INTRODUCTION: Maintaining the integrity of structural steel, firewalls and smoke barriers throughout the NYU Langone Health is a major component of the facility’s fire protection plan. If smoke and fire barriers are not maintained in accordance with the original fire rating, the level of protection provided to patients, staff, and visitors could be severely compromised.

Any contractor or in-house department performing work at NYU Langone Health which causes a penetration through a fire or smoke barrier (including floors, ceilings, and walls) is responsible for correctly sealing these penetrations as outlined below.

PURPOSE: To document any fireproofing issues for structural steel and the penetrations of rated fire/smoke walls and floor slabs (hereafter referred to as “rated walls/slabs”) within NYULH space and provide a quality assurance process to insure that as infrastructure is installed, the rated walls/slab penetrations are properly sealed; and to outline the preventive maintenance and inspection (PMI) procedures for identifying and repairing such penetrations.

POLICY: All penetrations of rated walls/slabs, whether existing or newly created by construction, shall be properly sealed to protect against the passage of fire and/or smoke. All structural steel is to be appropriately fireproofed. All in-house maintenance staff and external contractors working in NYULH spaces and penetrating fire rated walls/slabs, must obtain certification and permission from a central authority (Facilities Operations or IT) prior to performing any work. Certification will include a short training session to verify that the contractor is knowledgeable about the building codes for firewall penetrations and the appropriate seals and techniques used for the repair/restoration of said penetrations. The Environmental Health and Safety and Facilities Operations staff shall perform periodic audits of all wall/slab penetrations to insure that they conform to these requirements. Any contractor failing to conform to the policy set forth will not be permitted to work at NYULH.

SCOPE: This policy applies to all exposed structural steel penetrations, new or existing, used or not used, created by but not limited to utilities, conduits, duct work, pipe and cabling (telephone, data network, fiber-optics, security devices, motion detectors, surveillance cameras, card swipes, biomedical devices, nurse call, fire alarms, overhead page, audio visual equipment, telecom carriers, wireless and microwave communications, cable TV, developmental wiring, etc.) in any NYULH space.
Penetrations created but not used, must be returned to the original rating of the penetrated wall/slab. All penetration repairs must adhere to a specific Underwriters Laboratories (UL) system.

The most recent set of fire/smoke partition drawings for all NYULH areas shall be used. These are available in the Facilities Operations Department, Greenberg Hall, Room SC2-122 for NYU Langone Hospital, the C-3 level Engineering Office at NYU Langone Orthopedic Hospital, Engineering Office at NYU Langone Hospital-Brooklyn and the Housing Office at 1 Park Ave. 10th Fl. for The Outpatient Surgical Center, Ambulatory Care Center, Brooklyn Endoscopy and NYU Cobble Hill.

In the absence of adequate drawings, the Environmental Health and Safety Fire Safety Director or Life Safety Consultant shall be consulted to determine the rating for wall/slabs.

**DEFINITIONS:** “Contractor” shall be defined as any company, person or internal NYULH department that engages in work requiring penetrations of rated walls/slabs.

“Penetration” shall be defined as any compromise of a wall or floor slab’s integrity and/or continuity. This breach of integrity and/or continuity may be the result of a hole made in the wall or slab to permit the installation of utilities or data services (as described above), or the disruption of an existing fire rated patch of a previous penetration due to contractor work on the same wall or slab.

“Fire Barrier” shall be defined as any wall, floor, ceiling, or roof which has a fire-resistance rating.

“Smoke Barrier” shall be defined as: a barrier which divides a floor into smoke compartments and has a minimum fire resistance rating of ½ hour. In newly constructed or renovated areas, the smoke barrier must have a fire resistance rating of one hour.

“Smoke Partition” shall be defined as any construction designed to prevent passage of smoke and gases; not required to be fire rated.

“Fire stopping” shall be defined as any component or product installed to maintain or regain the fire resistance rating of a fire barrier that has openings that could allow fire or smoke to pass to any other part of the building. All fire stopping systems must be tested and listed by an accredited third party testing agency for their appropriate use.
“Exposed Structural Steel” shall be defined as steel in visible areas which must be fireproofed and are utilized for building support.

