIRING. AN AUTOMATIC GAIN CONTROL CIRCUIT SHALL BE PROVIDED TO COMPENSATE FOR DETECTOR AGING AND DIRT ACCUMULATION AND MAINTAIN THE DETECTOR WITHIN THE CORRECT SENSITIVITY RANGE. A DIFFERENTIAL REDUCTION OF SENSITIVITY CAUSED BY DIRT ACCUMULATION SHALL INITIATE A TROUBLE SIGNAL. DETECTOR SENSITIVITY SHALL BE CAPABLE OF BEING READ AND ADJUSTED FROM THE CONTROL PANEL.

G. INTERFACE MONITOR MODULES SHALL BE ADDRESSABLE, MOUNTED IN STANDARD 4" X 4" SQUARE OR OCTAGONAL ELECTRICAL BOXES WITH COVERS. COVER SHALL BE LABELED OR EMBOSSED WITH FIRE ALARM SYSTEM INTERFACE MODULE DESIGNATION. A SOLID STATE LED INDICATOR LAMPS SHALL BE VISIBLE IN THE COVER. THESE MODULES ARE TO BE USED FOR CONNECTION OF CONVENTIONAL ALARM DEVICES SUCH AS WATERFLOW SWITCHES, VALVE TAMPER SWITCHES, FIRE PUMP ALARMS AND OTHER NON-ADDRESSABLE DEVICES. CONNECTIONS BETWEEN DEVICES AND MODULES SHALL BE INTERNALLY SUPERVISED FOR OPEN AND GROUND FAULTS. MONITOR AND CONTROL FUNCTIONS MAY BE INTEGRATED IN A SINGLE INTERFACE MODULE IF LISTED AND APPROVED FOR THIS PURPOSE.

H. DUCT TYPE DETECTOR ASSEMBLIES SHALL CONSIST OF AN ADDRESSABLE ANALOG PHOTOELECTRIC DETECTOR, AN AIR DUCT SAMPLING TUBE, DETECTOR HOUSING AND INTEGRAL OUTPUT RELAY. PROVIDE A REMOTE TEST STATION WITH ALARM INDICATING LAMP FOR ALL DUCT DETECTORS INSTALLED IN CONCEALED SPACES.

I. MANUAL STATIONS SHALL BE ADDRESSABLE, RED IN COLOR, NON-CODED, DOUBLE-ACTION TYPE. MANUAL STATION COVERS SHALL BE HINGED AND SECURED WITH A LOCKSET. LOCKSETS SHALL BE KEYED THE SAME AS THE CONTROL UNIT LOCKSET.

J. ALL FIELD WIRING SHALL BE INSTALLED IN CONDUIT. CONDUIT AND BOXES SHALL BE SIZED ACCORDING TO NATIONAL ELECTRICAL CODE REQUIREMENTS BASED ON THE NUMBER OF CONDUCTORS. INITIATING DEVICE CIRCUIT WIRING SHALL MATCH EXISTING CONDITIONS. INDICATING APPLIANCE CIRCUITS SHALL BE MINIMUM 14 AWG.

K. FIRE ALARM CIRCUITS SHALL BE IDENTIFIED BY RED JUNCTION BOX COVERS STENCILED IN WHITE LETTERS "FIRE ALARM".

L. FIRE ALARM WIRING SHALL BE COLOR CODED IN ACCORDANCE WITH REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION.

M. ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO, NFPA 72.

N. CONTRACTOR SHALL INCLUDE THE INSTALLATION AND MATERIAL OF 3 ADDITIONAL NOTIFICATION DEVICES INCLUSIVE OF ASSOCIATED LABOR (INCLUDING CIRCUITS AND PROGRAMMING) TO INSTALL AFTER FINAL WALK THROUGH BY THE FIRE MARSHAL.

12 - TESTING

12.1 GENERAL

A. THOROUGHLY CLEAN ALL ELECTRICAL EQUIPMENT AND ASSOCIATED ELECTRICAL MATERIALS BEFORE ENERGIZATION OF ANY PART OF THE ELECTRICAL SYSTEM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL THE ELECTRICAL EQUIPMENT, RACEWAYS, CABLING, CABLE INSULATION AND OTHER RELATED ELECTRICAL SYSTEMS TESTED. ALL TEST RESULTS SHALL BE RECORDED, DATED AND SUBMITTED TO THE ENGINEER AND OWNER FOR RECORD. TEST PROCEDURES AND RESULTS SHALL BE PER NETA STANDARDS. IN THE ABSENCE OF RELEVANT NETA STANDARDS, THE CONTRACTOR SHALL SUBSTITUTE APPROPRIATE TEST PROCEDURES FROM IEEE OR ANSI. THE SUBSTITUTE TEST PROCEDURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL, BEFORE CONDUCTING THE TESTS.

B. THE CONTRACTOR SHALL VERIFY THAT EACH KEY SYSTEM INTERFACES CORRECTLY WITH ALL RELATED SYSTEMS. THE CONTRACTOR SHALL FURNISH ALL TEST DATA TO THE ENGINEER VERIFYING THAT ALL SYSTEMS HAVE BEEN INSTALLED CORRECTLY AND WORK TOGETHER TO PROVIDE A COMPLETELY OPERATIONAL ELECTRICAL POWER SYSTEM AS DESIGNED.

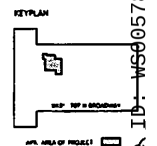
C. THE ENGINEER RESERVES THE RIGHT TO ACCEPT OR REJECT TEST DATA WHICH DOES NOT CONFORM TO THE MANUFACTURER'S DATA OR IS NOT OBTAINED IN ACCORDANCE WITH THESE SPECIFICATIONS.


ARCHITECT
Hord Coplan Macht, Inc.
700 E. Pratt St, Suite 1300 Baltimore MD 21
p 410 837 7311 f 410 837 5305

MEP ENGINEER
Buchanan, Ezzelino, Murphy & Associates, Inc.
1300 Dulaney Valley Lane Suite 400
Towson, MD 21204
p 410 321 0900


