METRO~~MTA~~ DESIGN CRITERIA AND STANDARDS

ADJACENT CONSTRUCTION DESIGN MANUAL

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ADJACENT CONSTRUCTION DESIGN MANUAL

1.0 INTRODUCTION

1.1 Parties planning construction over, under or adjacent to Metropolitan Transportation Authority (~~MTA~~**Metro**) facilities or structures **are required**~~are advised~~ to submit for review two (2) hard copies and one (1) electronic copy of their design drawings and calculations showing the relationship between their project and ~~the MTA~~**existing Metro** facilities, for ~~MTA~~**Metro** review. The purpose of the ~~MTA~~**Metro** review is to reduce the chance of conflict, damage, and unnecessary remedial measures for both ~~MTA~~**Metro** and the parties. Parties are defined as developers, agencies, municipalities, property owners or similar organizations proposing to perform or sponsor construction work near ~~MTA~~**Metro** facilities. **Each project will be reviewed on a case-by-case basis. This includes any proposed physical attachments including but not limited to pedestrian entrances or access points to existing Metro facilities as well as new construction which falls within the zone of geotechnical influence for existing Metro facilities.**

The Metro adjacent construction review is not a permit for construction. Parties shall obtain building construction permits and approval from the Authority having jurisdiction.

1.2 Sufficient drawings and details shall be submitted at each level of completion such as Preliminary, In-Progress, Pre-final and Final **(Approved for Construction)**, etc. to facilitate **Metro**~~the~~ review **for potential** ~~of the~~ effects that the proposed **development**~~project~~ may **pose**~~or may not have on~~ **to** ~~the~~ **existing** ~~MTA~~**Metro** facilities. A~~n MTA~~**Metro** review requires internal circulation of the construction drawings to concerned departments for ~~MTA~~ **an inter-**department**al**~~s~~ review. **The party**~~Parties~~ **planning construction** shall be responsible for all costs related to ~~MTA~~**Metro adjacent development** reviews. ~~MTA~~**Metro** costs ~~shall be~~**are** based upon ~~the~~ actual hours taken for review at the hourly rate of pay**,** plus overhead charges. **Documents**~~Drawings normally~~ **typically** required for review are:

A. Site Plan
B. Drainage Area Maps and Drainage Calculations
C. Architectural drawings
D. Structural drawings and calculations
E. Civil Drawings
F. Utility Drawings
G. Sections showing Foundations and ~~MTA~~**Metro** Structures
~~H. Column Load Tables~~
H~~I~~. Pertinent Drawings and calculations detailing an impact on ~~MTA~~**Metro** facilities
I~~J~~. A copy of the Geotechnical Report.
J~~K~~. Construction zone traffic safety and detour plans: Provide and regulate positive traffic guidance and definition for vehicular and pedestrian traffic adjacent to the construction site to ensure traffic safety and reduce adverse traffic circulation impact.

K~~L~~. Drawings and calculations **shall** ~~should~~ be sent to:
Metro Development Review:
Email: **devreview@metro.net**
Phone: **(213) 418-3484**
Web: **www.metro.net/projects/devreview/**
Address: **One Gateway Plaza**
Los Angeles, California 90012

~~**MTA Third Party Administration (Permits Administration)**~~
~~**Los Angeles County Metropolitan Transportation Authority**~~
~~One Gateway Plaza~~
~~Los Angeles, California 90012~~

1.3 If uncertainty exists on the possible impacts a project may have on ~~the MTA~~**Metro** facilities, ~~and~~ before submitting a formal letter requesting a review of a construction project adjacent to the Metro System, the party ~~or his agent~~ may contact **Metro**~~the MTA Third Party Administrator (Permits). The Party shall review the complexity of the project, and contact MTA~~ to receive an informal evaluation of the amount of detail required for the ~~MTA~~**Metro** review. ~~In those cases, whereby it appears the project will present no risk to MTA, the Third Party Administrator (Permits) shall immediately route the design documents to Engineering, Construction, Operations, Maintenance, and Real Estate departments for a preliminary evaluation.~~ If it is **determined**~~then confirmed~~ that **the existing Metro** ~~MTA~~ **structures are not at** risk **from the proposed development,** ~~is not present,~~ **Metro will** ~~the Administrator shall~~ process ~~an~~ approval **for the Party's project.** ~~letter to the party.~~

