FORMER JUNG SUN LAUNDRY SITE
SITE No. 241102

37-11 23rd STREET
LONG ISLAND CITY, NEW YORK
Block 366 Lot 18

INTERIM REMEDIAL MEASURE WORK PLAN

April 2014
Revised June 2014

Prepared for:
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CERTIFICATION PAGE

I Ariel Czemerinski certify that I am currently a NYS registered professional engineer and that this Interim Remedial Measure Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

7/7/14

1.0 INTRODUCTION

This Interim Remedial Measure Work Plan (IRMWP) was prepared on behalf of New Generation Development LLC for the property located at 37-11 23rd Street in the Long Island City section of Queens, New York (**Figure 1)**. On March 26, 2014, New Generation Development LLC signed an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC), to investigate and remediate four lots which were formerly operated as the Jung Sun Laundry. The four lots identified as Block 366 Lots 18, 26, 32 and 33 were previously listed on the Registry of Inactive Hazardous Waste Sites (Class 2). Three of the four lots were purchased by New Generation at auction. New Generation is not affiliated in any way with the owners and operators of Jung Sun Laundry, and did not cause or own the property at the time the contaminants were released. See **Figure 2** for the locations and orientation of the tax lots covered under the listing.

This Interim Remedial Measure (IRM) Work Plan addresses the excavation of soil on Lot 18 during the construction of a new commercial building (hotel) on the lot. The Work Plan also includes the installation of a vapor barrier and subslab depressurization system to protect the new building from the infiltration of chlorinated solvent vapors which are known to be present at the Site. Removal of impacted soil will reduce the threat of potential exposure, while the process of developing a comprehensive remedial plan for the entire Site proceeds.

1.1 SITE LOCATION AND DESCRIPTION

The address for the subject property is 37-11 23rd Street, Long Island City, New York 11101. The subject property is designated as Block 366, Lot 18 by the New York City Department of Assessment. The subject property is located in the City of New York and Borough of Queens (Queens County). The lot has 74.33 feet of frontage on 23rd Street and is 92.6 feet deep for a total area of 6,883 square feet (0.158 acres). The subject Site is currently a vacant parking lot occupying the entire Lot.

The elevation of the property is approximately 19 feet above the National Geodetic Vertical Datum (NGVD) feet. Based on measurements made at the Site as part of the Remedial Investigation, the depth to groundwater beneath the site is approximately 15 feet below existing grade and flows southwest toward.

The area surrounding the Site is predominantly heavy commercial / industrial and includes a building supply, a manufacturing business and junk yard to the east, a large former textile mill (currently used as multi-tenant residental space) to the south, an auto repair shop and commercial / industrial building to the west and an auto repair shop and parking lot to the north.

1.2 REDEVELOPMENT PLANS

New Generation intends to redevelop the property with a new 11-story hotel building including a full height basement level. As shown in **Figure 3** the proposed hotel building will occupy approximately 60 percent of the lot leaving a set back in the front and a 28 foot strip at the rear of the lot for parking. The parking area will be combined with a future parking planned area on Lots 32 and 33 accessed by a driveway on 24th Street.

The cellar level of the building will be used for utility rooms and a kitchen and dining area for guests. Architectural plans including floor plans and elevation drawings are provided in **Attachment A**.

1.3 SUMMARY OF PREVIOUS INVESTIGATIONS

The NYSDEC performed a subsurface investigation at the Site and surrounding area. This work was part of a general Site Characterization and consisted of two Phases as follows:

- Phase 1 Data Summary Report, Jung Sun Laundry Plume, Site Number: 241102. Earth Tech Northeast, Inc. July 2008.

- Final Phase 2 Data Summary Report, Jung Sun Laundry Plume, Site Number: 241102. AECOM March 2010.

1.3.1 July 2008 – Phase 1 Data Summary Report (Earth Tech)

Under the Phase 1 groundwater investigation, Earth Tech installed three permanent monitoring wells, collected groundwater samples from the three new and five existing monitoring wells for volatile organic compounds (VOCs), conducted a membrane interphase probe investigation and collected soil samples from borings. Earth Tech reached the following conclusions in the Report:

- The presence of PCE and TCE, was confirmed in the groundwater under the Jung Sun and Scalamandre Silks property. The presence of PCE was confirmed in the subsurface soil (on Scalamandre Silks property, located adjacent to the Jung Sun Property).

- The concentration of PCE and other chlorinated solvents observed in the groundwater is greatest in MW-4, located immediately to the west of the Jung Sun facility and near the location of the dry cleaning operation.

- Groundwater flow in the shallow zone appears to be to the south-southeast across the Site, although the extremely minimal gradient makes determination of the groundwater flow direction difficult. The data indicate that the dissolved plume observed on the south side of the site is not present north of the Site. This suggests that the site is a probable source of the observed contamination.

- There is some upgradient or cross-gradient contamination in the shallow groundwater; suggesting a possible additional upgradient source if the presumed flow direction is correct. Alternatively, this relatively low level of contamination may result from dispersion of the contaminant plume identified on the Jung Sun Property.

- Based on the distribution and concentration of contaminants observed in the soil and groundwater, it is considered possible that there may be an additional source area near the area of the tank-like geophysical anomaly on Scalamandre Silks property.

- Ecological impacts from the elevated groundwater concentrations are not considered significant because of the urban setting and a lack of a direct pathway.

- Impacts to human health from airborne contamination should be evaluated since receptors are present at the operating facilities on the block. No public water wells were identified within a mile of the site indicating there is no significant threat to human health from ingestion of the groundwater.

- Off –site migration of the groundwater contamination is possible because PCE contamination in the downgradient MW-1 was observed in the 2003 and January 2008 sampling events at levels exceeding the Class GA criteria.

- Jung Sun is a probable source of the PCE in groundwater.

1.3.2 March 2010 – Phase 2 Data Summary Report (AECOM)

Under the Phase 2 part of the investigation performed in February 2009, AECOM collected groundwater samples from 8 existing monitoring wells, advanced 2 test pits, installed 7 soil borings and collected soil gas samples from 7 locations.

Earth Tech installed three permanent monitoring wells, collected groundwater samples from the three new and five existing monitoring wells for volatile organic compounds (VOCs), conducted a membrane interphase probe investigation and collected soil samples from borings. Earth Tech reached the following conclusions in the Report:

AECOM provided the following conclusions:

- The groundwater, soil and soil gas results confirm the presence of chlorinated volatile organic compounds (TCE, PCE, VC and cis-1,2-DCE) in all matrices at the site (Jung Sun) and in the vicinity of the site.

- The groundwater flow in the shallow zone appears to be relatively flat across the site and the extremely minimal gradient makes determination of the groundwater flow direction difficult.
- The data of previous site investigation (February 2008) and this round (February 2009) of site investigation indicate that the dissolved plume has migrated towards south-southeast to the site at MW-1 and MW-5.

- In Phase 2, a decrease in groundwater contamination concentrations was observed for MW-4 and an increase in groundwater contamination was observed in the downgradient wells MW-1 and MW-5 compared to Phase 1. This indicates the migration of the plume from the site towards south-southeast, and a potential vertical migration of the plume.

- There is some upgradient or cross-gradient contamination in the shallow groundwater; suggesting a possible additional upgradient source, if the presumed flow direction is correct. Alternatively, this relatively low level of contamination may result from dispersion of the contaminant plume identified on the Jung Sun Property.

- PCE was detected in groundwater above the NYSDEC class GA criteria in six of the eight monitoring wells.

- PCE was detected in soil above NYS DEC Part 375 unrestricted use SCGs on Jung Sun property and Scalamandre Silks property adjacent to Jung Sun. At location SB-1B within the Scalamandre property PCE was detected at 12.0 ft bgs, which is believed to be migrated from contaminated groundwater during seasonal fluctuation (No PID readings were recorded from the surface to 11.00 ft bgs.)

- PCE and TCE were detected at elevated concentrations in soil gas samples; future soil vapor investigation is warranted.

- Ecological impacts from the elevated groundwater concentrations are not considered significant because of the urban setting and a lack of a direct pathway.

- Test pit excavation at the suspected anomalies presented at Scalamandre Silks property adjacent to Jung Sun property identified a reinforced concrete pad.

1.4 SITE GEOLOGY / HYDROGEOLOGY

Subsurface soils at the site include a silty non-native fill with bricks, coal ash and other rubble to a depth ranging from less than 1 foot to as much as 12 feet at some locations. Native fine brown silty-sands present beneath the historic fill material to the termination depth of 20 feet below grade. A 20 inch thick coarse sand lens was noted between 10 and 15 feet below grade at two locations.

Groundwater at the Site is present at a depth of approximately 13 to 15 feet below surface grade within the native silty-sand. Based on groundwater elevation measurments taken from on-site monitoring wells, groundwater flow is generally south-southwest.

2.0 INTERIM REMEDIAL MEASURE PROGRAM

The IRM proposed for the Lot 18 portion of the Site consists of the excavation and disposal of shallow impacted soil within two hot spot areas, during excavation for construction of the proposed hotel building foundation. The IRM will be performed in accordance with the methods and specifications as described under the NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation (May, 2010).

2.1 GOVERNING DOCUMENTS

Governing documents and procedures included in the IRM Work Plan include a Site-specific HASP, a CAMP, a Citizen Participation Plan (CPP), a Soil Management Plan (SMP) and analytical Quality Assurance Project Plan (QAPP). Highlights of these documents and procedures are provided in the following sections.

2.1.1 Health & Safety Plan (HASP)

The HASP takes into account the specific hazards inherent to the site and presents the minimum requirements which are to be met by the remediation contractor, excavation subcontractor, and other on-site personnel in order to avoid and, if necessary, protect against health and/or safety hazards. A HASP has been prepared for the IRM activity at the site and is provided in **Attachment B**.

Contractors and subcontractors will have the option of adopting this HASP or developing their own site-specific document. If a contractor or subcontractor chooses to prepare their own HASP, the Project Remedial Engineer will ensure that it meets the minimum requirements as detailed in the site HASP prepared by EBC and must be submitted to and approved by the NYSDEC.

2.1.2 Quality Assurance Project Plan (QAPP)

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-pak(s) to maintain a temperature of 4^{o}C.

Dedicated disposable sampling materials will be used for both soil and groundwater samples (if collected), eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected.

Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil;
- Rinse with tap water;
- Wash with alconox® detergent solution and scrub ;
- Rinse with tap water;
- Rinse with distilled or deionized water.

Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will accompany samples each time they are transported to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) will be collected at the rate of one per 20 samples submitted to the laboratory. Laboratory reports will be upgradeable to ASP category B deliverables for use in the preparation of a data usability report (DUSR). The DUSR will be applicable to all confirmation samples and final round samples. Performance monitoring samples will be in a results-only format. The QAPP prepared for the Site is provided in **Attachment C**.

2.1.3 Soil Management Plan (SMP)

An SMP was prepared for excavation, handling, storage, transport and disposal of all soils/materials that are disturbed/excavated at the Site. The SMP includes all of the controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations. The SMP developed for this site is presented in **Section 2.6** of this IRM.

2.1.4 Storm-Water Pollution Prevention Plan (SWPPP)

The erosion and sediment controls will be in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

The erosion and sediment controls for all remedial activity will be performed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Typical measures that will be utilized at various stages of the project to limit the potential for erosion and migration of soil include the use of hay bales, temporary stabilized construction entrances/exits, placement of silt fencing and/or hay bales around soil stockpiles, and dust control measures.

2.1.5 Community Air Monitoring Plan (CAMP)

The CAMP provides measures for protection for on-site workers and the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from remedial activities.

The action levels specified require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the remedial work did not spread contamination off-site through the air. The primary concerns for this site are vapors,

nuisance odors and dust particulates. A CAMP was prepared for implementation of the IRM and is provided in **Attachment D**.

2.2 GENERAL INFORMATION

2.2.1 Project Organization

The Remedial Engineer for the IRM activity is Mr. Ariel Czemerinski, P.E. The Owner's representative in charge of the redevelopment project is Mr. Gurdial Singh. Mr. Singh will also serve as the project's Construction Manager for site preparation and redevelopment.

2.2.2 Remedial Engineer

The Remedial Engineer for this project will be Mr. Ariel Czemerinski, P.E.. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the overall remedial program for the Site. The Remedial Engineer will certify that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the IRM Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in conformance with that Plan.

The Remedial Engineer will oversee all aspects of the IRM program, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal.

2.2.3 IRM Schedule

The estimated duration of the hot spot excavation and removal and the soil handling activity is two weeks. Excavation of the remainder of the lot for foundation construction will immediately follow removal of the hot spot areas and is expected to take an additional two weeks. Installation of the vapor barrier and SSD System will be performed during construction of the new buildings basement foundation.

2.2.4 Work Hours

The hours for operation of IRM activity will conform to the NYCDOB construction code requirements or according to specific variances issued by that agency. DEC will be notified by the Volunteer of any variances issued by the NYCDOB.

2.2.5 Site Security

The lot currently has chain link fences on three sides; west, south and north. The east side is bordered by an adjacent lot owned by the developer which in turn has a construction fence erected along 24th Street. These fences will be maintained during IRM activity and properly secured at the end of the day.

2.2.6 Traffic Control

All traffic enters and leaves the Site via an existing gate on 23rd Street. The IRM contractor will direct the arrival or departure of construction vehicles, and provide flag services as needed to maintain safe travel exiting and entering the Site from the 23rd Street entrance. Traffic related to to the IRM activity will require the staging of 10-wheel dump trucks along 23rd Street on a daily basis during soil loading activity. The local soil disposal transport route will be as follows: Exit the Site by turning right, heading north on 23rd Street for one half block to 36th Avenue, turn right heading east on 36th Avenue for 9 blocks to 33rd Street, turn left on 33rd Street heading north for 8 blocks to Astoria Boulevard North. Turn Left on Astoria Boulevard North heading west two blocks, merge left heading west onto I-278 Brooklyn Queens Expressway West.

This route was designed to minimize or eliminate the time trucks will be on local streets. See **Figure 4** for a map of the planned truck route. Clean, empty trucks waiting to be loaded will be parked in front of the Site along 23rd Street Avenue and not on residential Streets. Site personnel will be required to park on Site or in legal all-day on-street parking spaces, near the Site or in an off-street parking lot/garage.

2.2.7 Pre-Construction Meeting with NYSDEC

A pre-construction meeting with the Project Manager, Remedial Engineer, Construction Manager and Owner's Representative will take place prior to the start of major construction activities. The NYSDEC will be permitted an opportunity to participate in this meeting and will be given advance notice to enable attendance.

2.2.8 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in **Table 1**. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

2.3 REPORTING

2.3.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day in which remedial activity takes place. Daily reports will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP readings;
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the IRM or other sensitive or time critical information. However, such conditions must also be included in the daily reports.

Emergency conditions and changes to the IRM will be addressed directly to the NYSDEC Project Manager via personal communication. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

2.3.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers within 10 days following the end of the month of the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e. tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

2.3.3 Construction Completion Report (CCR)

Following completion of all IRM activity, a Construction Completion Report (CCR) will be prepared to document all aspects of the underground storage tank and contaminated soil removal. This report will be summarized in the Remedial Action Work Plan (RAWP), and included in the Final Engineering Report (FER). The CCR will be prepared in accordance with DER-10 guidelines and will include:

- A summary of the removal action including a detailed description of the extent and volume of soil excavated.
- All fully executed manifests documenting any off-site transport of waste material.
- Scaled site plan showing the location of all confirmation samples
- Results of all analyses, including summary tables, laboratory data sheets and the required laboratory data deliverables.
- Photographic documentation of the excavation and the overall removal process.
- Information on backfill imported onto the Site including amount, type and origin and copies of transport tickets from the supplier.
- Certification of the Report by a QEP or P.E. as required.

2.3.4 Complaint Management Plan

Complaints from the public regarding nuisance or other Site conditions including noise, odor, truck traffic etc., will be recorded in the Site field book and reported to the NYSDEC in the daily status report.

2.3.5 Deviations from the IRM Work Plan

Minor deviations from the IRMWP will be identified in the daily update report and will be noted in the Final Engineering Report. When deviations are reported, a brief discussion will be provided which will state the following:

- Reasons for deviating from the approved IRMWP;
- Effect of the deviations on overall remedy.

Major changes to the scope of work must be discussed with the NYSDEC and the NYSDOH prior to implementation. If the changes are considered to be significant enough, an addendum to the IRMWP Work Plan will be prepared and submitted to NYSDEC/NYSDOH for review.

2.4 MOBILIZATION

Mobilization will include the delivery of excavation equipment and materials to the site. All remediation personnel will receive site orientation and training in accordance with the site specific HASP, CAMP and established policies and procedures to be followed during the implementation of the IRMWP. The remediation contractor, construction manager and all associated subcontractors will each receive a copy of the IRMWP and the site specific HASP and will be briefed on their contents.

2.5 SITE PREPARATION

2.5.1 Erosion and Sedimentation Controls

During mobilization, a continuous line of silt fence or hay bales will be established around the perimeter of the work area as necessary to minimize off-site sediment transport during storm events. Silt fences and hay bales will also be used as needed to protect any storm drains outside the excavation areas. The silt fences will be inspected by the Contractor at the start and end of each workday and repaired immediately as needed.

2.5.2 Stabilized Construction Entrance(s)

The construction entrance will be stabilized with crushed stone, gravel or plywood sheeting as necessary to provide a safe egress and ingress to the Site.

2.5.3 Utility Mark-outs, Easements and Permits

The IRM Contractor and its sub-contractors are solely responsible for the identification of utilities that might be affected by work under the IRMWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this IRMWP. The IRM Contractor and its sub-contractors are solely responsible for safe execution of all invasive and other work performed under this IRMWP. The IRM Contractor and its sub-contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this IRMWP including but not limited to NYC Department of Buildings work permits and Notice of No Objection by the Manhattan Transit

Authority for excavation adjacent to a subway line. Approval of this IRMWP by NYSDEC does not constitute satisfaction of these requirements.The presence of utilities and easements on the Site will be investigated by the IRM Contractor and it must be determined that no risk or impediment to the planned work under this IRMWP is posed by utilities or easements on the Site. The IRM Contractor will provide copies of all permits and documentation of the utlility investigation to the Remedial Engineer prior to the start of work.

2.5.4 Sheeting and Shoring

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities including excavation is the sole responsibility of the IRM Contractor and its sub-contractors. The IRM Contractor and its sub-contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The IRM Contractor and its sub-contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. Further, the IRM Contractor and its sub-contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved Plan.

2.5.5 Equipment and Material Staging

Equipment used for excavation work will be staged on Site within the fenced perimeter. Trucks arriving for the transport of soil and other materials will be staged along 23rd Street in front of the site. It is anticipated that no more than 5 trucks will be staged at a time.

2.5.6 Decontamination Area

All materials and equipment (except disposable items) will be decontaminated on specially constructed “pads” located at the exit point from the Site. At a minimum, the pads will consist of a layer of crushed stone underlain by an impervious plastic liner that has been graded to drain to the interior of the Site. The pad will be sized to accommodate the largest piece of equipment used on the project. Where effective, the equipment will be “dry” decontaminated using a broom and/or brushes. If significant amounts of soil or other contaminants remain after the dry decontamination, the equipment will also be pressure washed before leaving the Site. Disposable items will be containerized within the site and transported for appropriate off- site disposal.

2.6 SOIL / MATERIAL MANAGEMENT PLAN

2.6.1 Excavation of Hot Spot Areas

Two CVOC hot-spot areas (approx. 600 sf each) have been identified at the Site as shown on **Figure 5**. The areas include two adjacent areas along the rear of the lot within the former loading area of the building on adjacent lots 32 and 33. Based on PID readings and laboratory results, the CVOC contamination, reported in these areas during the Supplemental RI (EBC 4/14), is limited to the upper 4 to 5 feet of soil. Deeper impacted soil was reported by AECOM in a boring within the north hotspot area to 7.5 ft below grade and in a boring within the south hotspot area to a depth of 12.5 ft. These hot-spot areas will be excavated to remove CVOC impacted soils to the depths as shown in **Figures 5, 6** and **7.** If contaminated soil extends beyond these depths within

the hot spot areas, it will be addressed as part of the Remedial Action Work Plan to be prepared for the Site.

Excavated soil will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, pre-characterization samples may be collected to allow the soil to be loaded directly on to trucks for transport to the disposal facility. It is anticipated that soils excavated from the hot-spot areas will be classified as a hazardous waste. The final determination on classification will be based on the results of waste characterization analysis and consultation with the NYSDEC.

The excavation of CVOC impacted soil will be performed by fully trained personnel (40HR OSHA HAZWOPER).

Final excavation depth, length, and width will be determined in the field, and will depend on the horizontal and vertical extent of contaminated soils as identified through physical examination (PID response, odor, staining, etc.) and confitmatory sampling. All CVOC contaminated soil that exceeds the restricted residential use soil cleanup objectives for protection of groundwater under the foot print of the new building will be excavated and removed off-site.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the HASP;
- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated;
- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile or dispose of separate from the impacted soil;
- Maintain a written description and photographic documentation of the excavation.
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation with a calibrated photoionization detector (PID).
- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc), an attempt will be made to remove it to the extent not limited by the site boundaries. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separate dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue as pratical, until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present;
- Excavated soils which are temporarily stockpiled on-site will be covered with 6-mil polyethylene sheeting while disposal options are determined. Sheeting will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The

sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property;

- Once the soil excavation effort has been complete, verification or confirmatory samples will be collected from the excavation as described in **Section 2.6.2** of this document.

The excavation of impacted soil will be performed by a qualified remedial contractor and fully trained personnel (40HR OSHA HAZWOPER).

2.6.2 Post Excavation Confirmation Sampling

Post excavation soil samples will be collected from each hot-spot excavation area to document the success of the removal effort in meeting restricted residential use soil cleanup objectives for the protection of groundwater. Confirmation samples will be submitted to a NYSDOH certified analytical laboratory for analysis of VOCs according to EPA method 8260 with category B deliverables. The approximate locations of post excavation endpoint samples are shown in **Figure 8**.

2.6.2.1 Confirmation Sampling Frequency
Confirmation samples will be collected at a frequency as outlined in DER-10 as follows:

If impacted soil is encountered and removed to the extent practical, a minimum of five samples will be collected consisting of 4 sidewall samples (minimum of 1 per 30 liner feet of sidewall) and one bottom sample (minimum of 1 sample per 900 squre feet. Samples will be biased upon field screening to the suspected location of greatest contamination.

2.6.2.2 Reporting of Results
Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR).

2.6.2.3 QA/QC
The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-paks to maintain a temperature of 4^{o}C.
Dedicated disposable sampling materials will be used for sample collection, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected.

Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil;
- Rinse with tap water;
- Wash with alconox® detergent solution and scrub ;
- Rinse with tap water;
- Rinse with distilled or deionized water;

Prepare field blanks by poring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.

2.6.2.4 DUSR

The DUSR provides a thorough evaluation of analytical data with third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. Verification and/or performance monitoring samples collected under this IRMWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. The completed DUSR for verification/performance samples collected during implementation of this IRMWP will be included in the final Engineering Report.

2.6.3 Excavation of Historic Fill Materials

Historic fill has been identified throughout most of the site. The depth varies from 6 inches to approximately 5 ft. The fill material contains several SVOCs and metals above restricted residential objectives in some areas. Historic fill which is present in areas of the site which are scheduled for the excavation of basement levels or which will otherwise be disturbed through grading or other activities, will be segregated from non-contaminated native soils and disposed of off-site at a permitted disposal facility. Excavated historic fill materials will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, pre-characterization samples may be collected to allow the soil to be loaded directly on to trucks for transport to the disposal facility. It is anticipated that historic fill materials will be classified as a non-hazardous material. It is anticipated that the excavation of historic fill materials will be performed by the excavation contractor for the construction project.

2.6.4 Excavation of Native Soils

Native soils are present directly below the fill materials and will represent the majority of soils excavated from the basement area during construction of the new building. Since excavation of the basement area will begin following removal of the hot spot areas, it is expected that native soils will not be contaminated. However, if pockets of contamination are discovered beneath the existing building's foundation following demolition, or during the excavation of basement areas, the contamination will be removed to the extent possible and segregated from clean native soils for proper disposal. Clean native soils will be stockpiled on-site and characterized for off-site disposal. It is anticipated that clean native soil will be disposed of as a beneficial re-use material. Clean native soils may also be utilized for backfill at the site provided that they pass a testing program and that reuse on-site is approved by the NYSDEC.

It is anticipated that the excavation of native soil materials will be performed by the excavation contractor for the construction project.

2.6.5 Estimated Removal Quantities

The total quantity of hot-spot soils expected to be disposed off-Site is 295 cubic yards. In addition approximately 750 cubic yards of historic fill and 1,500 cubic yards of non-contaminated native soil will be excavated for the basement area and will be disposed of off-site. The estimated quantity of soil/fill expected to be reused/relocated on Site is 0 cubic yards.

2.6.6 Soil Screening Methods

Visual, olfactory, soil screening and assessment will be performed by a qualified environmental professional (QEP) during all remedial and development excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC. Soil screening will include physical observation for odors and staining of soils and bedrock materials and scanning with a photoionization detector.

Resumes will be provided for all personnel responsible for field screening (i.e. those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

2.6.7 Stockpile Methods

Materials excavated from hot spot contaminated areas excavated materials may be stockpiled for characterization prior to off-site disposal or, if pre-characterized, loaded directly into trucks supplied by the selected disposal facility.

If stockpiling of overburden soil is utilized then the following methods will apply. Stockpiles will be inspected every work day and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. Stockpiles will be kept covered at all times with appropriately anchored commercial-grade tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

2.6.8 Materials Excavation and Load Out

The Remediation Engineer or a QEP under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material. Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Where effective, the equipment will be “dry” decontaminated using a broom and/or brushes. If significant amounts of soil or other contaminants remain after the dry decontamination, the

equipment will also be pressure washed before leaving the Site. The QEP will be responsible for ensuring that all outbound trucks are dry-brushed or washed on the truck wash/equipment pad before leaving the Site until the remedial construction is complete. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking. The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site derived materials.

Each hot-spot area to be remediated will be removed and confirmation sampling completed before excavations related to Site development commence proximal to the hot-spot area.

Development related grading cuts and fills will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan. Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

2.6.9 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. A truck transport route has been prepared to limit truck traffic along local roads. All trucks loaded with Site materials will exit the vicinity of the Site using only this approved truck route.

Proposed in-bound and out-bound truck routes to the Site are shown in **Figure 4**, and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off- Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development. Material transported by trucks exiting the site will be secured with covers.

If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be inspected and dry-brushed, as needed, before leaving the site. If powerwashing is used, truck wash waters will be collected and disposed of off-Site in an appropriate manner.

2.6.10 Materials Disposal Off-Site

Multiple disposal facility designations will be employed for the materials removed from the Site. Once final arrangements have been made the disposal location(s) will be reported to the NYSDEC Project Manager.

All hot-spot soils and historic fill excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed of in accordance with all local, State

(including 6NYCRR Part 360) and Federal regulations. It is anticipated that hot-spot soils will be disposed of as a hazardous waste and historic fill disposed of as a non-hazardous material. Petroleum contaminated soils, if encountered, and which are free of CVOCs will also be disposed of as a non-hazardous material. Final classification of excavated materials will be dependant upon the results of waste characterization sampling and the NYSDEC. Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the CCR. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations. Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities). Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of Solid & Hazardous Materials (DSHM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DSHM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off-Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Consultant. The letter will include as an attachment a summary of all chemical data for the material being transported.

Clean soil removed from the site for development purposes (i.e. basement levels) will be handled as unregulated or beneficial use disposal. This soil will undergo a testing program to confirm that it meets residential / groundwater protection SCOs prior to unregulated disposal or reuse on-site. Confirmation testing of clean soils will be as follows:

Contaminant	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	Each composite sample for analysis is created from 3-5 discrete samples from representative locations in the fill.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	

800-1000	7	2	
1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

Uncontaminated native soil confirmed by the above testing program and removed from the site, will be disposed of as unregulated C&D material or sent to a beneficial re-use facility. The final destination of soils whether classified as contaminated or uncontaminated must be approved by the NYSDEC.

Concrete demolition material generated on the Site from building slabs, parking areas and other structures will be segregated, sized and shipped to a concrete recycling facility. Concrete crushing or processing on-Site is prohibited. Asphalt removed from the parking areas will be sent to a separate recycling facility.

Additionally, it is common to encounter scrap metals and large boulders (greater than one foot in diameter) during excavation which may not be accepted by either the licensed disposal facility or the C&D facility. These materials will be segregated and subsequently recycled at local facilities. Uncontaminated metal objects will be taken to a local scrap metal facility.

Bricks and other C&D material are also not accepted by most soil disposal facilities if present at greater then 5% by volume. This material, if encountered, will be sent to a C&D landfill or other C&D processing facility if approved by the DEC. C&D material of this type is most often encountered on sites in which former basement structures have been filled in with material from demolishing a former building.

The following documentation will be obtained and reported to DEC for each disposal location used for contaminated material to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Consultant to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed of was generated at an environmental remediation site in New York State. The letter will provide the project identity and the name and phone number of the Consultant. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the CCR.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report.

Documentation for materials disposed of at recycling facilities (such as metal, concrete, asphalt) and as non-regulated C&D will include transport tickets for each load stating the origin of the material, the destination of the material and the quantity transported.

The IRM activities will be summarized in a CCR and in the FER. The summary will include an accounting of the destination of all material removed from the Site during this IRM, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include

records and approvals for receipt of the material. This information will also be presented in a tabular form in the CCR.

2.6.11 Materials Reuse On-Site

There is no plan to re-use any site materials on the property, however, clean native soil may be used to backfill around foundation walls and to backfill the hot-spot excavation areas. Re-use of on-Site clean native soil will only be allowed if the material is found to be acceptable through the verification testing program detailed above. The Remedial Engineer will ensure that procedures defined for materials reuse in this IRM are followed and that unacceptable material will not remain on-Site.

Concrete crushing or processing on-Site is prohibited. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site. Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

2.6.12 Backfill from Off-Site Sources

Off-site fill material may be needed to stabilize the entrance - exit areas of the Site and for temporary driveways for loading trucks. Clean fill will also be imported onto the Site as necessary for foundation sub-base. All soil brought to the site for use as backfill will meet the requirements of 6NYCRR Part 375 6.7(d).

Recycled Concrete Aggregate (RCA) derived from recognizable and uncontaminated concrete and supplied by facilities permitted by, and in full compliance with Part 360-16 and DSNY regulations, is an acceptable form of backfill material. The Remedial Engineer is responsible for ensuring that the facility is compliant with the registration and permitting requirements of 6 NYCRR Part 360 and DSNY regulations at the time the RCA is acquired. RCA imported from compliant facilities does not require additional testing unless required by NYS DEC and DSNY under its terms of operations for the facility. Documentation of part 360-16 and DSNY compliance must be reviewed and approved by the Remedial Engineer before the RCA is transported to the Site.

Fill material may also consist of virgin mined sand, gravel or stone products. Materials from a virgin mined source may be imported to the Site without testing provided that that the material meets the specifications of the geotechnical engineer, Remedial Engineer, and Redevelopment Construction Documents and that the source of the material is approved by the Remedial Engineer and the NYSDEC Project Manager.

The source approval process will require a review of the following information:

- The origin of the material;
- The address of the facility which mines/processes the material;

- A letter from the facility stating that the material to be delivered to the site is a virgin mined material and that it has not been co-mingled with other materials during processing or stockpiling.

All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this IRM prior to receipt at the Site. Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

Under no circumstances will fill materials be imported to the site without prior approval from the NYSDEC Project Manager. If sufficient documentation is not obtained, fill materials will be tested at a frequency consistent with that as specified in Table 4 of NYSDEC CP-51 Soil Cleanup Guidance Policy. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

2.6.13 Community Air Monitoring Plan

The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from remedial activities at construction sites.

The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the remedial work did not spread contamination off-site through the air. The primary concerns for this site are nuisance odors and dust particulates.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report. The complete CAMP developed for this site is included in **Attachment D** of this IRM.

2.6.14 Odor, Dust and Nuisance Control Plan

2.6.14.1 Odor Control Plan
This odor control plan is capable of controlling emissions of nuisance odors off-Site. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils; . If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

2.6.14.2 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-Site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved though the use of wetting.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.

2.6.14.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during Site demolition and clearing, and during all remedial work. A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

3.0 ENGINEERING CONTROLS

3.1 SUB-SLAB DEPRESSURIZATION SYSTEM (SSDS)

An SSDS and vapor barrier were designed for the basement level which will be used used for a guest dining area, kitchen and mechanical and utility rooms.

The SSDS beneath the occupied portion of the basement slab will consist of a single venting zone. This zone will provide coverage of the entire basement slab area (approximately 3,500 sf). This is consistent with USEPA sub-slab depressurization design specifications which recommend a separate vent loop for every 4,000 sf of slab area.