KENNEDY KRIEGER INSTITUTE
MPI SCANNER RENOVATION
707 NORTH BROADWAY
BALTIMORE, MD 21205

KEYPLAN




Kennedy Krieger Institute

hord | coplan | mach

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

| No. | Date | Revision |
|---|---|---|

Project Name
MPI SCANNER RENOVATION

Project Number
219260.00

Date
12.20.2019

Scale
As Noted

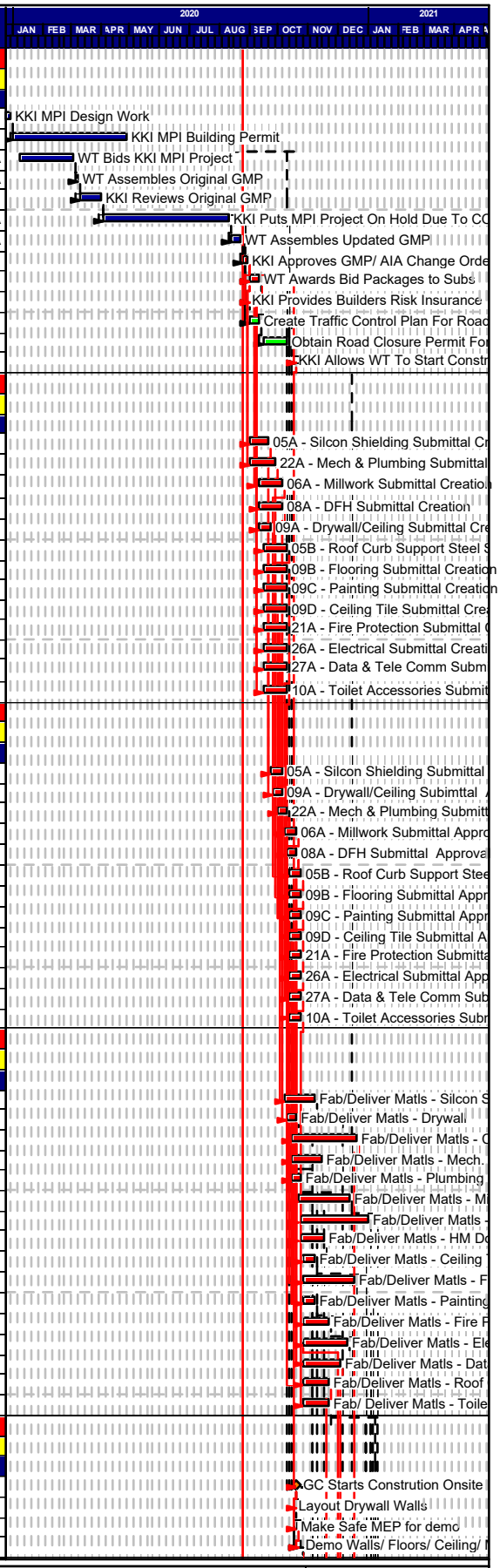
Drawn
ELECTRICAL SPECIFICATIONS

E1.07

CONSTRUCTION DOCUMENTS


PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Number: PWAA2020

| Act ID | Description | Orig Dur | Rem Dur | Early Start | Early Finish |
|---|---|---|---|---|---|
| **Preconstruction** | | | | | |
| 1400 | KKI MPI Design Work | 120d | 0 | 01AUG19 A | 31DEC19 A |
| 1030 | KKI MPI Building Permit | 1d | 0 | 01JAN20 A | 30APR20 A |
| 1180 | WT Bids KKI MPI Project | 20d | 0 | 07JAN20 A | 06MAR20 A |
| 1190 | WT Assembles Original GMP | 1d | 0 | 09MAR20 A | 09MAR20 A |
| 1410 | KKI Reviews Original GMP | 5d | 0 | 10MAR20 A | 02APR20 A |
| 1220 | KKI Puts MPI Project On Hold Due To COVID 19 | 1d | 0 | 03APR20 A | 14AUG20 A |
| 1230 | WT Assembles Updated GMP | 1d | 0 | 14AUG20 A | 25AUG20 A |
| 1350 | KKI Approves GMP/ AIA Change Order | 5d | 5d | 25AUG20 | 31AUG20 |
| 1010 | WT Awards Bid Packages to Subs | 10d | 10d | 01SEP20 | 14SEP20 |
| 1500 | KKI Provides Builders Risk Insurance | 1d | 1d | 01SEP20 | 01SEP20 |
| 1680 | Create Traffic Control Plan For Road Closure | 10d | 10d | 01SEP20 | 14SEP20 |
| 1670 | Obtain Road Closure Permit For Chiller/ Condense | 20d | 20d | 15SEP20 | 12OCT20 |
| 1660 | KKI Allows WT To Start Construction | 1d | 1d | 20OCT20 | 20OCT20 |
| **Submittal Creations** | | | | | |
| 1200 | 05A - Silcon Shielding Submittal Creation | 15d | 15d | 02SEP20 | 22SEP20 |
| 1260 | 22A - Mech & Plumbing Submittal Creation | 20d | 20d | 02SEP20 | 29SEP20 |
| 1040 | 06A - Millwork Submittal Creation | 20d | 20d | 10SEP20 | 07OCT20 |
| 1060 | 08A - DFH Submittal Creation | 20d | 20d | 11SEP20 | 08OCT20 |
| 1100 | 09A - Drywall/Ceiling Submittal Creation | 10d | 10d | 11SEP20 | 24SEP20 |
| 1080 | 05B - Roof Curb Support Steel Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1120 | 09B - Flooring Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1140 | 09C - Painting Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1160 | 09D - Ceiling Tile Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1240 | 21A - Fire Protection Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1280 | 26A - Electrical Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1300 | 27A - Data & Tele Comm Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| 1510 | 10A - Toilet Accessories Submittal Creation | 20d | 20d | 15SEP20 | 12OCT20 |
| **Submittal Approvals** | | | | | |
| 1210 | 05A - Silcon Shielding Submittal Approval | 10d | 10d | 23SEP20 | 06OCT20 |
| 1110 | 09A - Drywall/Ceiling Subimttal Approval | 10d | 10d | 25SEP20 | 08OCT20 |
| 1270 | 22A - Mech & Plumbing Submittal Approval | 10d | 10d | 30SEP20 | 13OCT20 |
| 1050 | 06A - Millwork Submittal Approval | 10d | 10d | 08OCT20 | 21OCT20 |
| 1070 | 08A - DFH Submittal Approval | 10d | 10d | 09OCT20 | 22OCT20 |
| 1090 | 05B - Roof Curb Support Steel Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1130 | 09B - Flooring Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1150 | 09C - Painting Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1170 | 09D - Ceiling Tile Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1250 | 21A - Fire Protection Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1290 | 26A - Electrical Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1310 | 27A - Data & Tele Comm Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| 1610 | 10A - Toilet Accessories Submittal Approval | 10d | 10d | 13OCT20 | 26OCT20 |
| **Material Fabrication** | | | | | |
| 1420 | Fab/Deliver Matls - Silcon Shielding | 25d | 25d | 07OCT20 | 10NOV20 |
| 1360 | Fab/Deliver Matls - Drywall | 10d | 10d | 09OCT20 | 22OCT20 |
| 1430 | Fab/Deliver Matls - Chiller & Condensing Unit | 50d | 50d | 14OCT20 | 22DEC20 |
| 1450 | Fab/Deliver Matls - Mech. | 25d | 25d | 14OCT20 | 17NOV20 |
| 1460 | Fab/Deliver Matls - Plumbing | 10d | 10d | 14OCT20 | 27OCT20 |
| 1320 | Fab/Deliver Matls - Millwork | 40d | 40d | 22OCT20 | 16DEC20 |
| 1330 | Fab/Deliver Matls - Doors/Hardware | 50d | 50d | 23OCT20 | 04JAN21 |
| 1340 | Fab/Deliver Matls - HM Door Frames | 20d | 20d | 23OCT20 | 19NOV20 |
| 1370 | Fab/Deliver Matls - Ceiling Tile (ACT) | 10d | 10d | 27OCT20 | 09NOV20 |
| 1380 | Fab/Deliver Matls - Flooring | 40d | 40d | 27OCT20 | 21DEC20 |
| 1390 | Fab/Deliver Matls - Painting | 10d | 10d | 27OCT20 | 09NOV20 |
| 1440 | Fab/Deliver Matls - Fire Protection | 20d | 20d | 27OCT20 | 23NOV20 |
| 1470 | Fab/Deliver Matls - Electrical | 35d | 35d | 27OCT20 | 14DEC20 |
| 1480 | Fab/Deliver Matls - Data & Tele Comm | 30d | 30d | 27OCT20 | 07DEC20 |
| 1490 | Fab/Deliver Matls - Roof Curb Support Steel | 20d | 20d | 27OCT20 | 23NOV20 |
| 1640 | Fab/ Deliver Matls - Toilet Accessories | 20d | 20d | 27OCT20 | 23NOV20 |
| **Construction** | | | | | |
| **Phase 1** | | | | | |
| 5000 | GC Starts Constrution Onsite | 0 | 0 | 20OCT20 | |
| 5030 | Layout Drywall Walls | 1d | 1d | 20OCT20 | 20OCT20 |
| 5040 | Make Safe MEP for demo | 3d | 3d | 20OCT20 | 22OCT20 |
| 5020 | Demo Walls/ Floors/ Ceiling/ MEP as needed | 3d | 3d | 23OCT20 | 27OCT20 |

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| Start date | 01JAN20 |
| Finish date | 08APR21 |
| Data date | 25AUG20 |
| Run date | 02SEP20 |
| Page number | 1A |

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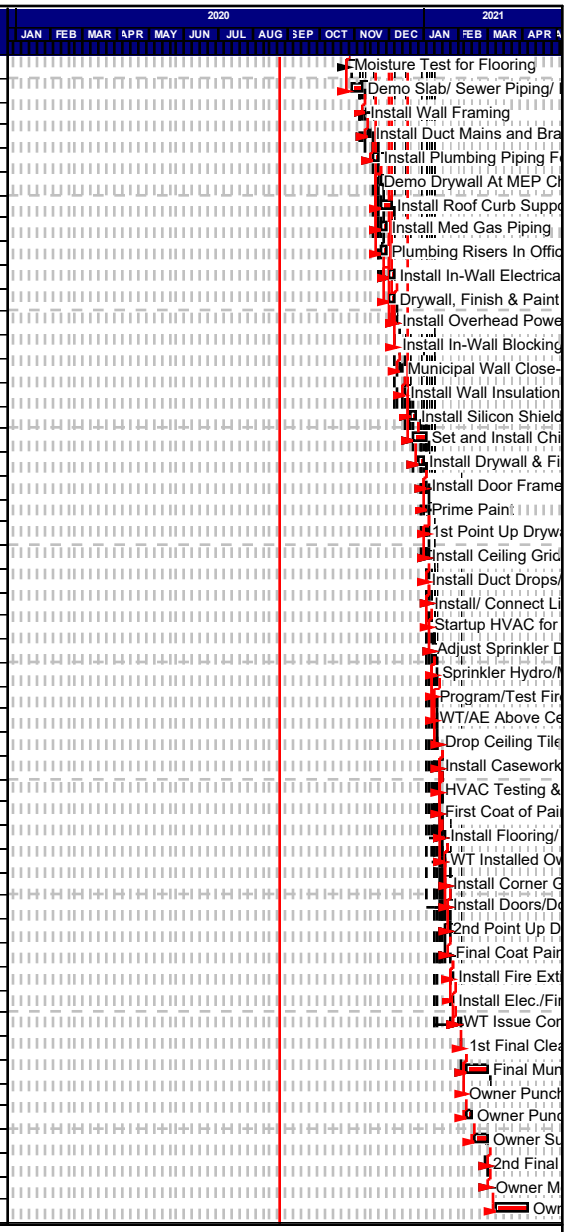
**The Whiting-Turner Contracting Co.**
**KKI 707 Building MPI Renovation**

Early bar
Progress bar
Critical bar
Summary bar
Start milestone point
Finish milestone point

| Act ID | Description | Orig Dur | Rem Dur | Early Start | Early Finish |
|---|---|---|---|---|---|
| 5060 | Moisture Test for Flooring | 1d | 1d | 28OCT20 | 28OCT20 |
| 5540 | Demo Slab/ Sewer Piping/ Inspect/ Patch Slab | 10d | 10d | 28OCT20 | 10NOV20 |
| 5070 | Install Wall Framing | 1d | 1d | 11NOV20 | 11NOV20 |
| 5080 | Install Duct Mains and Branches | 3d | 3d | 12NOV20 | 16NOV20 |
| 5120 | Install Plumbing Piping For Glycol Water & Sewer | 5d | 5d | 17NOV20 | 23NOV20 |
| 5510 | Demo Drywall At MEP Chase At 1st and 2nd Floor | 1d | 1d | 23NOV20 | 23NOV20 |
| 5460 | Install Roof Curb Support Steel and Roof Curbs | 10d | 10d | 24NOV20 | 07DEC20 |
| 5490 | Install Med Gas Piping | 5d | 5d | 24NOV20 | 30NOV20 |
| 5500 | Plumbing Risers In Offices on 1st and 2nd floor | 5d | 5d | 24NOV20 | 30NOV20 |
| 5100 | Install In-Wall Electrical/ Fire Alarm/ Comm. | 7d | 7d | 01DEC20 | 09DEC20 |
| 5520 | Drywall, Finish & Paint At MEP Chase 1 & 2 Floor | 6d | 6d | 01DEC20 | 08DEC20 |
| 5090 | Install Overhead Power/ Fire Alarm/ Low Voltage | 3d | 3d | 08DEC20 | 10DEC20 |
| 5110 | Install In-Wall Blocking | 1d | 1d | 10DEC20 | 10DEC20 |
| 5130 | Municipal Wall Close-In Inspections/ Corrections | 3d | 3d | 11DEC20 | 15DEC20 |
| 5480 | Install Wall Insulation & Plywood | 3d | 3d | 16DEC20 | 18DEC20 |
| 5450 | Install Silicon Shielding | 5d | 5d | 21DEC20 | 28DEC20 |
| 5470 | Set and Install Chiller and Condensing Unit | 10d | 10d | 23DEC20 | 07JAN21 |
| 5140 | Install Drywall & Finish Drywall | 4d | 4d | 29DEC20 | 04JAN21 |
| 5150 | Install Door Frames | 1d | 1d | 05JAN21 | 05JAN21 |
| 5160 | Prime Paint | 1d | 1d | 05JAN21 | 05JAN21 |
| 5170 | 1st Point Up Drywall | 1d | 1d | 06JAN21 | 06JAN21 |
| 5180 | Install Ceiling Grid | 1d | 1d | 06JAN21 | 06JAN21 |
| 5190 | Install Duct Drops/ Registers/ Grills/ Diffusers | 1d | 1d | 07JAN21 | 07JAN21 |
| 5200 | Install/ Connect Light Fixtures | 1d | 1d | 08JAN21 | 08JAN21 |
| 5220 | Startup HVAC for flooring | 1d | 1d | 08JAN21 | 08JAN21 |
| 5210 | Adjust Sprinkler Drops/Install Heads/ Fire Alarm | 2d | 2d | 11JAN21 | 12JAN21 |
| 5230 | Sprinkler Hydro/Municipal Close-in Inspections | 3d | 3d | 13JAN21 | 15JAN21 |
| 5240 | Program/Test Fire Alarm & Comm. System | 1d | 1d | 13JAN21 | 13JAN21 |
| 5250 | WT/AE Above Ceiling Close-In Inspections | 2d | 2d | 13JAN21 | 14JAN21 |
| 5260 | Drop Ceiling Tile | 1d | 1d | 18JAN21 | 18JAN21 |
| 5270 | Install Casework, Countertops & Backsplashes | 1d | 1d | 19JAN21 | 19JAN21 |
| 5280 | HVAC Testing & Balancing | 1d | 1d | 19JAN21 | 19JAN21 |
| 5290 | First Coat of Paint | 1d | 1d | 19JAN21 | 19JAN21 |
| 5310 | Install Flooring/ Wall Base | 3d | 3d | 20JAN21 | 22JAN21 |
| 5340 | WT Installed Owner Supplied Equipment | 3d | 3d | 20JAN21 | 22JAN21 |
| 5300 | Install Corner Guards/Accessories | 1d | 1d | 25JAN21 | 25JAN21 |
| 5350 | Install Doors/Door Hardware DS | 1d | 1d | 25JAN21 | 25JAN21 |
| 5320 | 2nd Point Up Drywall | 1d | 1d | 26JAN21 | 26JAN21 |
| 5360 | Final Coat Paint | 2d | 2d | 27JAN21 | 28JAN21 |
| 5330 | Install Fire Extinguishers/Signage | 1d | 1d | 29JAN21 | 29JAN21 |
| 5370 | Install Elec./Fire Alarm/Comm. Devices & Trim | 1d | 1d | 29JAN21 | 29JAN21 |
| 5380 | WT Issue Completion List & Correct Items | 5d | 5d | 01FEB21 | 05FEB21 |
| 5390 | 1st Final Clean | 1d | 1d | 08FEB21 | 08FEB21 |
| 5400 | Final Municipal Inspections for Occupancy Permit | 15d | 15d | 09FEB21 | 01MAR21 |
| 5410 | Owner Punch List Walk | 1d | 1d | 09FEB21 | 09FEB21 |
| 5420 | Owner Punch List Corrections | 5d | 5d | 10FEB21 | 16FEB21 |
| 5530 | Owner Supplied, Owner Installed Equipment | 10d | 10d | 17FEB21 | 02MAR21 |
| 5430 | 2nd Final Clean | 1d | 1d | 03MAR21 | 03MAR21 |
| 5440 | Owner Move In | 2d | 2d | 04MAR21 | 05MAR21 |
| 5550 | Owner Equipment Move In | 24d | 24d | 08MAR21 | 08APR21 |