**QUALITY ASSURANCE:** This program and all documentation shall be reviewed at least annually by the Director of Engineering. Reports to the Environment of Care Committee shall be submitted quarterly.

The Building Systems Manager is responsible for the implementation of the program on a day-to-day basis. The Carpentry and Paint Foremen are responsible for the inspection and repair/maintenance work.

An external Life Safety Engineer or architect will survey the wall, floors, and ceiling for penetrations, open junction boxes and that sprinkler pipes are not supporting any other items in hospital areas. The Facilities Operations Department shall maintain a plan for improvement and documented efforts to comply with the plan.

The PMI procedures are based on NYC fire safety code as well as internal hospital safety guidelines for smoke and fire barrier integrity.

All staff shall be familiar with and work in accordance with the established NYULH Infection Control Procedures. Infection Control and Risk Assessment (ICRA) protocols shall be followed.

Outside contractors may be used to supplement in-house staff for remediation and identification. The outside contractors shall comply with all infection control guidelines as well as all construction standards.

Construction Projects: Project managers are responsible for reporting on any new construction projects at the weekly construction coordination meeting. In addition, the project managers will conduct daily inspections during the project duration.

The Environmental Health and Safety (EHS) Department conducts semi-annual QA inspections of smoke and fire barriers, doors, Junction boxes and sprinkler pipes as well as annual inspections of IT and Electrical Closets.

Any deficiencies found are communicated to the project manager immediately. Project managers are responsible to ensure corrections are made in a timely fashion (generally within one week of when work is completed in that area).

Since contract language requires contractors to properly seal all penetrations, a failure to do so may result in withholding and/or reducing payment until such time.
work is completed. Should the respective contractor fail to complete the work, the withheld monies may be used to cover the expense of hiring another contractor/vendor to rectify the work.

**ENGINEERING INFORMATION:** All building construction data and specifications contained in the Alchemy drawing database accessible to RED&F staff. Basic building information is contained in the electronic joint commission system (jointcommission.org)

**Standard Ratings:** Construction drawings given to the contractor and available to in-house departments should indicate any rated firewalls. The following general rules apply:

- Stairwells, pipe shafts and elevator shafts must always maintain a **two hour fire rating**.
- Mechanical rooms and laboratories must maintain at least a **one hour fire rating**.
- Any smoke barriers used to divide floors into smoke compartments must maintain at least a **one half hour fire rating**. Smoke barriers in newly constructed or renovated areas must maintain at least a **one hour fire rating**. (All NYULH patient floors are divided into at least two smoke compartments.)
- Exit corridors, in general, must be smoke partitions; that is, form a barrier to limit the spread of smoke.
- Structural steel must have fireproofing as required by the NYC Department of Buildings.

**Materials:**

- **Fire Stopping:** Contractors must provide and use penetration seal assemblies whose fire resistance ratings have been determined by testing (ASTM E-814) in the configurations required and which have fire-resistance ratings at least as high as that of the fire-rated assembly in which they are to be installed. These materials must be HILTI Certified Products.
- **Smoke Stopping:** Use any caulking-gun type or poured joint sealant suitable for the application; use only fully curing types where accessible in the finished work. For smoke partitions, rated fire stop material is not required for sealing of penetrations.
In all cases, provide intumescent products which allow normal expansion and contraction movement of the penetrating item without failure of the penetration seal and emit no hazardous, combustible, or irritating by-products during installation or curing period. High-traffic openings shall be fire stopped with materials and a UL rated system specifically designed for retrofit, such as intumescent fire stop putty or pillows. Typical high-traffic openings include: cable tray penetrations of walls and floor, openings for voice, data and communications cabling, all sleeved cabling openings.

When a penetration in a smoke or fire barrier is made in error or is too large to be sealed using fire stop material, it should be repaired using the original materials of construction.

*Any exceptions to these general rules should be confirmed prior to construction with the project manager.