The horizontal vent line is constructed of a continuous loop of perforated 4-inch HDPE smooth interior pipe. The horizontal pipe will extend to an adjacent utility chase-way where it will be piped individually to the roof via a 6-inch schedule 40 pvc line. Fill material around the horizontal vent piping is virgin-mined, ½ inch to ¾ inch gravel.

A high density polyethylene vapor barrier liner (HPDE) will be installed over the SSDS prior to pouring the building's concrete slab. The vapor barrier will consist of a 20 mil geomembrane liner (Vapor Block 20) as manufactured by Raven Industries, or equivalent. The vapor barrier will extend throughout the area occupied by the footprint of the new building which is to be constructed at the site. The specifications for installation will be provided to the construction management company and the foundation contractor or installer of the liner. The specifications state that all vapor barrier seams, penetrations, and repairs will be sealed either by the tape method or weld method, according to the manufacturer's recommendations and instructions.

A field inspector under the direct supervision of a professional engineer will inspect and photograph the vapor barrier at several critical stages before during and after the installation is complete, to assure compliance with design specifications. Detailed specifications of the SSD system are provided **Attachment E**.

3.1.1 Criteria for Termination

The active SSDS will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active SSDS may be submitted by the property owner based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

4.0 CONSTRUCTION COMPLETION REPORT (CCR)

Following completion of all IRM activity, a Construction Completion Report (CCR) will be prepared to document all aspects of the contaminated soil removal. This report will be summarized in the Remedial Action Work Plan (RAWP), and included in the Final Engineering Report (FER). The CCR will be prepared in accordance with DER-10 guidelines and will include:

- A summary of the removal action including a detailed description of the extent and volume of soil excavated.
- All fully executed manifests documenting any off-site transport of waste material.
- Scaled site plan showing the location of all confirmation samples
- Results of all analyses, including summary tables, laboratory data sheets and the required laboratory data deliverables.
- Photographic documentation of the excavation and the overall removal process.
- Information on backfill imported onto the Site including amount, type and origin and copies of transport tickets from the supplier.
- Certification of the Report by a P.E. as required.

5.0 SCHEDULE

The Work is anticipated to begin approximately 2 weeks following NYSDEC approval of the IRM Work Plan and 10 days following the distribution of the IRM notification Fact Sheet. The estimated duration of the tank removal, soil excavation and soil handling activity is two to three weeks.

The anticipated schedule of events is as follows:

Schedule Task	Estimated Date
NYSDEC Approval of IRM Work Plan	Week of July 7, 2014
Mobilize equipment to the Site (begin)	Week of July 7, 2014
Invasive activity - Excavation of Hotspot Areas (begin)	Week of July 14, 2014
Continue Excavations for Building Foundation (begin)	2 Weeks Following Mobilization
Disposal of Excavated Soil (complete)	6 Weeks Following Mobilization
Submission of Construction Completion Report	60 Days Following Soil Disposal

TABLES

Table 1
Emergency Contact List

General Emergencies	911
NYC Police	911
NYC Fire Department	911
NY Presbyterian Hospital	(212) 746-5454
NYSDEC Spills Hotline	1-800-457-7362
NYSDEC Project Manager	(518) 402- 9656
NYC Department of Health	(212) 676-2400
National Response Center	1-800-424-8802
Poison Control	1-800-222-1222
EBC Project Manager	(631) 504-6000
EBC BCP Program Manager	(631) 504-6000
EBC Site Safety Officer	(631) 504-6000
Remedial Engineer	(516) 987-1662
Construction Manager	(718) 347-3200

FIGURES

USGS Brooklyn Quadrangle 1995, Contour Interval = 10 feet

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
Phone 631.504.6000
Fax 631. 924 .2870

FORMER JUNG SUN LAUNDRY
37-11 23RD STREET, LONG ISLAND CITY, NY 11101

FIGURE 1 SITE LOCATION MAP

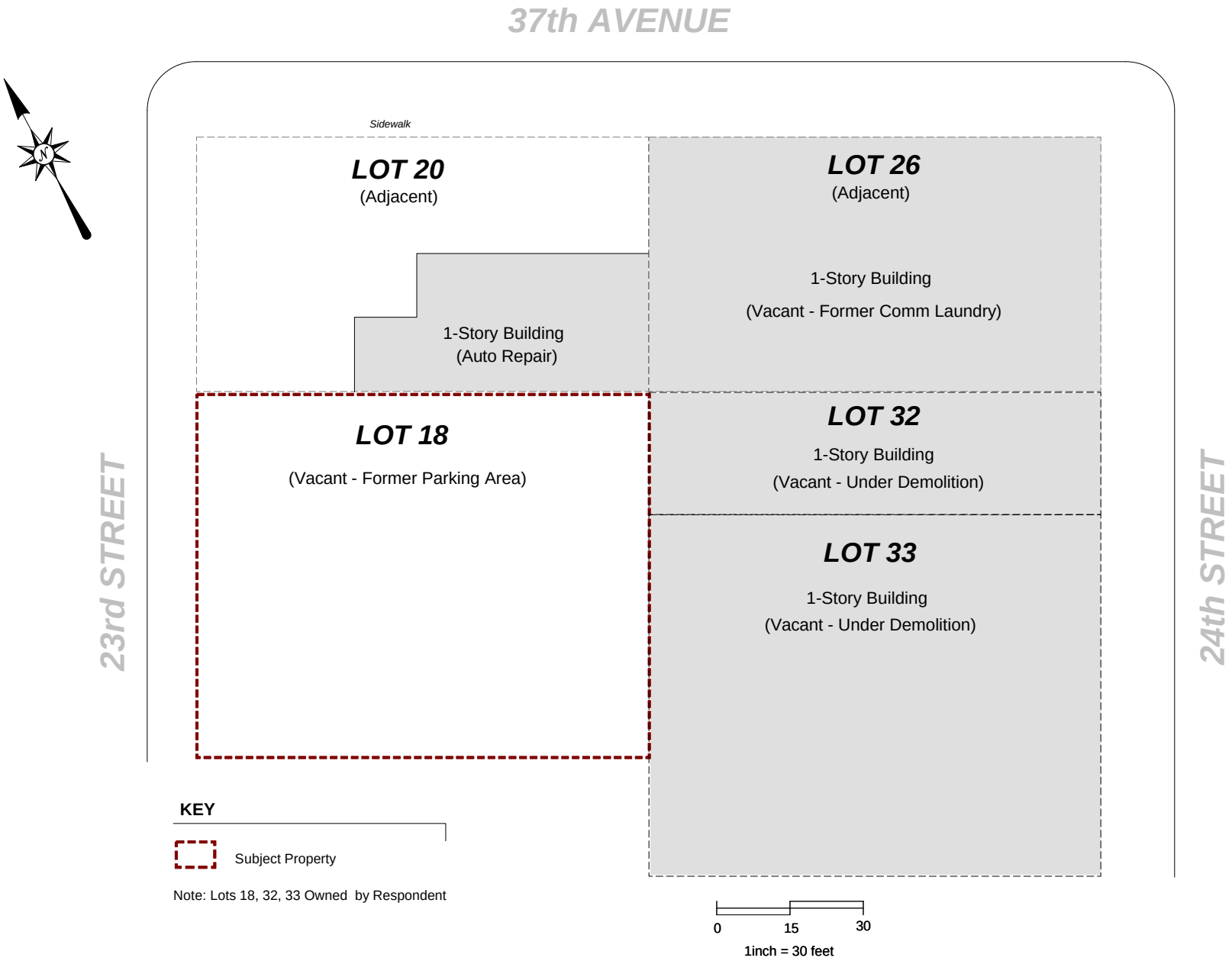

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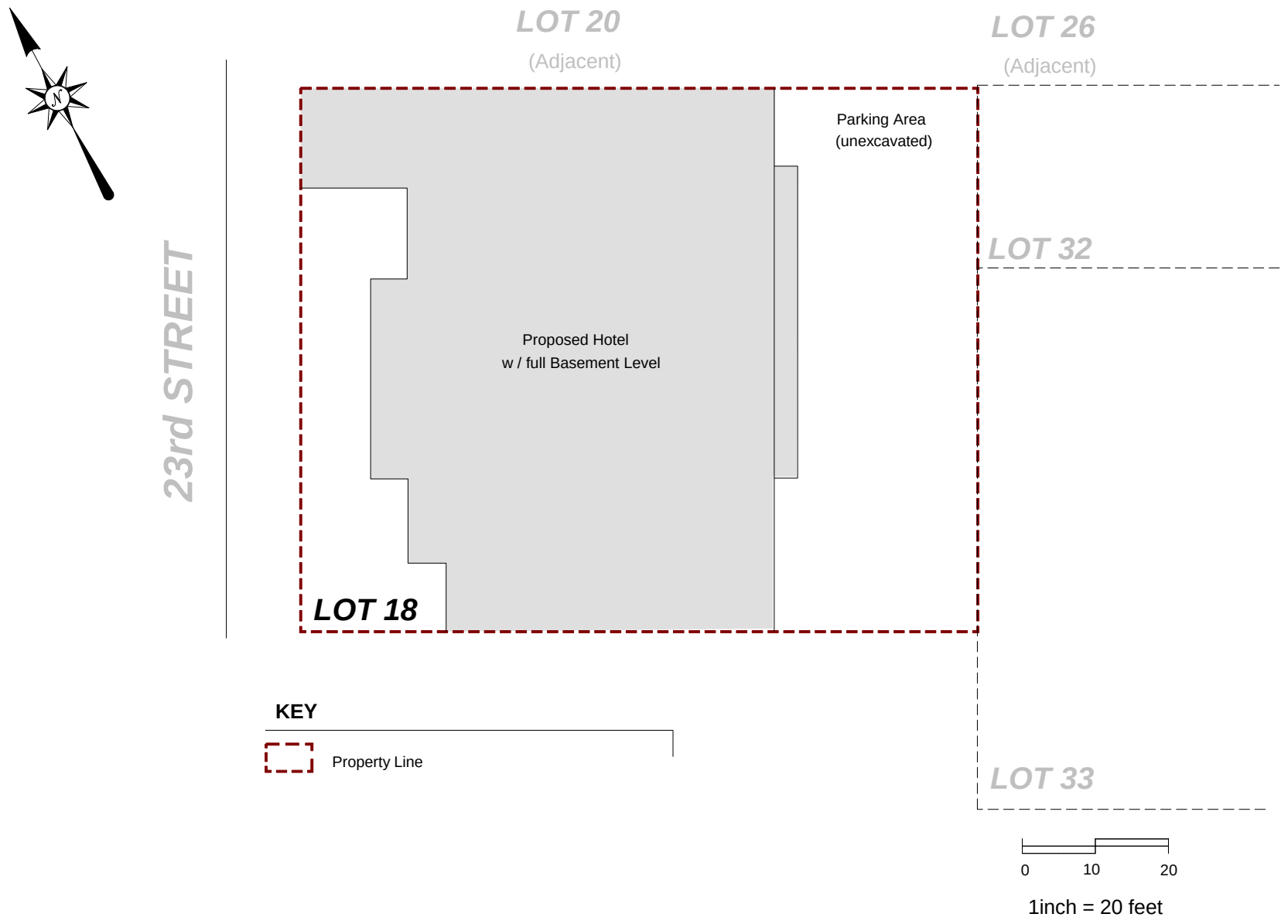
Figure No. 2

Site Name: REDEVELOPMENT PROJECT

Site Address: 85 TO 89 4TH AVENUE, BROOKLYN, NY

Drawing Title: LOT PLAN



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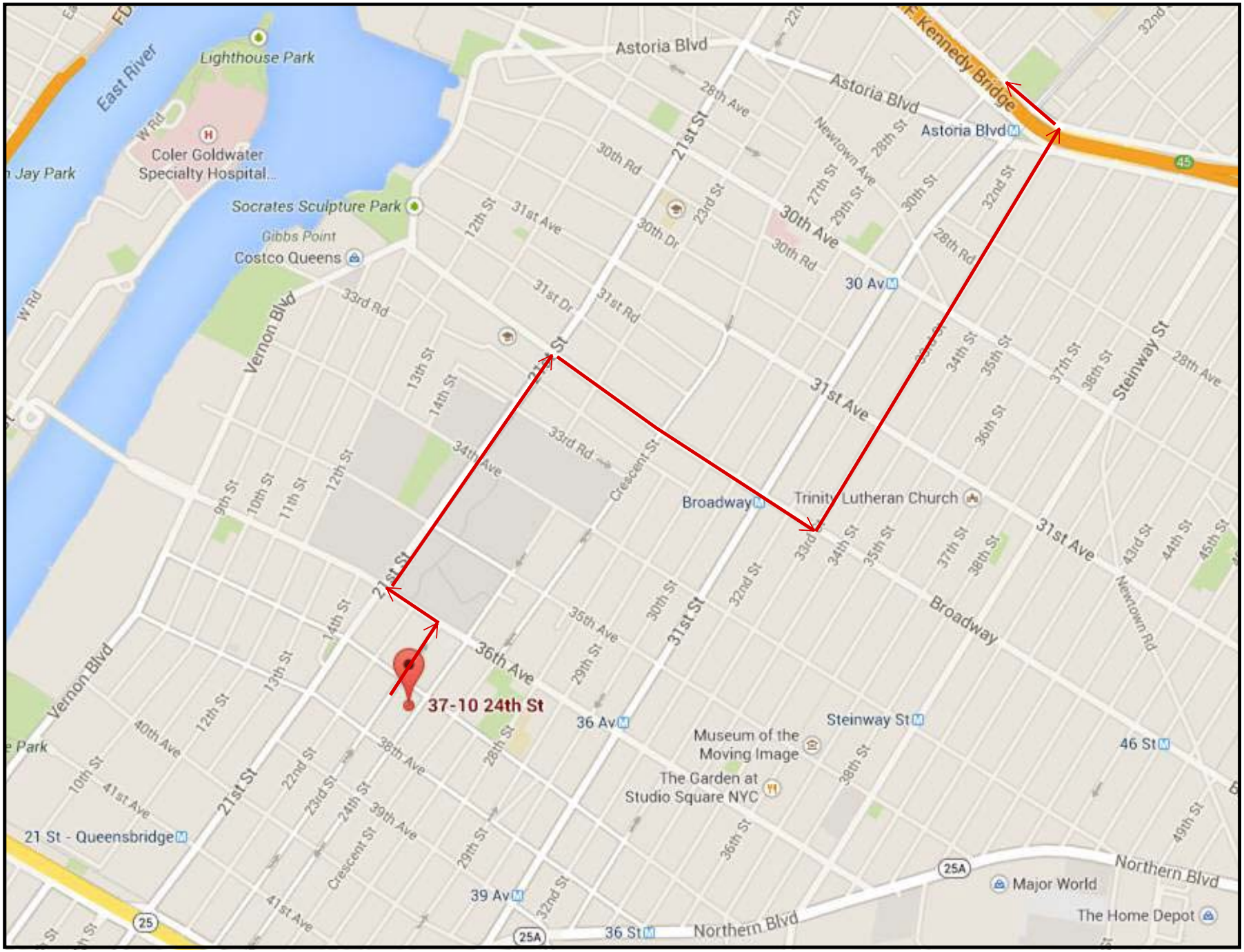
Environmental Business Consultants
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 3

Site Name: Redevelopment Project

Site Address: 85 to 89 4th Avenue, Brooklyn, NY

Drawing Title: Site Plan With Proposed Building



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ENVIRONMENTAL BUSINESS CONSULTANTS

Phone 631.504.6000
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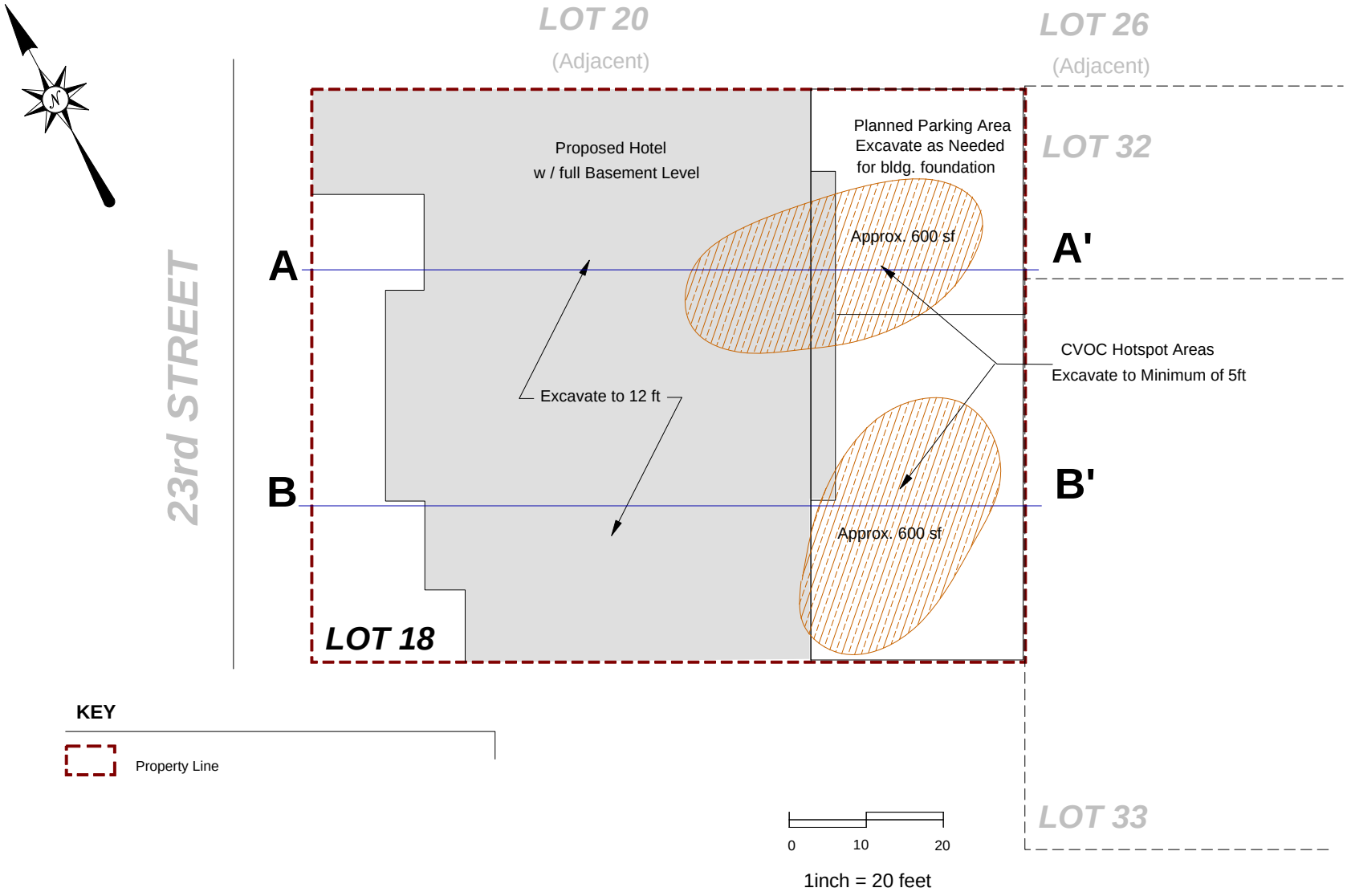
Figure No. 4

Site Name: FORMER JUNK SUN LAUNDRY SITE
Site Address: 85 TO 89 4TH AVENUE, BROOKLYN, NY
Drawing Title: TRUCK ROUTE



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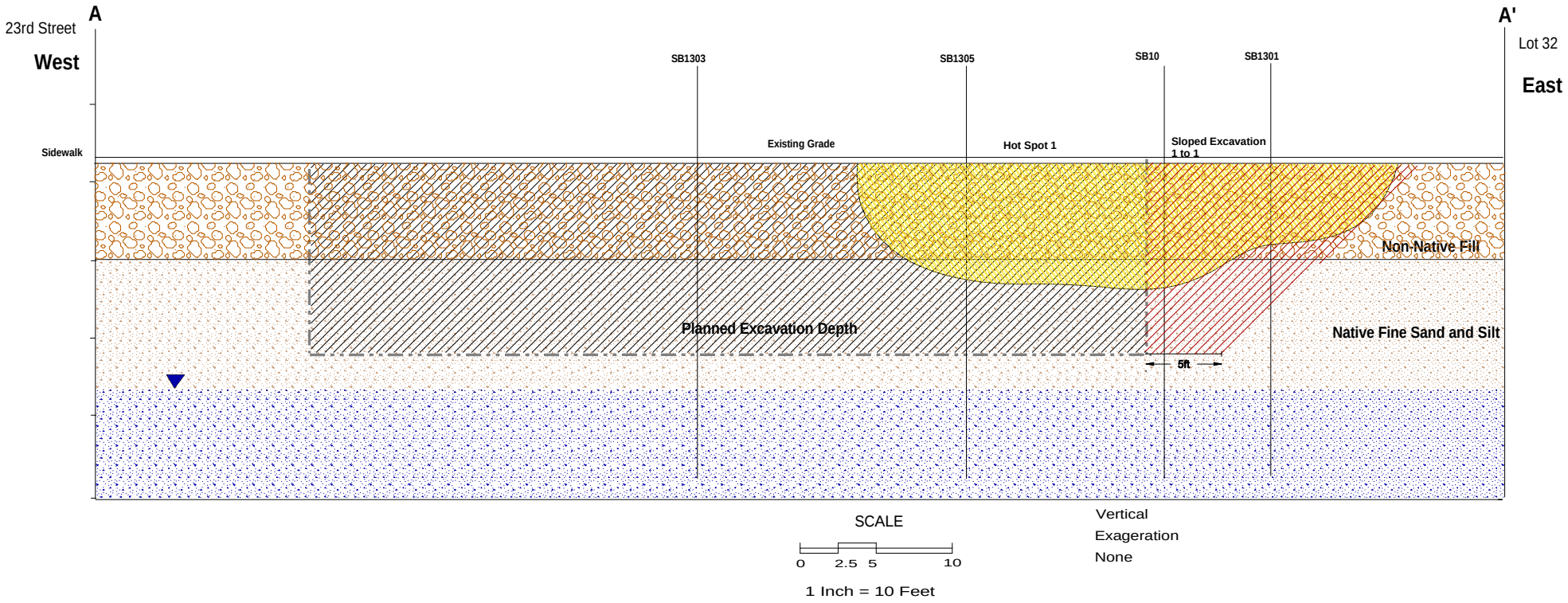
Environmental Business Consultants
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 5

Site Name: Redevelopment Project
Site Address: 37-11 23rd Street, LI City, NY
Drawing Title: Excavation Plan



EBC
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1808 MIDDLE COUNTRY ROAD. RIDGE. NY 11961
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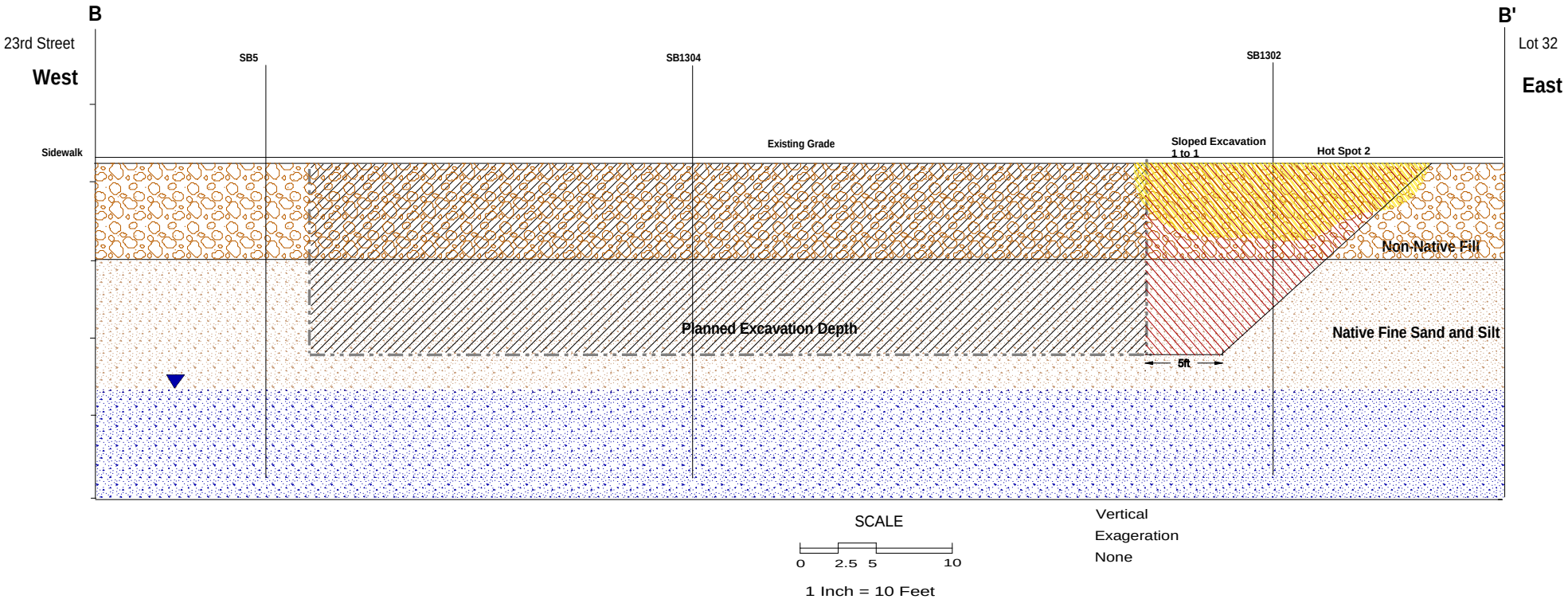
Fax: 631.924.2780

37-11 23RD STREET, LI CITY, NY

FIGURE 6 CROSS-SECTION A-A'



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37-11 23rd Street, LI City, NY

FIGURE 7 Cross-Section B-B'

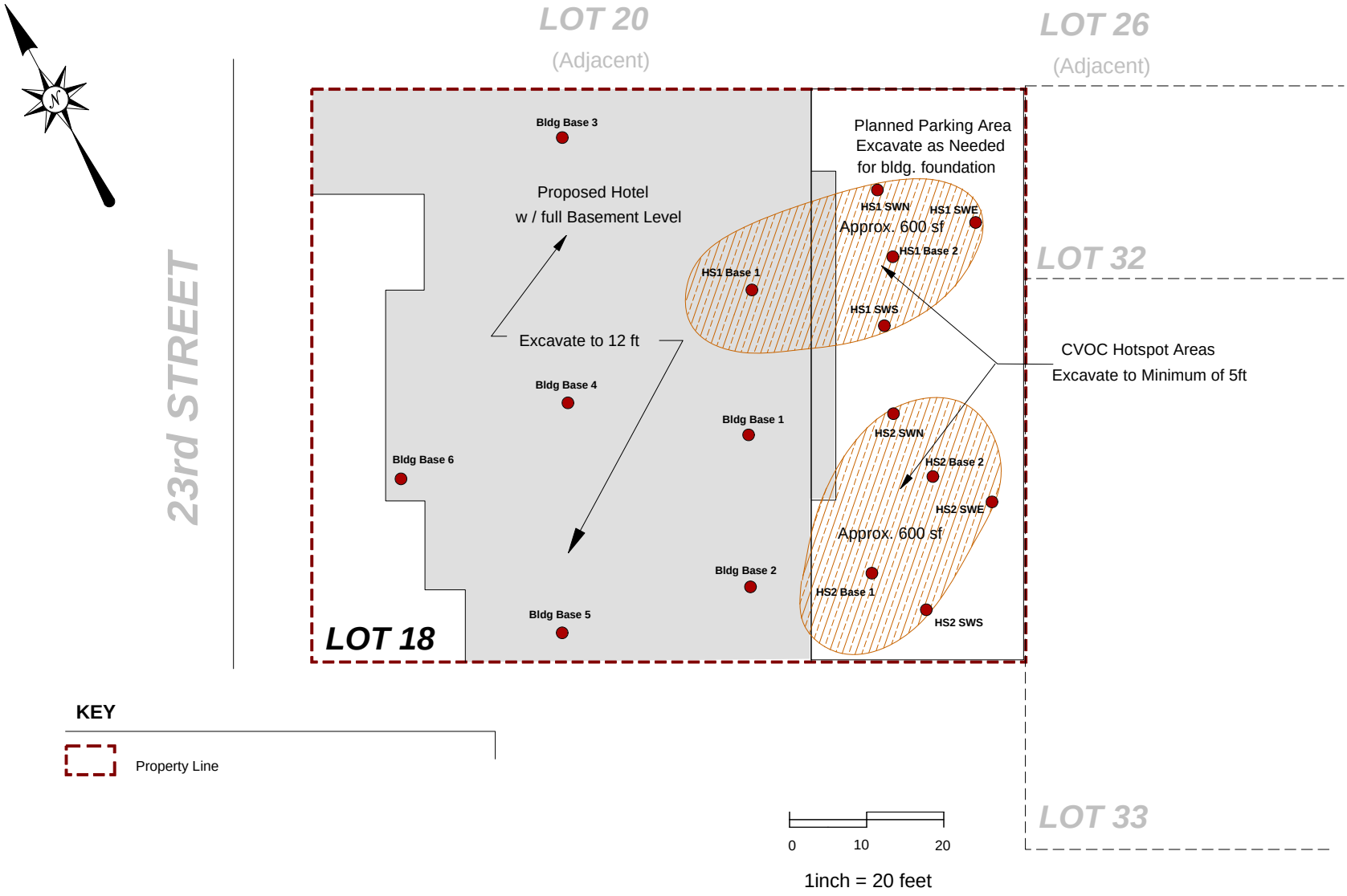

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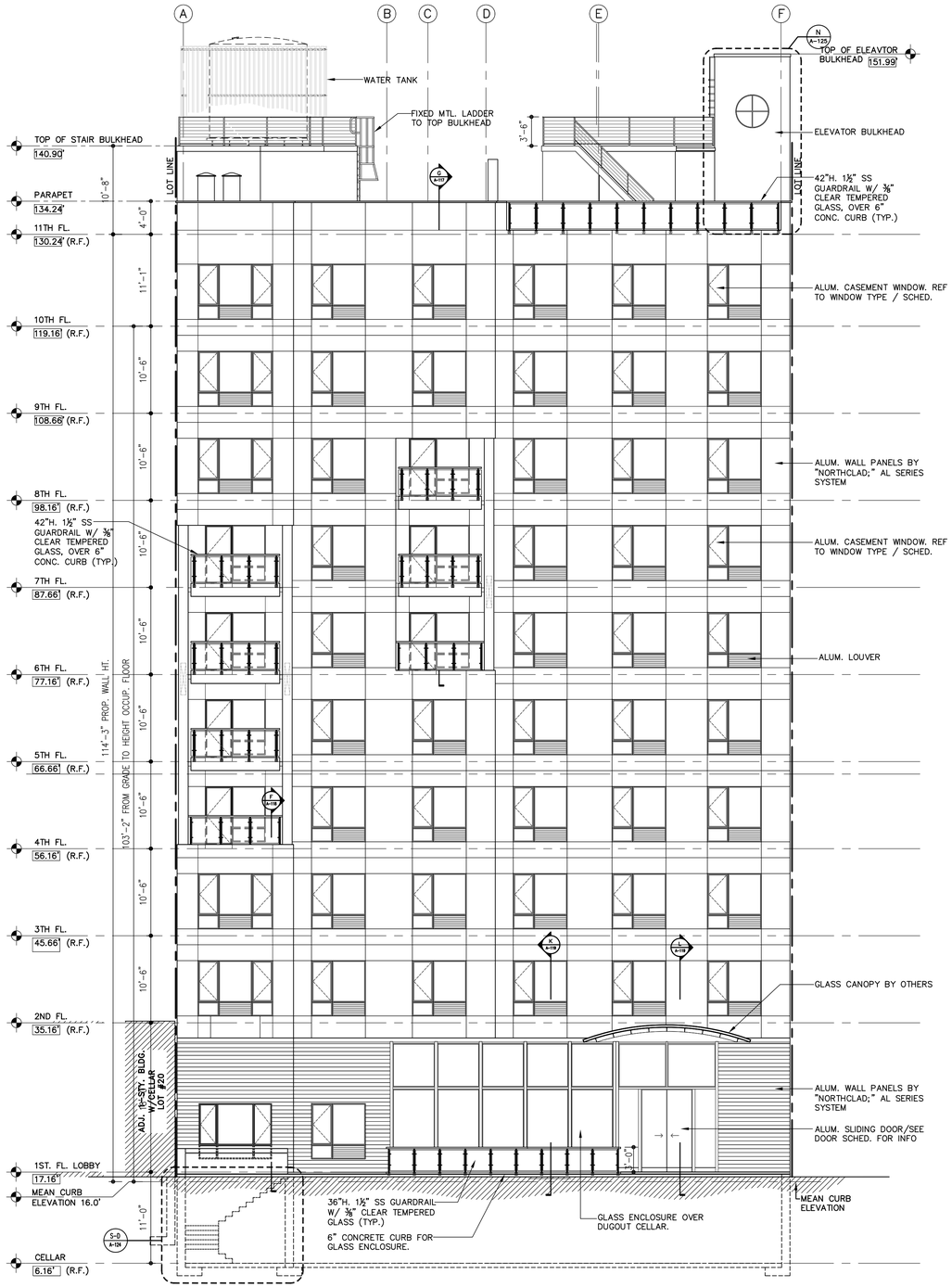
Figure No. 8