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| Page number | 2A |

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**The Whiting-Turner Contracting Co.**
**KKI 707 Building MPI Renovation**

Early bar
Progress bar
Critical bar
Summary bar
Start milestone point
Finish milestone point

October 13, 2020

We have submitted paperwork to the Maryland Historical Trust. Since this EDA Grant Proposal, "FM Kirby Center: Magnetic Particle Imaging (MPI) Scanner Expansion," does not have a Maryland State Capital Grant associated with it, the Historical Trust has not been able to give us a formal determination letter.

However, The 707 North Broadway address (i.e., the construction project location) has had several past projects that have been funded partially with Maryland State Capital Grants and reviewed by the Maryland Historical Trust as recently as August 2020. **The Kennedy Krieger Institute 707 North Broadway building was determined to not have historical significance. These letters are included in this document.**

August 6, 2020

Kevin Kennedy
Kennedy Krieger Institute
1741 Ashland Avenue, 7th Floor, Office #743
Baltimore, MD 21205-1531
Sent via email to kennedy@kennedykrieger.org

RE: Pediatric Epilepsy Monitoring Unit, Kennedy Krieger Children's Hospital, Inc. - Loan of 2020
Chapter 537, DGS Item No. G007
Baltimore City, Maryland
Historic Preservation Review

Dear Mr. Kennedy:

Thank you for your recent submittal, received by the Maryland Historical Trust (Trust) on July 20, 2020, regarding the above-referenced bond bill project. The Trust, a division of the Maryland Department of Planning, has reviewed the project to assess its effects on historic properties, pursuant to the Maryland Historical Trust Act of 1985, as amended (State Finance and Procurement Article § 5A-325 of the Annotated Code of Maryland). In our opinion, the proposed project will have no effect on historic properties, including historic structures and archeological sites.

As provided by the Bond Bill, the Maryland Historical Trust has examined the proposed project to determine whether, prior to the issuance of the bonds, the grantee or owner of the property must convey a perpetual preservation easement to the Trust. After review of the documentation provided, the Trust has determined that the property is not historic [COMAR 34.04.05.03B (11)]. Therefore, the Trust does **not** require the conveyance of a perpetual preservation easement on this property.

By copy of this letter, we are notifying the Board of Public Works (BPW) that the project's historic preservation review and consultation have been completed. If you have questions or require further information, please contact me at beth.cole@maryland.gov. Thank you for providing us this opportunity to comment.

Sincerely,

Beth Cole (signed electronically)

Beth Cole
Administrator, Project Review and Compliance

BC/202003329
cc: BPW /email.bpw@maryland.gov
Comptroller / CAPITAL_GRANTS@comp.state.md.us
DGS / dgs.capitalgrants@maryland.gov

Rec'd 12/18

Sustainable Attainable

Maryland Department of Planning
Maryland Historical Trust

December 16, 2014

Mr. Michael Neuman
Senior Vice President – Finance
Kennedy Krieger Institute
2931 E. Biddle Street
Baltimore, MD 21205

RE: Kennedy Krieger Institute Renovation of Pediatric Rehab & Feeding Disorders Unit
Loan of 2012, Chapter No. 444, DGS Item G019
Loan of 2013, Chapter No. 424, DGS Item G027
Baltimore City, Maryland
Historic Preservation Review

Dear Mr. Neuman:

Thank you for your recent letter, dated November 17, 2014 received by the Maryland Historical Trust (Trust) on November 19, 2014, regarding the above-referenced bond bill project. The Trust, a division of the Maryland Department of Planning, has reviewed the project to assess its effects on historic properties, pursuant to the Maryland Historical Trust Act of 1985, as amended (State Finance and Procurement Article § 5A-325 of the Annotated Code of Maryland). In our opinion, the proposed project will have no effect on historic properties, including historic structures and archeological sites.

As provided by the Bond Bill, the Maryland Historical Trust has examined the proposed project to determine whether, prior to the issuance of the bonds, the grantee or owner of the property must convey a perpetual preservation easement to the Trust. After review of the documentation provided, the Trust has determined that the property is not historic [COMAR 34.04.05.03B(11)]. Therefore, the Trust does **not** require the conveyance of a perpetual preservation easement on this property.

By copy of this letter, we are notifying the Board of Public Works (BPW) that the project's historic preservation review and consultation have been completed. If you have questions or require further information, please contact me at 410-514-7631 / beth.cole@maryland.gov. Thank you for providing us this opportunity to comment.

Sincerely,

Beth Cole

Beth Cole
Administrator, Project Review and Compliance
Maryland Historical Trust

EJC/201406003
cc: Sheila McDonald (BPW)
Rehena Rentuma (Comptroller)
Kim Langkam (DGS)

## ENVIRONMENTAL NARRATIVE

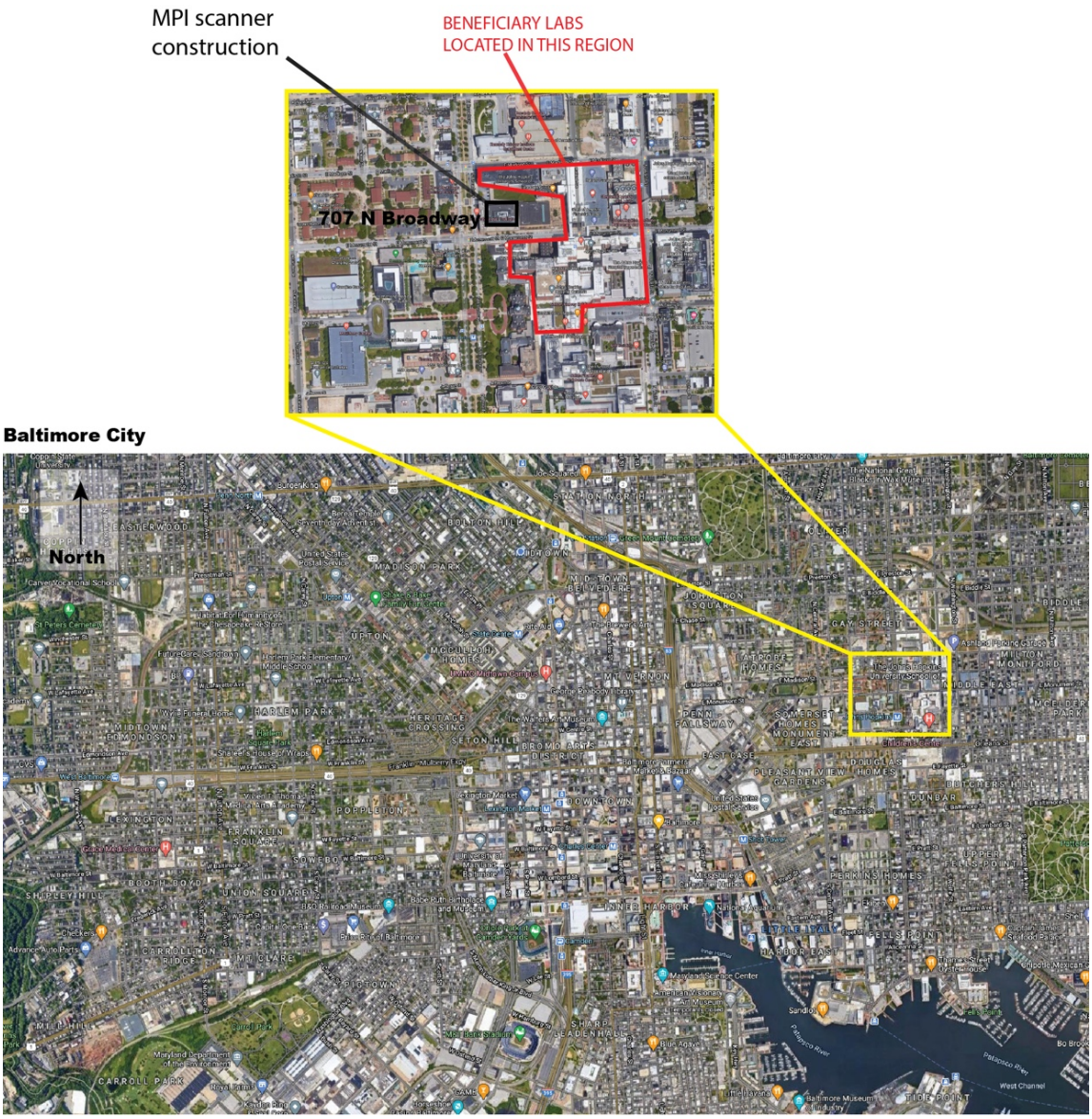
## A. PROJECT DESCRIPTION

### 1. Beneficiaries

The beneficiaries of this project are laboratories developing new methods for imaging the brain and internal organs of the body at a subcellular level. Laboratories run by the following researchers are beneficiaries: Drs. Artemov, Bhujwalla, Bulte, Delikatny, Green, Ivkov, Lu, Pomper, Wadghiri, and Walczak. Because the MPI scanner is a unique resource on the east coast, laboratories from other states will be using this device (e.g. Pennsylvania and New York).