**SCHEDULES:**

a) Semi-Annually: EHS conducts semi-annual inspections of the primary fire walls and smoke barriers as well as junction boxes and sprinkler pipes.

b) Annually: Survey, identify and document all penetration deficiencies, open junction boxes and sprinkler pipe deficiencies. This information and subsequent repairs shall be retained by Facilities Operations, located in Greenberg Hall, room SC2-122 for NYU Langone Hospital, the C-3 level Engineering Office at NYU Langone Orthopedic Hospital, Engineering Office at NYU Langone Hospital-Brooklyn and the Housing Office at 1 Park Ave. 10th Fl. for The Outpatient Surgical Center, Ambulatory Care Center, Brooklyn Endoscopy and NYU Cobble Hill. Work shall be performed as follows:

- Staff painter mechanics shall survey and log all penetrations in fire and smoke barriers as well as exposed structural steel deficiencies. Report any open junction boxes and sprinkler pipe deficiencies.
- Consulting life safety experts shall survey and log all penetrations in fire and smoke barriers as well as structural steel fireproofing deficiencies. Log all open junction boxes and sprinkler pipe deficiencies.

c) Annually: EHS QA inspecting of electrical and IT closets.

d) All construction project managers shall inspect construction areas daily while construction is in progress. Fire stopping and smoke stopping shall be performed as soon as possible upon completion of the work.
Above Ceiling Inspections, 
Penetrations in Fire/Smoke Walls

Policy Number: T. 01

Facilities Operations

Revised Date: Jan. 2018

Approved By: _________________________________

Director of Engineering

e) Auditing: EHS audits construction projects at random to determine adherence to daily construction inspections.

Rate Wall/Slab Penetration Permits: all work that is performed in NYULMC buildings requires a wall/slab penetration permit to be filled out, submitted and logged with the Facilities Operations Department, Greenberg Hall, Room SC2-122. If any existing penetrations are found, Facilities Operations must be notified before ANY work commences. A work order will be created to seal all open penetration found.

Deficiencies in penetration repair shall be noted and submitted to the contractor in the form of a punch list to be completed as work progresses.

- ILSM: Controlled inspections, where required, in construction projects, shall be placed in the project file. Corrective work shall be documented therein.

- Project Managers shall note in the daily construction safety inspection the presence of any penetrations not properly repaired and ensure that the general contractor, construction manager or in-house paint or carpentry mechanic is aware of problem. Project Manager shall follow-up to ensure work is completed.

- Projects performed by Non-Facilities Operations Departments: as soon as work is scheduled by other departments (such as IT, Security, etc), an Aware Manager work order shall be submitted by the originating department for the painters.

PROCEDURES:

a) Certification: Contractors working in NYULMC space must obtain a HILTI Certification for Firestopping by attending a HILTI Penetration Training as specified by the Facilities Operations Department, located in Greenberg Hall, room SC2-122 to verify all listed individuals have been trained from the manufacturer of the fire stopping material (or other authorized organization) in the UL approved methods of installing firestopping material. Such granted certification shall be submitted to Facilities Operations as well when applying for a Penetration Permit. Renewal for Certification must be completed every 2 years. Training can be arranged through NYULH.

b) Permits: Contractors working in NYULMC space must obtain a Rated Wall/Slab Penetrations Permit to install infrastructure as described in the “Scope” section above from the Facilities Operations Department prior to working in NYULMC (see attached permit copy). Permits may be
Above Ceiling Inspections, Penetrations in Fire/Smoke Walls