Site Name: Redevelopment Project
Site Address: 37-11 23rd Street, LI City, NY
Drawing Title: Endpoint Verification Sample Location

ATTACHMENT A
Architectural Plans

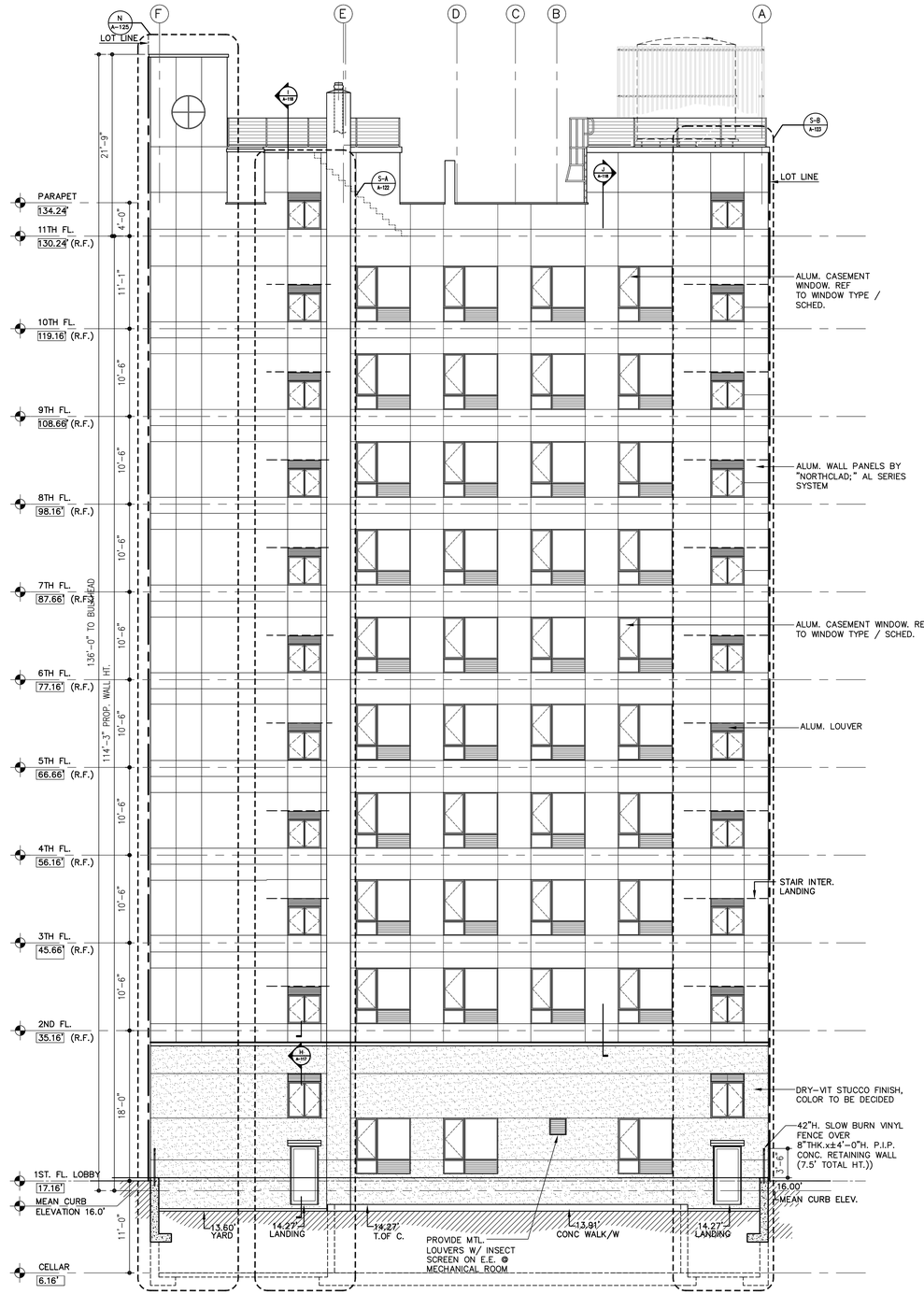
FRONT ELEVATION

SCALE: 1/8"=1'-0" | 01



REAR ELEVATION

SCALE: 1/8"=1'-0" | 02



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DEP:

NO.	DATE	DESCRIPTION OF REVISION

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mss@mssarch.com

CLIENT:
MR. GURPAL CHEEMA
37-11 23rd STREET
QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
ELEVATIONS

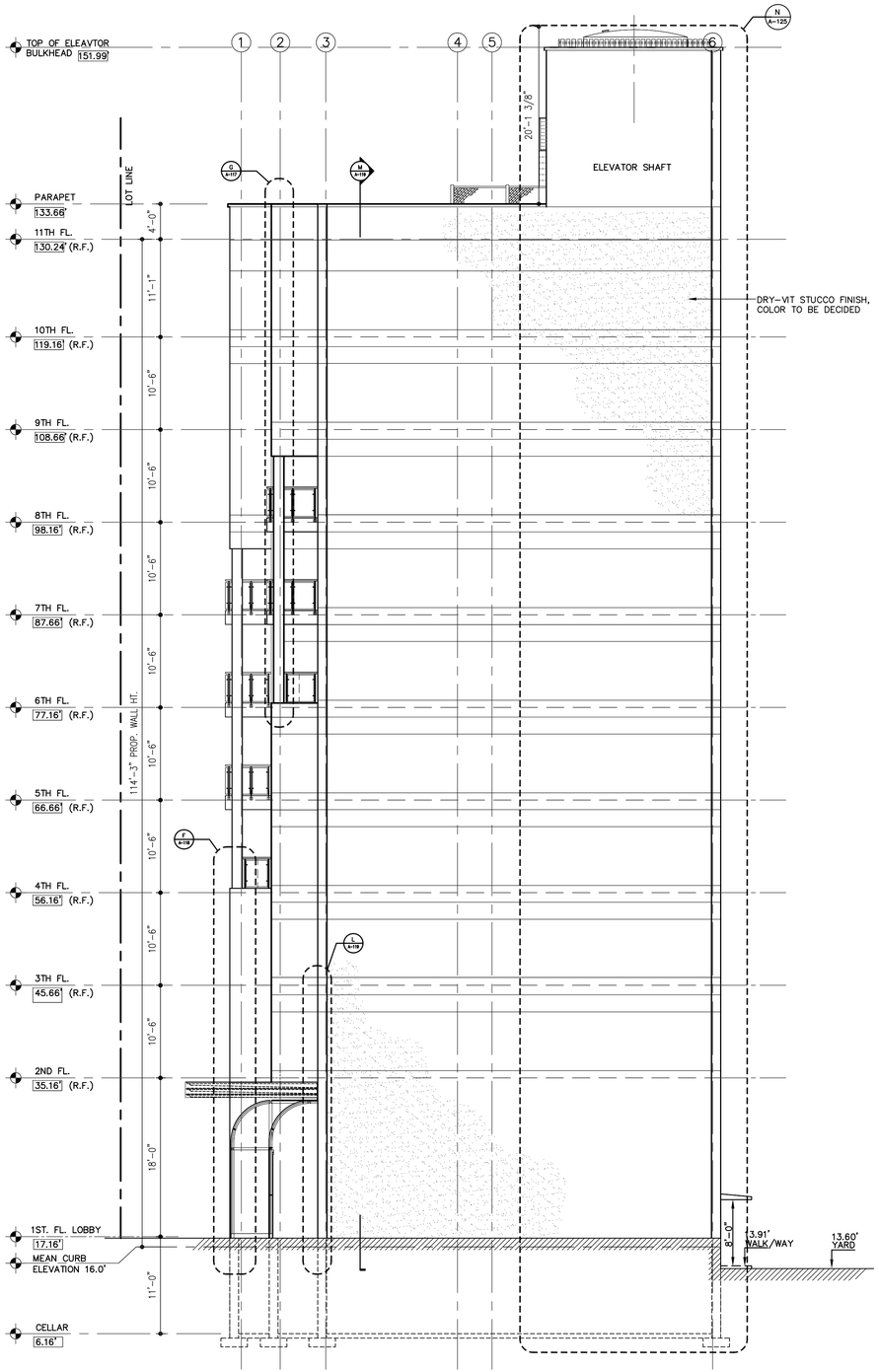
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-112.00
CAD FILE NO: 23 OF 62

RIGHT SIDE ELEVATION

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

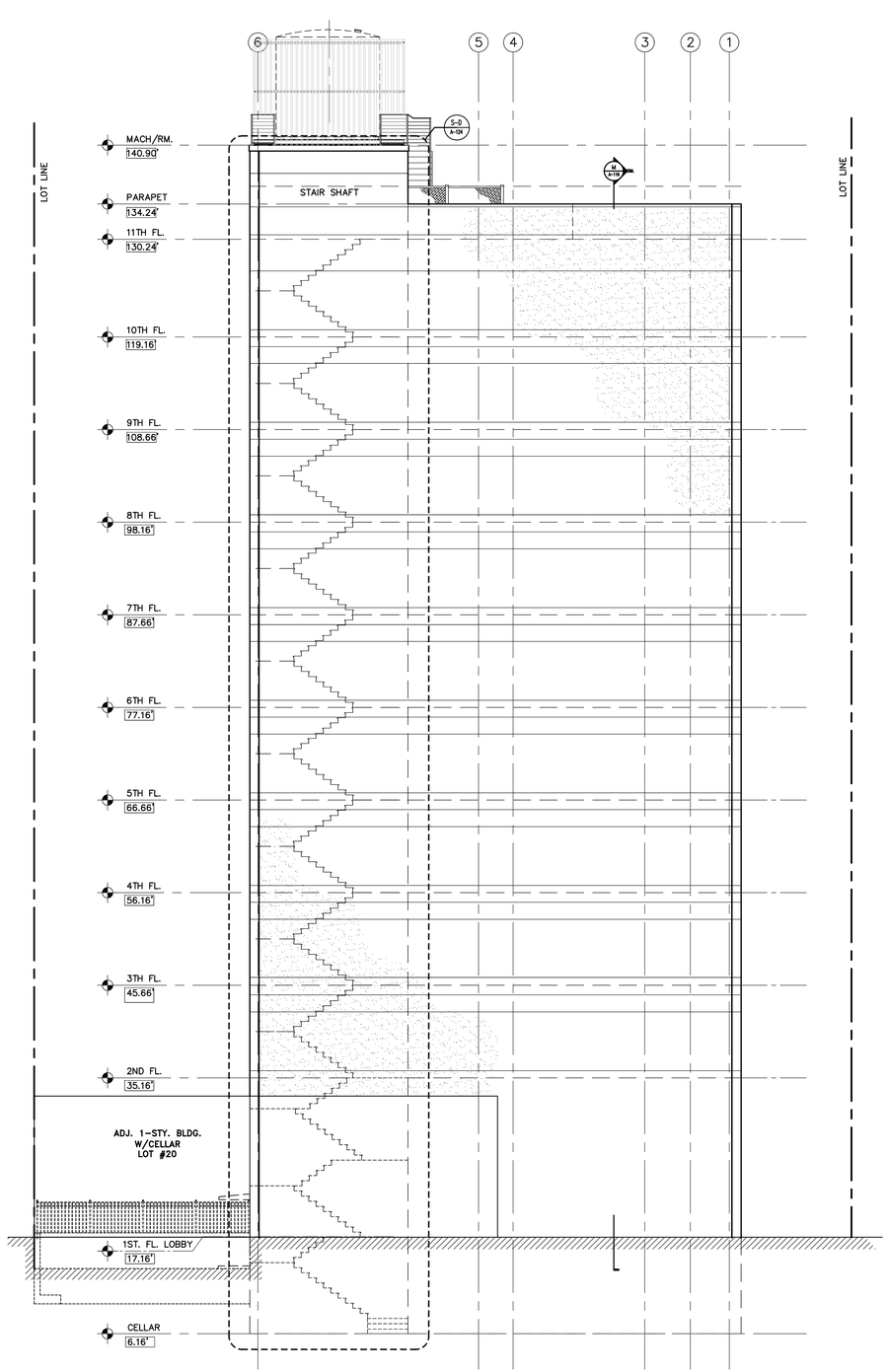
01



LEFT SIDE ELEVATION

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

02



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DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
ELEVATIONS

SEAL & SIGNATURE:

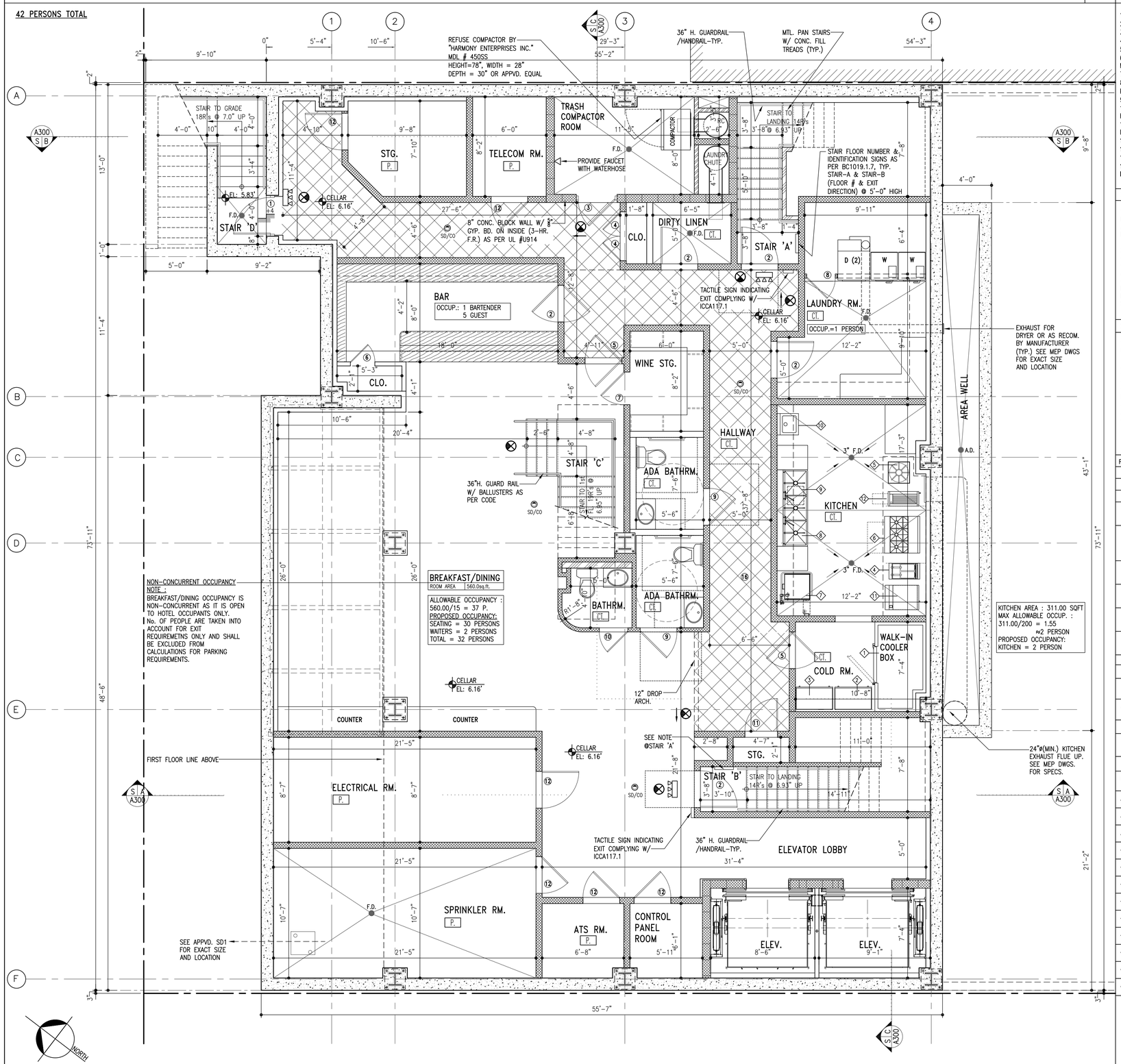
DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-113.00
CAD FILE NO: 24 OF 62

CELLAR PLAN

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

01

42 PERSONS TOTAL



NOTES

1) FOR ALL STL. BEAMS PROVIDE 2-HR. F.R. MASTIC COATING AS PER UL N606. TYP.
2) FOR ALL STL. COLUMNS PROVIDE 2-HR. F.R. GYB. BD. AS PER UL X536. TYP.
3) G.C. TO INSTALL ACRYLIC CORNER GUARDS @ ALL CORNERS EQUAL OR LESS THAN 135° ANGLE.
4) ALL FINISHES TO BE COORDINATED W/ OWNER.
5) ENTIRE BUILDING TO BE SPRINKLERED (TO BE FILED AS A SEPARATE). APPLICATION
6) F. & I. SCALED SIGNS AT EACH STAIRWAY, ELEVATOR & STRATEGIC LOCATIONS SHOWING MEANS OF EGRESS AS PER MDL SEC. 64- TYPICAL FOR EACH FLOOR
7) CLOSED CIRCUIT FIRE ALARM REQUIRED AS PER MDL SEC. 64 TO BE FILED AS A SEPARATE APPLICATION.
8) PROVIDE 17"x44" OPENING @ FOUNDATION WALL FOR PTAC UNITS. VERIFY ROUGH OPENING SIZE W/ MANUFACTURER PRIOR TO ANY WORK.(MANUFACTURED BY McQUAY INCREMENTAL COMFORT CONDITIONERS-PDNS/PDNC)
9) MECHANICAL VENTILATION, EXHAUST... TO BE FILED AS A SEPARATE APPLICATION UNDER MEP PLANS
10) ELEVATOR PIT FLOOR BENEATH CYLINDERS AND BUFFER TO BE FLAT AND LEVEL WITHIN 1/8" (3MM) FULL WIDTH OF HOISTWAY.
11) A FIXED VERTICAL STEEL LADDER TO PIT EXTENDING 4'-0" ABOVE THE SILL OF THE BOTTOM ENTRANCE AS LOCATED IN THE PLAN. LADDER WIDTH & PROJECTION FROM WALL PER LOCAL CODE.
12) PROVIDE PHOTOLUMINESCENT EXIT PATH MARKINGS IN COMPLIANCE W/ BC 1026.11
13) EXIT SIGNS TO COMPLY W/ BC 1026.
14) PROVIDE FRESH AIR (VIA POWER VENTILATION) IN TRASH COMPACTOR ROOM.
15) ALL WALLS, PARTITIONS AND FLOOR/CEILING ASSEMBLIES SHALL HAVE A SOUND TRANSMISSION CLASS (STC) OF NOT LESS THAN 50. AS PER BC 1207.2. SEE LEGEND BELOW.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

2. SMOKE DETECTORS ARE REQUIRED IN THE FOLLOWING AREAS:
– IN SLEEPING AREAS
– IN EVERY ROOM IN THE PATH OF THE MEANS OF EGRESS FROM THE SLEEPING AREA TO THE DOOR LEADING FROM THE DWELLING UNIT.
– IN EACH STORY WITHIN THE UNIT, INCLUDING BELOW-GRADE STORIES.
FOR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, ASMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL.

CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

1. CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN AFFECTED DWELLING UNITSAND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.
2. CARBON MONOXIDE DETECTORS SHALL BE LOCATED WITHIN DWELLING UNITS AS FOLLOWS:
– OUTSIDE ANY ROOM USED FOR SLEEPING PURPOSES, WITHIN 15 FEET OF THE ENTRANCE OF SUCH ROOM.
– IN ANY ROOM USED FOR SLEEPING PURPOSES.
– ON ANY STORY WITHIN A DWELLING UNIT, INCLUDING BELOW-GRADE STORES AND PENTHOUSES OF ANY AREA, BUT NOT INCLUDING CRAWL SPACES AND UNINHABITABLE ATTICS.
3. CARBON MONOXIDE ALARMA OR DETECTORS SHALL COMPLY WITH THE POWER SOURCE, INTERCONNECTION, AND ACCEPTANCE TESTING REQUIREMENTS AS REQUIRED FOR SMOKE ALARMS.
4. CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 2075.

FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)

CONSTRUCTION GROUP NON-COMBUSTIBLE	TYPE I	
BUILDING ELEMENT		B
STRUCTURAL FRAME [g] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST		2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED	
GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

KITCHEN EQUIPMENT SCHEDULE

NO.	DESCRIPTION	SIZE	H.W.	C.W.	WASTE DIRECT	WASTE INDIRECT	ELECTRICAL CORD	ELECTRICAL J-BOX	GAS	DESCRIPTION	MEA #
1	WALK-IN COOLER BOX										
2	FREEZER	2'-0" x 7'-0"						●		TRUE – TRF-1S	
3	REFRIGERATOR	2'-0" x 7'-0"						●		TRUE – TR1R-1S	
4	DEEP FRYER	1'-4" x 2'-7"							●	PITCO – MODEL 45C	83-93-E-VOL.3
5	POT STOVE	1'-8" x 1'-8"							●	BOWERY	433-83-E-1
6	COOKING RANGE	3'-0" x 2'-0"							●	VG 36 BY VULCAN	59-84-E-1
7	DISH WASHER	2'-0" x 2'-0"									
8	THREE COMPARTMENT SINK	5'-2" x 2'-3"								ADVANCE TABCO OR SIMILAR	
9	GREASE TRAP									LOWE ENGINEERING CO. OR APPVD. EQ.	251-91E OR APPVD. EQ.
10	HAND WASH									ADVANCE TABCO OR SIMILAR	
11	OVEN	2'-6" x 2'-4"						●		GCO2D BY VULCAN	
12	CHARBROILERS	2'-0" x 2'-0"						●		RRG SERIES BY VULCAN	

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DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
CELLAR PLAN

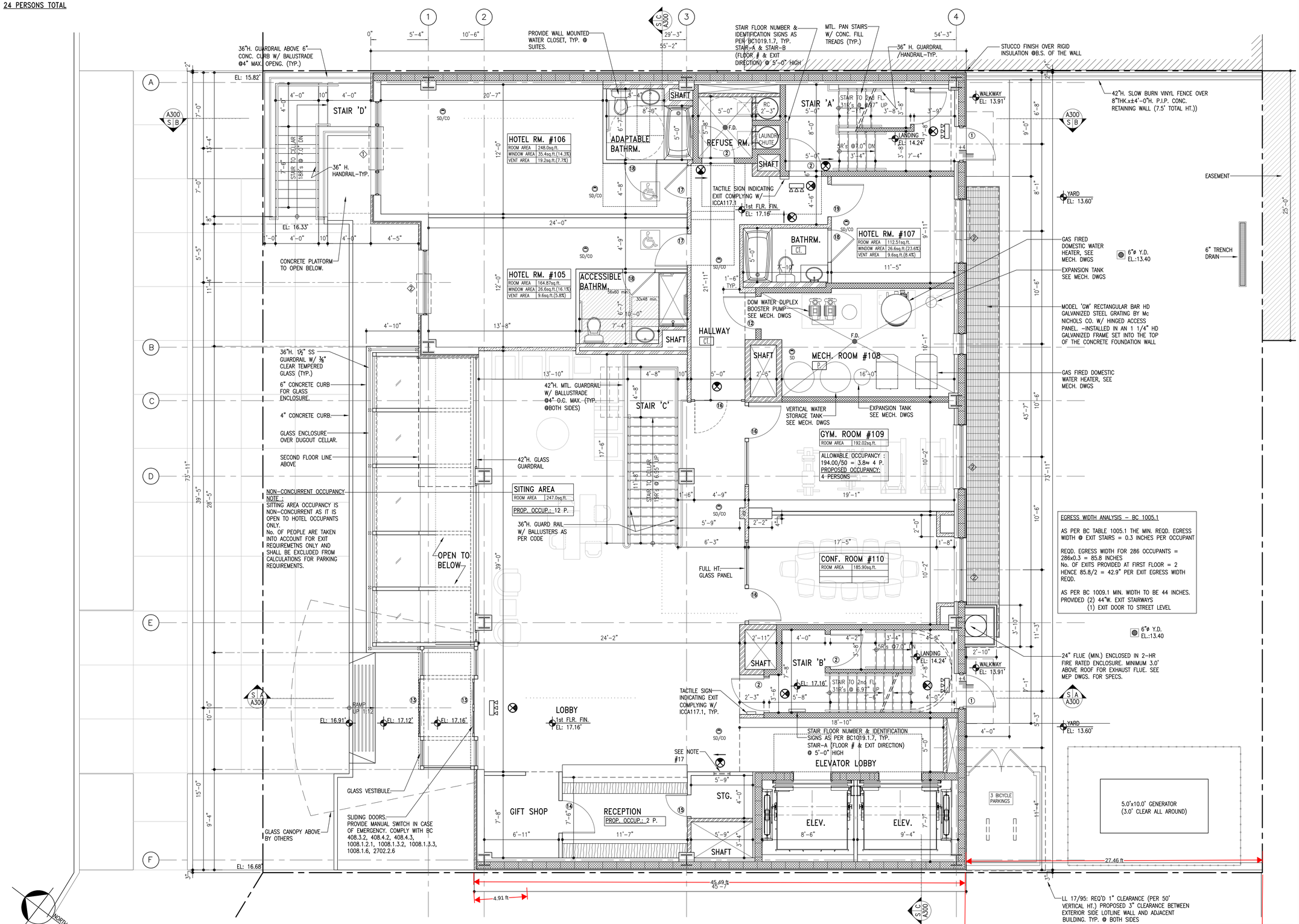
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-100.00
CAD FILE NO: 11 OF 62

FIRST FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

24 PERSONS TOTAL



SEE SHEET A-102 FOR NOTES

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DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
1st FLOOR PLAN

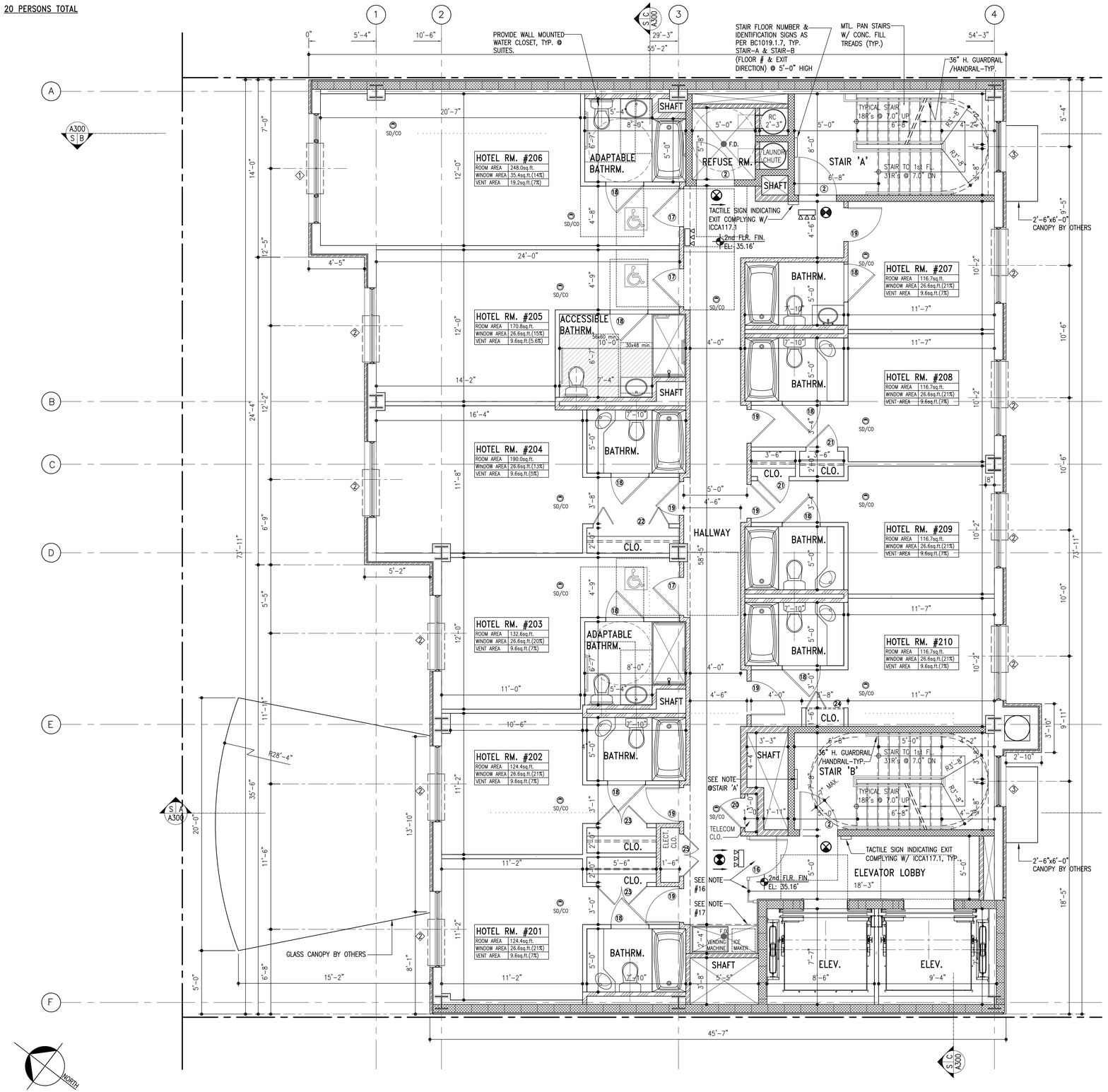
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-101.00
CAD FILE NO: 12 OF 62

SECOND FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

20 PERSONS TOTAL



NOTES

1) FOR ALL STL. BEAMS PROVIDE 2-HR. F.R. MASTIC COATING AS PER UL N606. TYP.
2) FOR ALL STL. COLUMNS PROVIDE 2-HR. F.R. GYB. BD. AS PER UL X536. TYP.
3) G.C. TO INSTALL ACRYLIC CORNER GUARDS @ ALL CORNERS EQUAL OR LESS THAN 135° ANGLE.
4) ALL FINISHES TO BE COORDINATED W/ OWNER.
5) ENTIRE BUILDING TO BE SPRINKLERED (TO BE FILED AS A SEPARATE). APPLICATION
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10) PIT FLOOR BENEATH CYLINDERS AND BUFFER TO BE FLAT AND LEVEL WITHIN 1/8" (3MM) FULL WIDTH OF HOISTWAY.
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12) PROVIDE PHOTOLUMINESCENCE EXIT PATH MARKINGS IN COMPLIANCE W/ BC 1026.11
13) EXIT SIGNS TO COMPLY W/ BC 1026.
14) PROVIDE FRESH AIR (VIA POWER VENTILATION) IN TRASH COMPACTOR ROOM.
15) ALL WALLS, PARTITIONS AND FLOOR/CEILING ASSEMBLIES SHALL HAVE A SOUND TRANSMISSION CLASS (STC) OF NOT LESS THAN 50. AS PER BC 1207.2. SEE LEGEND BELOW.
16) ARCHITECTURAL GLASS DOOR. NO SMOKE PROOF ENCLOSURE.
17) PROVIDE LOUVER FOR SMOKE PURGE SYSTEM. SEE MEP DRAWINGS.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

2. SMOKE DETECTORS ARE REQUIRED IN THE FOLLOWING AREAS:
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CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

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3. CARBON MONOXIDE ALARMA OR DETECTORS SHALL COMPLY WITH THE POWER SOURCE, INTERCONNECTION, AND ACCEPTANCE TESTING REQUIREMENTS AS REQUIRED FOR SMOKE ALARMS.
4. CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 2075.

FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)

CONSTRUCTION GROUP NON-COMBUSTIBLE	TYPE I	B
BUILDING ELEMENT		
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST		2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED	
GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

AS PER TABLE 1107.6.1.1

TOTAL OF UNITS PROVIDED = 93
MIN. REQ'D. ACCESSIBLE UNITS W/ROLL-IN SHOWER= 1
ACCESSIBLE UNITS W/ROLL-IN SHOWERS PROVIDED= 9
MIN. REQ'D ACCESSIBLE UNITS= 5
TOTAL ACCESSIBLE UNITS PROVIDED= 9

LEGEND

- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
- 8"CONC. BLK. EXT. WALL W/ 2½" MTL. FRAMING +BATT INSUL. INSIDE AND ALUMINUM PANEL FINISH OUTSIDE.
- 3 ⅝" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
- 3 ⅝" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1-HR F.R.
- 3 ⅝" MTL. STUD WALL W/ 2-5/8" GYP.BD. ON E.S. 2-HR F.R.
- 5 ⅛" MTL. STUD WALL W/ 2-5/8" GYP.BD. B.S.+ 1" RIGID INSULATION WITH ALUMINUM PANEL FINISH. 2-HR F.R.
- 2-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- 1-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- SD/CO — SMOKE DETECTOR SHALL COMPLY W/ SEC. 907.2.8.3 & 907.2.9 OF NYC BLDG. and C.O. W/ SEC. 908.7 OF 2008 NYC BLDG CODE.
- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

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QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
2nd FLOOR PLAN

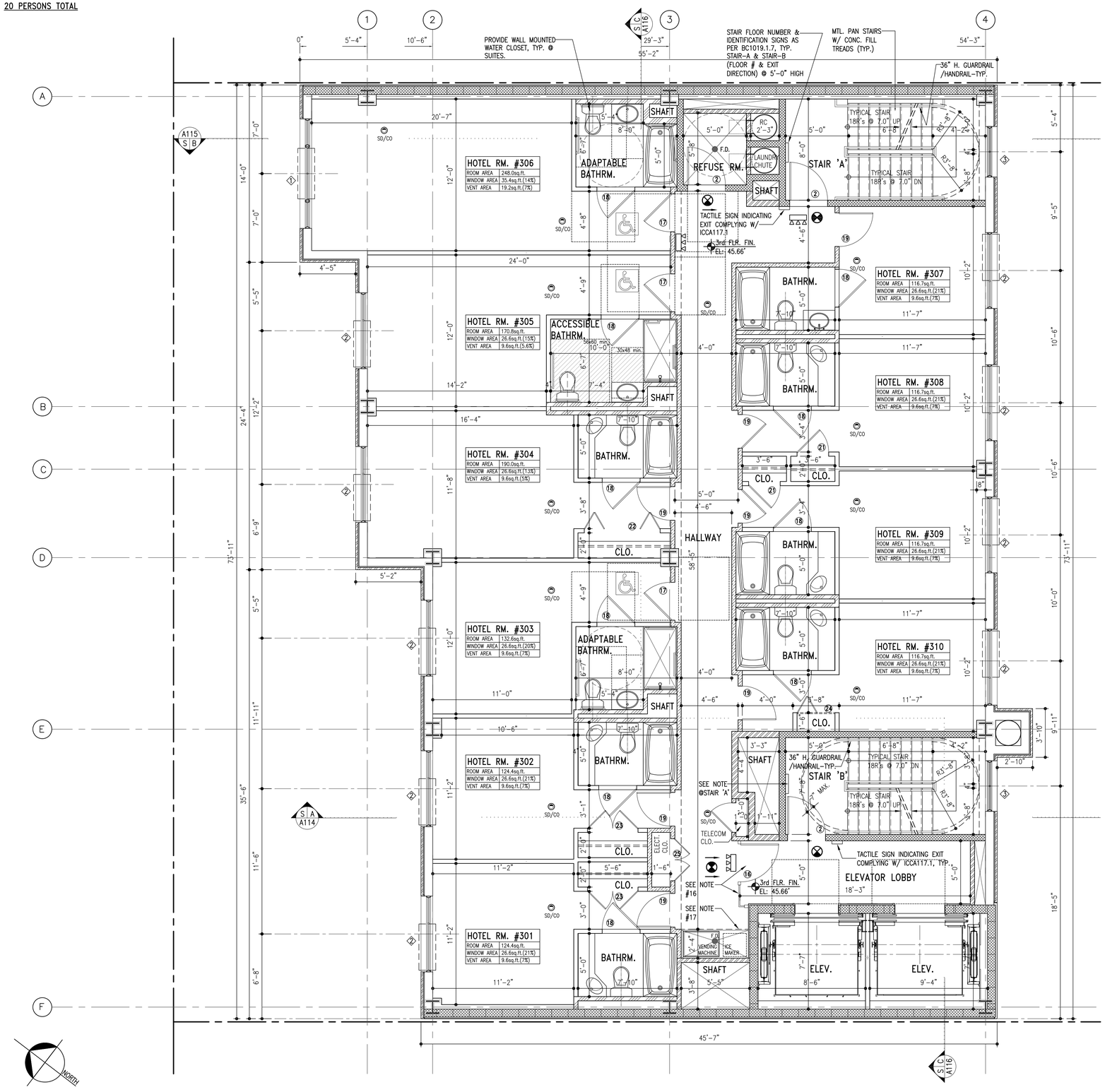
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH – FSC
CHK. BY: MSS
DWG NO:
A-102.00
CAD FILE NO: 13 OF 62

THIRD FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

20 PERSONS TOTAL



NOTES

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14) PROVIDE FRESH AIR (VIA POWER VENTILATION) IN TRASH COMPACTOR ROOM.
15) ALL WALLS, PARTITIONS AND FLOOR/CEILING ASSEMBLIES SHALL HAVE A SOUND TRANSMISSION CLASS (STC) OF NOT LESS THAN 50. AS PER BC 1207.2. SEE LEGEND BELOW.
16) ARCHITECTURAL GLASS DOOR. NO SMOKE PROOF ENCLOSURE.
17) PROVIDE LOUVER FOR SMOKE PURGE SYSTEM. SEE MEP DRAWINGS.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

2. SMOKE DETECTORS ARE REQUIRED IN THE FOLLOWING AREAS:
– IN SLEEPING AREAS
– IN EVERY ROOM IN THE PATH OF THE MEANS OF EGRESS FROM THE SLEEPING AREA TO THE DOOR LEADING FROM THE DWELLING UNIT.
– IN EACH STORY WITHIN THE UNIT, INCLUDING BELOW-GRADE STORIES.
FOR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, ASMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL.

CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

1. CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN AFFECTED DWELLING UNITSAND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.
2. CARBON MONOXIDE DETECTORS SHALL BE LOCATED WITHIN DWELLING UNITS AS FOLLOWS:
– OUTSIDE ANY ROOM USED FOR SLEEPING PURPOSES, WITHIN 15 FEET OF THE ENTRANCE OF SUCH ROOM.
– IN ANY ROOM USED FOR SLEEPING PURPOSES.
– ON ANY STORY WITHIN A DWELLING UNIT, INCLUDING BELOW-GRADE STORES AND PENTHOUSES OF ANY AREA, BUT NOT INCLUDING CRAWL SPACES AND UNINHABITABLE ATTICS.
3. CARBON MONOXIDE ALARMA OR DETECTORS SHALL COMPLY WITH THE POWER SOURCE, INTERCONNECTION, AND ACCEPTANCE TESTING REQUIREMENTS AS REQUIRED FOR SMOKE ALARMS.
4. CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 2075.

FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)	
CONSTRUCTION GROUP NON-COMBUSTIBLE	TYPE I
BUILDING ELEMENT	B
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES	2b
BEARING WALLS EXTERIOR [f,g]	2
BEARING WALLS INTERIOR	2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602
NONBEARING WALLS AND PARTITIONS INTERIOR [e]	0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST	2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST	1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED

GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

AS PER TABLE 1107.6.1.1

TOTAL OF UNITS PROVIDED = 93
MIN. REQ'D. ACCESSIBLE UNITS W/ROLL-IN SHOWER= 1
ACCESSIBLE UNITS W/ROLL-IN SHOWERS PROVIDED= 9
MIN. REQ'D ACCESSIBLE UNITS= 5
TOTAL ACCESSIBLE UNITS PROVIDED= 9

LEGEND

- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
- 8"CONC. BLK. EXT. WALL W/ 2½" MTL. FRAMING +BATT INSUL. INSIDE AND ALUMINUM PANEL FINISH OUTSIDE.
- 3 ½" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
- 3 ½" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1-HR F.R.
- 3 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. ON E.S. 2-HR F.R.
- 5 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. B.S.+ 1" RIGID INSULATION WITH ALUMINUM PANEL FINISH. 2-HR F.R.
- 2-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- 1-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- SD/CO — SMOKE DETECTOR SHALL COMPLY W/ SEC. 907.2.8.3 & 907.2.9 OF NYC BLDG. and C.O. W/ SEC. 908.7 OF 2008 NYC BLDG CODE.
- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

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F.:(908) 654-0240

DEP:

NO.	DATE	DESCRIPTION OF REVISION

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CLIENT:
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37-11 23rd STREET
QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
3rd FLOOR PLAN

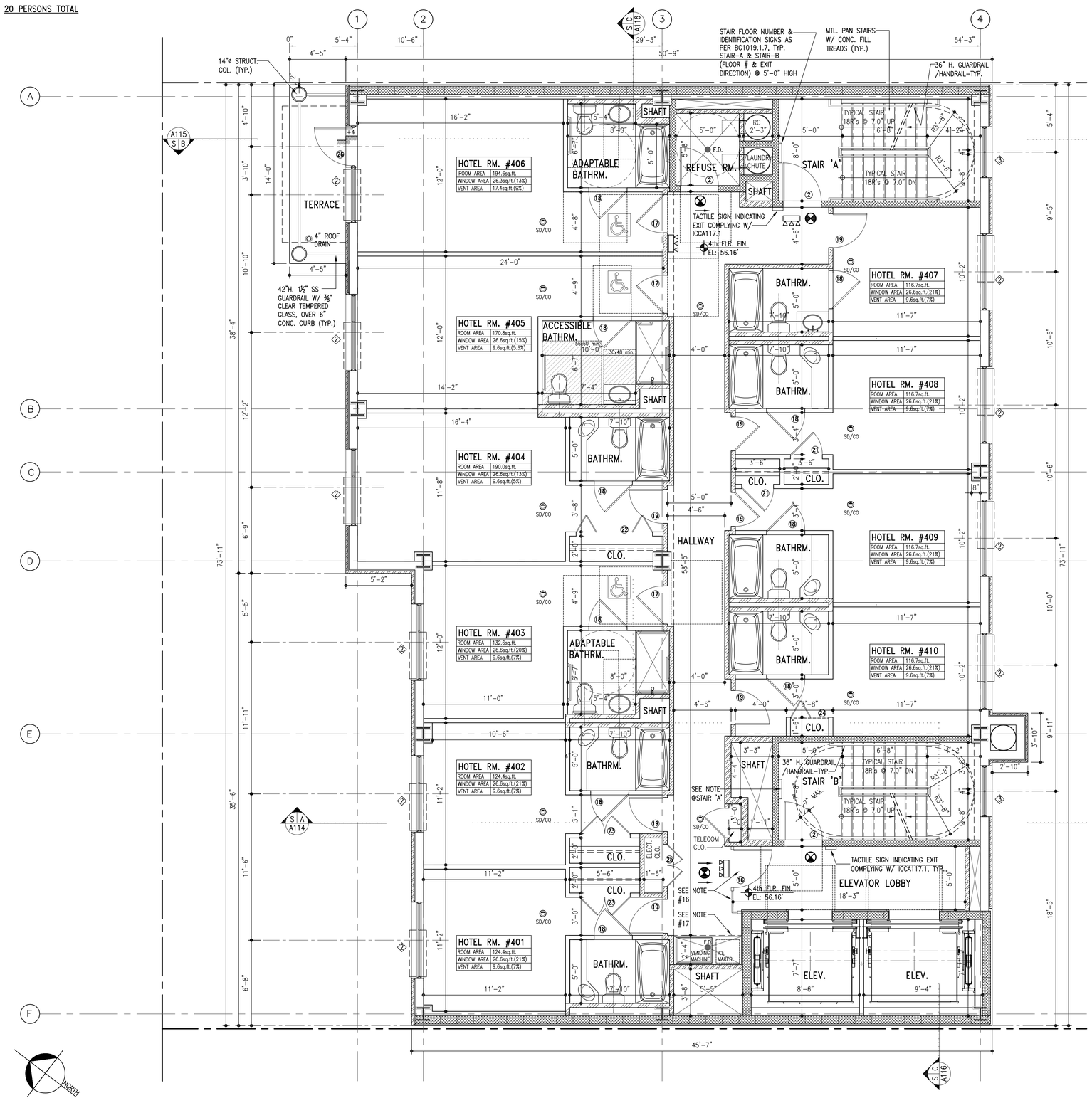
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH – FSC
CHK. BY: MSS
DWG NO:
A-103.00
CAD FILE NO: 14 OF 62

FOURTH FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

20 PERSONS TOTAL



NOTES

1) FOR ALL STL. BEAMS PROVIDE 2-HR. F.R. MASTIC COATING AS PER UL N606. TYP.
2) FOR ALL STL. COLUMNS PROVIDE 2-HR. F.R. GYB. BD. AS PER UL X536. TYP.
3) G.C. TO INSTALL ACRYLIC CORNER GUARDS @ ALL CORNERS EQUAL OR LESS THAN 135° ANGLE.
4) ALL FINISHES TO BE COORDINATED W/ OWNER.
5) ENTIRE BUILDING TO BE SPRINKLERED (TO BE FILED AS A SEPARATE). APPLICATION
6) F. & I. SCALED SIGNS AT EACH STAIRWAY, ELEVATOR & STRATEGIC LOCATIONS SHOWING MEANS OF EGRESS AS PER MDL SEC. 64- TYPICAL FOR EACH FLOOR
7) CLOSED CIRCUIT FIRE ALARM REQUIRED AS PER MDL SEC. 64 TO BE FILED AS A SEPARATE APPLICATION.
8) NOT USE.
9) MECHANICAL VENTILATION, EXHAUST... TO BE FILED AS A SEPARATE APPLICATION UNDER MEP PLANS
10) PIT FLOOR BENEATH CYLINDERS AND BUFFER TO BE FLAT AND LEVEL WITHIN 1/8" (3MM) FULL WIDTH OF HOISTWAY.
11) A FIXED VERTICAL STEEL LADDER TO PIT EXTENDING 4'-0" ABOVE THE SILL OF THE BOTTOM ENTRANCE AS LOCATED IN THE PLAN. LADDER WIDTH & PROJECTION FROM WALL PER LOCAL CODE.
12) PROVIDE PHOTOLUMINESCENCE EXIT PATH MARKINGS IN COMPLIANCE W/ BC 1026.11
13) EXIT SIGNS TO COMPLY W/ BC 1026.
14) PROVIDE FRESH AIR (VIA POWER VENTILATION) IN TRASH COMPACTOR ROOM.
15) ALL WALLS, PARTITIONS AND FLOOR/CEILING ASSEMBLIES SHALL HAVE A SOUND TRANSMISSION CLASS (STC) OF NOT LESS THAN 50. AS PER BC 1207.2. SEE LEGEND BELOW.
16) ARCHITECTURAL GLASS DOOR. NO SMOKE PROOF ENCLOSURE.
17) PROVIDE LOUVER FOR SMOKE PURGE SYSTEM. SEE MEP DRAWINGS.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

2. SMOKE DETECTORS ARE REQUIRED IN THE FOLLOWING AREAS:
– IN SLEEPING AREAS
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– IN EACH STORY WITHIN THE UNIT, INCLUDING BELOW-GRADE STORIES.
FOR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, ASMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL.

CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

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4. CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 2075.

FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)

CONSTRUCTION GROUP NON-COMBUSTIBLE	TYPE I	
BUILDING ELEMENT		B
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [c]		0
FLOOR CONSTRUCTION [b] INCLUDING SUPPORTING BEAMS AND JOIST		2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED

GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

AS PER TABLE 1107.6.1.1

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ACCESSIBLE UNITS W/ROLL-IN SHOWERS PROVIDED= 9
MIN. REQ'D ACCESSIBLE UNITS= 5
TOTAL ACCESSIBLE UNITS PROVIDED= 9

LEGEND

- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
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- 3 ⅝" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
- 3 ⅝" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1-HR F.R.
- 3 ⅝" MTL. STUD WALL W/ 2-5/8" GYP.BD. ON E.S. 2-HR F.R.
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- 2-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
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- SD/CO — SMOKE DETECTOR SHALL COMPLY W/ SEC. 907.2.8.3 & 907.2.9 OF NYC BLDG. and C.O. W/ SEC. 908.7 OF 2008 NYC BLDG CODE.
- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

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QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
4th FLOOR PLAN

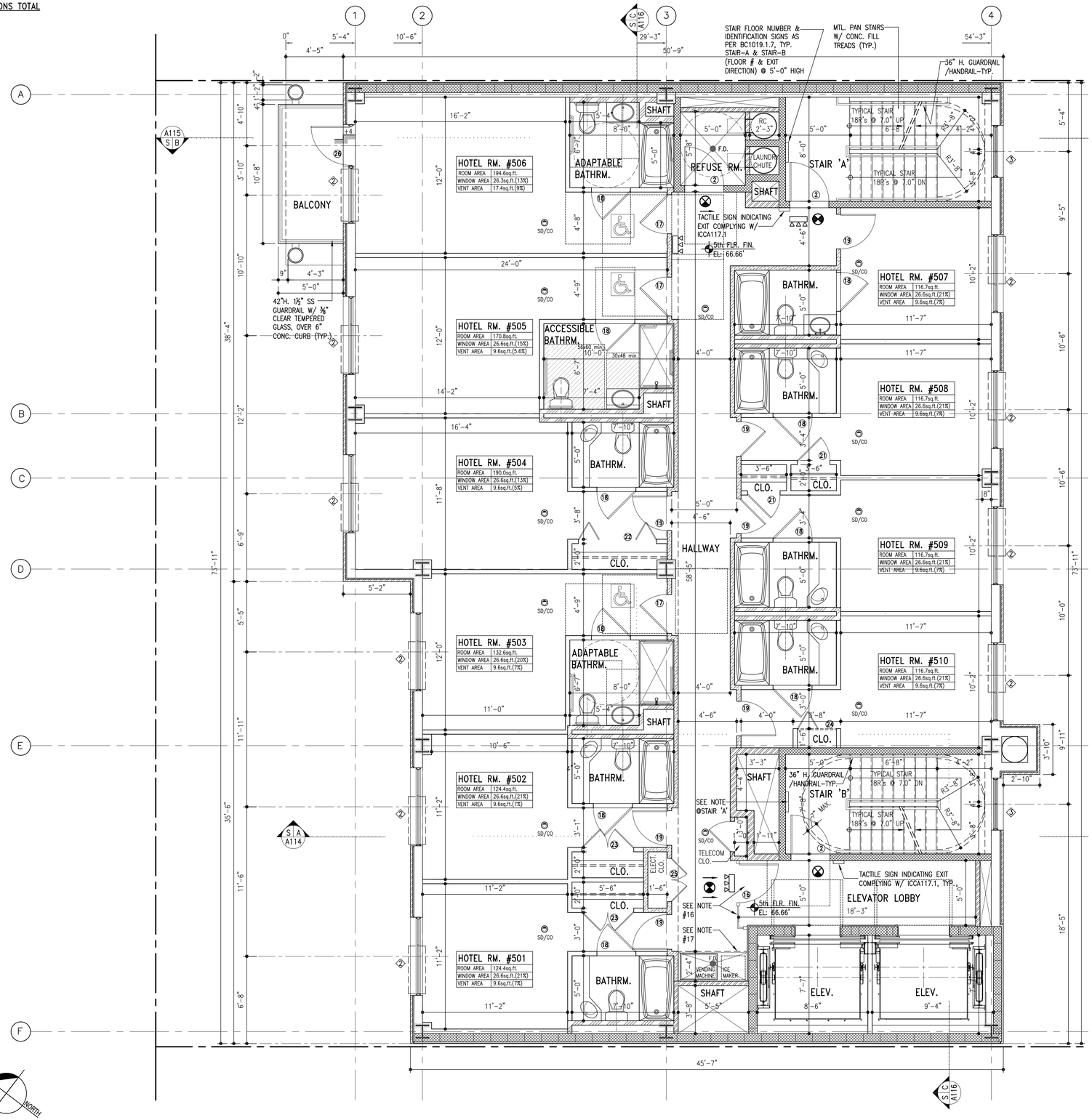
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-104.00
CAD FILE NO: 15 OF 62

FIFTH FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

20 PERSONS TOTAL



NOTES

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2) FOR ALL STL. COLUMNS PROVIDE 2-HR. F.R. GYB. BD. AS PER UL X536. TYP.
3) G.C. TO INSTALL ACRYLIC CORNER GUARDS @ ALL CORNERS EQUAL OR LESS THAN 135° ANGLE.
4) ALL FINISHES TO BE COORDINATED W/ OWNER.
5) ENTIRE BUILDING TO BE SPRINKLERED (TO BE FILED AS A SEPARATE). APPLICATION
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10) PIT FLOOR BENEATH CYLINDERS AND BUFFER TO BE FLAT AND LEVEL WITHIN 1/8" (3MM) FULL WIDTH OF HOISTWAY.
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17) PROVIDE LOUVER FOR SMOKE PURGE SYSTEM. SEE MEP DRAWINGS.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

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CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

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FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)
CONSTRUCTION GROUP NON-COMBUSTIBLE

	TYPE I	
BUILDING ELEMENT		B
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST		2
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TABLE 503 BUILDING HEIGHT
HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

TABLE 803.5 INTERIOR FINISHES
INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY
SPRINKLERED

GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
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AS PER TABLE 1107.6.1.1

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- 3 ½" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1-HR F.R.
- 3 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. ON E.S. 2-HR F.R.
- 5 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. B.S.+ 1" RIGID INSULATION WITH ALUMINUM PANEL FINISH. 2-HR F.R.
- 2-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
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- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

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DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
5th FLOOR PLAN

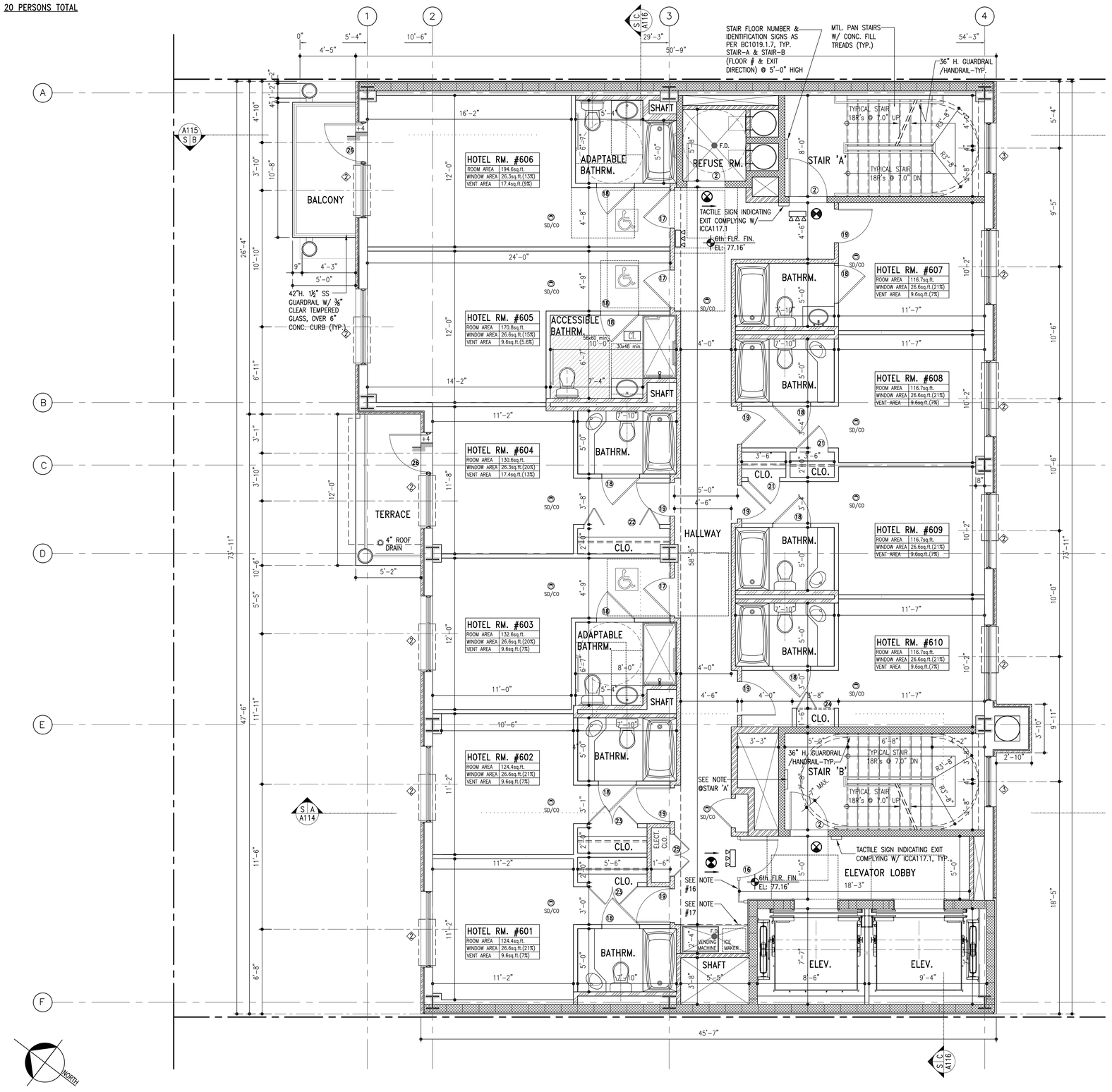
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH – FSC
CHK. BY: MSS
DWG NO:
A-105.00
CAD FILE NO: 16 OF 62

SIXTH FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

20 PERSONS TOTAL



NOTES

1) FOR ALL STL. BEAMS PROVIDE 2-HR. F.R. MASTIC COATING AS PER UL N606. TYP.
2) FOR ALL STL. COLUMNS PROVIDE 2-HR. F.R. GYB. BD. AS PER UL X536. TYP.
3) G.C. TO INSTALL ACRYLIC CORNER GUARDS @ ALL CORNERS EQUAL OR LESS THAN 135° ANGLE.
4) ALL FINISHES TO BE COORDINATED W/ OWNER.
5) ENTIRE BUILDING TO BE SPRINKLERED (TO BE FILED AS A SEPARATE). APPLICATION
6) F. & I. SCALED SIGNS AT EACH STAIRWAY, ELEVATOR & STRATEGIC LOCATIONS SHOWING MEANS OF EGRESS AS PER MDL SEC. 64- TYPICAL FOR EACH FLOOR
7) CLOSED CIRCUIT FIRE ALARM REQUIRED AS PER MDL SEC. 64 TO BE FILED AS A SEPARATE APPLICATION.
8) NOT USE.
9) MECHANICAL VENTILATION, EXHAUST... TO BE FILED AS A SEPARATE APPLICATION UNDER MEP PLANS
10) PIT FLOOR BENEATH CYLINDERS AND BUFFER TO BE FLAT AND LEVEL WITHIN 1/8" (3MM) FULL WIDTH OF HOISTWAY.
11) A FIXED VERTICAL STEEL LADDER TO PIT EXTENDING 4'-0" ABOVE THE SILL OF THE BOTTOM ENTRANCE AS LOCATED IN THE PLAN. LADDER WIDTH & PROJECTION FROM WALL PER LOCAL CODE.
12) PROVIDE PHOTOLUMINESCENCE EXIT PATH MARKINGS IN COMPLIANCE W/ BC 1026.11
13) EXIT SIGNS TO COMPLY W/ BC 1026.
14) PROVIDE FRESH AIR (VIA POWER VENTILATION) IN TRASH COMPACTOR ROOM.
15) ALL WALLS, PARTITIONS AND FLOOR/CEILING ASSEMBLIES SHALL HAVE A SOUND TRANSMISSION CLASS (STC) OF NOT LESS THAN 50. AS PER BC 1207.2. SEE LEGEND BELOW.
16) ARCHITECTURAL GLASS DOOR. NO SMOKE PROOF ENCLOSURE.
17) PROVIDE LOUVER FOR SMOKE PURGE SYSTEM. SEE MEP DRAWINGS.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

2. SMOKE DETECTORS ARE REQUIRED IN THE FOLLOWING AREAS:
– IN SLEEPING AREAS
– IN EVERY ROOM IN THE PATH OF THE MEANS OF EGRESS FROM THE SLEEPING AREA TO THE DOOR LEADING FROM THE DWELLING UNIT.
– IN EACH STORY WITHIN THE UNIT, INCLUDING BELOW-GRADE STORIES.
FOR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, ASMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL.

CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

1. CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN AFFECTED DWELLING UNITSAND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.
2. CARBON MONOXIDE DETECTORS SHALL BE LOCATED WITHIN DWELLING UNITS AS FOLLOWS:
– OUTSIDE ANY ROOM USED FOR SLEEPING PURPOSES, WITHIN 15 FEET OF THE ENTRANCE OF SUCH ROOM.
– IN ANY ROOM USED FOR SLEEPING PURPOSES.
– ON ANY STORY WITHIN A DWELLING UNIT, INCLUDING BELOW-GRADE STORES AND PENTHOUSES OF ANY AREA, BUT NOT INCLUDING CRAWL SPACES AND UNINHABITABLE ATTICS.
3. CARBON MONOXIDE ALARMA OR DETECTORS SHALL COMPLY WITH THE POWER SOURCE, INTERCONNECTION, AND ACCEPTANCE TESTING REQUIREMENTS AS REQUIRED FOR SMOKE ALARMS.
4. CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 2075.

FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)

CONSTRUCTION GROUP NON-COMBUSTIBLE	TYPE I	B
BUILDING ELEMENT		
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED	
GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES and FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

AS PER TABLE 1107.6.1.1

TOTAL OF UNITS PROVIDED = 93
MIN. REQ'D. ACCESSIBLE UNITS W/ROLL-IN SHOWER= 1
ACCESSIBLE UNITS W/ROLL-IN SHOWERS PROVIDED= 9
MIN. REQ'D ACCESSIBLE UNITS= 5
TOTAL ACCESSIBLE UNITS PROVIDED= 9

LEGEND

- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
- 8"CONC. BLK. EXT. WALL W/ 2½" MTL. FRAMING +BATT INSUL. INSIDE AND ALUMINUM PANEL FINISH OUTSIDE.
- 3 ½" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
- 3 ½" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1-HR F.R.
- 3 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. ON E.S. 2-HR F.R.
- 5 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. B.S.+ 1" RIGID INSULATION WITH ALUMINUM PANEL FINISH. 2-HR F.R.
- 2-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- 1-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- SD/CO — SMOKE DETECTOR SHALL COMPLY W/ SEC. 907.2.8.3 & 907.2.9 OF NYC BLDG. and C.O. W/ SEC. 908.7 OF 2008 NYC BLDG CODE.
- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

CONSULTANTS:

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F.:(908) 654-0240

DEP:

NO.	DATE	DESCRIPTION OF REVISION

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CLIENT:
MR. GURPAL CHEEMA
37-11 23rd STREET
QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
6th FLOOR PLAN

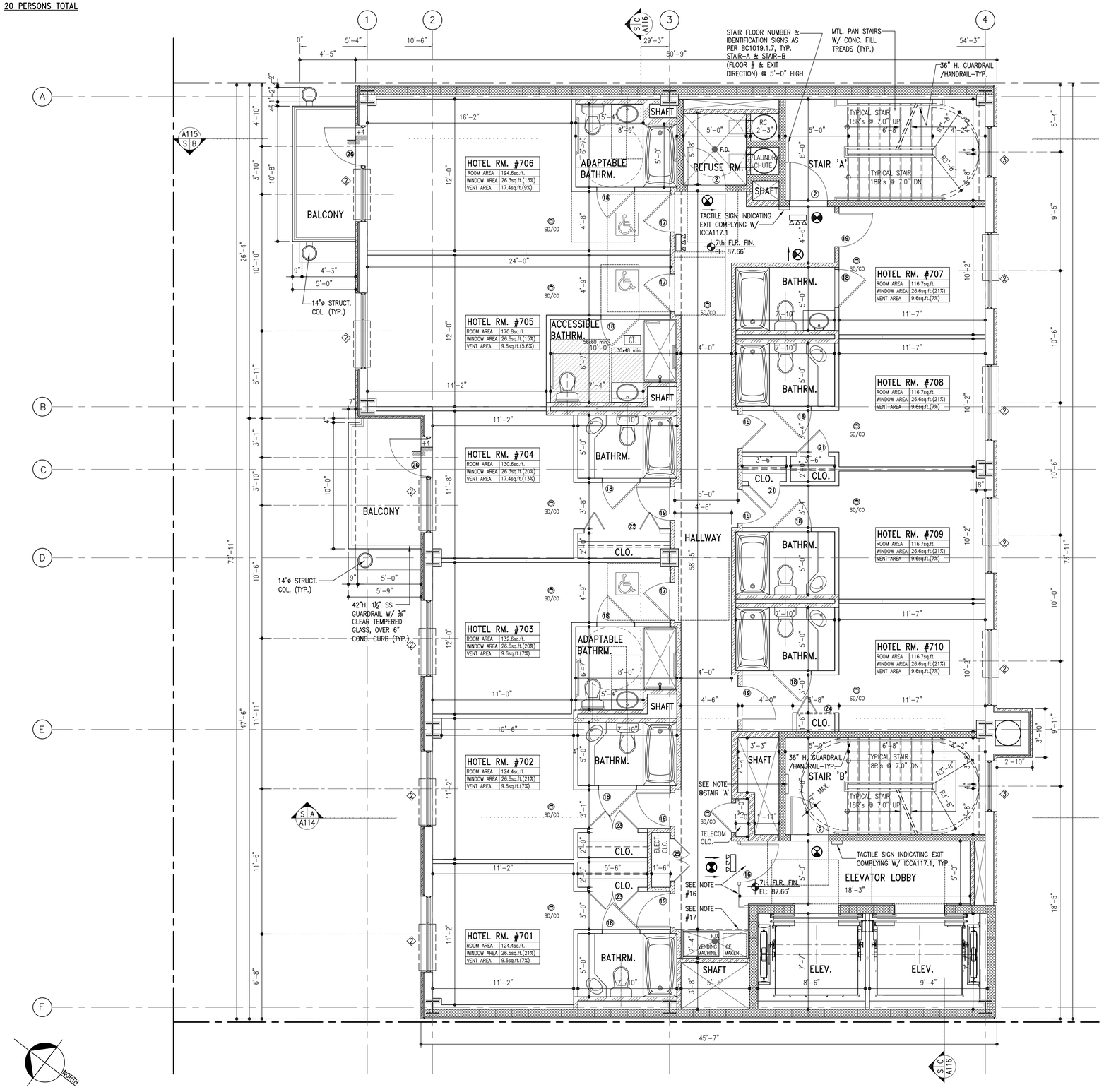
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH – FSC
CHK. BY: MSS
DWG NO:
A-106.00
CAD FILE NO: 17 OF 62

SEVENTH FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

20 PERSONS TOTAL



NOTES

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FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)		
CONSTRUCTION GROUP NON-COMBUSTIBLE		
	TYPE I	
BUILDING ELEMENT		B
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST		2
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SPRINKLERED

GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
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HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
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- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
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- 3 ½" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
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- LOCATION OF EXIT SIGN & LIGHT DIRECTION

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QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
7th FLOOR PLAN

SEAL & SIGNATURE:

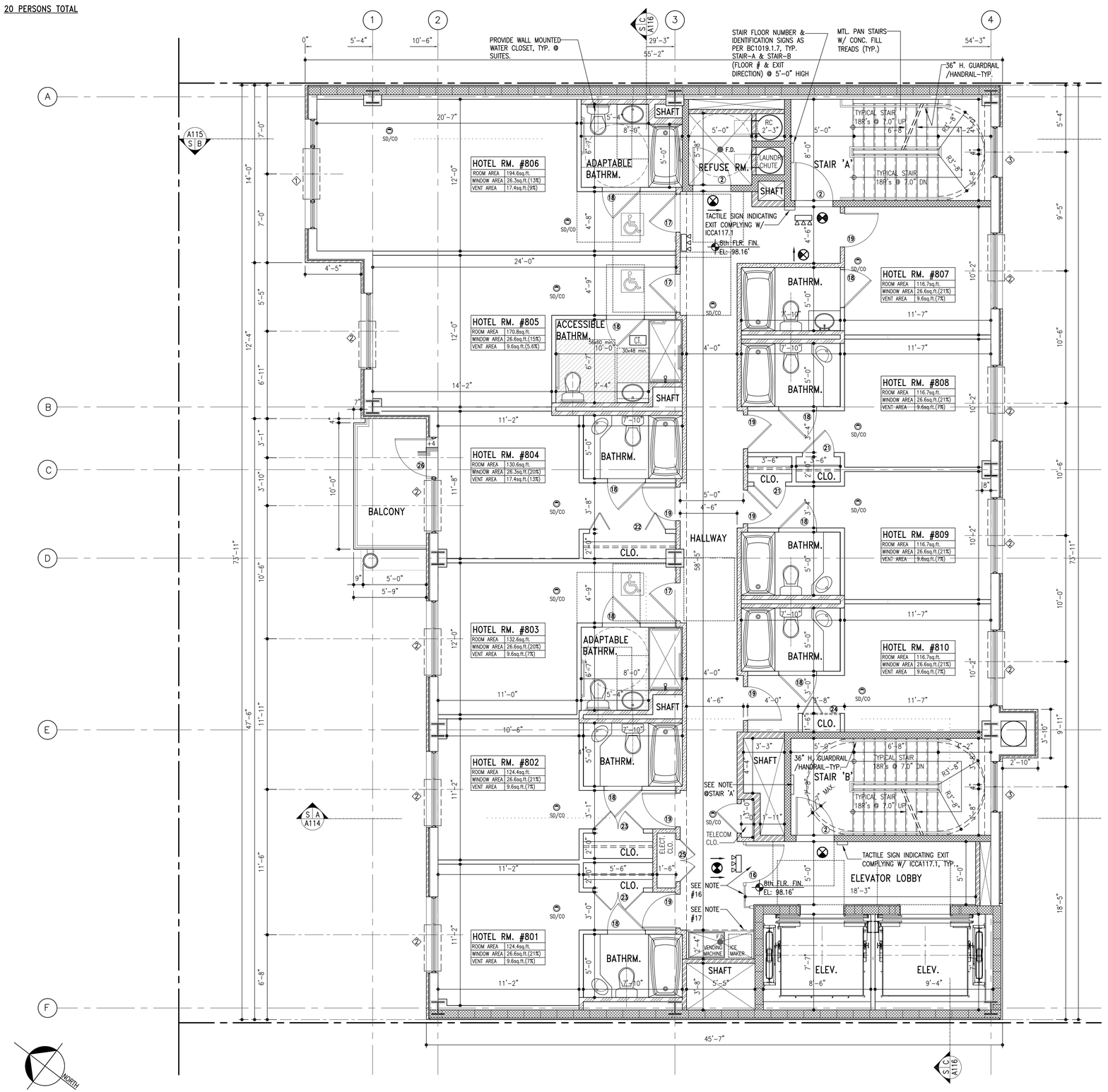
DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-107.00
CAD FILE NO: 18 OF 62

EIGHTH FLOOR PLAN

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

01

20 PERSONS TOTAL



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- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

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CLIENT:
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37-11 23rd STREET
QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
8th FLOOR PLAN

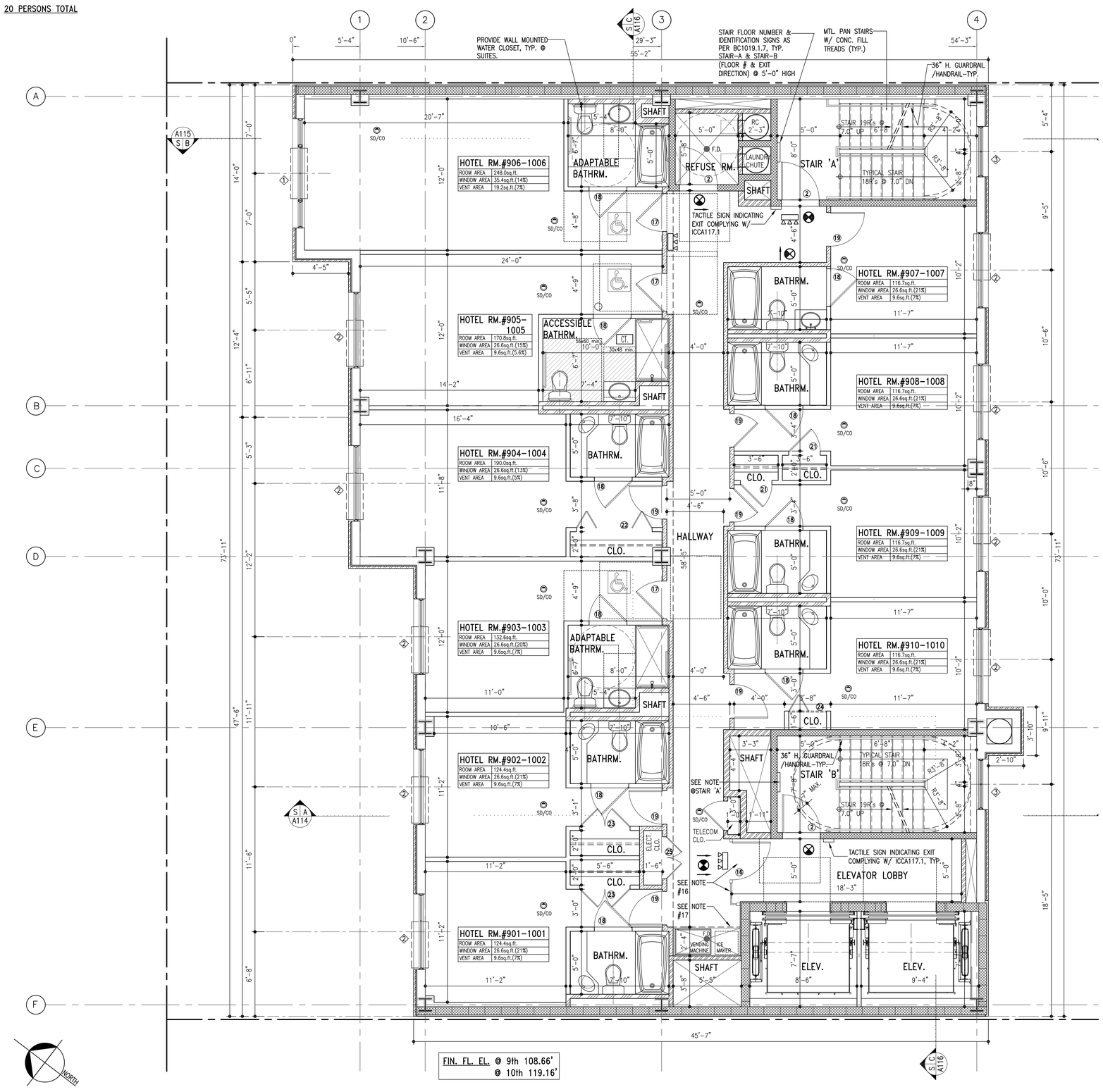
SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH - FSC
CHK. BY: MSS
DWG NO:
A-108.00
CAD FILE NO: 19 OF 62

NINTH – TENTH FLOOR PLAN

SCALE: 1/4"=1'–0" | 01

20 PERSONS TOTAL



NOTES

1) FOR ALL STL. BEAMS PROVIDE 2–HR. F.R. MASTIC COATING AS PER UL N606. TYP.
2) FOR ALL STL. COLUMNS PROVIDE 2–HR. F.R. GYB. BD. AS PER UL X536. TYP.
3) G.C. TO INSTALL ACRYLIC CORNER GUARDS @ ALL CORNERS EQUAL OR LESS THAN 135° ANGLE.
4) ALL FINISHES TO BE COORDINATED W/ OWNER.
5) ENTIRE BUILDING TO BE SPRINKLERED (TO BE FILED AS A SEPARATE). APPLICATION
6) F. & I. SCALED SIGNS AT EACH STAIRWAY, ELEVATOR & STRATEGIC LOCATIONS SHOWING MEANS OF EGRESS AS PER MDL SEC. 64– TYPICAL FOR EACH FLOOR
7) CLOSED CIRCUIT FIRE ALARM REQUIRED AS PER MDL SEC. 64 TO BE FILED AS A SEPARATE APPLICATION.
8) NOT USE.
9) MECHANICAL VENTILATION, EXHAUST... TO BE FILED AS A SEPARATE APPLICATION UNDER MEP PLANS
10) PIT FLOOR BENEATH CYLINDERS AND BUFFER TO BE FLAT AND LEVEL WITHIN 1/8" (3MM) FULL WIDTH OF HOISTWAY.
11) A FIXED VERTICAL STEEL LADDER TO PIT EXTENDING 4'–0" ABOVE THE SILL OF THE BOTTOM ENTRANCE AS LOCATED IN THE PLAN. LADDER WIDTH & PROJECTION FROM WALL PER LOCAL CODE.
12) PROVIDE PHOTOLUMINESCENCE EXIT PATH MARKINGS IN COMPLIANCE W/ BC 1026.11
13) EXIT SIGNS TO COMPLY W/ BC 1026.
14) PROVIDE FRESH AIR (VIA POWER VENTILATION) IN TRASH COMPACTOR ROOM.
15) ALL WALLS, PARTITIONS AND FLOOR/CEILING ASSEMBLIES SHALL HAVE A SOUND TRANSMISSION CLASS (STC) OF NOT LESS THAN 50. AS PER BC 1207.2. SEE LEGEND BELOW.
16) ARCHITECTURAL GLASS DOOR. NO SMOKE PROOF ENCLOSURE.
17) PROVIDE LOUVER FOR SMOKE PURGE SYSTEM. SEE MEP DRAWINGS.

SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

1. SMOKE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN DWELLING UNITS AND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.

2. SMOKE DETECTORS ARE REQUIRED IN THE FOLLOWING AREAS:
– IN SLEEPING AREAS
– IN EVERY ROOM IN THE PATH OF THE MEANS OF EGRESS FROM THE SLEEPING AREA TO THE DOOR LEADING FROM THE DWELLING UNIT.
– IN EACH STORY WITHIN THE UNIT, INCLUDING BELOW–GRADE STORIES.
FOR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, ASMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL.

CARBON MONOXIDE ALARM & DETECTOR NOTES AS PER BC 908.7

1. CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN AFFECTED DWELLING UNITSAND SHALL BE ANNUNCIATED BY DWELLING UNIT AT A CONSTANTLY ATTENDED LOCATION FROM WHICH THE FIRE ALARM SYSTEM IS CAPABLE OF BEING MANUALLY ACTIVATED.
2. CARBON MONOXIDE DETECTORS SHALL BE LOCATED WITHIN DWELLING UNITS AS FOLLOWS:
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– IN ANY ROOM USED FOR SLEEPING PURPOSES.
– ON ANY STORY WITHIN A DWELLING UNIT, INCLUDING BELOW–GRADE STORES AND PENTHOUSES OF ANY AREA, BUT NOT INCLUDING CRAWL SPACES AND UNINHABITABLE ATTICS.
3. CARBON MONOXIDE ALARMA OR DETECTORS SHALL COMPLY WITH THE POWER SOURCE, INTERCONNECTION, AND ACCEPTANCE TESTING REQUIREMENTS AS REQUIRED FOR SMOKE ALARMS.
4. CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 2075.

FIRE–RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)

CONSTRUCTION GROUP NON–COMBUSTIBLE	TYPE I	
BUILDING ELEMENT		B
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST		2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED

GROUP	R–1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R–1	S	A	UL (UNLIMITED)

AS PER TABLE 1107.6.1.1

TOTAL OF UNITS PROVIDED = 93
MIN. REQ'D. ACCESSIBLE UNITS W/ROLL–IN SHOWER= 1
ACCESSIBLE UNITS W/ROLL–IN SHOWERS PROVIDED= 1
MIN. REQ'D ACCESSIBLE UNITS= 5
ACCESSIBLE UNITS WITHOUT ROLL–IN SHOWERS PROVIDED= 8
TOTAL ACCESSIBLE UNITS PROVIDED= 9

LEGEND

- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
- 8"CONC. BLK. EXT. WALL W/ 2½" MTL. FRAMING +BATT INSUL. INSIDE AND ALUMINUM PANEL FINISH OUTSIDE.
- 3 ⅝" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
- 3 ⅝" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1–HR F.R.
- 3 ⅝" MTL. STUD WALL W/ 2–5/8" GYP.BD. ON E.S. 2–HR F.R.
- 5 ⅛" MTL. STUD WALL W/ 2–5/8" GYP.BD. B.S.+ 1" RIGID INSULATION WITH ALUMINUM PANEL FINISH. 2–HR F.R.
- 2–HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- 1–HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- SD/CO — SMOKE DETECTOR SHALL COMPLY W/ SEC. 907.2.8.3 & 907.2.9 OF NYC BLDG. and C.O. W/ SEC. 908.7 OF 2008 NYC BLDG CODE.
- EXHAUST. CFM AS SHOWN
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DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10–STY
TRANSIENT HOTEL

TITLE:
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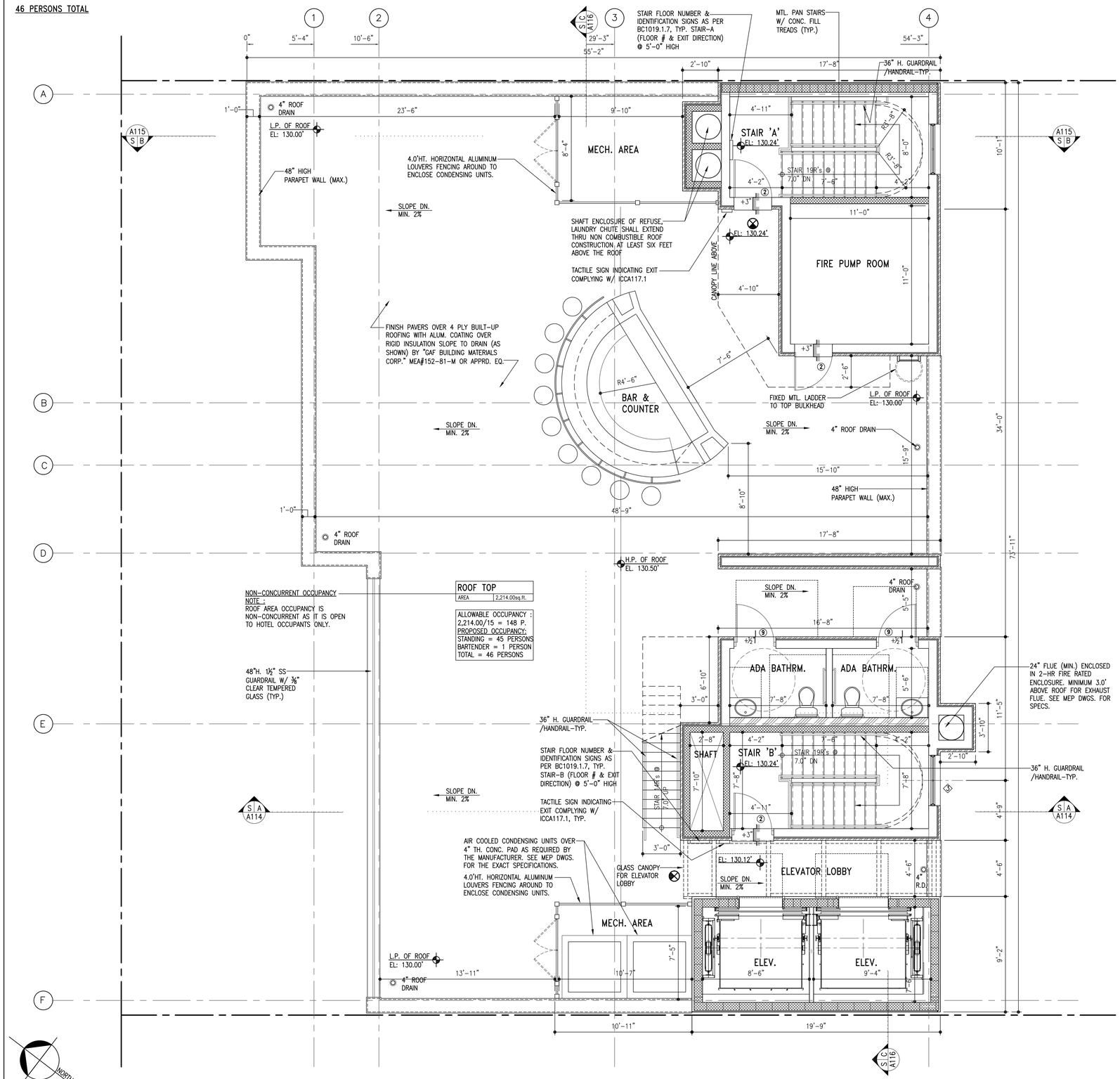
SEAL & SIGNATURE:

DATE: 02–27–13
PROJECT NO.: MSS 528–23
DRAWING BY: MH – FSC
CHK. BY: MSS
DWG NO:
A–109.00
CAD FILE NO: 20 OF 62

ELEVENTH FLOOR PLAN

SCALE: 1/4"=1'-0" | 01

46 PERSONS TOTAL



NOTES

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SMOKE ALARM & DETECTOR NOTES AS PER BC 907.2.8.3

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FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)

CONSTRUCTION GROUP NON-COMBUSTIBLE	TYPE I	
BUILDING ELEMENT		B
STRUCTURAL FRAME [a] INCLUDING COLUMNS, GIRDERS, TRUSSES		2b
BEARING WALLS EXTERIOR [f,g]		2
BEARING WALLS INTERIOR		2b
NONBEARING WALLS AND PARTITIONS EXTERIOR	SEE TABLE 602	
NONBEARING WALLS AND PARTITIONS INTERIOR [e]		0
FLOOR CONSTRUCTION [h] INCLUDING SUPPORTING BEAMS AND JOIST		2
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOIST		1c

TABLE 803.5 INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQ. BY OCCUPANCY

SPRINKLERED	
GROUP	R-1
VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
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AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

LEGEND

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- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
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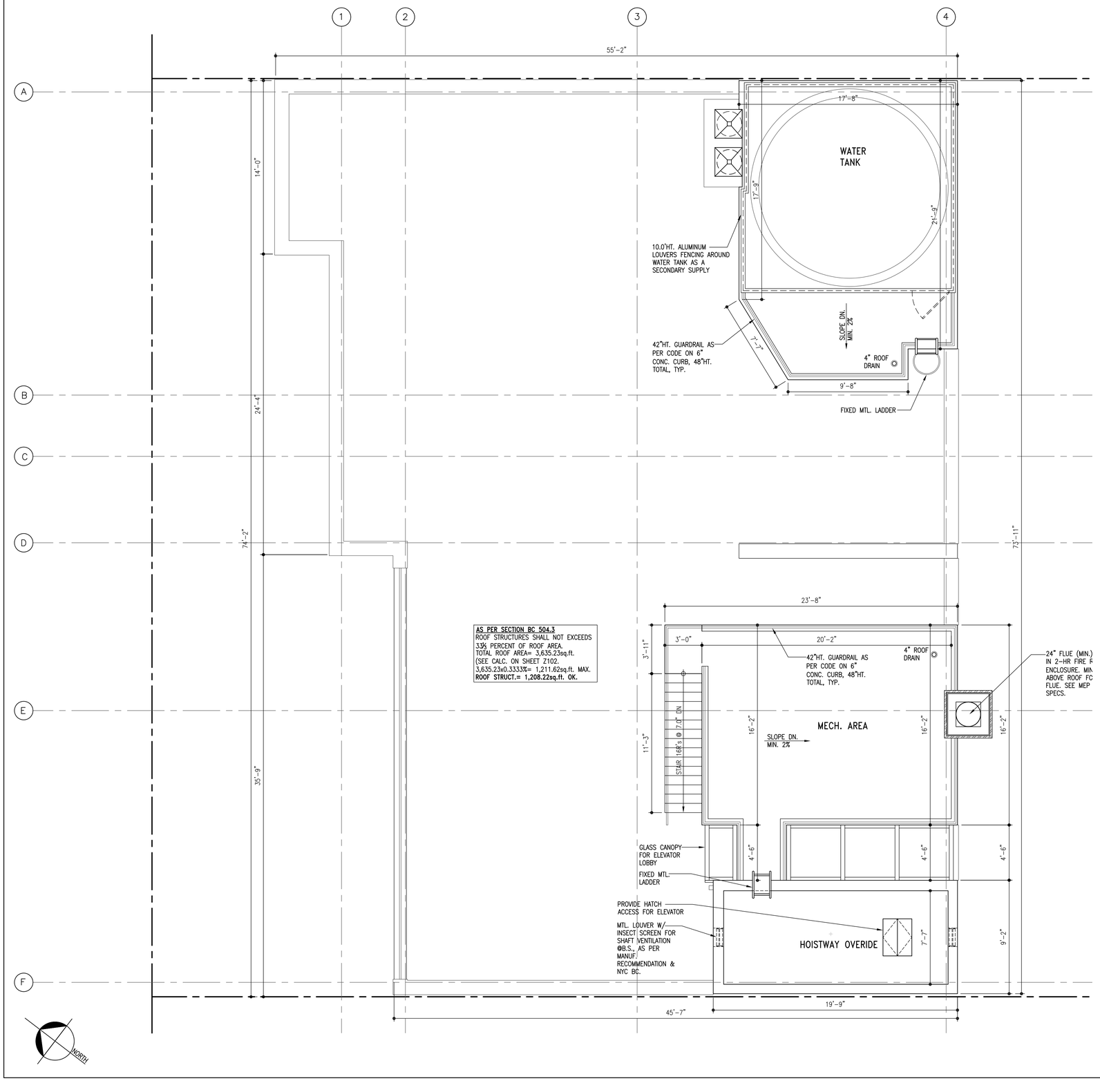
BULKHEAD PLAN

SCALE: 1/4"=1'-0" | 01



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FIRE-RESISTANCE RATING REQ. FOR BUILDING ELEMENTS (HRS.)
CONSTRUCTION GROUP NON-COMBUSTIBLE

	TYPE I
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BEARING WALLS EXTERIOR [f,g]	2
BEARING WALLS INTERIOR	2b
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SPRINKLERED

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VERTICAL EXITS AND EXIT PASSAGEWAYS	B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS	B
ROOMS & ENCLOSED SPACES	B

INTERIOR FINISH CLASS	FLAME SPREADING RATING
A	0 TO 25
B	26 TO 75
C	76 TO 200

TABLE 503 BUILDING HEIGHT

HEIGHT LIMITATIONS SHOWN AS STORIES AND FEET ABOVE GRADE PLANE

AREA LIMITATIONS AS DETERMINED BY THE DEFINITION OF "AREA, BUILDING," PER FLOOR

GROUP	HT(FEET)	HT(S)	TYPE 1B (160e)
R-1	S	A	UL (UNLIMITED)

LEGEND

- POURED CONCRETE WALL. SEE DWG. FOR THICKNESS
- 8"CONC. BLK. EXT. WALL OR AS SHOWN ON PLAN W/ 2 1/2" MTL. FRAMING + BATT INSUL. INSIDE 1/2" STUCCO OUTSIDE.
- 8"CONC. BLK. EXT. WALL W/ 2½" MTL. FRAMING +BATT INSUL. INSIDE AND ALUMINUM PANEL FINISH OUTSIDE.
- 3 ½" MTL. STUD WALL W/ 1/2" GYP.BD. ON E.S. (N.R.)
- 3 ½" MTL. STUD WALL W/ 5/8" GYP.BD. ON E.S.(F.C. 60) 1-HR F.R.
- 3 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. ON E.S. 2-HR F.R.
- 5 ½" MTL. STUD WALL W/ 2-5/8" GYP.BD. B.S.+ 1" RIGID INSULATION WITH ALUMINUM PANEL FINISH. 2-HR F.R.
- 2-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- 1-HR F.R. SHAFT WALL (SEE DETAIL PROVIDED)
- SD/CO — SMOKE DETECTOR SHALL COMPLY W/ SEC. 907.2.8.3 & 907.2.9 OF NYC BLDG. and C.O. W/ SEC. 908.7 OF 2008 NYC BLDG CODE.
- EXHAUST. CFM AS SHOWN
- EMERGENCY LIGHT
- LOCATION OF EXIT SIGN & LIGHT DIRECTION

CONSULTANTS:

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DEP:

NO.	DATE	DESCRIPTION OF REVISION

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37-11 23rd STREET
QUEENS, NY 11101

DOB STAMP & SIGNATURE:

PROJECT:
PROPOSED 10-STY
TRANSIENT HOTEL

TITLE:
BULKHEAD PLAN

SEAL & SIGNATURE:

DATE: 02-27-13
PROJECT NO.: MSS 528-23
DRAWING BY: MH – FSC
CHK. BY: MSS
DWG NO:
A-111.00
CAD FILE NO: 22 OF 62

ATTACHMENT B
Health and Safety Plan

FORMER JUNG SUN LAUNDRY SITE
37-11 23rd STREET
QUEENS, NEW YORK

CONSTRUCTION
HEALTH AND SAFETY PLAN

APRIL 2014

Prepared for:
New Generation Development, LLC
111-26 Van Wyck Expressway
South Ozone Park, New York 11420

Prepared by:

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 Middle Country Road
Ridge, NY 11961

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CONSTRUCTION HEALTH AND SAFETY PLAN
Former Jung Sun Laundry Site
37-11 23rd Street, Queens, New York

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CONSTRUCTION HEALTH AND SAFETY PLAN
Former Driggs Plywood Corp.
11 to 15 Jackson Street, Brooklyn, New York 11211

FIGURES

APPENDICES

STATEMENT OF COMMITMENT

This Health and Safety Plan (HASP) has been prepared to ensure that workers are not exposed to risks from hazardous materials during the Interim Remedial Action at 37-11 23rd Street, Queens, New York.

This HASP, which applies to persons present at the site actually or potentially exposed to hazardous materials, describes emergency response procedures for actual and potential chemical hazards. This HASP is also intended to inform and guide personnel entering the work area or exclusion zone. Persons are to acknowledge that they understand the potential hazards and the contents of this Health and Safety policy by signing off on receipt of their individual copy of the document. Contractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees.

1.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by Environmental Business Consultants (EBC) for the planned Interim Remedial Action at 37-11 23rd Street, Queens, New York to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes during remedial activities. In accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 Hazardous Waste Operations and Emergency Response Final rule, this CHASP, including the attachments, addresses safety and health hazards related to excavation, loading and other soil disturbance activities and is based on the best information available. The CHASP may be revised by EBC at the request of New Generation Development LLC and/or a regulatory agency upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by EBC's project manager, site safety officer and/or the EBC health and safety consultant.

1.1 Training Requirements

Personnel entering the exclusion zone or decontamination zone are required to be certified in health and safety practices for hazardous waste site operations as specified in the Federal OSHA Regulations CFR 1910.120e (revised 3/6/90).

Paragraph (e - 3) of the above referenced regulations requires that all on-site management personnel directly responsible for or who supervise employees engaged in hazardous waste operations, must initially receive 8 hours of supervisor training related to managing hazardous waste work.

Paragraph (e - 8) of the above referenced regulations requires that workers and supervisors receive 8 hours of refresher training annually on the items specified in Paragraph (e-1) and/or (e-3).

Additionally all on-site personnel must receive adequate site-specific training in the form of an on-site Health and Safety briefing prior to participating in field work with emphasis on the following:

- Protection of the adjacent community from hazardous vapors and / or dust which may be released during intrusive activities.
- Identification of chemicals known or suspected to be present on-site and the health effects and hazards of those substances.
- The need for vigilance in personnel protection, and the importance of attention to proper use, fit and care of personnel protective equipment.
- Decontamination procedures.
- Site control including work zones, access and security.
- Hazards and protection against heat or cold.
- The proper observance of daily health and safety practices, such as entry and exit of work zones and site. Proper hygiene during lunch, break, etc.
- Emergency procedures to be followed in case of fire, explosion and sudden release of hazardous gases.

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Health and Safety meetings will be conducted on a daily basis and will cover protective clothing and other equipment to be used that day, potential and chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

1.2 Medical Monitoring Requirements

Field personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f) if respirators or other breathing related PPE is needed. Medical monitoring enables a physician to monitor each employee's health, physical condition, and his fitness to wear respiratory protective equipment and carry out on-site tasks.

1.3 Site Safety Plan Acceptance, Acknowledgment and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (EBC employees and/or owner or owners representatives) entering the work area of the contents of this plan and ensuring that each person signs the safety plan acknowledging the on-site hazards and procedures required to minimize exposure to adverse effects of these hazards. A copy of the Acknowledgement Form is included in **Appendix A**.

Site conditions may warrant an amendment to the HASP. Amendments to the HASP are acknowledged by completing forms included in **Appendix B**.

1.4 Key Personnel - Roles and Responsibilities

Personnel responsible for implementing this Health and Safety Plan are:

Name	Title	Address	Contact Numbers
Ms. Kristen DiScenza	EBC – Project Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Ms. Chawinie Miller	Health & Safety Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Mr. Kevin Waters	Site Safety Officer	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000

The project manager is responsible for overall project administration and, with guidance from the site safety officer, for supervising the implementation of this CHASP. The site safety officer will conduct daily (tail gate or tool box) safety meetings at the project site and oversee daily safety issues. Each subcontractor and supplier (defined as an OSHA employer) is also responsible for the health and safety of its employees. If there is any dispute about health and safety or project activities, on-site personnel will attempt to resolve the issue. If the issue cannot be resolved at the site, then the project manager will be consulted.

The site safety officer is also responsible for coordinating health and safety activities related to hazardous material exposure on-site. The site safety officer is responsible for the following:

1. Educating personnel about information in this CHASP and other safety requirements to

be observed during site operations, including, but not limited to, decontamination procedures, designation of work zones and levels of protection, air monitoring, fit testing, and emergency procedures dealing with fire and first aid.