### 2. Proposed Construction

The MPI scanner will be installed in a renovated portion of an existing building at the Kennedy Krieger Institute located at 707 N Broadway.



**Describe the project construction components in detailed, quantifiable terms. Describe the project location, proposed construction methods, and schedule.**

The Kennedy Krieger Institute (KKI) is proposed to construct a new 1,050 square foot MPI scanner suite within the existing 161,833 square foot footprint of the F.M. Kirby Center, located at 707 North Broadway, Baltimore, MD 21205. The building that houses the F.M. Kirby Center is owned by Madison Street Properties, Inc. (MSP), a nonprofit property holding company operated solely for the charitable, scientific, and educational purposes of KKI and its affiliates. The MPI scanner facility will be accessibly located on the ground floor of the Kennedy Krieger Children's hospital, with nearby parking. Its location within the larger hospital provides for well-established safety protocols and security measures for all staff and users.

Renovations will take place over a nine-month period from November 2020 to May 2021. The renovation will include relocating an existing vending machine area elsewhere in the building to create space for the MPI scanner suite, and associated storage rooms. A new rooftop nano chiller will be installed to support the MPI and hyper theranostic equipment. The renovated MPI suite will include silicon steel shielding, new cabinetry, wall protection, a stainless-steel worktable and access to required gases. The project includes new finishes (walls, flooring, and ceilings); under slab trenching for below-grade plumbing to support the new equipment; electrical upgrades; and reconfiguring the above-ceiling ductwork. Construction will include demolition to walls, floors and ceilings on the first and second floors of the existing building to access the mechanical shafts that will accommodate the new gas lines and infrastructure for the new rooftop chiller. Project plans include repairing these areas and replacing finishes. Additional details are provided in the PER.

**3. Need and Purpose**

**Provide a brief summary of the underlying need and purpose of the proposal for EDA funding.**

Under the proposed *F.M. Kirby Center: Magnetic Particle Imaging (MPI) Scanner Expansion* project, KKI will renovate the F.M. Kirby Center, located at 707 North Broadway, Baltimore, MD 21205, to house a scanner facility. Magnetic particle imaging is an emerging imaging technology that is expected to change the landscape of modern medical imaging and research. It allows fast tracking of cells and nanoparticles in the body and brain. There are only five MPI scanners in the United States, and currently none in KKI's east coast region. KKI's new MPI facility will promote economic growth in the Baltimore region by establishing a state-of-the-art center for principal investigators in numerous fields of study to conduct novel biomedical research. Positioning the new facility as an MPI hub will attract users from well outside of the Mid-Atlantic region, and support global biohealth research, including to address the current COVID-19 pandemic through novel research on potential treatments. The proposed expansion will result in at least twenty five new jobs in biohealth research within two years, and will enable several existing positions to be maintained. Positions will include roles for senior-level researchers, as well as mid-level research support positions. KKI received an equipment grant from the National Institutes of Health to purchase the MPI scanner and related equipment.



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

**4. Alternatives to the Proposed Project**

**Based in the Need and Purpose summary above, provide a detailed description of alternative actions that were considered during the project planning but were not selected (e.g., alternative locations, designs, other projects having similar benefits, and a "no project" alternative). Explain why this project/site was selected as the preferred alternative with respect to other choices. Provide detail on why other alternatives were rejected (e.g. did not meet the purpose and need of the project, implicated more environmental impacts than the proposed action). If the selected project would impact wetlands or floodplains, please provide a detailed description of alternatives to those proposed impacts.**

The F.M. Kirby Center was selected as the site for the proposed project because the Center includes a "clean" facility for non-human laboratory animal research which is needed for the MPI scanner suite. No other facility within the mid-Atlantic region provides this type of facility other than those owned and used by private corporations. As no other MPI scanner facility exists on the east coast, alternate sites were not considered.

The selected project location will not impact wetlands or floodplains.

**B. <u>HISTORIC/ARCHEOLOGICAL RESOURCES</u>**

**Identify any known historic/archeological resources within the project site(s) or area of potential effect that are either listed on the National Register of Historic Places or considered to be of local or State significance and perhaps eligible for listing on the National Register.**

There are no known historical or archeological resources within the project site. The project site is not listed on the National Register of Historic Places or considered to be of local or State significance. All proposed renovations will take place within the existing facility at 707 North Broadway, Baltimore, MD, with limited impacts to the surrounding area. No changes in the Area of Potential Effect in terms of character or use of historic properties, culturally significant resources, are anticipated.

**C. <u>AFFECTED ENVIRONMENT</u>**

**For the resource areas identified below, indicate potential direct and indirect impacts from proposed project activities and specify proposed measures to mitigate probable impacts. Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are those that are caused by a proposed action, but that may occur later in time or farther removed in distance, relative to the primary impacts of the proposed action (40 C.F.R. Section 1508.8) Development induced by the proposed project would be an example of an indirect impact.**

**1. Affected Area**

**Describe the general project area, including topography, historic land usages, unique geological features, and economic history. Provide site photographs if available. Identify native vegetation and wildlife found in the project area or its immediate vicinity. Describe the amount and type of vegetation in the project area and indicate the impact to vegetation if removed (e.g., 1.2 acres of early successional native hardwood forest). Identify any designated State and National Parks, National Wildlife Refuges, or National Game**



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

**Preserves located on or in the vicinity of the proposed project activities. Identify any Wilderness Areas, as designated or proposed under the Wilderness Act, or wild or scenic rivers, as designated or proposed under the Wild and Scenic Rivers Act, that are located on or in the vicinity of the proposed project activities.**

1. **Direct effects**
2. **Indirect effects**

The proposed renovation will occur entirely within the interior of the existing F.M. Kirby Center, within the Kennedy Krieger Institute at 707 North Broadway in Baltimore. The F.M. Kirby Center is located in the City of Baltimore, adjacent to the Johns Hopkins Hospital's 22 acre campus, which has occupied this location since the late 1800's. The project is situated within an urban medical campus that was planned and constructed in 1963 as the John F. Kennedy Institute for the Habilitation of the Mentally and Physically Handicapped Child. There are no designated State or National Parks, National Wildlife Refuges, or National Game Preserves located in the hospital's vicinity. No Wilderness Areas, wild or scenic rivers are located in the project area or nearby.

The project will not have any direct or indirect effects on native vegetation or wildlife. No vegetation or wildlife will be removed for the project.

**2. Coastal Zones**

**Indicate whether the project is located within a designated coastal zone subject to the Coastal Zone Management Act. Identify any shorelines, beaches, dunes, or estuaries within or adjacent to the project site(s). Also indicate if there are any proposed overwater structures that could impact navigable waters.**

The proposed project exists within the Maryland coastal zone, which includes the land, water and subaqueous land between the territorial limits of Maryland in the Chesapeake Bay, Atlantic Coastal Bays and the Atlantic Ocean, as well as the towns, cities and counties that contain and help govern the thousands of miles of Maryland shoreline. The Maryland coastal zone extends from three miles out in the Atlantic Ocean to the inland boundaries of the 16 counties and Baltimore City that border the Atlantic Ocean, Chesapeake Bay and the Potomac River up to the District of Columbia. This area encompasses two-thirds of the State's land area and is home to almost 70% of Maryland's residents. The Chesapeake Bay Watershed and Coastal Zone is pictured below:



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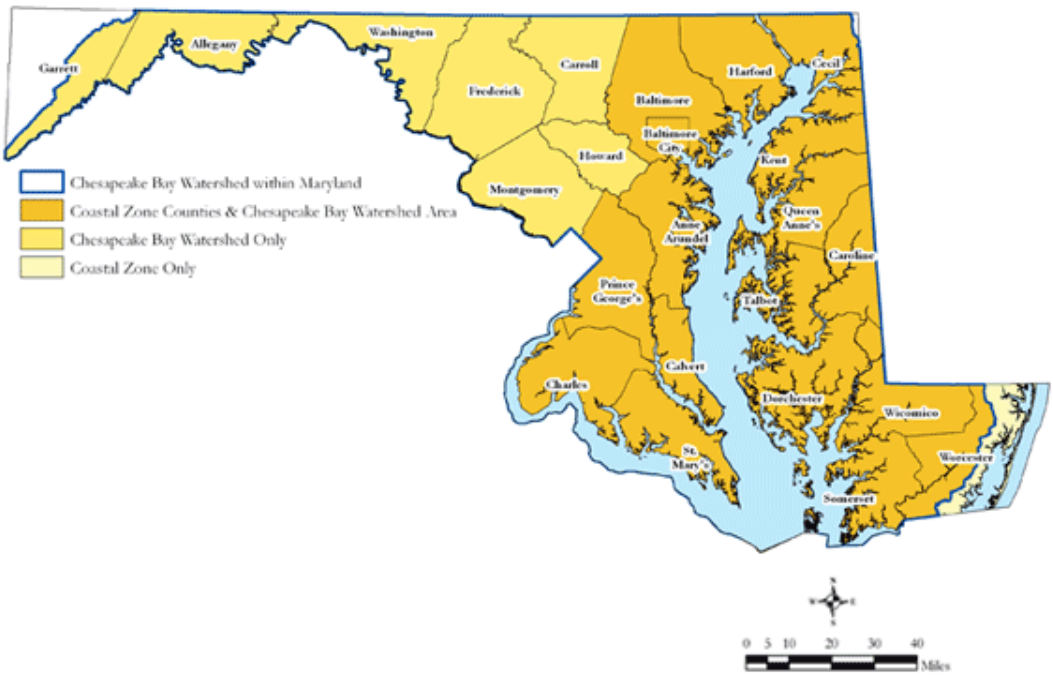


**3. Wetlands**

**Identify any wetlands within or adjacent to the project site(s). If available, provide an on-site wetland/waters delineation performed in accordance with the 1987 (or current version) U.S. Army Corps of Engineers Wetland Delineation Manual, as amended. Provide any correspondence from the U.S. Army Corps of Engineers (USACE), including any jurisdictional determination or permit documents.**

1. **Provide a determination of direct and indirect effects including the amount of jurisdictional waters affected by type (e.g. 1.1 acres of palustrine emergent wetlands would be impacted by the proposed project).**
2. **If any wetlands would be impacted by the project, provide an analysis of alternatives to wetland impact in this section or in the Alternatives to the Project section above.**
3. **Describe any mitigation plans here or in Section D below.**

**If wetlands, streams, or navigable waters may be impacted, it is recommended that Applicants contact USACE concerning any jurisdictional waters resources.**

There are no wetlands within or adjacent to the project site, and no wetlands will be impacted by the project.