obtained by submitting evidence of training for all contractor personnel along with the following information: company name, cabling location, building, floor, and path of cable (from – to), number of cable runs, and names/phone numbers of project managers.
A request for a permit can be obtained in the Facilities Operations Department, Greenberg Hall, Room SC2-122. The permit will be issued by the Facilities Operations within 2 business days (assuming certification requirements as described above have been met). All contractors are required to follow the terms of the Rated Wall/Slab Penetrations Permit. Signature on the permit must be obtained by the appointed personnel in the Facilities Operations Department. If a permit is not issued, Facilities Operations will provide a reason to the requester for not issuing a permit. Permits will be issued within 31 calendar days or daily dependent upon work. The Permit can be renewed for additional weeks if the project extends beyond 31 days. All permits must have a drawing indicating the location of work. Drawings can be obtained from the RED+F Space Planning Office.
An Above Ceiling Work Permit Vest will be provided once a permit is obtained. This blue vest must be worn during the duration of the project and must be returned upon expiration of the Perforation Permit.
At the end of the work week permitted, the sponsor department (RED+F or IT) will update the activities described on the permit to include any alterations in scheduled work or additional “small pulls or projects” that occurred.
All construction projects: Permits shall be issued as part of the Interim Life Safety Measures documentation (ILSM) and shall be good for the length of the project. Final inspection and sign-off shall be performed at the project’s completion. Such a permit is good only for work within the project site. Any project-related work that entails running cables, pipes, etc. outside the project site through other areas of the hospital shall be subject to the regular rules of this policy and procedure. Renewal of these permits at 31 day intervals for construction projects is required. For every significant renovation or new construction project, the project manager must inform all potential contractors of their responsibility of bringing any exposed fire wall or smoke barrier into code compliance. Bidders should be given the opportunity during the walk-through to examine these areas so as to bid accordingly. Any "penetration survey" drawings of the area should be made available. For those projects where
areas may not be visible until after demolition begins, the project manager should either put in an allowance for any found penetrations beforehand, issue a change order to cover the additional work afterwards, or, after discussions with the appropriate administration, transfer responsibility of the repair to the Plant Maintenance Paint Shop.

In the case where a penetration that a contractor uses was pre-existing and Facilities Operations was NOT made aware, the contractor has responsibility:

- for sealing and fire stopping with a UL rated system that penetration if it is of a similar size and scope to one that would have had to have been made to accommodate the penetrating item
- for sealing and fire stopping with a UL rated system that penetration if the proper sealing of all pre-existing penetrations was included in the scope of work
- For reporting the penetration to the project manager if it is of a size and scope beyond the needs of the current job.
- Fireproofing exposed structural steel where needed

In the case where a contractor or in-house department does not either create or use, but observes a penetration in a fire wall or smoke barrier, the contractor has the responsibility to either repair that penetration with a UL rated system or to report it to the project manager who must report it to the Facilities Operations Department.

During any major renovation project, all rated fire assemblies should be brought up to code. Reporting of penetrations for in-house repair should be confined to those found during small scale wiring projects.

c) HILTI App: Once a penetration permit is obtained the HILTI app can be downloaded on any I-phone/Android. The contractor and /or employee will receive an email from HILTI that will allow access. The app allows the designated person to mark the penetrations on the drawing and take before and after pictures. A HILTI QR Code sticker will be provided to apply near the area for scanning to unify the permit process, the work performance and completion.

**POST-INSTALLATION/CONSTRUCTION:**

a) All fireproofing and penetration repairs must be validated with TR-1 certification by a professional engineering or architect.
b) When installation is complete and rated wall/slab penetrations are sealed and structural steel is fireproofed, the contractor shall notify the sponsor department (i.e.: FM or IT). Any deviation from the original path will be noted on the Permit Form as an “update” along with any other additions or alterations as described in the Procedures: Permit section above.

c) A representative from the NYULH Facilities Operations Paint Shop will inspect all rated wall/slab penetrations for completed fire stopping. The contractor will provide a representative to accompany the representative to familiarize them with the work to be inspected, and shall act as a guide to expedite the inspection.

d) The Facilities Operations representative performing the inspection shall acknowledge by signature on the Penetrations Permit when it is verified that all penetrations have been properly sealed.

e) All contractors are required to follow the terms on the Rated Wall/Slab Penetrations Permit. Such agreement is verified by the Contractor’s (or representative’s) signature on the permit at time of issue.

f) Final payment shall be authorized to a contractor only when the NYULMC Facilities Operations Paint Shop representative validates all penetrations have been properly sealed, or other arrangements have been made to fire stop the penetrations.

ATTACHMENTS:
Flow Chart
NYU Langone Health Rated Wall/Slab Penetrations Permit
Permit Request Log/Sign-in Sheet
Typical Fire/Smoke Barrier Drawing
Typical Painter Mechanic Log
Environmental Health and Safety Penetration Report and Summary