2. Coordinating site safety decisions with the project manager.

3. Designating exclusion, decontamination and support zones on a daily basis.

4. Monitoring the condition and status of known on-site hazards and maintaining and implementing the air quality monitoring program specified in this CHASP.

5. Maintaining the work zone entry/exit log and site entry/exit log.

6. Maintaining records of safety problems, corrective measures and documentation of chemical exposures or physical injuries (the site safety officer will document these conditions in a bound notebook and maintain a copy of the notebook on-site).

The person who observes safety concerns and potential hazards that have not been addressed in the daily safety meetings should immediately report their observations/concerns to the site safety officer or appropriate key personnel.

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2.0 SITE BACKGROUND AND SCOPE OF WORK

The address for the subject property is 37-11 23rd Street, Long Island City, New York 11101. The subject property is designated as Block 366, Lot 18 by the New York City Department of Assessment. The subject property is located in the City of New York and Borough of Queens (Queens County). The lot has 74.33 feet of frontage on 23rd Street and is 92.6 feet deep for a total area of 6,883 square feet (0.158 acres). The subject Site is currently a vacant parking lot occupying the entire Lot.

The elevation of the property is approximately 19 feet above the National Geodetic Vertical Datum (NGVD) feet. Based on measurements made at the Site as part of the Remedial Investigation, the depth to groundwater beneath the site is approximately 15 feet below existing grade and flows west toward the East River.

2.1 Previous Investigations

2.1.1 Phase 1 Data Summary (Earth Tech July 2008)

Under the Phase 1 groundwater investigation, Earth Tech installed three permanent monitoring wells, collected groundwater samples from the three new and five existing monitoring wells for volatile organic compounds (VOCs), conducted a membrane interphase probe investigation and collected soil samples from borings. Earth Tech reached the following conclusions in the Report:

- The presence of PCE and TCE, was confirmed in the groundwater under the Jung Sun and Scalamandre Silks property. The presence of PCE was confirmed in the subsurface soil (on Scalamandre Silks property, located adjacent to the Jung Sun Property).

- The concentration of PCE and other chlorinated solvents observed in the groundwater is greatest in MW-4, located immediately to the west of the Jung Sun facility and near the location of the dry cleaning operation.

- Groundwater flow in the shallow zone appears to be to the south-southeast across the Site, although the extremely minimal gradient makes determination of the groundwater flow direction difficult. The data indicate that the dissolved plume observed on the south side of the site is not present north of the Site. This suggests that the site is a probable source of the observed contamination.

- There is some upgradient or cross-gradient contamination in the shallow groundwater; suggesting a possible additional upgradient source if the presumed flow direction is correct. Alternatively, this relatively low level of contamination may result from dispersion of the contaminant plume identified on the Jung Sun Property.

- Based on the distribution and concentration of contaminants observed in the soil and groundwater, it is considered possible that there may be an additional source area near the area of the tank-like geophysical anomaly on Scalamandre Silks property.

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- Ecological impacts from the elevated groundwater concentrations are not considered significant because of the urban setting and a lack of a direct pathway.

- Impacts to human health from airborne contamination should be evaluated since receptors are present at the operating facilities on the block. No public water wells were identified within a mile of the site indicating there is no significant threat to human health from ingestion of the groundwater.

- Off –site migration of the groundwater contamination is possible because PCE contamination in the downgradient MW-1 was observed in the 2003 and January 2008 sampling events at levels exceeding the Class GA criteria.

- Jung Sun is a probable source of the PCE in groundwater.

2.1.2 Phase 2 Data Summary Report (AECOM March 2010)

Under the Phase 2 part of the investigation performed in February 2009, AECOM collected groundwater samples from 8 existing monitoring wells, advanced 2 test pits, installed 7 soil borings and collected soil gas samples from 7 locations.

Earth Tech installed three permanent monitoring wells, collected groundwater samples from the three new and five existing monitoring wells for volatile organic compounds (VOCs), conducted a membrane interphase probe investigation and collected soil samples from borings. Earth Tech reached the following conclusions in the Report:

AECOM provided the following conclusions:

- The groundwater, soil and soil gas results confirm the presence of chlorinated volatile organic compounds (TCE, PCE, VC and cis-1,2-DCE) in all matrices at the site (Jung Sun) and in the vicinity of the site.

- The groundwater flow in the shallow zone appears to be relatively flat across the site and the extremely minimal gradient makes determination of the groundwater flow direction difficult.

- The data of previous site investigation (February 2008) and this round (February 2009) of site investigation indicate that the dissolved plume has migrated towards south-southeast to the site at MW-1 and MW-5.

- In Phase 2, a decrease in groundwater contamination concentrations was observed for MW-4 and an increase in groundwater contamination was observed in the downgradient wells MW-1 and MW-5 compared to Phase 1. This indicates the migration of the plume from the site towards south-southeast, and a potential vertical migration of the plume.

- There is some upgradient or cross-gradient contamination in the shallow groundwater; suggesting a possible additional upgradient source, if the presumed flow direction is

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correct. Alternatively, this relatively low level of contamination may result from dispersion of the contaminant plume identified on the Jung Sun Property.

- PCE was detected in groundwater above the NYSDEC class GA criteria in six of the eight monitoring wells.

- PCE was detected in soil above NYS DEC Part 375 unrestricted use SCGs on Jung Sun property and Scalamandre Silks property adjacent to Jung Sun. At location SB-1B within the Scalamandre property PCE was detected at 12.0 ft bgs, which is believed to be migrated from contaminated groundwater during seasonal fluctuation (No PID readings were recorded from the surface to 11.00 ft bgs.)

- PCE and TCE were detected at elevated concentrations in soil gas samples; future soil vapor investigation is warranted.

- Ecological impacts from the elevated groundwater concentrations are not considered significant because of the urban setting and a lack of a direct pathway.

- Test pit excavation at the suspected anomalies presented at Scalamandre Silks property adjacent to Jung Sun property identified a reinforced concrete pad.

2.1.2 Remedial Investigation, (EBC March 16-20, 2012, May 8, 2013)

The remedial investigation was performed from December 17 through December 20, 2013. The goals of the Remedial Investigation were to define the nature and extent of contamination in soil, groundwater and any other impacted media; to identify the source(s) of the contamination; to assess the impact of the contamination on public health and/or the environment; and to provide information to support the development of a Remedial Work Plan to address the contamination.

The results of sampling performed during the Supplemental RI, identified CVOC contamination, consisting mainly of PCE in shallow soil in the rear portion of the property. This contamination is likely related to intermittent surface spills which occurred during the historic use of the lot as a parking / loading area for the commercial laundry facility which occupied the buildings on the adjacent lots. The timing and scenario of the release(s) are unknown but could have occurred at any time during the operation of the laundry facility through releases associated with daily activities or the storage of chlorinated solvents.

Groundwater samples obtained from on-site monitoring wells indicate moderate to low levels of PCE and / or TCE present across the Site. PCE contamination in groundwater would largely occur through the vertical transport as a dissolved component to the water table, as surface runoff entered the ground through the same cracks in the surface and passed through the impacted soil zone. Once in the groundwater PCE began to undergo reductive dechlorinization as evidenced by the presence of degradation products including TCE, cis/trans-DCE and vinyl chloride.

Off-gassing is occurring from impacted shallow soils resulting in elevated concentrations of PCE and TCE in soil gas. The highest concentrations of both PCE and TCE in soil vapor were located in the rear (east) portions of the property, consistent with the areas of highest CVOC concentrations in shallow soil and groundwater.

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The qualitative exposure assessment identified potential completed routes of exposure to construction workers and remediation workers through inhalation, ingestion and dermal contact during excavation activities. The Health and Safety Plan prepared for the site identifies such exposures and provides instructions for on-site workers to minimize potential exposure. Occupants (guests) and hotel workers in the proposed hotel building may be exposed to CVOCs through the vapor intrusion pathway, if preventative measures are not incorporated unto the design of the new building.

The exposure assessment also identified potential exposure to commercial workers in adjacent buildings through vapors off-gassing from impacted soil beneath the Site and possibly through impacted groundwater as well.

2.2 Redevelopment Plans

New Generation intends to redevelop the property with a new 11-story hotel building including a full height basement level. As shown in Figure 3 the proposed hotel building will occupy approximately 60 percent of the lot leaving a set back in the front and a 28 foot strip at the rear of the lot for parking. The parking area will be combined with a future parking planned area on Lots 32 and 33 accessed by a driveway on 24th Street.

2.3 Description of Interim Remedial Action

Site activities included within the Remedial Action that are included within the scope of this HASP include the following:

1. Removal of shallow CVOC impacted soil from two hotspot areas located on the property.
2. Excavation of soil/fill from the footprint of the proposed building to install a basement level foundation to a depth of 12 feet below grade;
3. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
4. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs;
5. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
6. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in Table 1, (2) all Federal, State and local rules and regulations for handling and transport of material.
7. Installation of a sub-slab depressurization system and vapor barrier beneath occupied areas of the building to be constructed on the Site.

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3.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general physical hazards that can be expected at most sites; and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment.

3.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general physical hazards that can be expected at most sites; and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment.

3.1 Physical Hazards

3.1.1 Tripping Hazards

An area of risk associated with on-site activities are presented by uneven ground, concrete, curbstones or equipment which may be present at the site thereby creating a potential tripping hazard. During intrusive work, care should be taken to mark or remove any obstacles within the exclusion zone.

3.1.2 Climbing Hazards

During site activities, workers may have to work on excavating equipment by climbing. The excavating contractor will conform with any applicable NIOSH and OSHA requirements or climbing activities.

3.1.3 Cuts and Lacerations

Field activities that involve excavating activities usually involve contact with various types of machinery. A first aid kit approved by the American Red Cross will be available during all intrusive activities.

3.1.4 Lifting Hazards

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the excavation program may be required to lift heavy objects. Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

3.1.5 Utility Hazards

Before conducting any excavation, the excavation contractor will be responsible for locating and verifying all existing utilities at each excavation.

3.1.6 Traffic Hazards

All traffic, vehicular and pedestrian, shall be maintained and protected at all times consistent with local, state and federal agency regulations regarding such traffic and in accordance with

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NYCDOT guidelines. The excavation contractor shall carry on his operations without undue interference or delays to traffic. The excavation contractor shall furnish all labor, materials, guards, barricades, signs, lights, and anything else necessary to maintain traffic and to protect his work and the public, during operations.

3.2 Work in Extreme Temperatures

Work under extremely hot or cold weather conditions requires special protocols to minimize the chance that employees will be affected by heat or cold stress.

3.2.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel, which limits the dissipation of body heat and moisture, can cause heat stress.

The following prevention, recognition and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress and to apply the appropriate treatment.

1. Prevention
    a. Provide plenty of fluids. Available in the support zone will be a 50% solution of fruit punch and water or plain water.
    b. Work in Pairs. Individuals should avoid undertaking any activity alone.
    c. Provide cooling devices. A spray hose and a source of water will be provided to reduce body temperature, cool protective clothing and/or act as a quick-drench shower in case of an exposure incident.
    d. Adjustment of the work schedule. As is practical, the most labor-intensive tasks should be carried out during the coolest part of the day.

2. Recognition and Treatment
    a Heat Rash (or prickly heat):
        Cause: Continuous exposure to hot and humid air, aggravated by chafing clothing.
        Symptoms: Eruption of red pimples around sweat ducts accompanied by intense itching and tingling.
        Treatment: Remove source or irritation and cool skin with water or wet cloths.

    b. Heat Cramps (or heat prostration)
        Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.
        Symptoms: Muscular weakness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.
        Treatment: Perform the following while making arrangement for transport to a medical facility. Remove the worker to a contamination reduction zone. Remove protective clothing. Lie worker down on back in a cool place and raise feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of salt-water solution, using one teaspoon of salt in 12 ounces of water. Transport to a medical facility.

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c. Heat Stroke

Cause:	Same as heat exhaustion. This is also an extremely serious condition.
Symptoms:	Dry hot skin, dry mouth, dizziness, nausea, headache, rapid pulse.
Treatment:	Cool worker immediately by immersing or spraying with cool water or sponge bare skin after removing protective clothing. Transport to hospital.

3.2.2 Cold Exposure

Exposure to cold weather, wet conditions and extreme wind-chill factors may result in excessive loss of body heat (hypothermia) and /or frostbite. To guard against cold exposure and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be readily available, rest periods should be adjusted as needed, and the physical conditions of on-site field personnel should be closely monitored. Personnel and supervisors working on-site will be made aware of the signs and symptoms of frost bite and hypothermia such as shivering, reduced blood pressure, reduced coordination, drowsiness, impaired judgment, fatigue, pupils dilated but reactive to light and numbing of the toes and fingers.

3.3 Chemical Hazards

"Urban fill" materials, present throughout the New York City area typically contain elevated levels of semi-volatile organic compounds and metals. These "contaminants" are not related to a chemical release occurring on the site, but are inherent in the reworked fill material in the area which contains ash and bits of tar and asphalt. Considering the previous sampling results and the past and present use of the site, the following compounds are considered for the site as potential contaminants: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyl's (PCBs), and heavy metals such as arsenic, chromium, lead and mercury.

Based on the findings of the Remedial Investigation and the inherent properties of urban fill, the following compounds are considered for the site as potential contaminants: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and heavy metals.

Volatile organic compounds reported to be present in soil, soil gas and/or groundwater include the following:

cis-1,2-dichloroethene	Tetrachloroethene	Trichloroethylene	Vinyl Chloride

Semi-Volatile organic compounds expected to be in fill materials include the following:

Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(a)pyrene	Chrysene
Benzo(k)fluoranthene	Dibenzo(a,h)anthracene	Ideno(1,2,3-cd) pyrene	Napthalene

Metals expected to be present in fill materials nclude the following

Arsenic	Chromium	Lead	Mercury

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The primary routes of exposure to these contaminants are inhalation, ingestion and absorption.

Appendix C includes information sheets for suspected chemicals that may be encountered at the site.

3.3.1 Respirable Dust

Dust may be generated from vehicular traffic and/or excavation activities. If visible observation detects elevated levels of dust, a program of wetting will be employed by the site safety officer. If elevated dust levels persist, the site safety office will employ dust monitoring using a particulate monitor (Miniram or equivalent). If monitoring detects concentrations greater than 150 µg/m3 over daily background, the site safety officer will take corrective actions as defined herein, including the use of water for dust suppression and if this is not effective, requiring workers to wear APRs with efficiency particulate air (HEPA) cartridges.

Absorption pathways for dust and direct contact with soils or groundwater will be mitigated with the implementation of latex gloves, hand washing and decontamination exercises when necessary.

3.3.2 Dust Control and Monitoring During Earthwork

Dust generated during excavation activities or other earthwork may contain contaminants identified in soils at the site. Dust will be controlled by wetting the working surface with water. Calcium chloride may be used if the problem cannot be controlled with water. Air monitoring and dust control techniques are specified in a site specific Dust Control Plan (if applicable). Site workers will not be required to wear APR's unless dust concentrations are consistently over 150 $\mu g/m^3$ over site-specific background in the breathing zone as measured by a dust monitor unless the site safety officer directs workers to wear APRs. The site safety officer will use visible dust as an indicator to implement the dust control plan.

3.3.3 Organic Vapors

Elevated levels of chlorinated VOCs were detected in soil, soil gas and groundwater samples collected during previous investigations at the site. Therefore, excavation activities may cause the release of organic vapors to the atmosphere. The site safety officer will periodically monitor organic vapors with a Photoionization Detector (PID) during excavation activities to determine whether organic vapor concentrations exceed action levels shown in Section 5 and/or the Community Air Monitoring Plan.

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4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be selected in accordance with the site air monitoring program, OSHA 29 CFR 1910.120(c), (g), and 1910.132. Protective equipment shall be NIOSH approved and respiratory protection shall conform to OSHA 29 CFR Part 1910.133 and 1910.134 specifications; head protection shall conform to 1910.135; eye and face protection shall conform to 1910.133; and foot protection shall conform to 1910.136. The only true difference among the levels of protection from D thru B is the addition of the type of respiratory protection. **It is anticipated that work will be performed in Level D PPE.**

4.1 Level D

Level D PPE shall be donned when the atmosphere contains no known hazards and work functions preclude splashes, immersion, or the potential for inhalation of, or contact with, hazardous concentrations of harmful chemicals. Level D PPE consists of:

- standard work uniform, coveralls, or tyvek, as needed;
- steel toe and steel shank work boots;
- hard hat;
- gloves, as needed;
- safety glasses;
- hearing protection;
- equipment replacements are available as needed.

4.2 Level C

Level C PPE shall be donned when the concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable OVA, or equivalent), but are less than 5 ppm. The specifications on the APR filters used must be appropriate for contaminants identified or expected to be encountered. Level C PPE shall be donned when the identified contaminants have adequate warning properties and criteria for using APR have been met. Level C PPE consists of:

- chemical resistant or coated tyvek coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves (surgical gloves);
- disposable outer gloves;
- full face APR fitted with organic vapor/dust and mist filters or filters appropriate for the identified or expected contaminants;
- hard hat;
- splash shield, as needed; and,
- ankles/wrists taped with duct tape.

The site safety officer will verify if Level C is appropriate by checking organic vapor concentrations using compound and/or class-specific detector tubes.

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- chemical resistant coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves;
- disposable outer gloves;
- hard hat; and,
- ankles/wrists taped.

The exact PPE ensemble is decided on a site-by-site basis by the Site Safety Officer with the intent to provide the most protective and efficient worker PPE.

4.3 Activity-Specific Levels of Personal Protection

The required level of PPE is activity-specific and is based on air monitoring results (Section 4.0) and properties of identified or expected contaminants. **It is expected that site work will be performed in Level D.** If air monitoring results indicate the necessity to upgrade the level of protection engineering controls (i.e. Facing equipment away from the wind and placing site personnel upwind of drilling locations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

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5.0 AIR MONITORING AND ACTION LEVELS

29 CFR 1910.120(h) specifies that monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

5.1 Air Monitoring Requirements

If excavation work is performed, air will be monitored for VOCs with a portable ION Science 3000EX photoionization detector, or the equivalent. If necessary, Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). If appropriate, fugitive dust will be monitored using a MiniRam Model PDM-3 aerosol monitor. Air will be monitored when any of the following conditions apply:

- initial site entry;
- during any work where a potential IDLH condition or flammable atmosphere could develop;
- excavation work begins on another portion of the site;
- contaminants, other than those previously identified, have been discovered;
- each time a different task or activity is initiated;
- during trenching and/or excavation work.

The designated site safety officer will record air monitoring data and ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. Monitoring results will be recorded in a field notebook and will be transferred to instrument reading logs.

5.2 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage are exceeded:

1 The SSO will be consulted immediately
2 All personnel (except as necessary for continued monitoring and contaminant migration, if applicable) will be cleared from the work area (eg from the exclusion zone).
3 Monitoring will be continued until intrusive work resumes.

5.3 Action Levels During Excavation Activities

Instrument readings will be taken in the breathing zone above the excavation pit unless otherwise noted. Each action level is independent of all other action levels in determining responses.

Organic Vapors (PID)	LEL %	Responses
0-1 ppm above background	0%	• Continue excavating • Level D protection • Continue monitoring every 10 minutes

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1-5 ppm Above Background, Sustained Reading	1-10%	• Continue excavating • Go to Level C protection or employ engineering controls • Continue monitoring every 10 minutes
5-25 ppm Above Background, Sustaineed Reading	10-20%	• Discontinue excavating, unless PID is only action level exceeded. • Level C protection or employ engineering controls • Continue monitoring for organic vapors 200 ft downwind • Continuous monitoring for LEL at excavation pit
>25 ppm Above Background, Sustained Reading	>20%	• Discontinue excavating • Withdraw from area, shut off all engine ignition sources. • Allow pit to vent • Continuous monitoring for organic vapors 200 ft downwind.

Notes: Air monitoring will occur in the breathing zone 30 inches above the excavation pit. Readings may also be taken in the excavation pit but will not be used for action levels.

If action levels for any one of the monitoring parameters are exceeded, the appropriate responses listed in the right hand column should be taken. If instrument readings do not return to acceptable levels after the excavation pit has been vented for a period of greater than one-half hour, a decision will then be made whether or not to seal the pit with suppressant foam.

If, during excavation activities, downwind monitoring PID readings are greater than 5 ppm above background for more than one-half hour, excavation will stop until sustained levels are less then 5 ppm (see Community Air Monitoring Plan).

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6.0 SITE CONTROL

6.1 Work Zones

The primary purpose of site controls is to establish the perimeter of a hazardous area, to reduce the migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons. When operations are to take place involving hazardous materials, the site safety officer will establish an exclusion zone, a decontamination zone, and a support zone. These zones "float" (move around the site) depending on the tasks being performed on any given day. The site safety officer will outline these locations before work begins and when zones change. The site safety officer records this information in the site log book.

It is expected that an exclusion zone, decontamination zone, and support zone will only be established during the remedial work required to excavate the CVOC hotspot area. 40 hr HAZWOPER training is required to perform any soil disturbing activities within the hotspot areas identified within the Interim Remedial Measure Work Plan. All onsite workers must provide evidence of OSHA 40-hour Hazardous Waste Operations and Emergency Response Operations training to conduct work within the exclusion zone established by the site safety officer. The exclusion zone is defined by the site safety officer but will typically be a 50-foot area around work activities. Gross decontamination (as determined by the site Health and Safety Officer) is conducted in the exclusion zone; all other decontamination is performed in the decontamination zone or trailer.

Protective equipment is removed in the decontamination zone. Disposable protective equipment is stored in receptacles staged in the decontamination zone, and non-disposable equipment is decontaminated. All personnel and equipment exit the exclusion zone through the decontamination zone. If a decontamination trailer is provided the first aid equipment, an eye wash unit, and drinking water are kept in the decontamination trailer.

The support zone is used for vehicle parking, daily safety meetings, and supply storage. Eating, drinking, and smoking are permitted only in the support zone. When a decontamination trailer is not provided, the eye wash unit, first aid equipment, and drinking water are kept at a central location designated by the site safety officer.

6.1 General Site Work

Upon completion of CVOC hotspot remedial activities by a 40 hr HAZWOPER trained personnel, a general excavation contractor may continue with site excavation/grading as needed for basement excavation, shoring, other building requirements, or as deemed necessary by the Interim Remedial Measure Work Plan and/or Project Manager. All onsite employees must have obtained OSHA 24-hour Hazardous Waste Operations and Emergency Response Operations training prior to performing soil disturbing activities.

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7.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms: illnesses, injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather.

Emergency telephone numbers and a map to the hospital will be posted in the command post. Site personnel should be familiar with the emergency procedures, and the locations of site safety, first aid, and communication equipment.

7.1 Emergency Equipment On-site

Private telephones:	Site personnel.
Two-way radios:	Site personnel where necessary.
Emergency Alarms:	On-site vehicle horns*.
First aid kits:	On-site, in vehicles or office.
Fire extinguisher:	On-site, in office or on equipment.

* Horns: Air horns will be supplied to personnel at the discretion of the project superintendent or site safety officer.

7.2 Emergency Telephone Numbers

General Emergencies	911
Suffolk County Police	911
NYC Fire Department	911
NY Presbyterian Hospital	(212) 746-5454
NYSDEC Spills Hotline	1-800-457-7362
NYSDEC Project Manager	518 402 9656
NYC Department of Health	212-676-2400
National Response Center	800-424-8802
Poison Control	800-222-1222
Project Manager	631-504-6000
Site Safety Officer	631-504-6000

7.3 Personnel Responsibilities During an Emergency

The project manager is primarily responsible for responding to and correcting any emergency situations. However, in the absence of the project manager, the site safety officer shall act as the project manager's on-site designee and perform the following tasks:

- Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, evacuate and secure the site, or upgrade/downgrade the level of protective clothing and respiratory protection;

- Ensure that appropriate federal, state, and local agencies are informed and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. If toxic materials are released to the air, the local authorities should be informed in order to assess the need for evacuation;

- Ensure appropriate decontamination, treatment, or testing for exposed or injured personnel;

- Determine the cause of incidents and make recommendations to prevent recurrence; and,

- Ensure that all required reports have been prepared.

The following key personnel are planned for this project:

- Project Manager — Ms. Kristen DiScenza (631) 504-6000
- Construction Superintendent — Dala Singh (718) 347-3200
- Site Safety Officer — Mr. Kevin Waters (631) 504-6000

7.4 Medical Emergencies

A person who becomes ill or injured in the exclusion zone will be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. First aid will be administered while waiting for an ambulance or paramedics. A Field Accident Report (**Appendix D**) must be filled out for any injury.

A person transporting an injured/exposed person to a clinic or hospital for treatment will take the directions to the hospital (**Appendix D**).and information on the chemical(s) to which they may have been exposed (**Appendix C**).

7.5 Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. The site safety officer or his designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials on-site. If it is safe to do so, site personnel may:

- use fire fighting equipment available on site; or,
- remove or isolate flammable or other hazardous materials that may contribute to the fire.

7.6 Evacuation Routes

Evacuation routes established by work area locations for each site will be reviewed prior to commencing site operations. As the work areas change, the evacuation routes will be altered accordingly, and the new route will be reviewed.

Under extreme emergency conditions, evacuation is to be immediate without regard for equipment. The evacuation signal will be a continuous blast of a vehicle horn, if possible, and/or by verbal/radio communication. When evacuating the site, personnel will follow these instructions:

- Keep upwind of smoke, vapors, or spill location.

- Exit through the decontamination corridor if possible.

- If evacuation through the decontamination corridor is not possible, personnel should remove contaminated clothing once they are in a safe location and leave it near the exclusion zone or in a safe place.

- The site safety officer will conduct a head count to ensure that all personnel have been evacuated safely. The head count will be correlated to the site and/or exclusion zone entry/exit log.

- If emergency site evacuation is necessary, all personnel are to escape the emergency situation and decontaminate to the maximum extent practical.

7.7 Spill Control Procedures

Spills associated with site activities may be attributed to project equipment and include gasoline, diesel and hydraulic oil. In the event of a leak or a release, site personnel will inform their supervisor immediately, locate the source of spillage and stop the flow if it can be done safely. A spill containment kit including absorbent pads, booms and/or granulated speedy dry absorbent material will be available to site personnel to facilitate the immediate recovery of the spilled material. Daily inspections of site equipment components including hydraulic lines, fuel tanks, etc. will be performed by their respective operators as a preventative measure for equipment leaks and to ensure equipment soundness. In the event of a spill, site personnel will immediately notify the NYSDEC (1-800-457-7362), and a spill number will be generated.

7.8 Vapor Release Plan

If work zone organic vapor (excluding methane) exceeds 5 ppm, then a downwind reading will be made either 200 feet from the work zone or at the property line, whichever is closer. If readings at this location exceed 5 ppm over background, the work will be stopped.

If 5 ppm of VOCs are recorded over background on a PID at the property line, then an off-site reading will be taken within 20 feet of the nearest residential or commercial property, whichever is closer. If efforts to mitigate the emission source are unsuccessful for 30 minutes, then the designated site safety officer will:

- contact the local police;
- continue to monitor air every 30 minutes, 20 feet from the closest off-site property. If two successive readings are below 5 ppm (non-methane), off-site air monitoring will be halted.
- All property line and off site air monitoring locations and results associated with vapor releases will be recorded in the site safety log book.

APPENDIX A

SITE SAFETY ACKNOWLEDGEMENT FORM

DAILY BREIFING SIGN-IN SHEET

Date:_____ Person Conducting Briefing:_____

Project Name and Location:_____

1. AWARENESS (topics discussed, special safety concerns, recent incidents, etc…):

_____

_____

_____

_____

2. OTHER ISSUES (HASP changes, attendee comments, etc…):

_____

_____

_____

3. ATTENDEES (Print Name):

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

APPENDIX B

SITE SAFETY PLAN AMENDMENTS

SITE SAFETY PLAN AMENDMENT FORM

Site Safety Plan Amendment #: _____

Site Name: _____

Reason for Amendment: _____

_____

_____

_____

Alternative Procedures: _____

_____

_____

_____

Required Changes in PPE: _____

_____

_____

_____

_____ _____

Project Superintendent (signature) **Date**

_____ _____

Health and Safety Consultant (signature) **Date**

_____ _____

Site Safety Officer (signature) **Date**

APPENDIX C

CHEMICAL HAZARDS

CHEMICAL HAZARDS

The attached International Chemical Safety Cards are provided for contaminants of concern that have been identified in soils and/or groundwater at the site.

Material Safety Data Sheet

cis-1,2-Dichloroethylene, 97%

ACC# 97773

Section 1 - Chemical Product and Company Identification

MSDS Name: cis-1,2-Dichloroethylene, 97%
Catalog Numbers: AC113380000, AC113380025, AC113380100
Synonyms: cis-Acetylene dichloride.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
156-59-2	cis-1,2-Dichloroethylene	97	205-859-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: Clear liquid. Flash Point: 6 deg C.
Warning! Flammable liquid and vapor. Harmful if inhaled. Unstabilized substance may polymerize. Causes eye and skin irritation. May be harmful if swallowed. May cause respiratory tract irritation.
Target Organs: Central nervous system, respiratory system, eyes, skin.

Potential Health Effects
Eye: Causes moderate eye irritation.
Skin: Causes moderate skin irritation. May cause dermatitis.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed. May cause central nervous system depression.
Inhalation: May cause respiratory tract irritation. May cause narcotic effects in high concentration. Eye irritation, vertigo, and nausea were reported in humans exposed at 2200 ppm.
Chronic: Not available. Some German investigators reported fatty degeneration of the liver upon repeated narcotic doses in rats and

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Fire or excessive heat may result in violent rupture of the container due to bulk polymerization. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Hazardous polymerization may occur under fire conditions.
Extinguishing Media: Use water fog, dry chemical, carbon dioxide, or regular foam.
Flash Point: 6 deg C (42.80 deg F)
Autoignition Temperature: 440 deg C (824.00 deg F)
Explosion Limits, Lower:9.70 vol %
Upper: 12.80 vol %
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 2

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Pure vapor will be uninhibited and may polymerize in vents or other confined spaces.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Flammables-area. Store protected from light and air.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
cis-1,2-Dichloroethylene	200 ppm TWA	none listed	none listed

OSHA Vacated PELs: cis-1,2-Dichloroethylene: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: Clear
Odor: Pleasant odor
pH: Not available.
Vapor Pressure: 201 mm Hg @ 25 deg C
Vapor Density: 3.34 (air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 60 deg C @ 760 mm Hg
Freezing/Melting Point:-80 deg C
Decomposition Temperature: Not available.
Solubility: Insoluble.
Specific Gravity/Density:1.2800
Molecular Formula:C2H2Cl2
Molecular Weight:96.94

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. This material is a monomer and may polymerize under certain conditions if the stabilizer is lost.
Conditions to Avoid: Light, ignition sources, exposure to air, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong bases, copper.
Hazardous Decomposition Products: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide.
Hazardous Polymerization: May occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 156-59-2: KV9420000
LD50/LC50:
CAS# 156-59-2:
Inhalation, rat: LC50 = 13700 ppm;
.

Carcinogenicity:
CAS# 156-59-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	DOT regulated - small quantity provisions apply (see 49CFR173.4)	1,2-DICHLOROETHYLENE
Hazard Class:		3
UN Number:		UN1150
Packing Group:		II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 156-59-2 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 156-59-2 can be found on the following state right to know lists: Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European / International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN F
Risk Phrases:

R 11 Highly flammable.
R 20 Harmful by inhalation.
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 29 Do not empty into drains.
S 7 Keep container tightly closed.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 156-59-2: No information available.