**4. Floodplains**

**Please state whether the project is located within a mapped 100- or 500-year floodplain. Provide a FEMA floodplain map (with the map number and effective date) displaying the project location and boundaries, existing and proposed project components, and location of all sites and/or companies benefiting from the proposed project. The document should be of sufficient clarity for adequate interpretation of the applicant's intentions.**



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**Floodplain maps can be viewed and printed from FEMA's website. If FEMA floodplain maps do not exist in the project area, provide a letter from a Professional Engineer regarding the presence or absence of a 100-year floodplain.**

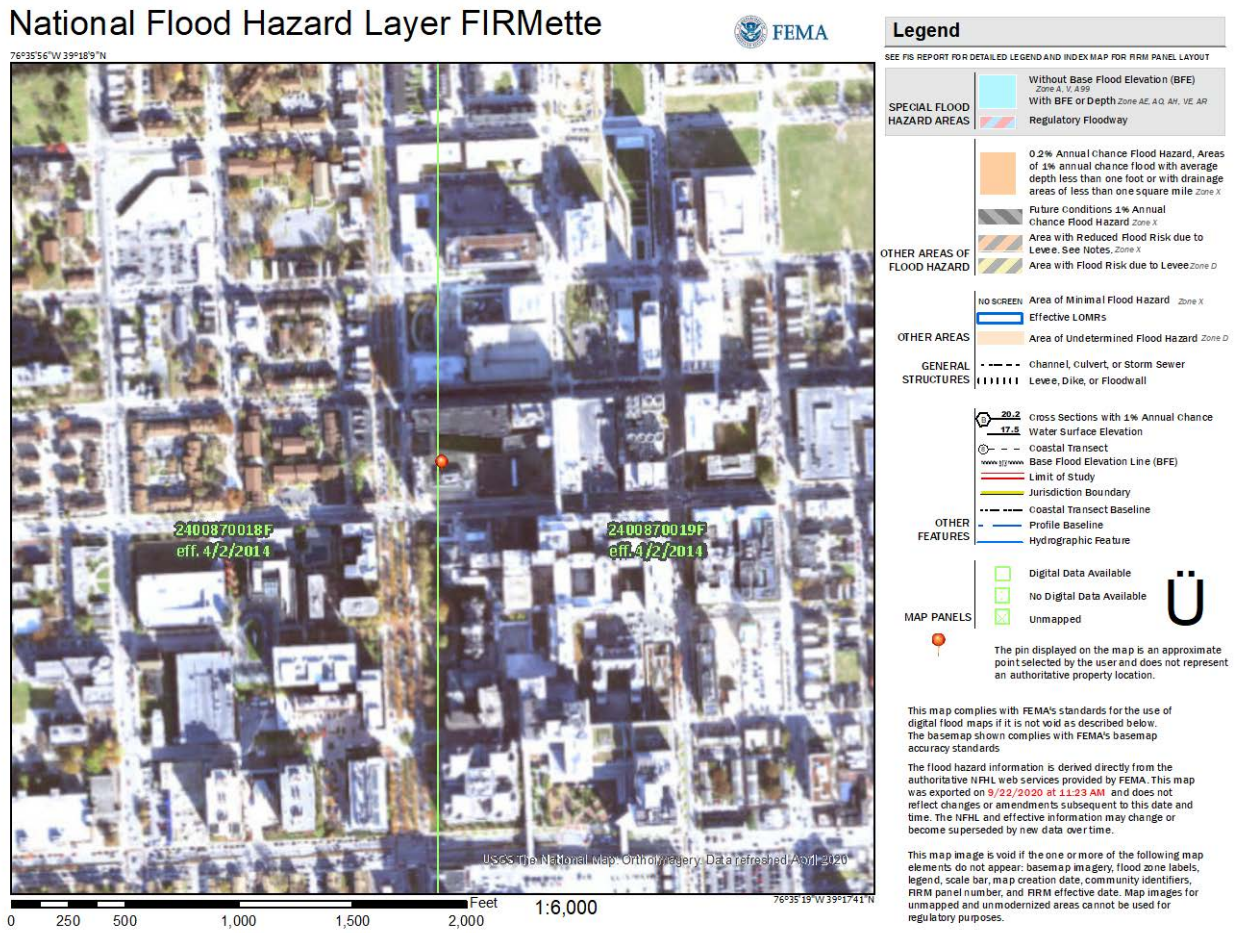
**i) Describe direct and indirect effects to 100-year floodplains, if any.**

**ii) If any 100-year floodplains would be impacted by the project, provide an analysis of alternatives to floodplain impact in this section or in the Alternatives to the Project section above.**

**iii) Indicate whether the Applicant's community participates in the National Flood Insurance Program.**

**iv) Indicate if a critical action (e.g., emergency response facility, hospital, wastewater treatment plant) is being located within the 500-year floodplain.**

KKI's site at 707 North Broadway, Baltimore is not located in a 100-year or 500-year floodplain. The facility is located in floodplain map area number 2400870019F, effective on 04/02/2014. The beneficiaries are located within this map view as well.




**5. Endangered Species**

**Provide a list of all threatened, endangered, and candidate species located in or near the project area, including any proposed development by the beneficiary, and the**



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**immediate vicinity. Identify these species' potential or existing habitat, and critical habitat designations in the project area. Identify the potential for direct or indirect impacts on these species.**

There are no known threatened, endangered, or candidate species located in or near the project area or immediate vicinity.

**6. Land Use and Zoning**

**Describe the present formal zoning designation and current land use of the specific project site and adjacent land parcels. The areas include: the site of construction activities, adjacent areas, and areas affected by the primary beneficiaries. Land uses to be considered include, but are not limited to, industrial, commercial, residential, agriculture, recreational, woodlands, mines/quarries, and open spaces. Please indicate whether the project is located entirely within a city limit. Identify agriculture land parcels designated as "prime/unique agriculture lands" by the U.S. Department of Agriculture (USDA) under the Federal Farmlands Protection Act or a local equivalent.**

707 North Broadway is located in a district zoned as "H," Hospital Campus Zoning, which addresses the special needs and impacts of large-scale, multi-functional hospitals and medical campuses. All adjacent parcels are also zoned for commercial use. The project is located entirely within the limits of the City of Baltimore. No prime or unique agriculture lands are located in the vicinity.

**7. Solid Waste Management**

**Indicate the types and quantities of solid wastes to be produced by the project facilities and primary beneficiary. Describe local solid waste collection and disposal methods and the expected useful life of the disposal facility. Indicate if recycling or resource recovery programs are currently being used or will be used in the future.**

Solid waste management is provided for the Kennedy Krieger Institute under contract with Republic Services and Allied Waste Services. All solid waste generated at the project site will be included within these existing service contracts.

**8. Hazardous or Toxic Substances**

**Describe any toxic, hazardous, or radioactive substances that will be utilized or produced by the proposed project facilities and primary beneficiaries. Describe the manner in which these substances will be stored, used, or disposed. Complete and sign one "Applicant Certification Clause" for each co-applicant (see Appendix A). Indicate if hazardous or toxic substances have been or must be remediated prior to construction, demolition, or renovation. If a recent Phase I or Phase II Environmental Site Assessment has been performed, please provide a copy of the executive summary (a full copy may be requested at a later date).**

There will be no hazardous or toxic substances in the construction or operation of the MPI scanner facility.



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**9. Water Resources**

**Describe surface and underground water resources at or near the project site(s) and any impacts of the project to these. If groundwater will be used, is the aquifer in overdraft and /or adjudicated? If there will be discharges to surface water, is the receiving surface water body listed on the U.S. Environmental Protection Agency's (EPA) Section 303(d) list of impaired waters? Is a National Pollution Discharge Elimination System (NPDES) permit required for any discharges to surface waters? Indicate if the proposed project is located within an area mapped by the EPA as sole source aquifer recharge area (maps and further information are available on EPA's website). Describe any induced changes in local surface water runoff patterns, and the status of storm water discharge permit processes (if applicable).**

The F.M. Kirby Center and proposed MPI scanner suite will not have any impact to surface or underground water resources. A NPDES permit is not required for this project. The project is not within an EPA sole source aquifer recharge area. There are no induced changes in local surface water runoff patters anticipated, and there are no applicable storm water discharge permit processes for this project.

**10. Water Supply and Distribution System**

**Indicate the source, quality, and supply capacity of local domestic and industrial/commercial water resources, and the amount of water that project facilities and primary beneficiaries are expected to utilize. Note whether the water that is being supplied is in compliance with the Safe Drinking Water Act, and if not, what steps are being taken to ensure compliance.**

The Kennedy Krieger Institute is served by the City of Baltimore's municipal water system. The system is managed by the Department of Public Works, which produces up to 360 million gallons of drinking water per day for 1.8 million residential and business customers. The City of Baltimore complies with the Safe Drinking Water Act.

**11. Wastewater Collection and Treatment Facilities**

**Describe the wastewater treatment facilities available for processing the additional effluent including usage by the beneficiary(s). Indicate design capacities and current loading (both daily average and peak), and adequacy in terms of degree and type of treatment required. Describe all domestic class or process wastewater or other discharges associated with the project facilities and its primary beneficiaries, and the expected composition and quantities to be discharged either to a municipal system or to the local environment. Indicate all discharges that will require on-site pre-treatment. Note whether the wastewater treatment plant is in violation of the Clean Water Act, and if so, what steps are being taken to ensure compliance. If local treatment and sewer systems are or will be inadequate or overloaded, describe the steps being taken for necessary improvements and their completion dates.**

The Kennedy Krieger Institute uses the Baltimore City Department of Public Works for wastewater collection and treatment. This renovation and its future operation will not require



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anything above what is already in place in Baltimore City's local treatment and sewer systems. The wastewater treatment plant is within Baltimore City's purview.

**12. Environmental Justice (Executive Order 12898)**
**Describe whether the proposed project will result in disproportionate adverse human health or environmental impacts relative to minority and low income populations. Sufficient detail should be provided to enable EDA to determine whether the project will comply with Executive Order 12898.**

The proposed project will not result in disproportionate adverse human health or environmental impacts for minority or low-income populations.

**13. Transportation (Streets, Traffic and Parking)**
**Briefly describe the local street/road system serving the project site(s) and describe any new traffic patterns that may arise because of the project.**

The F.M. Kirby Center is located within the Kennedy Krieger Hospital at 707 North Broadway. A parking garage for patients and visitors, including project beneficiaries is located at 801 North Broadway. The proposed MPI Scanner renovation will not alter existing streets, traffic patterns, or parking, and there will be no impact to the traffic pattern during construction.

**14. Air Quality**
**Indicate types and quantities of air emissions (including odors) to be produced by the project facilities and its primary beneficiaries, and any measures proposed to mitigate adverse impacts. Indicate the impact that the project would have on greenhouse gas emissions. Is the proposed project site classified as a "non-attainment" area for any criteria pollutants? If so, what are those pollutants? Indicate any local topographical or meteorological conditions that hinder the dispersal of air emissions.**

This project will not produce any new air emissions or odors and does not impact greenhouse gas emissions.

**15. Noise**
**Will operation of project facilities or primary beneficiaries' facilities increase local ambient noise levels? If yes, indicate the estimated levels of increase, and the areas and sensitive receptors (e.g., residences) to be affected.**

Operation of project facilities will not increase local ambient noise.

**16. Permits**
**Identify any Federal, State, or local permits of an environmental nature needed for the project (e.g., USACE, US Environmental Protection Agency (EPA), Coastal Zone Management/Shoreline Management, Air Quality, State Environmental Policy Act,**



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**NPDES, etc.) and the status of any such permits. Attach copies of any such permits and all associated correspondence, including the permit applications.**

None apply.

**17. Public Notification/Controversy**

**Provide evidence of the community's awareness of the project, such as newspaper articles or public notification and/or public meetings, as applicable. If a formal public hearing has been held, attach a copy of the minutes. Fully describe any public controversy or objections which have been made concerning this proposed project and discuss steps taken to resolve such objections.**

No public notification, public meetings, or hearings have been held because the proposed project will only include the interior renovation of an existing building. No public controversy or objections have been identified and there are none anticipated.

**18. Cumulative Effects**

**Please list projects (public and private, whether or not directly related to the proposed project described above) that have occurred or will occur in the past, present, and future in and around the project area that could result in significant cumulative impacts when considered in aggregate with the proposed EDA project. Cumulative impacts result from the incremental impacts of a proposed action when added to other past, present and reasonable foreseeable future actions (40 C.F.R. Section 1508.7). In other words, cumulative impacts can result from individually minor but collectively significant impacts. Based on the direct and indirect impacts identified in Sections C1-18, identify which resources, ecosystems, and human communities are affected; and which effects on these resources are important from a cumulative effects perspective.**

No public or private projects have been identified that would result in significant cumulative impacts when considered in aggregate with the proposed EDA project.

## D. MITIGATION

**Describe methods to be employed to reduce impacts to any and all adverse impacts identified in Section C. List all mitigation measures that would be implemented to minimize impacts to environmental resources from project implementation.**

No mitigation measures are planned as no adverse impacts were identified in section C.



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## E. LIST OF ATTACHMENTS

The following checklist is a list of required and optional attachments to the Environmental Narrative as described in the sections above. The items listed in the optional section may be required by EDA at a later date to complete the project review and selection process, so it is recommended that you provide them now if they are currently available. While the documents listed below are the most frequently required for scoping determinations, EDA reserves the right to request additional items that are not listed below when necessary.

Applicants are not required to contact other governmental agencies for environmental or historical resources consultation until directed by EDA, though any interagency coordination letters that may be currently available should be provided. **EDA expects that all Applicants whose projects are selected for further evaluation will proceed with consultations in an expeditious manner. As such, Applicants should have the required information prepared for submission immediately upon notification of selection by EDA.** If you determine prior to application that your project may affect environmental or historical resources, you may contact the appropriate Regional Environmental Officer to determine if early interagency consultation is appropriate.

Please refer to the applicable Federal Funding Opportunity for unique requirements for each individual grant competition and a list of documents required for submittal with the application



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## Appendix A: Applicant Certification Clause

The applicant represents and certifies that it has used due diligence to determine that the description of the project site described herein is accurate with respect to the presence or absence of contamination from toxic and hazardous substances. The term "site" includes the entire scope of the project, including future phases of the project and all areas where construction will occur.

1. Is the site currently, or has it in the past 50 years, been used for any of the following operations or activities:

a. Generation of hazardous substances or waste?
_____ Yes ____X__ No

b. Treatment, storage (temporary or permanent), or disposal of solid or hazardous substances or waste?
_____ Yes ___X___ No

c. Storage of petroleum products?
___X___ Yes _____ No

d. Used/waste oil storage or reclamation units?
_____ Yes ___X___ No

e. Research or testing laboratory?
___X___ Yes _____ No

f. Ordinance research, testing, production, use, or storage?
_____ Yes ____X__ No

g. Chemical manufacturing or storage?
_____ Yes ___X___ No

h. Weapons or ammunition training, use, or testing?
_____ Yes ___X___ No

i. Iron works/foundry?
_____ Yes ___X___ No

j. Railroad yard?
_____ Yes ___X___ No

k. Industrial or manufacturing operation?
_____ Yes ____X__ No

If any of the above operations ever occurred at the site, and if appropriate cleanup or other mitigation actions were performed in accordance with the local, State, and federal laws, please attach documentation of these actions.



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## Appendix A: Applicant Certification Clause

2. Do wells draw from an underlying aquifer to provide the local domestic water supply?
   _____ Yes ___X___ No

3. Has a federal, State, or local regulatory authority ever conducted an environmental assessment, environmental impact statement, or a preliminary assessment/site inspection, or similar environmental surveyor inspection report at the site? If yes, please list here and attach copies of these reports or results.
   _____ Yes ___X___ No

   1) _____

   2) _____

   3) _____

   4) _____

   5) _____

4. Have any environmental or OSHA citations or notices of violation been issued to a facility at the site? If yes, please attach copies.
   _____ Yes ____X__ No

5. Have any unauthorized releases of hazardous substances occurred at any facility at the site which resulted in notification of the EPA's National Response Center?
   _____ Yes ____X__ No

6. Is any material containing asbestos or lead paint located at the site? If yes, please attach information concerning State and federal regulatory compliance.
   _____ Yes ____X__ No

7. Is there any equipment (electrical transformers, etc.) containing polychlorinated biphenyls (PCB) on the site? If yes, please attach a description of the equipment.
   _____ Yes ___X___ No

8. Are there underground or above ground storage tanks on the site? If yes, please attach a detailed description, including the number of underground storage tanks on the site, whether the tanks have been inspected (or removed) and the results of such inspections.



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## Appendix A: Applicant Certification Clause

___X___ Yes _____ No

9. Has the site been tested for radon? If yes, please attach results.
   _____ Yes ___X___ No

10. Have there been, or are there now any environmental investigations by federal, State or local government agencies that could affect the site in question? If yes, please attach available information.
    _____ Yes ___X___ No

The applicant acknowledges that this certification regarding hazardous substances and/or waste is a material representation of fact upon which EDA relies when making and executing an award. EDA reserves the right to terminate any award made in conjunction with the representations contained herein if, at any time during the useful life of the project, EDA becomes aware of the presence of hazardous materials or waste at the site, or that hazardous materials or waste have been inappropriately handled thereon.

Further, if it is determined at any time that the presence of hazardous materials or waste, or handling thereof, has been misrepresented, EDA may pursue other available legal remedies against the applicant.

Amy J. Bastian PhD, CSO Kennedy Krieger Institute

Applicant's Name

_Christine Collins, Associate Director Research Programs_____
Name and Title of Applicant's Authorized Representative

C Coll 10|13|20

Signature of Applicant's Authorized Representative Date



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OMB Number: 0610-0094
Expiration Date: 11/30/2021

# ED-900E – Calculation of Estimated Relocation and Land Acquisition Expenses

a. Are relocation expenses part of the proposed project's EDA budget? ☐ Yes ☒ No

b. Will the proposed project cause the displacement of individuals, families, businesses or farms? ☐ Yes ☒ No

If **Yes**, explain how relocation procedures will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1990 (13 C.F.R. § 302.5 ; see Certification #11 on Form SF-424D, 'Assurances - Construction Programs', for an explanation of this requirement.)

All applicants must complete the "Calculation of Estimated Relocation and Land Acquisition Expenses" form (below), and enter the estimated total for "costs incidental to land acquisition" (line item 1) on line item 3 ("relocation expenses and payments") of Form SF-424C, 'Budget Information - Construction Programs.' This is separate from the estimated purchase price of the property.