Canada - DSL/NDSL

CAS# 156-59-2 is listed on Canada's NDSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 2/09/1998
Revision #5 Date: 3/16/2007

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

International Chemical Safety Cards

TRICHLOROETHYLENE

ICSC: 0081

1,1,2-Trichloroethylene
Trichloroethene
Ethylene trichloride
Acetylene trichloride
C_2HCl_3 / $ClCH=CCl_2$
Molecular mass: 131.4

ICSC # 0081
CAS # 79-01-6
RTECS # KX4550000
UN # 1710
EC # 602-027-00-9
April 10, 2000 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. See Notes.		In case of fire in the surroundings: all extinguishing agents allowed.
EXPLOSION		Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE!	
•INHALATION	Dizziness. Drowsiness. Headache. Weakness. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Give one or two glasses of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment.	Separated from metals (see Chemical Dangers), strong bases, food and feedstuffs . Dry. Keep in the dark. Ventilation along the floor. Store in an area without drain or sewer access.	Do not transport with food and feedstuffs. Marine pollutant. T symbol R: 45-36/38-52/53-67 S: 53-45-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the

ICSC: 0081 OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TRICHLOROETHYLENE

ICSC: 0081

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (phosgene , hydrogen chloride). The substance decomposes on contact with strong alkali producing dichloroacetylene , which increases fire hazard. Reacts violently with metal powders such as magnesium, aluminium, titanium, and barium. Slowly decomposed by light in presence of moisture, with formation of corrosive hydrochloric acid.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 50 ppm as TWA; 100 ppm as STEL; A5; BEI issued; (ACGIH 2004).
MAK:
Carcinogen category: 1; Germ cell mutagen group: 3B; (DFG 2007).
OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)
NIOSH REL: Ca See Appendix A See Appendix C
NIOSH IDLH: Ca 1000 ppm See: 79016

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the skin . Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system , resulting in respiratory failure . Exposure could cause lowering of consciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the central nervous system , resulting in loss of memory. The substance may have effects on the liver and kidneys (see Notes). This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 87°C
Melting point: -73°C
Relative density (water = 1): 1.5
Solubility in water, g/100 ml at 20°C: 0.1
Vapour pressure, kPa at 20°C: 7.8
Relative vapour density (air = 1): 4.5
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.3
Auto-ignition temperature: 410°C
Explosive limits, vol% in air: 8-10.5
Octanol/water partition coefficient as log Pow: 2.42
Electrical conductivity: 800pS/m

ENVIRONMENTAL DATA

The substance is harmful to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

N O T E S

Combustible vapour/air mixtures difficult to ignite, may be developed under certain conditions. Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert.

Transport Emergency Card: TEC (R)-61S1710

NFPA Code: H2; F1; R0;
Card has been partially updated in October 2004: see Occupational Exposure Limits, EU Classification, Emergency Response.
Card has been partially updated in April 2010: see Occupational Exposure Limits, Ingestion First Aid, Storage.

ADDITIONAL INFORMATION

ICSC: 0081 **TRICHLOROETHYLENE**

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

TETRACHLOROETHYLENE

ICSC: 0076

1,1,2,2-Tetrachloroethylene
Perchloroethylene
Tetrachloroethene
C_2Cl_4 / $Cl_2C=CCl_2$
Molecular mass: 165.8

ICSC # 0076
CAS # 127-18-4
RTECS # KX3850000
UN # 1897
EC # 602-028-00-4
April 13, 2000 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		STRICT HYGIENE! PREVENT GENERATION OF MISTS!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea. Weakness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles , face shield .	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. Personal protection: filter respirator for organic gases and vapours.	Separated from metals ,(see Chemical Dangers), food and feedstuffs . Keep in the dark. Ventilation along the floor.	Do not transport with food and feedstuffs. Marine pollutant. Xn symbol N symbol R: 40-51/53 S: (2-)23-36/37-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0076

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TETRACHLOROETHYLENE

ICSC: 0076

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air.

CHEMICAL DANGERS:
On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (hydrogen chloride, phosgene, chlorine). The substance decomposes slowly on contact with moisture producing trichloroacetic acid and hydrochloric acid. Reacts with metals such as aluminium, lithium, barium, beryllium.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 25 ppm as TWA, 100 ppm as STEL; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004).
MAK: skin absorption (H);
Carcinogen category: 3B;
(DFG 2004).
OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3-hours)
NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A
NIOSH IDLH: Ca 150 ppm See: 127184

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes , the skin and the respiratory tract . If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. Exposure at high levels may result in unconsciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the liver and kidneys. This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 121°C
Melting point: -22°C
Relative density (water = 1): 1.6
Solubility in water, g/100 ml at 20°C: 0.015

Vapour pressure, kPa at 20°C: 1.9
Relative vapour density (air = 1): 5.8
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.09
Octanol/water partition coefficient as log Pow: 2.9

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert. Card has been partly updated in April 2005. See section Occupational Exposure Limits.

Transport Emergency Card: TEC (R)-61S1897

NFPA Code: H2; F0; R0;

ADDITIONAL INFORMATION

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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	modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

Methylbenzene
Toluol
Phenylmethane
$C_6H_5CH_3$ / C_7H_8
Molecular mass: 92.1

ICSC # 0078
CAS # 108-88-3
RTECS # XS5250000
UN # 1294
EC # 601-021-00-3
October 10, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•**INHALATION**	Cough. Sore throat. Dizziness. Drowsiness. Headache. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•**EYES**	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area in large spill! Consult an expert in large spill! Remove all ignition sources. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: self-contained breathing apparatus	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-38-48/20-63-65-67 S: 2-36/37-46-62 UN Hazard Class: 3 UN Packing Group: II

ICSC: 0078

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour mixes well with air, explosive mixtures are formed easily. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts violently with strong oxidants causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 50 ppm as TWA (skin) A4 BEI issued (ACGIH 2004).
MAK: 50 ppm 190 mg/m³ H
Peak limitation category: II(4) Pregnancy risk group: C (DFG 2004).
OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)
NIOSH REL: TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)
NIOSH IDLH: 500 ppm See: 108883

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the respiratory tract The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. Exposure at high levels may result in cardiac dysrhythmiaandunconsciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the central nervous system Exposure to the substance may enhance hearing damage caused by exposure to noise. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 111°C
Melting point: -95°C
Relative density (water = 1): 0.87
Solubility in water: none
Vapour pressure, kPa at 25°C: 3.8
Relative vapour density (air = 1): 3.1
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01
Flash point: 4°C c.c.
Auto-ignition temperature: 480°C
Explosive limits, vol% in air: 1.1-7.1
Octanol/water partition coefficient as log Pow: 2.69

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1294
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

m-XYLENE

ICSC: 0085

meta-Xylene
1,3-Dimethylbenzene
m-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0085
CAS # 108-38-3
RTECS # ZE2275000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0085

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

m-XYLENE

ICSC: 0085

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts with strong acids strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001).
MAK: 100 ppm 440 mg/m³
Peak limitation category: II(2)
skin absorption (H);
Pregnancy risk group: D
(DFG 2005).
EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000).
OSHA PEL†: TWA 100 ppm (435 mg/m^3)
NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3)
NIOSH IDLH: 900 ppm See: 95476

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the central nervous system Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 139°C
Melting point: -48°C
Relative density (water = 1): 0.86
Solubility in water:
none
Vapour pressure, kPa at 20°C: 0.8

Relative vapour density (air = 1): 3.7
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02
Flash point: 27°C c.c.
Auto-ignition temperature: 527°C
Explosive limits, vol% in air: 1.1-7.0
Octanol/water partition coefficient as log Pow: 3.20

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0086 p-Xylene.

NFPA Code: H 2; F 3; R 0;
Transport Emergency Card: TEC (R)-30S1307-III

ADDITIONAL INFORMATION

ICSC: 0085 **m-XYLENE**

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International Chemical Safety Cards

o-XYLENE

ICSC: 0084

ortho-Xylene
1,2-Dimethylbenzene
o-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0084
CAS # 95-47-6
RTECS # ZE2450000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 32°C explosive vapour/air mixtures may be formed.	Above 32°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0084

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

o-XYLENE

ICSC: 0084

I M P O R T A N T D A T A	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** As a result of flow, agitation, etc., electrostatic charges can be generated. **CHEMICAL DANGERS:** Reacts with strong acids strong oxidants **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001). MAK: 100 ppm 440 mg/m³ Peak limitation category: II(2) skin absorption (H); Pregnancy risk group: D (DFG 2005). EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3) NIOSH IDLH: 900 ppm See: 95476 **ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. The substance may have effects on the central nervous system. Exposure to the substance may enhance hearing damage caused by exposure to noise. Animal tests show that this substance possibly causes toxicity to human reproduction or development.
PHYSICAL PROPERTIES	Boiling point: 144°C Melting point: -25°C Relative density (water = 1): 0.88 Solubility in water: none Vapour pressure, kPa at 20°C: 0.7 Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 32°C c.c. Auto-ignition temperature: 463°C Explosive limits, vol% in air: 0.9-6.7 Octanol/water partition coefficient as log Pow: 3.12
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. 

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0086 p-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

ICSC: 0084 **o-XYLENE**

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

p-XYLENE

ICSC: 0086

para-Xylene
1,4-Dimethylbenzene
p-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0086
CAS # 106-42-3
RTECS # ZE2625000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants, strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0086

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

p-XYLENE

ICSC: 0086

I M P O R T A N T D A T A	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** As a result of flow, agitation, etc., electrostatic charges can be generated. **CHEMICAL DANGERS:** Reacts with strong acids strong oxidants **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001). MAK: 100 ppm 440 mg/m³ Peak limitation category: II(2) skin absorption (H); Pregnancy risk group: D (DFG 2005). EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3) NIOSH IDLH: 900 ppm See: 95476 **ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. The substance may have effects on the central nervous system. Animal tests show that this substance possibly causes toxicity to human reproduction or development.
PHYSICAL PROPERTIES	Boiling point: 138°C Melting point: 13°C Relative density (water = 1): 0.86 Solubility in water: none Vapour pressure, kPa at 20°C: 0.9 Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 27°C c.c. Auto-ignition temperature: 528°C Explosive limits, vol% in air: 1.1-7.0 Octanol/water partition coefficient as log Pow: 3.15
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. 

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

ICSC: 0086 **p-XYLENE**

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International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

Pseudocumene

C_9H_{12}

Molecular mass: 120,2

ICSC # 1433
CAS # 95-63-6
RTECS # DC3325000
UN # 1993
EC # 601-043-00-3
March 06, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 44°C explosive vapour/air mixtures may be formed.	Above 44°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Xn symbol N symbol R: 10-20-36/37/38-51/53 S: 2-26-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1433

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on burning producing toxic and irritating fumes Reacts violently with strong oxidants causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as mixed isomers) 25 ppm as TWA (ACGIH 2004). MAK: (as mixed isomers) 20 ppm 100 mg/m³ Peak limitation category: II(2) Pregnancy risk group: C (DFG 2004). OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m^3) NIOSH IDLH: N.D. See: IDLH INDEX	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure , resulting in chronic bronchitis The substance may have effects on the central nervous system blood See Notes.
PHYSICAL PROPERTIES	Boiling point: 169°C Melting point: -44°C Relative density (water = 1): 0.88 Solubility in water: very poor Relative vapour density (air = 1): 4.1	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 44°C c.c. Auto-ignition temperature: 500°C Explosive limits, vol% in air: 0.9-6.4 Octanol/water partition coefficient as log Pow: 3.8
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. See also ICSC 1155 1,3,5-Trimethylbenzene (Mesitylene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethyl benzene (mixed isomers). 1,3,5-Trimethylbenzene (Mesitylene) is classified as a marine pollutant.

Transport Emergency Card: TEC (R)-30GF1-III
NFPA Code: H0; F2; R0;

ADDITIONAL INFORMATION

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International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

Ethylbenzol
Phenylethane
EB
C_8H_{10} / $C_6H_5C_2H_5$
Molecular mass: 106.2

ICSC # 0268
CAS # 100-41-4
RTECS # DA0700000
UN # 1175
EC # 601-023-00-4
March 13, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•**INHALATION**	Cough. Dizziness. Drowsiness. Headache.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain. Blurred vision.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	(Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking liquid in covered containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Personal protection: A filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-20 S: 2-16-24/25-29 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0268

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH AROMATIC ODOUR. **PHYSICAL DANGERS:** The vapour mixes well with air, explosive mixtures are easily formed. **CHEMICAL DANGERS:** Reacts with strong oxidants. Attacks plastic and rubber. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 125 ppm as STEL A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2005). MAK: skin absorption (H); Carcinogen category: 3A; (DFG 2004). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3) NIOSH IDLH: 800 ppm 10%LEL See: 100414	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system Exposure far above the OEL could cause lowering of consciousness. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis.
PHYSICAL PROPERTIES	Boiling point: 136°C Melting point: -95°C Relative density (water = 1): 0.9 Solubility in water, g/100 ml at 20°C: 0.015 Vapour pressure, kPa at 20°C: 0.9 Relative vapour density (air = 1): 3.7	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 18°C c.c. Auto-ignition temperature: 432°C Explosive limits, vol% in air: 1.0-6.7 Octanol/water partition coefficient as log Pow: 3.2
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. 	

N O T E S

The odour warning when the exposure limit value is exceeded is insufficient.

Transport Emergency Card: TEC (R)-30S1175 or 30GF1-I+II
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

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International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

Mesitylene
C_9H_{12}
Molecular mass: 120.2

ICSC # 1155
CAS # 108-67-8
RTECS # OX6825000
UN # 2325
EC # 601-025-00-5
March 06, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 50°C explosive vapour/air mixtures may be formed.	Above 50°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Marine pollutant. Xi symbol N symbol R: 10-37-51/53 S: 2-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

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International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on burning producing toxic and irritating fumes. Reacts violently with strong oxidants causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV (as mixed isomers): 25 ppm; (ACGIH 2001). MAK (all isomers): 20 ppm; 100 mg/m^3; class II 1 © (2001) OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m^3) NIOSH IDLH: N.D. See: IDLH INDEX	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure, resulting in chronic bronchitis. The substance may have effects on the central nervous system blood See Notes.
PHYSICAL PROPERTIES	Boiling point: 165°C Melting point: -45°C Relative density (water = 1): 0.86 Solubility in water: very poor Vapour pressure, kPa at 20°C: 0.25	Relative vapour density (air = 1): 4.1 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 50°C (c.c.) Auto-ignition temperature: 550°C Octanol/water partition coefficient as log Pow: 3.42
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. See ICSC 1433 1,2,4-Trimethylbenzene (Pseudocumene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethyl benzene (mixed isomers).

Transport Emergency Card: TEC (R)-30S2325
NFPA Code: H0; F2; R0

ADDITIONAL INFORMATION

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International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

o-Phenylenepyrene
2,3-Phenylenepyrene
$C_{22}H_{12}$
Molecular mass: 276.3

ICSC # 0730
CAS # 193-39-5
RTECS # NK9300000
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0730

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International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

I **M** **P**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS **PHYSICAL DANGERS:**	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin. **INHALATION RISK:**

O R T A N T D A T A	**CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK: Carcinogen category: 2; (DFG 2004).	Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 536°C Melting point: 164°C Solubility in water: none	Octanol/water partition coefficient as log Pow: 6.58
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Indeno(1,2,3-cd)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing Indeno(1,2,3-c,d)pyrene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0730 **INDENO(1,2,3-cd)PYRENE**

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International Chemical Safety Cards

CHRYSENE

ICSC: 1672

Benzoaphenanthrene
1,2-Benzophenanthrene
1,2,5,6-Dibenzonaphthalene
$C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 1672
CAS # 218-01-9
RTECS # GC0700000
UN # 3077
EC # 601-048-00-0
October 12, 2006 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray. Dry powder. Foam. Carbon dioxide.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: P3 filter respirator for toxic particles. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants, Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.	T symbol N symbol R: 45-68-50/53 S: 53-45-60-61 UN Hazard Class: 9 UN Packing Group: III Signal: Warning Aqua-Cancer Suspected of causing cancer Very toxic to aquatic life with long lasting effects Very toxic to aquatic life

SEE IMPORTANT INFORMATION ON BACK

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Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

CHRYSENE

ICSC: 1672

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS TO BEIGE CRYSTALS OR POWDER

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
The substance decomposes on burning producing toxic fumes Reacts violently with strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2006).
MAK not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 448°C
Melting point: 254 - 256°C
Density: 1.3 g/cm³

Solubility in water:
very poor
Octanol/water partition coefficient as log Pow: 5.9

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in seafood. It is strongly advised that this substance does not enter the environment.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. This substance does not usually occur as a pure substance but as a component of polyaromatic hydrocarbon (PAH) mixtures. Human population studies have associated PAH's exposure with cancer and cardiovascular diseases.

Transport Emergency Card: TEC (R)-90GM7-III

ADDITIONAL INFORMATION

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International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

Dibenzo(b,jk)fluorene
8,9-Benzofluoranthene
11,12-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0721
CAS # 207-08-9
RTECS # DF6350000
EC # 601-036-00-5
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0721

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International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

I **M**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

P O R T A N T D A T A	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK: Carcinogen category: 2; (DFG 2004). **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 480°C Melting point: 217°C Solubility in water: none Octanol/water partition coefficient as log Pow: 6.84
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in crustacea and in fish. 

N O T E S

Benzo(k)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(k)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0721 **BENZO(k)FLUORANTHENE**

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International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

Benz(e)acephenanthrylene
2,3-Benzofluoroanthene
Benzo(e)fluoranthene
3,4-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0720
CAS # 205-99-2
RTECS # CU1400000
EC # 601-034-00-4
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0720

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

I	**PHYSICAL STATE; APPEARANCE:** COLOURLESS CRYSTALS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation

IMPORTANT DATA	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: A2 (suspected human carcinogen); (ACGIH 2004). MAK: Carcinogen category: 2; (DFG 2004). of its aerosol and through the skin. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans. May cause genetic damage in humans.
PHYSICAL PROPERTIES	Boiling point: 481°C Melting point: 168°C Solubility in water: none Octanol/water partition coefficient as log Pow: 6.12
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. 

N O T E S

Benzo(b)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(b)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0720 **BENZO(b)FLUORANTHENE**

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International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

Benz(a)pyrene
3,4-Benzopyrene
Benzo(d,e,f)chrysene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0104
CAS # 50-32-8
RTECS # DJ3675000
EC # 601-032-00-3
October 17, 2005 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, foam, powder, carbon dioxide.
EXPLOSION			
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN	MAY BE ABSORBED!	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants.	T symbol N symbol R: 45-46-60-61-43-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0104

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
PALE-YELLOW CRYSTALS

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Reacts with strong oxidants causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: Exposure by all routes should be carefully controlled to levels as low as possible A2 (suspected human carcinogen); (ACGIH 2005).
MAK:
Carcinogen category: 2; Germ cell mutagen group: 2; (DFG 2005).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is carcinogenic to humans. May cause heritable genetic damage to human germ cells. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 496°C
Melting point: 178.1°C
Density: 1.4
g/cm³

Solubility in water: none (<0.1 g/100 ml)
Vapour pressure :
negligible
Octanol/water partition coefficient as log Pow: 6.04

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish, in plants and in molluscs. The substance may cause long-term effects in the aquatic environment.

NOTES

Do NOT take working clothes home. Benzo(a)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAHs) in the environment, usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.

ADDITIONAL INFORMATION

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

BENZ(a)ANTHRACENE

ICSC: 0385

1,2-Benzoanthracene
Benzo(a)anthracene
2,3-Benzphenanthrene
Naphthanthracene
$C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 0385
CAS # 56-55-3
RTECS # CV9275000
EC # 601-033-00-9
October 23, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.		Water spray, powder. In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: complete protective clothing including self-contained breathing apparatus.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0385

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ICSC: 0385

BENZ(a)ANTHRACENE

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS TO YELLOW BROWN FLUORESCENT FLAKES OR POWDER.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:

OCCUPATIONAL EXPOSURE LIMITS:
TLV: A2 (suspected human carcinogen); (ACGIH 2004).
MAK:
Carcinogen category: 2 (as pyrolysis product of organic materials)
(DFG 2005).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Sublimation point: 435°C
Melting point: 162°C
Relative density (water = 1): 1.274
Solubility in water:
none

Vapour pressure, Pa at 20°C: 292
Octanol/water partition coefficient as log Pow: 5.61

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in seafood.

N O T E S

This substance is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. Tetraphene is a common name. Card has been partly updated in October 2005 and August 2006: see sections Occupational Exposure Limits, EU classification.

ADDITIONAL INFORMATION

ICSC: 0385 **BENZ(a)ANTHRACENE**

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International Chemical Safety Cards

NICKEL

ICSC: 0062

Ni
Atomic mass: 58.7
(powder)

ICSC # 0062
CAS # 7440-02-0
RTECS # QR5950000
EC # 028-002-00-7
October 17, 2001 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable as dust. Toxic fumes may be released in a fire.		Dry sand. NO carbon dioxide. NO water.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!	
•INHALATION	Cough. Shortness of breath.	Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Vacuum spilled material. Carefully collect remainder, then remove to safe place. Personal protection: P2 filter respirator for harmful particles.	Separated from strong acids.	Xn symbol R: 40-43 S: 2-22-36

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0062

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

NICKEL

ICSC: 0062

I

PHYSICAL STATE; APPEARANCE:
SILVERY METALLIC SOLID IN VARIOUS FORMS.

PHYSICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of the dust.

IMPORTANT DATA	Dust explosion possible if in powder or granular form, mixed with air. **CHEMICAL DANGERS:** Reacts violently, in powder form, with titanium powder and potassium perchlorate, and oxidants such as ammonium nitrate, causing fire and explosion hazard. Reacts slowly with non-oxidizing acids and more rapidly with oxidizing acids. Toxic gases and vapours (such as nickel carbonyl) may be released in a fire involving nickel. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (Inhalable fraction) 1.5 mg/m³ as TWA A5 (not suspected as a human carcinogen); (ACGIH 2004). MAK: (Inhalable fraction) sensitization of respiratory tract and skin (Sah); Carcinogen category: 1; (DFG 2004). OSHA PEL*†: TWA 1 mg/m^3 *Note: The PEL does not apply to Nickel carbonyl. NIOSH REL*: Ca TWA 0.015 mg/m^3 See Appendix A *Note: The REL does not apply to Nickel carbonyl. NIOSH IDLH: Ca 10 mg/m^3 (as Ni) See: 7440020	**INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed. **EFFECTS OF SHORT-TERM EXPOSURE:** May cause mechanical irritation. Inhalation of fumes may cause pneumonitis. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation exposure may cause asthma. Lungs may be affected by repeated or prolonged exposure. This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 2730°C Melting point: 1455°C Density: 8.9 g/cm3	Solubility in water: none
ENVIRONMENTAL DATA		

N O T E S

At high temperatures, nickel oxide fumes will be formed. Depending on the degree of exposure, periodic medical examination is suggested. The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Anyone who has shown symptoms of asthma due to this substance should avoid all further contact with this substance.

ADDITIONAL INFORMATION

ICSC: 0062 **NICKEL**

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International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

Blue powder
Merrillite
Zn
Atomic mass: 65.4
(powder)

ICSC # 1205
CAS # 7440-66-6
RTECS # ZG8600000
UN # 1436 (zinc powder or dust)
EC # 030-001-00-1
October 24, 1994 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with acid(s), base (s) and incompatible substances (see Chemical Dangers).	Special powder, dry sand, NO other agents. NO water.
EXPLOSION	Risk of fire and explosion on contact with acid(s), base(s), water and incompatible substances.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Prevent deposition of dust.	In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water.
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE!	
•**INHALATION**	Metallic taste and metal fume fever. Symptoms may be delayed (see Notes).	Local exhaust.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin.	Protective gloves.	Rinse and then wash skin with water and soap.
•**EYES**		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Extinguish or remove all ignition sources. Do NOT wash away into sewer. Sweep spilled substance into containers. then remove to safe place. Personal protection: self-contained breathing apparatus.	Fireproof. Separated from acids, bases oxidants Dry.	Airtight. F symbol N symbol R: 15-17-50/53 S: 2-7/8-43-46-60-61 UN Hazard Class: 4.3 UN Subsidiary Risks: 4.2

SEE IMPORTANT INFORMATION ON BACK

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International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
ODOURLESS GREY TO BLUE POWDER.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc.

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. The substance is a strong reducing agent and reacts violently with oxidants. Reacts with water and reacts violently with acids and bases forming flammable/explosive gas (hydrogen - see ICSC0001) Reacts violently with sulfur, halogenated hydrocarbons and many other substances causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
Inhalation of fumes may cause metal fume fever. The effects may be delayed.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis.

PHYSICAL PROPERTIES

Boiling point: 907°C
Melting point: 419°C
Relative density (water = 1): 7.14
Solubility in water: reaction
Vapour pressure, kPa at 487°C: 0.1
Auto-ignition temperature: 460°C

ENVIRONMENTAL DATA

N O T E S

Zinc may contain trace amounts of arsenic, when forming hydrogen, may also form toxic gas arsine (see ICSC 0001 and ICSC 0222). Reacts violently with fire extinguishing agents such as water, halons, foam and carbon dioxide. The symptoms of metal fume fever do not become manifest until several hours later. Rinse contaminated clothes (fire hazard) with plenty of water.

Transport Emergency Card: TEC (R)-43GWS-II+III
NFPA Code: H0; F1; R1;

ADDITIONAL INFORMATION

ICSC: 1205 **ZINC POWDER**

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International Chemical Safety Cards

COPPER

ICSC: 0240

Cu
(powder)

ICSC # 0240
CAS # 7440-50-8
RTECS # GL5325000
September 24, 1993 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Special powder, dry sand, NO other agents.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough. Headache. Shortness of breath. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder. Then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles).	Separated from - See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0240

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International Chemical Safety Cards

COPPER

ICSC: 0240

I

M

P

PHYSICAL STATE; APPEARANCE:
RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.

PHYSICAL DANGERS:

CHEMICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

O **R** **T** **A** **N** **T** **D** **A** **T** **A**	Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 0.2 mg/m³ fume (ACGIH 1992-1993). TLV (as Cu, dusts & mists): 1 mg/m³ (ACGIH 1992-1993). Intended change 0.1 mg/m³ Inhal., A4 (not classifiable as a human carcinogen); MAK: 0.1 mg/m³ (Inhalable fraction) Peak limitation category: II(2) Pregnancy risk group: D (DFG 2005). OSHA PEL*: TWA 1 mg/m^3 *Note: The PEL also applies to other copper compounds (as Cu) except copper fume. NIOSH REL*: TWA 1 mg/m^3 *Note: The REL also applies to other copper compounds (as Cu) except Copper fume. NIOSH IDLH: 100 mg/m^3 (as Cu) See: 7440508	**EFFECTS OF SHORT-TERM EXPOSURE:** Inhalation of fumes may cause metal fume fever. See Notes. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact may cause skin sensitization.

PHYSICAL PROPERTIES	Boiling point: 2595°C Melting point: 1083°C Relative density (water = 1): 8.9	Solubility in water: none
ENVIRONMENTAL DATA		

N O T E S

The symptoms of metal fume fever do not become manifest until several hours.

ADDITIONAL INFORMATION

ICSC: 0240 **COPPER**

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International Chemical Safety Cards

CHROMIUM

ICSC: 0029

Chrome
Cr
Atomic mass: 52.0
(powder)

ICSC # 0029
CAS # 7440-47-3
RTECS # GB4200000
October 27, 2004 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions.	No open flames if in powder form.	In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION		Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST!	
•**INHALATION**	Cough.	Local exhaust or breathing protection.	Fresh air, rest.
•**SKIN**		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•**EYES**	Redness.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P2 filter respirator for harmful particles.		R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0029

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International Chemical Safety Cards

CHROMIUM

ICSC: 0029

I

M

P

PHYSICAL STATE; APPEARANCE:
GREY POWDER

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

ROUTES OF EXPOSURE:

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed.

O R T A N T D A T A	**CHEMICAL DANGERS:** Chromium is a catalytic substance and may cause reaction in contact with many organic and inorganic substances , causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as Cr metal, Cr(III) compounds) 0.5 mg/m³ as TWA A4 (ACGIH 2004). MAK not established. OSHA PEL*: TWA 1 mg/m^3 See Appendix C *Note: The PEL also applies to insoluble chromium salts. NIOSH REL: TWA 0.5 mg/m^3 See Appendix C NIOSH IDLH: 250 mg/m^3 (as Cr) See: 7440473 **EFFECTS OF SHORT-TERM EXPOSURE:** May cause mechanical irritation tothe eyesandthe respiratory tract. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:**
PHYSICAL PROPERTIES	Boiling point: 2642°C Melting point: 1900°C Density: 7.15 g/cm³ Solubility in water: none
ENVIRONMENTAL DATA	

N O T E S

The surface of the chromium particles is oxidized to chromium(III)oxide in air. See ICSC 1531 Chromium(III) oxide.

ADDITIONAL INFORMATION

ICSC: 0029 **CHROMIUM**

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International Chemical Safety Cards

MERCURY

ICSC: 0056

Quicksilver
Liquid silver
Hg
Atomic mass: 200.6

ICSC # 0056
CAS # 7439-97-6
RTECS # OV4550000
UN # 2809
EC # 080-001-00-0
April 22, 2004 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Risk of fire and explosion.		In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Abdominal pain. Cough. Diarrhoea. Shortness of breath. Vomiting. Fever or elevated body temperature.	Local exhaust or breathing protection.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
•SKIN	MAY BE ABSORBED! Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•EYES		Face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area in case of a large spill! Consult an expert! Ventilation. Collect leaking and spilled liquid in sealable non-metallic containers as far as possible. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Chemical protection suit including self-contained breathing apparatus.	Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs Well closed.	Special material. Do not transport with food and feedstuffs. T symbol N symbol R: 23-33-50/53 S: 1/2-7-45-60-61 UN Hazard Class: 8 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

MERCURY

ICSC: 0056

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
ODOURLESS, HEAVY AND MOBILE SILVERY LIQUID METAL.

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. Reacts violently with ammonia and halogens causing fire and explosion hazard. Attacks aluminium and many other metals forming amalgams.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.025 mg/m³ as TWA (skin) A4 BEI issued (ACGIH 2004).
MAK: 0.1 mg/m³ Sh
Peak limitation category: II(8) Carcinogen category: 3B (DFG 2003).
OSHA PEL†: C 0.1 mg/m^3
NIOSH REL: Hg Vapor: TWA 0.05 mg/m^3 skin
Other: C 0.1 mg/m^3 skin
NIOSH IDLH: 10 mg/m^3 (as Hg) See: 7439976

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its vapour and through the skin , also as a vapour!

INHALATION RISK:
A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the skin. Inhalation of the vapours may cause pneumonitis. The substance may cause effects on the central nervous systemandkidneys. The effects may be delayed. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the central nervous system kidneys , resulting in irritability, emotional instability, tremor, mental and memory disturbances, speech disorders. Danger of cumulative effects. Animal tests show that this substance possibly causes toxic effects upon human reproduction.

PHYSICAL PROPERTIES

Boiling point: 357°C
Melting point: -39°C
Relative density (water = 1): 13.5
Solubility in water:
none

Vapour pressure, Pa at 20°C: 0.26
Relative vapour density (air = 1): 6.93
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.009

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. In the food chain important to humans, bioaccumulation takes place, specifically in fish.

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. No odour warning if toxic concentrations are present. Do NOT take working clothes home.

Transport Emergency Card: TEC (R)-80GC9-II+III

ADDITIONAL INFORMATION

ICSC: 0056 **MERCURY**

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International Chemical Safety Cards

LEAD

ICSC: 0052

Lead metal
Plumbum
Pb
Atomic mass: 207.2
(powder)

ICSC # 0052
CAS # 7439-92-1
RTECS # OF7525000
October 08, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.	Separated from food and feedstuffs incompatible materials See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0052

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International Chemical Safety Cards

LEAD

ICSC: 0052

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On heating, toxic fumes are formed. Reacts with oxidants. Reacts with hot concentrated nitric acid, boiling concentrated hydrochloric acid and sulfuric acid. Attacked by pure water and by weak organic acids in the presence of oxygen.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.05 mg/m³ A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2004).
MAK:
Carcinogen category: 3B; Germ cell mutagen group: 3A; (DFG 2004).
EU OEL: as TWA 0.15 mg/m³ (EU 2002).
OSHA PEL*: 1910.1025 TWA 0.050 mg/m^3 See Appendix C *Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C *Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH IDLH: 100 mg/m^3 (as Pb) See: 7439921

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the blood bone marrow central nervous system peripheral nervous system kidneys , resulting in anaemia, encephalopathy (e.g., convulsions), peripheral nerve disease, abdominal cramps and kidney impairment. Causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES		
	Boiling point: 1740°C	Density: 11.34 g/cm3
	Melting point: 327.5°C	Solubility in water: none

ENVIRONMENTAL DATA	
	Bioaccumulation of this chemical may occur in plants and in mammals. It is strongly advised that this substance does not enter the environment. 

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home.

Transport Emergency Card: TEC (R)-51S1872

ADDITIONAL INFORMATION

ICSC: 0052 **LEAD**

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APPENDIX D

HOSPITAL INFORMATION AND MAP

FIELD ACCIDENT REPORT

FIELD ACCIDENT REPORT

This report is to be filled out by the designated Site Safety Officer after EVERY accident.

PROJECT NAME _____ PROJECT. NO._____

Date of Accident _____ Time _____ Report By _____

Type of Accident (Check One):

( ) Vehicular ( ) Personal ( ) Property

Name of Injured _____ DOB or Age _____

How Long Employed _____

Names of Witnesses _____

_____

Description of Accident _____

_____

_____

Action Taken _____

_____

_____

Did the Injured Lose Any Time? _____ How Much (Days/Hrs.)? _____

Was Safety Equipment in Use at the Time of the Accident (Hard Hat, Safety Glasses, Gloves, Safety Shoes, etc.)? _____

_____

(If not, it is the EMPLOYEE'S sole responsibility to process his/her claim through his/her Health and Welfare Fund.)