| **ITEM 1. COSTS INCIDENTAL TO LAND ACQUISITION - ESTIMATES** | |
|---|---|
| Number of land transactions involved (including options, easements and rights-of-way): | |
| Recording fees, transfer taxes, surveys, appraisals, title search and similar expenses-Section 303(1) | |
| Penalty costs-Section 303(2) | |
| Real Property taxes-Section 303(3) | |
| Litigation expenses-Section 304(a) | |
| Total - Estimated costs incidental to transfer of title | |
| **ITEM 2. RELOCATION - ESTIMATES** | |
| **a. TENANTS - Estimates: Number of Claims** | |
| (1) Moving Expenses: | |
| Actual Expenses-Section 202(a)(1) | |
| In lieu payments-Section 202(b) | |
| Total - Moving Expenses | |
| (2) Replacement housing payments: | |
| Rental payments-Section 204(1) | |
| Down payment-Section 204(2) | |
| Total - Replacement housing payments | |
| Total - Estimated Tenants | |

| | |
|---|---|
| **b. OWNER-OCCUPANTS - Estimates: Number of Claims** | |
| (1) Moving Expenses: | |
| Actual Expenses-Section 202(a)(1) | |
| In lieu payments-Section 202(b) | |
| Total - Moving Expenses | |
| (2) Replacement housing payments: | |
| Purchase payments-Section 203(a)(1) | |
| Reasonable replacement costs-Section 203(a)(1)(A) | |
| Increased interest costs-Section 203(a)(1)(B) | |
| Closing costs-Section 203(a)(1)(C) | |
| Rental payments-Section 204(1) | |
| Down payment-Section 204(2) | |
| Total - Replacement housing payments | |
| Total - Estimated Owner-Occupants | |
| **c. BUSINESS - Estimates: Number of Claims** | |
| Moving Expenses: | |
| Actual Expenses-Section 202(a)(1) | |
| Actual loss of tangible personal property-Section 202(a)(2) | |
| Actual searching expenses-Section 202(a)(3) | |
| In lieu payments-Section 202(c) | |
| Total - Estimated Business | |
| **d. NONPROFIT ORGANIZATIONS - Estimates: Number of Claims** | |
| Moving Expenses: | |
| Actual Expenses-Section 202(a)(1) | |
| Actual loss of tangible personal property-Section 202(a)(2) | |
| Actual searching expenses-Section 202(a)(3) | |
| In lieu payments-Section 202(c) | |
| Total - Estimated Nonprofit Organizations | |
| **e. FARM OPERATIONS - Estimates: Number of Claims** | |
| Moving Expenses: | |
| Actual Expenses-Section 202(a)(1) | |
| Actual loss of tangible personal property-Section 202(a)(2) | |
| Actual searching expenses-Section 202(a)(3) | |
| In lieu payments-Section 202(c) | |
| Total - Estimated Farm Operations | |
| **f. ADVISORY SERVICES - Estimates: Number of Claims** | |
| Total - Expenses of grantee/borrower-Section 205 | |

| g. ADMINISTRATION - Estimates: Number of Claims | |
|---|---|
| Contracting with individual, firm, association, or corporation-Section 212 | |
| Agreement w/ Federal or State government agency or instrumentality-Section 212 | |
| Total - Estimated Administration | |
| **ITEM 3. GRAND TOTAL** | |
| Enter the sum of Items 1 and 2 (parts (a) through (g)) in this Item | |
| **GRAND TOTAL RELOCATION EXPENSES** | |

# ASSURANCES - CONSTRUCTION PROGRAMS

OMB Number: 4040-0009
Expiration Date: 02/28/2022

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant:, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards of merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29) U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statue(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statue(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.

14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).

18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

20. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

| SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL | TITLE |
|---|---|
| Completed on submission to Grants.gov | Assoc. Director, Research Programs |
| APPLICANT ORGANIZATION | DATE SUBMITTED |
| Hugo W. Moser Research Institute at Kennedy Krieger Inc | Completed on submission to Grants.gov |

SF-424D (Rev. 7-97) Back

## BUDGET INFORMATION - Construction Programs

*NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.*

| COST CLASSIFICATION | a. Total Cost | b. Costs Not Allowable for Participation | c. Total Allowable Costs (Columns a-b) |
|---|---|---|---|
| 1. Administrative and legal expenses | $ | $ | $ |
| 2. Land, structures, rights-of-way, appraisals, etc. | $ | $ | $ |
| 3. Relocation expenses and payments | $ | $ | $ |
| 4. Architectural and engineering fees | $ 70,000.00 | $ | $ 70,000.00 |
| 5. Other architectural and engineering fees | $ 10,500.00 | $ | $ 10,500.00 |
| 6. Project inspection fees | $ | $ | $ |
| 7. Site work | $ | $ | $ |
| 8. Demolition and removal | $ | $ | $ |
| 9. Construction | $ 700,800.00 | $ | $ 700,800.00 |
| 10. Equipment | $ | $ | $ |
| 11. Miscellaneous | $ 10,700.00 | $ | $ 10,700.00 |
| 12. SUBTOTAL *(sum of lines 1-11)* | $ 792,000.00 | $ | $ 792,000.00 |
| 13. Contingencies | $ 8,000.00 | $ | $ 8,000.00 |
| 14. SUBTOTAL | $ 800,000.00 | $ | $ 800,000.00 |
| 15. Project (program) income | $ | $ | $ |
| 16. TOTAL PROJECT COSTS *(subtract #15 from #14)* | $ 800,000.00 | $ | $ 800,000.00 |

FEDERAL FUNDING

| | | |
|---|---|---|
| 17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share. | Enter eligible costs from line 16c Multiply X 80 % | $ 640,000.00 |

FORM **CD-511**
(REV 1-05)

U.S. DEPARTMENT OF COMMERCE

CERTIFICATION REGARDING LOBBYING

Applicants should also review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, 'New Restrictions on Lobbying.' The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Commerce determines to award the covered transaction, grant, or cooperative agreement.

**LOBBYING**

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over $100,000 or a loan or loan guarantee over $150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying.' in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure occurring on or before October 23, 1996, and of not less than $11,000 and not more than $110,000 for each such failure occurring after October 23, 1996.

**Statement for Loan Guarantees and Loan Insurance**

The undersigned states, to the best of his or her knowledge and belief, that:

In any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure occurring on or before October 23, 1996, and of not less than $11,000 and not more than $110,000 for each such failure occurring after October 23, 1996.

**As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.**

* NAME OF APPLICANT

Hugo W. Moser Research Institute at Kennedy Krieger Inc

* AWARD NUMBER

* PROJECT NAME

FM Kirby Center: Magnetic Particle Imaging Scanner Expansion

Prefix:

* First Name: Christine

Middle Name:

* Last Name: Collins

Suffix:

* Title: Assoc. Director, Research Programs

* SIGNATURE: Completed by Grants.gov upon submission.

* DATE: Completed by Grants.gov upon submission.

# ATTACHMENTS FORM

**Instructions:** On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

**Important:** Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

| | | | | |
|---|---|---|---|---|
| 1) Please attach Attachment 1 | All_letters.pdf | Add Attachment | Delete Attachment | View Attachment |
| 2) Please attach Attachment 2 | | Add Attachment | Delete Attachment | View Attachment |
| 3) Please attach Attachment 3 | | Add Attachment | Delete Attachment | View Attachment |
| 4) Please attach Attachment 4 | | Add Attachment | Delete Attachment | View Attachment |
| 5) Please attach Attachment 5 | | Add Attachment | Delete Attachment | View Attachment |
| 6) Please attach Attachment 6 | | Add Attachment | Delete Attachment | View Attachment |
| 7) Please attach Attachment 7 | | Add Attachment | Delete Attachment | View Attachment |
| 8) Please attach Attachment 8 | | Add Attachment | Delete Attachment | View Attachment |
| 9) Please attach Attachment 9 | | Add Attachment | Delete Attachment | View Attachment |
| 10) Please attach Attachment 10 | | Add Attachment | Delete Attachment | View Attachment |
| 11) Please attach Attachment 11 | | Add Attachment | Delete Attachment | View Attachment |
| 12) Please attach Attachment 12 | | Add Attachment | Delete Attachment | View Attachment |
| 13) Please attach Attachment 13 | | Add Attachment | Delete Attachment | View Attachment |
| 14) Please attach Attachment 14 | | Add Attachment | Delete Attachment | View Attachment |
| 15) Please attach Attachment 15 | | Add Attachment | Delete Attachment | View Attachment |

**The Russell H. Morgan Department**
**of**
**Radiology and Radiological Science**
***600 N Wolfe Street***
***Baltimore, MD 21287***

JOHNS HOPKINS
MEDICINE

**Dmitri Artemov, Ph.D.**
*Professor of Radiology and Oncology*
*Johns Hopkins University School of Medicine*
*217 Traylor, 720 Rutland Ave.*
*Baltimore, Maryland 21205, USA*
*Telephone: 410 614-2703*
*Fax: 410 614-1948*
*E-mail: dartemo2@jh.edu*

September 28, 2020

Dear Dr. Bastian,

I am happy to be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

As I state in my beneficiary form, the MPI scanner provides unique opportunity for high-sensitivity high-resolution imaging of magnetic nanoplatforms for targeted drug delivery to cancer. In combination with other imaging modalities this technology is key for the development of novel highly effective therapies and will form a basis for future applications for extramural funding.

My laboratory will benefit from this by creating 1 new job and saving 1 job at this time.

Sincerely,

Dmitri Artemov, Ph.D.

# THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

JOHNS HOPKINS MEDICINE

## The Russell H. Morgan Department of Radiology and Radiological Science

Zaver M. Bhujwalla, M.Sc., Ph.D., William R. Brody Professor of Radiology
Professor of Oncology
Professor of Radiation Oncology and Molecular Radiation Sciences
The Johns Hopkins University School of Medicine
208C Traylor Building, 720 Rutland Avenue
Baltimore, Maryland 21205, U.S.A.
E-mail: zbhujwa1@jhmi.edu ♦ Phone: (410) 955-9698 ♦ Fax: (410) 614-1948

September 29, 2020

Dear Dr. Bastian,

I am pleased to be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

The MPI scanner is the first one on the entire East Coast. The site will be a hub to attract users from outside, serving as a Resource Center. The MPI scanner will uniquely complement information obtained from our multi-modality imaging systems to provide novel information to understand diseases and find effective cures.

It will also lead to new commercial (pharmaceutical and biotech) industry contracts to test devices and new magnetic nanomaterials.

I anticipate that my laboratory will create 2 new jobs because of this project.

Sincerely,

Zaver M. Bhujwalla.

Zaver M. Bhujwalla, Ph.D.
William R. Brody Professor of Radiology and Radiological Science
Professor of Oncology
Professor of Radiation Oncology and Molecular Radiation Sciences



PREVIEW Date: Oct 14, 2020 Workspace ID: WS00578954 Funding Opportunity Number: PWEAA2020

**Jeff W.M. Bulte, Ph.D.**
*Professor of Radiology, Oncology, Biomedical Engineering, and Chemical & Biomolecular Engineering*
*Director of Scientific Communications*

*Director, Cellular Imaging Section*
*Institute for Cell Engineering*

THE JOHNS HOPKINS INSTITUTE FOR CELL ENGINEERING

**Division of MR Research**
MRB 659, 733 N. Broadway,
Baltimore, MD 21205

443-287-0996 T
443-287-7945 F

jwmbulte@mri.jhu.edu

JOHNS HOPKINS MEDICINE

**THE RUSSELL H. MORGAN DEPARTMENT OF RADIOLOGY AND RADIOLOGICAL SCIENCE**

September 28, 2020.

Dear Dr. Bastian,

Thank you for including me as a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

Our MPI scanner is the first one on the entire East Coast. Our site will be a hub to attract users from outside, serving as a Resource Center. Several institutions have already committed to collaborate and bring people to our site. This will create even more jobs and bring in Federal dollars for Maryland in the near future. Working together with the University of Maryland (Dr. Piotr Walczak) will strengthen our position to competitively apply for grants and attract more people from abroad. We will also serve as a training site for other Universities across the country and the world (guest/visiting researchers). Some will bring in overseas fellowships and then may stay here. As a running MRI Resource Center we are experienced in training such visitors.

My laboratory will create 5 new jobs and save 3 jobs as a result of this project.

Sincerely,

Jeff W.M. Bulte, Ph.D.

Jim Delikatny, Ph.D.
Professor
Department of Radiology
Director, Small Animal Imaging Facility
Chair, Pharmacology Graduate Admissions

September 27, 2020

Amy Bastian, Ph.D.
Chief Science Officer
Kennedy Krieger Institute
707 N. Broadway
Baltimore, MD 21205

Dear Dr. Bastian,

I am writing to confirm that I will be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

MPI is a groundbreaking new technology that allows the imaging of magnetic nanoparticles at high resolution and sensitivity with no background noise. The installation at Johns Hopkins will be the first one on the East Coast and will serve as a regional resource for the mid-Atlantic area. We are excited to be able to access the Hopkins MPI scanner, for small animal imaging in pharmacology and drug delivery applications.

My laboratory will create 2 new jobs and save 1 job as a result of this project.

Sincerely

E.J. Delikatny, Ph.D.
Research Professor

*317 Anatomy Chemistry Building, 3620 Hamilton Walk, Philadelphia, PA, 19104-6021.*
*Tel: (215) 898-3105; E-mail: delikatn@pennmedicine.upenn.edu*

Jordan J. Green, Ph.D.
The Johns Hopkins University School of Medicine
Department of Biomedical Engineering
Biomaterials and Drug Delivery Laboratory
400 N. Broadway, Smith Building Room 5017
Baltimore, MD 21231
410-614-9113 / FAX 443-287-6298 / green@jhu.edu

September 28, 2020

Dear Dr. Bastian,

I am happy to confirm that I will be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

There will be synergistic opportunities between the new MPI scanner at KKI and the new Johns Hopkins Translational Immunoengineering Center that together will allow innovation of new advanced nanomedicine immunotherapies. These new advanced therapies will likely lead to research and training opportunities in addition to private company sponsored research and licensing of the new biotechnology.

My laboratory will create 1 new job and save 1 job as a result of this project.

Sincerely,

Jordan J. Green, Ph.D.
Professor of Biomedical Engineering, Ophthalmology, Oncology, Neurosurgery, Chemical & Biomolecular Engineering, and Materials Science & Engineering
Director of the Biomaterials and Drug Delivery Laboratory
Associate Director of the Johns Hopkins Translational ImmunoEngineering (JH-TIE) Center
Johns Hopkins University School of Medicine

**Robert Ivkov, Ph.D.**
**Associate Professor**
**Radiation Oncology & Molecular Radiation Sciences, Oncology, Mechanical Engineering; and, Materials Science and Engineering**
1550 Orleans Street, Rm 442
Baltimore, Maryland 21231
443-287-7282 T
410-502-2821 F
**rivkov1@jhmi.edu**

JOHNS HOPKINS
MEDICINE

The Sidney Kimmel Comprehensive Cancer Center

JOHNS HOPKINS
WHITING SCHOOL of ENGINEERING

Monday, September 28, 2020

Dear Dr. Bastian,

I am happy to confirm that I will be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

The MPI scanner is a first for any institution in the region/East Coast. Its installation and commissioning will provide a novel, state-of-the-art Resource Center for all researchers using nanostructured magnetic materials. In addition, the resource will provide a new and unique characterization tool to enhance existing collaborations with researchers (Drs. Cindi Dennis and Julie Borchers) at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD. We have a long-standing collaboration with researchers at NIST, and this capability will enhance both research and development of industry standards for physical and biomedical applications of magnetic nanostructured materials. Several other institutions have committed to collaborate and bring people to our site. This will create even more jobs and bring in Federal dollars for Maryland in the near future. We will also serve as a training site for other Universities across the country and the world (guest/visiting researchers). This capability will attract talent from the nation and other countries, many of whom will likely use the research to innovate new technologies which will support creation of start-up business ventures in MD.

My laboratory will create 5 new jobs and save 2 jobs as a result of this project.

Sincerely,

Robert Ivkov, Ph.D.

JOHNS HOPKINS
MEDICINE

***JOHNS HOPKINS UNIVERSITY***
***SCHOOL OF MEDICINE***
***and***
***THE JOHNS HOPKINS HOSPITAL***

DEPARTMENT OF RADIOLOGY
AND
RADIOLOGICAL SCIENCE

HANZHANG LU, PH.D.
ELIAS A. ZERHOUNI, M.D. PROFESSOR
CHIEF, NEUROFUNCTION SECTION
TEL: (410) 955-1431
FAX: (410) 614-1977
EMAIL: hanzhang.lu@jhu.edu

*Mailing Address:*
THE JOHNS HOPKINS HOSPITAL
DEPT OF RADIOLOGY/PARK 322
600 N. WOLFE STREET, BALTIMORE, MD 21287
U.S.A

September 28, 2020

Dear Dr. Bastian,

I am happy to confirm that I will be a beneficiary on your construction project application to the EDA for the “FM Kirby Center Magnetic Particle Scanner Expansion.”

The proposed project will likely enhance the ability of investigators in our organization in terms of competing for federal grants and contracts, which will increase the financial capacity of our institution, leading to new hiring opportunities. My laboratory will create 2 new jobs and save 3 jobs as a result of this project.

Sincerely,

Hanzhang Lu, Ph.D.
The Elias A. Zerhouni, M.D. Professor
The Russell H. Morgan Department of Radiology & Radiological Science
Johns Hopkins University School of Medicine

**Martin G. Pomper, M.D., Ph.D.**
*Henry N. Wagner, Jr., M.D. Professor of Radiology*
*Director of Nuclear Medicine and Molecular Imaging*
*Associate Dean for Entrepreneurship and Technology Development*
*Joint Appointments in Pharmacology and Molecular Sciences, Oncology, Radiation Oncology, Psychiatry, Pathobiology, Environmental Health Sciences, Materials Science and Engineering, Chemical and Biomolecular Engineering, Urology, and, Biomedical Engineering*

**Division of Nuclear Medicine and Molecular Imaging**
JHOC 3223, 601 North Caroline Street
Baltimore, MD 21287
410-955-2789 T
mpomper@jhmi.edu

JOHNS HOPKINS
MEDICINE

**THE RUSSELL H. MORGAN DEPARTMENT OF RADIOLOGY AND RADIOLOGICAL SCIENCE**

September 28, 2020

Dear Dr. Bastian,

I am happy to be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion."

As I state in my beneficiary form, the MPI scanner will enable us to apply for further federal and private funding. It is an important facet of our pre-clinical imaging and therapy programs, particularly in but not solely limited to cancer.

My laboratory will benefit from this by creating 2 new jobs and saving 1 job at this time.

Sincerely,

Martin G. Pomper, M.D., Ph.D.

NYU Grossman School of Medicine
NYU LANGONE HEALTH

**Youssef Z. Wadghiri, Ph.D.**
*Associate Professor of Radiology*
*Director of Preclinical Imaging*

Sunday, September 27, 2020

RE: application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion"

Dear Dr. Bastian,

I am happy to confirm that I will be a beneficiary on your construction project application to the EDA for the "FM Kirby Center Magnetic Particle Scanner Expansion".

The research project requiring this unique resource is part a joint collaboration between NYU Grossman School of Medicine and the NYU Tandon School of Engineering and will utilize the FM Kirby Center in Baltimore. The biomaterial developed is aimed at designing theranostic (diagnostic & therapeutic) compounds based on self-assembled proteins. The design of these biomaterials is primarily focused in traceable cargo carrying existing cancer drugs known to be poorly soluble and to exhibit side effects such as Doxorubicin. Yet, these drugs are very effective if properly delivered to cancer cells. One of the imaging tags incorporated in our theranostic agents is based in biomineralized iron oxide nanoparticles. Magnetic Particle Imaging (MPI) is new and steadily growing modality that is uniquely positioned to monitor the delivery and accumulation of our theranostic agents. The testing of our agents using MPI will speed up their characterization by providing qualitative and quantitative pharmacokinetics and biodistribution and ultimately lead to help test drug efficacy.

We do not have currently such imaging technology at NYU and have been in contact with the manufacturer Magnetic Insights to perform some of our experiments in order to generate the preliminary data that are crucial to fuel interest and secure additional research funding. Our initial finding are very exciting and promising but have been performed with our existing MRI scanners which have limited sensitivity for such studies. MPI offers a unique alternative, which is a far superior imaging modality for its sensitivity and quantitative assessment. MPI will help identify our lead biomaterial compound in order to focus our research efforts on.

We are excited that our colleagues at the FM Kirby Center have been successful in acquiring an MPI within a driving distance between our two sister institutions. We are grateful that this MPI scanner will be setup as part of a Resource Center making it accessible to our research needs.

This will help support our research efforts and maintain our research activities competitive to attract rising talents to our research field.

This will also open up new opportunities for collaboration and new applications in cancer treatment that would result in future federal research grants.

My laboratory will create 1 new job and save 1 job as a result of this project.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Youssef Zaim Wadghiri, Ph.D.
Associate Professor
Department of Radiology

**Department of Radiology**
**Center for Advanced Imaging Innovation and Research (CAI$^2$R) - Bernard & Irene Schwartz Center for Biomedical Imaging** 660 First Avenue, New York, NY 10016 | tel. 212.263.3336 | fax: 212.263.7541 | e-mail: wadghiri@med.nyu.edu

New York University
*A private university in the public service*

Dr. Piotr Walczak
Professor
Center for Advanced Imaging Research
Department of Diagnostic Radiology and Nuclear Medicine
University of Maryland Marlene and Stewart Greenebaum
Comprehensive Cancer Center
University of Maryland, Baltimore
HSF III, rm 1176
670 W. Baltimore st.
21201 Baltimore, MD
Phone: 410 706 7904
pwalczak@som.umaryland.edu

27 September 2020

Dear Dr. Bastian,

I confirm that I will be a beneficiary on your construction project application to the EDA for the “FM Kirby Center Magnetic Particle Scanner Expansion.”

Access to MPI technology will complement multimodality imaging capabilities in our region. complementary data offered by this facility will help attract contracts with pharmaceutical companies to study efficacy of drug delivery to the brain.

With data obtained using MPI scanner we plan to expand our research program in collaboration with JHU. Each new NIH grant will help create or maintain about 3 positions.

My laboratory will create 1 new job and save 2 jobs as a result of this project.

Sincerely,

Piotr Walczak
Professor
Department of Diagnostic Radiology and Nuclear Medicine