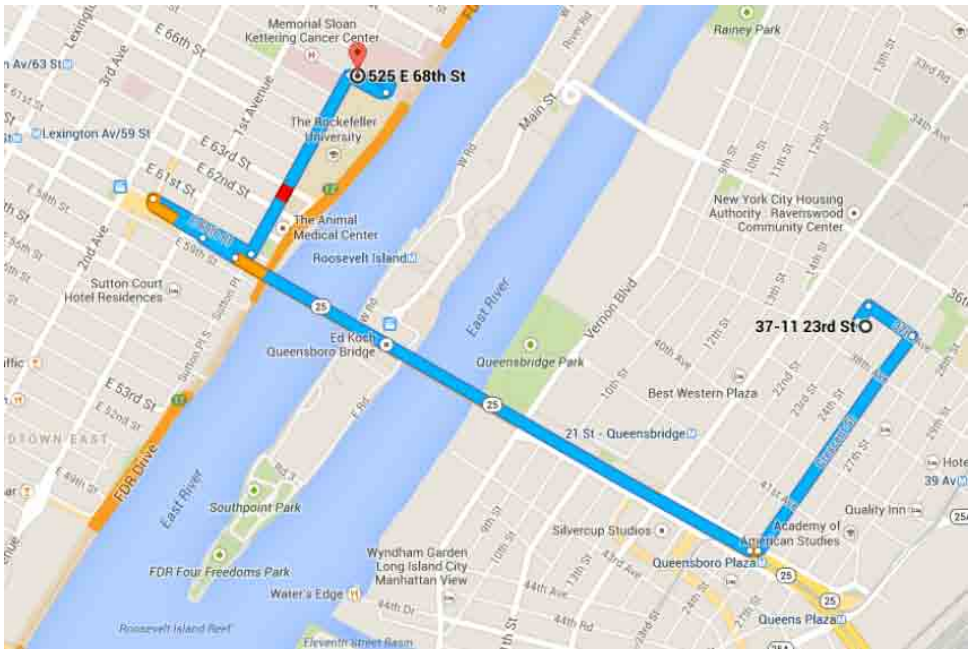
INDICATE STREET NAMES, DESCRIPTION OF VEHICLES, AND NORTH ARROW

HOSPITAL INFORMATION AND MAP

The nearest emergency room to the site is:

NY Presbyterian/Weill Cornell Medical Center

525 E. 68th Street, New York, NY 10065
(212) 746-5454
2.8 Miles – About 9 Minutes



37-11 23rd St

1. Long Island City, NY 11101
2. Get on New York 25 W/Ed Koch Queensboro Bridge from 25th St/Crescent St — 0.7 mi / 3 min
3. Head northeast on 23rd St toward 37th Ave — 194 ft
4. Take the 1st right onto 37th Ave — 0.1 mi
5. Take the 2nd right onto 25th St/Crescent St — 0.5 mi
6. Take the ramp onto New York 25 W/Ed Koch Queensboro Bridge — 85 ft
7. Continue on New York 25 W/Ed Koch Queensboro Bridge to Manhattan.
8. Exit from New York 25 W/Ed Koch Queensboro Bridge — 1.4 mi / 3 min
9. Merge onto New York 25 W/Ed Koch Queensboro Bridge — 1.2 mi
10. Take the exit toward E 60th St — 390 ft
11. Keep right at the fork, follow signs for 1 Avenue N/FDR Drive — 0.1 mi
12. Continue on E 60th St. Take York Ave to E 68th St — 0.7 mi / 3 min
13. Turn right onto E 60th St — 0.2 mi
14. Take the 2nd left onto York Ave — 0.4 mi
15. Turn right onto E 68th St — 433 ft
16. Turn left to stay on E 68th St

Destination will be on the left — **180 ft**

525 E 68th St New York, NY 10065

ATTACHMENT C
Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN
Former Jung Sun Laundry Site
37-11 23rd Street, Queens, NY

Prepared on behalf of:

New Generation Development, LLC
111-26 Van Wyck Expressway
South Ozone Park, New York 11420

Prepared by:

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961

TABLE OF CONTENTS

QUALITY ASSURANCE PROJECT PLAN
Former Jung Sun Laundry Site
37-11 23rd Street, Queens, NY

TABLES

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared in accordance with DER-10 to detail procedures to be followed during the course of the sampling and analytical portion of the project, as required by the approved work plan.

To ensure the successful completion of the project each individual responsible for a given component of the project must be aware of the quality assurance objectives of his / her particular work and of the overall project. The Project Director, Charles Sosik will be directly responsible to the client for the overall project conduct and quality assurance/quality control (QA/QC) for the project. The Project Director will be responsible for overseeing all technical and administrative aspects of the project and for directing QA/QC activities. Ms. Chawinie Miller will serve as the Quality Assurance Officer (QAO) and in this role may conduct:

- conduct periodic field and sampling audits;
- interface with the analytical laboratory to resolve problems; and
- interface with the data validator and/or the preparer of the DUSR to resolve problems.

Kristen DiScenza will serve as the Project Manager and will be responsible for implementation of the Interim Remedial Measure and coordination with field sampling crews and subcontractors. Reporting directly to the Project Manager will be the Field Operations Officer, Kevin Waters; who will serve as the on-Site qualified environmental professional who will record observations, monitor excavation activities and be responsible for the collection and handling of all samples.

1.1 Organization

Project QA will be maintained under the direction of the Project Manager, in accordance with this QAPP. QC for specific tasks will be the responsibility of the individuals and organizations listed below, under the direction and coordination of the Project Manager

.

GENERAL RESPONSIBILITY	SCOPE OF WORK	RESPONSIBILITY OF QUALITY CONTROL
Field Operations	Monitoring of Remedial Activities, sample collection and handling	K. Waters, EBC
Project Manager	Implementation of the Remedial Action according to the RAWP	Kristen DiScenza, EBC
Laboratory Analysis	Analysis of soil samples by NYSDEC ASP methods Laboratory	NYSDOH-Certified Laboratory
Data review	Review for completeness and compliance	3rd party validation

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2.0 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative Statements that specify the quality of the data required to support decisions; DQOs, as described in this section, are based on the end uses of the data as described in the work plan.

In this plan, Quality Assurance and Quality Control are defined as follows:

- Quality Assurance - The overall integrated program for assuring reliability of monitoring and measurement data.

- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

2.2 QA / QC Requirements for Analytical Laboratory

Samples will be analyzed by a New York State Department of Health (NYSDOH) certified laboratory. Data generated from the laboratory will be used to evaluate contaminants such as metals, semi-volatile organic compounds (SVOCs) and pesticides / PCBs in both historic fills and native soils and chlorinated and other volatile organic compounds (VOCs) in soil. The QA requirements for all subcontracted analytical laboratory work performed on this project are described below. QA elements to be evaluated include accuracy, precision, sensitivity, representativeness, and completeness. The data generated by the analytical laboratory for this project are required to be sensitive enough to achieve detection levels low enough to meet required quantification limits as specified in NYSDEC Analytical Services Protocol (NYSDEC ASP, 07/2005). The analytical results meeting the required quantification limits will provide data sensitive enough to meet the data quality objectives of this remedial program as described in the work plan. Reporting of the data must be clear, concise, and comprehensive. The QC elements that are important to this project are completeness of field data, sample custody, sample holding times, sample preservation, sample storage, instrument calibration and blank contamination.

2.2.1 Instrument Calibration

Calibration curves will be developed for each of the compounds to be analyzed. Standard concentrations and a blank will be used to produce the initial curves. The development of calibration curves and initial calibration response factors must be consistent with method requirements presented in the most recent version of (NYSDEC ASP 07/2005).

2.2.2 Continuing Instrument Calibration

The initial calibration curve will be verified every 12 hrs by analyzing one calibration standard. The standard concentration will be the midpoint concentration of the initial calibration curve. The calibration check compound must come within 25% relative percent difference (RPD) of the average response factor obtained during initial calibration. If the RPD is greater than 25%, then corrective action must be taken as provided in the specific methodology.

2.2.3 Method Blanks

Method blank or preparation blank is prepared from an analyte·free matrix which includes the same reagents, internal standards and surrogate standards as the related samples. It is carried through the

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entire sample preparation and analytical procedure. A method blank analysis will be performed once for each 12 hr period during the analysis of samples for volatiles. An acceptable method blank will contain less than two (2) times the CRQL of methylene chloride, acetone and 2-butanone. For all other target compounds, the method blank must contain less than or equal to the CRQL of any single target compound. For non-target peaks in the method blank, the peak area must be less than 10 percent of the nearest internal standard. The method blank will be used to demonstrate the level of laboratory background and reagent contamination that might result from the analytical process itself.

2.2.4 Trip Blanks.

Trip blanks consist of a single set of sample containers filled at the laboratory with deionized. laboratory-grade water. The water used will be from the same source as that used for the laboratory method blank. The containers will be carried into the field and handled and transported in the same way as the samples collected that day. Analysis of the trip blank for VOCs is used to identify contamination from the air, shipping containers, or from other items coming in contact with the sample bottles. (The bottles holding the trip blanks will be not opened during this procedure.) A complete set of trip blanks will be provided with each shipment of samples to the certified laboratory.

2.2.5 Surrogate Spike Analysis

For organic analyses, all samples and blanks will be spiked with surrogate compounds before purging or extraction in order to monitor preparation and analyses of samples. Surrogate spike recoveries shall fall within the advisory limits in accordance with the NY5DEC ASP protocols for samples falling within the quantification limits without dilution.

2.2.6 Matrix Spike / Matrix Spike Duplicate / Matrix Spike Blank (MS/MSDIMSB) Analysis

MS, MSD and MSB analyses will be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS / MSD / MSB samples will be analyzed for each group of samples of a similar matrix at a rate of 5% (one for every 20 field samples). The RPD will be calculated from the difference between the MS and MSD. Matrix spike blank analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD.

2.3 Accuracy

Accuracy is defined as the nearness of a real or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery and is expressed as percent recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike percent recovery (% REC) is calculated by the following equation:

$$\%REC = \frac{SSR - SR}{SA} \times 100$$

Where:
SSR = spike sample results
SR = sample results
SA = spike added from spiking mix

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2.4 Precision

Precision is defined as the measurement of agreement of a set of replicate results among themselves without a Precision is defined as the measurement of agreement of a set of replicate results among themselves without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses.

Analytical precision is expressed in terms of RPD. The RPD is calculated using the following formula:

$$RPD = \frac{D^1 - D^2}{(D^1 - D^2)/2} \times 100$$

Where:
RPD = relative percent difference
D^1 = first sample value
D^2 = second sample value (duplicate)

2.5 Sensitivity

The sensitivity objectives for this plan require that data generated by the analytical laboratory achieve quantification levels low enough to meet the required detection limits specified by NYSDEC ASP and to meet all site-specific standards, criteria and guidance values (SGCs) established for this project.

2.6 Representativeness

Representativeness is a measure of the relationship of an individual sample taken from a particular site to the remainder of that site and the relationship of a small aliquot of the sample (i.e., the one used in the actual analysis) to the sample remaining on site. The representativeness of samples is assured by adherence to sampling procedures described in the Interim Remedial Measure Work Plan.

2.7 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers, and should be between 70 and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data, and raw analytical data. The laboratory will be required to submit data packages that follow NYSDEC ASP reporting format which, at a minimum, will include the following components:

1. All sample chain-of-custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analytes in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).
6. Matrix spike/matrix spike duplicate/matrix spike blank results.
7. QC check sample and standard recovery results
8. Blank results (field, trip, and method).
9. Internal standard area and RT summary.

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2.8 Laboratory Custody Procedures

The following elements are important for maintaining the field custody of samples:

- Sample identification
- Sample labels
- Custody records
- Shipping records
- Packaging procedures

Sample labels will be attached to all sampling bottles before field activities begin; each label will contain an identifying number. Each number will have a suffix that identifies the site and where the sample was taken. Approximate sampling locations will be marked on a map with a description of the sample location. The number, type of sample, and sample identification will be entered into the field logbook. A chain-of-custody form, initiated at the analytical laboratory will accompany the sample bottles from the laboratory into the field. Upon receipt of the bottles and cooler, the sampler will sign and date the first received blank space. After each sample is collected and appropriately identified, entries will be made on the chain-of-custody form that will include:

- Site name and address
- Samplers' names and signatures

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3.0 ANALYTICAL PROCEDURES

3.1 Laboratory Analysis

Samples will be analyzed by the NYSDOH ELAP laboratory for one or more of the following parameters: VOCs in soil by USEPA Method 8260, SVOCs in soil by USEPA Method 8270BN, Target Analyte List (TAL) Metals in soil, and pesticides / PCBs in soil by USEPA Method 8081/8082. If any modifications or additions to the standard procedures are anticipated, and if any nonstandard sample preparation or analytical protocol is to be used, the modifications and the nonstandard protocol will be explicitly defined and documented. Prior approval by EBC's PM will be necessary for any nonstandard analytical or sample preparation protocol used by the laboratory, i.e., dilution of samples or extracts by greater than a factor of five (5).

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4.0 DATA REDUCTION, REVIEW, AND REPORTING

4.1 Overview

The process of data reduction, review, and reporting ensures the assessments or a conclusion based on the final data accurately reflects actual site conditions. This plan presents the specific procedures, methods, and format that will be employed for data reduction, review and reporting of each measurement parameter determined in the laboratory and field. Also described in this section is the process by which all data, reports, and work plans are proofed and checked for technical and numerical errors prior to final submission.

4.2 Data Reduction

Standard methods and references will be used as guidelines for data handling, reduction, validation, and reporting. All data for the project will be compiled and summarized with an independent verification at each step in the process to prevent transcription/typographical errors. Any computerized entry of data will also undergo verification review.

Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Analytical results shall be presented on standard NYSDEC ASP-B forms or equivalents, and include the dates the samples were received and analyzed, and the actual methodology used. Note that when waste characterization samples are analyzed they will be in results only format and will not be evaluated in the DUSR.

Laboratory QA/QC information required by the method protocols will be compiled, including the application of data QA/QC qualifiers as appropriate. In addition, laboratory worksheets, laboratory notebooks, chains-of-custody, instrument logs, standards records, calibration records, and maintenance records, as applicable, will be provided in the laboratory data packages to determine the validity of data. Specifics on internal laboratory data reduction protocols are identified in the laboratory's SOPs.

Following receipt of the laboratory analytical results by EBC, the data results will be compiled and presented in an appropriate tabular form. Where appropriate, the impacts of QA/QC qualifiers resulting from laboratory or external validation reviews will be assessed in terms of data usability.

4.3 Laboratory Data Reporting

All sample data packages submitted by the analytical laboratory will be required to be reported in conformance to the NYSDEC ASP (7/2005), Category B data deliverable requirements as applicable to the method utilized. All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Note that waste characterization samples if analyzed will be in results only format and will not be evaluated in the DUSR.

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5.0 CORRECTIVE ACTION

Review and implementation of systems and procedures may result in recommendations for corrective action. Any deviations from the specified procedures within approved project plans due to unexpected site-specific conditions shall warrant corrective action. All errors, deficiencies, or other problems shall be brought to the immediate attention of the EBC PM, who in turn shall contact the Quality Assurance/Data Quality Manager or his designee (if applicable).

Procedures have been established to ensure that conditions adverse to data quality are promptly investigated, evaluated and corrected. These procedures for review and implementation of a change are as follows:

- Define the problem.
- Investigate the cause of the problem.
- Develop a corrective action to eliminate the problem, in consultation with the personnel who defined the problem and who will implement the change.
- Complete the required form describing the change and its rationale (see below for form requirements).
- Obtain all required written approvals.
- Implement the corrective action.
- Verify that the change has eliminated the problem.

During the field investigation, all changes to the sampling program will be documented in field logs/sheets and the EBC PM advised.

If any problems occur with the laboratory or analyses, the laboratory must immediately notify the PM, who will consult with other project staff. All approved corrective actions shall be controlled and documented.

All corrective action documentation shall include an explanation of the problem and a proposed solution which will be maintained in the project file or associated logs. Each report must be approved by the necessary personnel (e.g., the PM) before implementation of the change occurs. The PM shall be responsible for controlling, tracking, implementing and distributing identified changes.

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TABLE 1
SUMMARY OF
SAMPLING PROGRAM RATIONALE AND ANALYSIS

Matrix	Location	Approximate Number of Samples	Frequency	Rationale for Sampling	Laboratory Analysis	Duplicates	Matrix Spikes	Spike Duplicates	Trip Blanks
Soil	CVOC Contaminated Soil Hotspot Excavation Bottom	2	1 per 900 square feet	Endpoint Verification of CVOC Contaminated Soil Hot Spot	VOCs by 8260	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	CVOC Contaminated Soil Hotspot Excavation Sidewalls	6	1 per 30 linear feet	Endpoint Verification of CVOC Contaminated Soil Hot Spot	VOCs by 8260	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	CVOC Contaminated basement excavation Bottom	2	2	Endpoint Verification of CVOC Contaminated Soil Hot Spot	VOCs by 8260	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	Excavated CVOC Contaminated Soil	1	1 per 800 cy	Waste Characterization	VOCs EPA Method 8260B, pesticides and PCBs by EPA 8081/8082, other as per disposal facility	0	0	0	0
Soil	Excavated Historic Fill Material	1	1 per 800 cy	Waste Characterization	VOCs EPA Method 8260B, pesticides and PCBs by EPA 8081/8082, other as per disposal facility	0	0	0	0
Soil	Excavated Uncontaminated Native Soil	2	As per CP51	Clean Verification	6 grab VOCs EPA Method 8260B 2 composite SVOCs, pesticides/and PCBs by EPA 8081/8082, and RCRA metals.	0	0	0	0

TABLE 2
SAMPLE COLLECTION AND ANALYSIS PROTOCOLS

Sample Type	Matrix	Sampling Device	Parameter	Sample Container	Sample Preservation	Analytical Method#	CRQL / MDLH	Holding Time
Soil	Soil	Scoop Direct into Jar	VOCs	(1) 2 oz Jar	Cool to 4^{o} C HCL	EPA Method 8260	Compound specific (1-5 ug/kg)	14 days
Soil	Soil	Scoop Direct into Jar	SVOCs	(1) 8 oz jar	Cool to 4^{o} C	EPA Method 8270 BN	Compound specific (1-5 ug/kg)	14 day ext/40 days
Soil	Soil	Scoop Direct into Jar	Pest/PCBs	from 8oz jar above	Cool to 4^{o} C	EPA Method 8081/8082	Compound specific (1-5 ug/kg)	14 day ext/40 days
Soil	Soil	Scoop Direct into Jar	Metals	from 8oz jar above	Cool to 4^{o} C	TAL Metals	Compound specific (01-1 mg/kg)	6 months

Notes:
All holding times listed are from Verified Time of Sample Receipt (VTSR) unless noted otherwise. * Holding time listed is from time of sample collection.
The number in parentheses in the "Sample Container" column denotes the number of containers needed.
Triple volume required when collected MS/MSD samples
The number of trip blanks are estimated.
CRQL / MDL = Contract Required Quantitation Limit / Method Detection Limit.
MCAWW = Methods for Chemical Analysis of Water and Wastes.
NA = Not available or not applicable.

ATTACHMENT D
Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

37-11 23rd STREET
LONG ISLAND CITY, NY

APRIL - 2014

COMMUNITY AIR MONITORING PLAN
TABLE OF CONTENTS
37-11 23rd Street, Long Island City, NY

APPENDICES

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for the excavation and building activities to be performed under a Interim Remedial Work Plan (IRMWP) at 37-11 23rd Street, in Long Island City, Queens, NY. The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the investigation activities) from potential airborne contaminant releases resulting from remedial activities at the site.

Compliance with this CAMP is required during all activities associated with soil disturbance activities that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include excavation and loading of affected soil. This CAMP has been prepared to ensure that remedial activities do not adversely affect passersby, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of site-related contaminants to off-site areas.

1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan as presented in DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC May 3, 2010). This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air;

- New York State Department of Environmental Conservation (NYSDEC) Technical and Guidance Memorandum (TAGM) #4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2.0 AIR MONITORING

Chlorinated volatile organic compounds (VOCs) are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during remediation activities is through real-time VOC and air particulate (dust) monitoring.

2.1 Meteorological Data

At a minimum, wind direction will be evaluated at the start of each workday, noon of each workday, and the end of each workday. These readings will be utilized to position the monitoring equipment in appropriate upwind and downwind locations.

2.2 Community Air Monitoring Requirements

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before activities begin. These points will be monitored periodically in series during the site work. When the drilling area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals at the downwind location.

Fugitive respirable dust will be monitored using a MiniRam Model PDM-3 aerosol monitor (or equivalent). Air will be monitored for VOCs with a portable Ionscience 3000 photoionization detector (PID), or equivalent. All air monitoring data will be documented in a site log book by the designated site safety officer. The site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan

3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present.

The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report, as shown in Appendix A, will be completed.

3.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level at the downwind location persists at a concentration that exceeds the upwind level by more than 5 ppm but less than 25 ppm during remediation activities, then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- Collection of purge water in covered containers;
- storage of excess sample and drill cuttings in drums or covering with plastic

4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during excavation and loading activities using both air monitoring equipment and visual observation at upwind and downwind locations. Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM_{10}) and capable of integrating (averaging) over periods of 15 minutes or less will be set up at upwind (i.e., background) and downwind locations, at heights approximately four to five feet above land surface (i.e., the breathing zone). Monitoring equipment will be MIE Data Ram monitors, or equivalent. The audible alarm on the particulate monitoring device will be set at 90 micrograms per cubic meter ($\mu g/m_3$). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of 100 $\mu g/m^3$ above background. The monitors will be calibrated at least once per day prior to work activities and recalibrated as needed thereafter. In addition, fugitive dust migration will be visually assessed during all intrusive work activities.

The following summarizes particulate action levels and the appropriate responses:

- If the downwind PM-10 particulate level is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and an evaluation of activities initiated. Work can resume provided that dust suppression measures (as described in Section 2.3.1 below) and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report as shown in **Appendix A** will be completed.

4.1 Potential Particulate Suppression Techniques

If the integrated particulate level at the downwind location exceeds the upwind level by more than 100 $\mu g/m^3$ at any time during remediation activities, then dust suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive dusts:

- limiting the excavation size;
- backfilling the excavation;
- spraying water onto the excavation faces and equipment;
- covering soil stockpiles with 8-mil plastic sheeting;
- hauling waste materials in properly tarped containers; and/or
- limiting vehicle speeds onsite.

Work may continue with dust suppression techniques provided that downwind PM_{10} levels are not more than 150 µg/m^3 greater than the upwind levels.

There may also be situations where the dust is generated by remediation activities and migrates to downwind locations, but is not detected by the monitoring equipment at or above the action level. Therefore, if dust is observed leaving the working area, dust suppression techniques such as those listed above will be employed.

If dust suppression techniques do not lower particulates to below 150 µg/m^3, or visible dust persists, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

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5.0 DATA QUALITY ASSURANCE

5.1 Calibration

Instrument calibration shall be documented on instrument calibration and maintenance sheets or in the designated field logbook. All instruments shall be calibrated as required by the manufacturer. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

5.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the SSO for reference.

5.3 Data Review

The SSO will interpret all monitoring data based the established criteria and his/her professional judgment. The SSO shall review the data with the PM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the PM.

6.0 RECORDS AND REPORTING

All air readings must be recorded on daily air monitoring log sheets and made available for review by personnel from NYSDEC and NYSDOH.

APPENDIX A
ACTION LIMIT REPORT

CAMP
ACTION LIMIT REPORT

Project Location: _____

Date: _____ Time: _____

Name: _____

Contaminant: _____ PM-10: _____ VOC: _____

Wind Speed: _____ Wind Direction: _____

Temperature: _____ Barometric Pressure: _____

DOWNWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

UPWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

BACKGROUND CORRECTED LEVELS

Monitor ID #: Location: _____ Level Reported: Level Reported: _____

ACTIONS TAKEN

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ATTACHMENT E
Subslab Depressurization System Details

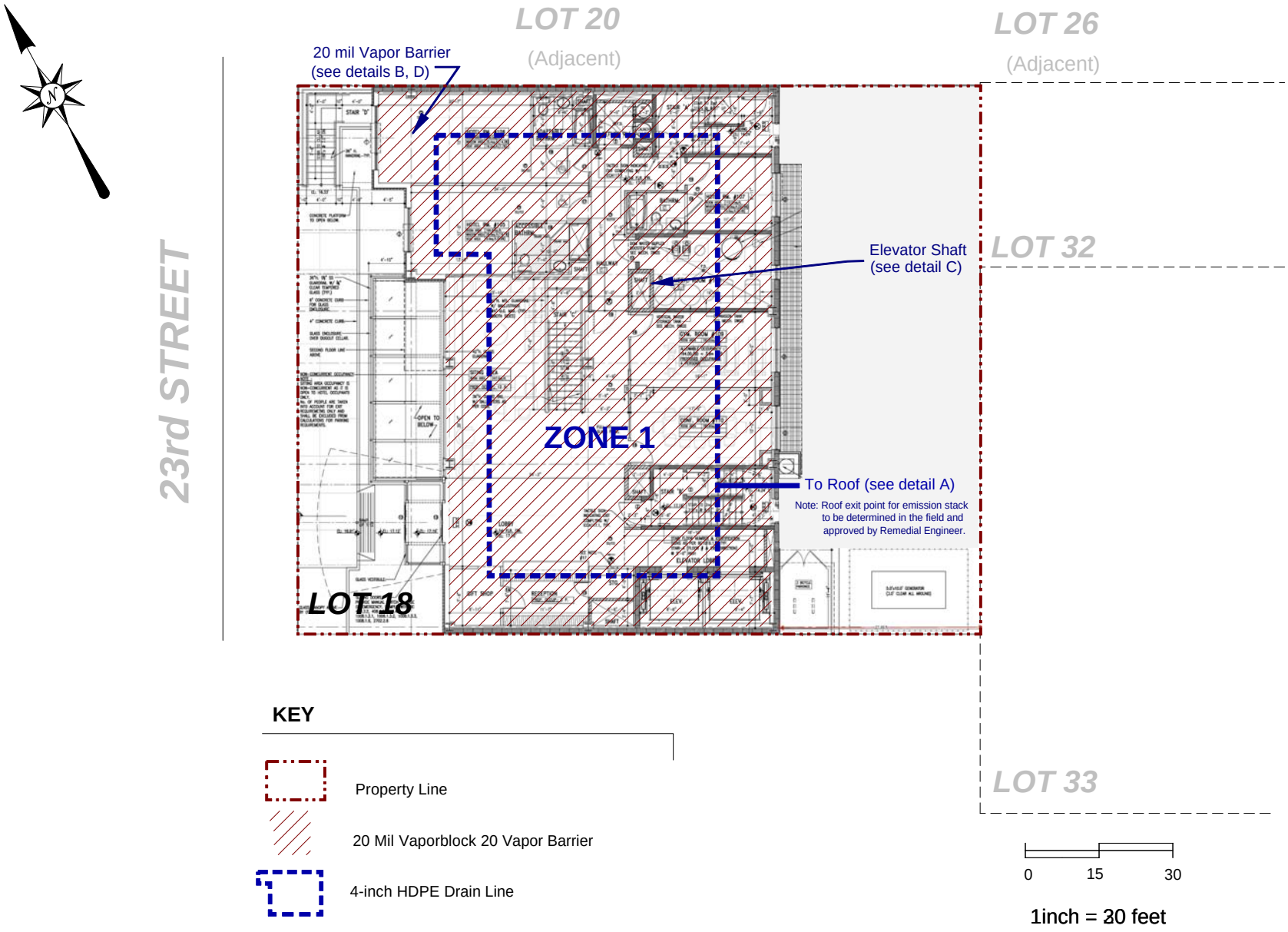

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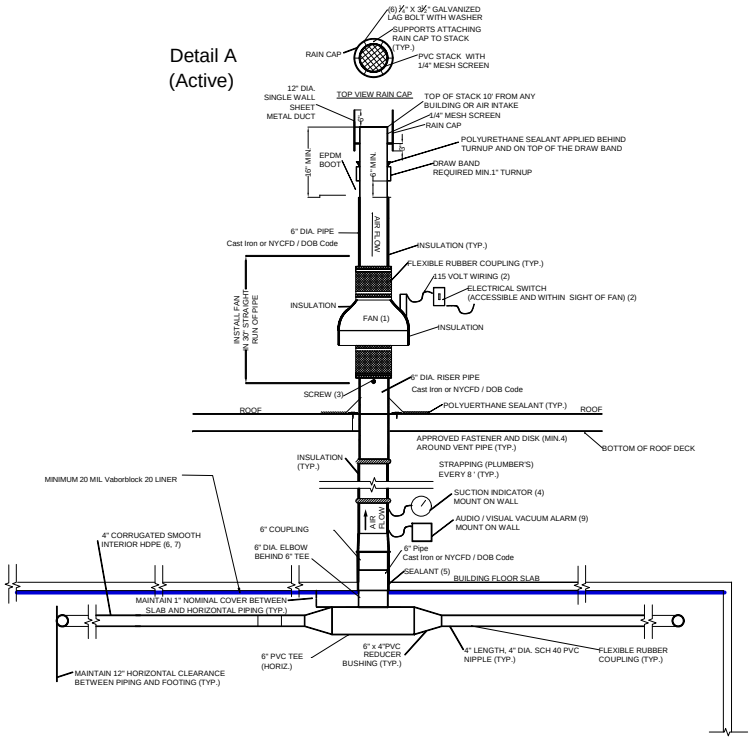
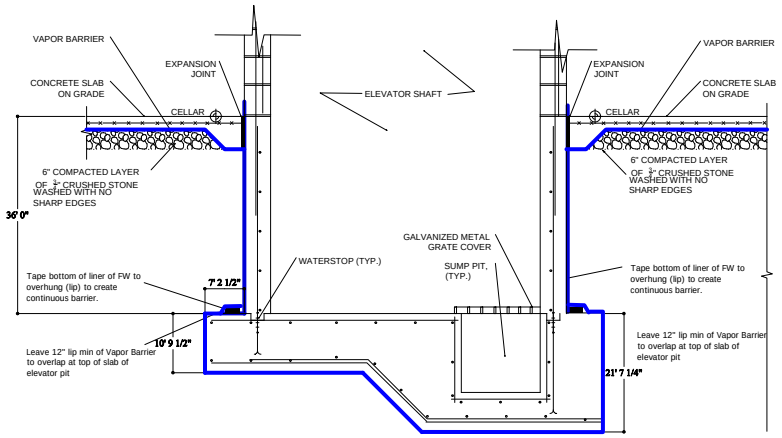
Figure No.
SSDS 1

Site Name:	Redevelopment Project
Site Address:	37-11 23rd Street, Queens, NY
Drawing Title:	SSDS Layout

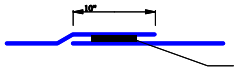
Detail A (Active)



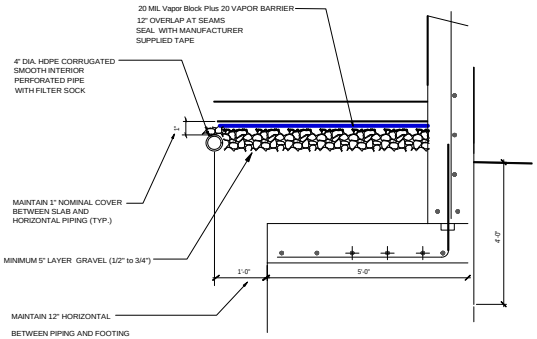
Detail C
New Elevator Shaft



Detail D



Detail B



N.T.S.

NOTES:

1. FAN TO BE RADONAWAY HIGH-FLOW IN-LINE FAN, MODEL RP 265, OR APPROVED EQUAL.
2. FAN AND ON/OFF SWITCH TO BE HARD-WIRED TOGETHER TO 115 VOLT CIRCUIT.
3. SECURE RUBBER COUPLING WITH SCREW TO PREVENT FAN ASSEMBLY FROM SLIPPING DOWN VERTICAL PIPE.
4. DWYER MAGNAHELIC DIAL TYPE VACUUM GAUGE MODEL 2002-M OR APPROVED EQUAL. ACTIVE SYSTEM ONLY
5. SEAL OPENING WITH ELASTOMERIC JOINT SEALANT AS DEFINED IN ASTM C920.
6. HIGH DENSITY POLYETHYLENE CORRUGATED PERFORATED PIPE ADS N-12 OR APPROVED EQUAL.
7. WRAP 4' HDPE PIPE WITH GEOTEXTILE FABRIC, GSE NW4 OR APPROVED EQUAL.
8. AMC MUST PRE-APPROVE ALL FILLMATERIAL BEFORE DELIVERY TO SITE.
9. CHECKPOINT IIA< @R OR APPROVED EQUAL.

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Figure No.
SSDS 2

Site Name: Redevelopment Project
Site Address: 37-11 23rd Street, Queens, NY
Drawing Title: Subslab Depressurization System Details