1.4 A period of **21**~~30~~ **calendar**~~working~~ days should be allowed for review of the drawings and calculations. ~~Thirty (30) work~~ **21 calendar** days should be allowed for each successive review as required~~. It is noted that preliminary evaluations are usually produced within 5 working days.~~

1.5 The party shall reimburse ~~the MTA~~**Metro** for any technical review or support service~~s~~ costs incurred that are associated with his/her request for access to the Metro Transit System.

1.6 The following items must be completed before starting any construction:

A. Each part of the project's design may be reviewed and approved by ~~the MTA~~**Metro**. The prime concern of ~~the MTA~~**Metro** is to determine the effect of the **proposed** project on ~~the MTA~~**Metro existing** structure**(s)** and its transit operations. **Other considerations include,** ~~A few of the other parts of a project to be considered are~~ overhead protection, dust protection, dewatering, and temporary use of public space**(s)** for construction activities.

B. Once the Party has received written acceptance of the design of a given project**,** ~~then~~ the Party must notify ~~MTA~~**Metro** prior to the start of construction, in accordance with the terms of acceptance.

1.7 **Submitted Documentation Requirements:** Qualified ~~Seismic,~~ Structural and Geotechnical Oversight

Documents submitted for Metro review shall be signed and sealed by the California licensed design professional responsible for their production.

~~The design documents shall note the name of the responsible Structural Engineer and Geotechnical Engineer, licensed in the State of California.~~

2.0 REVIEW PROCEDURE

2.1 All portions of any proposed design that will have a direct impact on a~~n MTA~~**Metro** facility or structure will be reviewed to assure that the ~~MTA~~**Metro** facility or structure is not placed in risk at any time, and that the design meets all applicable codes and criteria. Any portion of the proposed design that is to form part of a~~n MTA~~**Metro** controlled area shall be designed to meet the ~~MTA~~**Metro** Design Criteria and Standards.

2.2 Permits, where required by the local jurisdiction, shall be the responsibility of the party. ~~City of L.A. Dept. of Bldg. and Safety and the Bureau of Engineering permit review shall remain in effect. Party shall refer to MTA Third Party Administration policies and procedures, THD5 for additional information.~~

2.3 Monitoring of the temporary support of excavation structures for adjacent construction shall be required in all cases for excavations within the geotechnical zone of influence of ~~MTA~~**Metro** structures. The extent of the monitoring will vary from case to case.

2.4 Monitoring of the inside of ~~MTA~~**Metro** tunnels and structures shall be required when the adjacent excavation will unload or load the ~~MTA~~**Metro** structure or tunnel. Monitoring of vertical and horizontal distortions **may**~~will~~ include use of extensometers, inclinometers, settlement reference points, tiltmeters, groundwater observation wells, tape extensometer anchor points and load cells, as **determined by Metro.**~~appropriately required.~~ Acceptable limits of movement will depend on groundwater conditions, soil types and also the length of service the stations and tunnels have gone through. Escorts will be required for the survey parties entering the Metro operating system in accordance with ~~MTA~~ **Metro** Operating Rules and Procedures. A ~~MTA~~**Metro** account number will be established and the costs for the escort monitoring and surveying service will be billed directly to the party **planning construction** or his**/her** agent as in section 1.2.

2.5 The calculations submitted for review shall include the following:

A. A concise statement of the problem and the purpose of the calculation.

B. Input data, applicable criteria, clearly stated assumptions and justifying rationale.

C. References to articles, manuals and source material shall be furnished with the calculations.

D. Reference to pertinent codes and standards.

E. Sufficient sketches or drawing references for the work to be easily understood by an independent reviewer. Diagrams indicating data (such as loads and dimensions) shall be included along with adequate sketches of all details not considered standard by **Metro**~~MTA~~.

F. The source or derivation of all equations shall be shown where they are introduced into the calculations.

G. Numerical calculations shall clearly indicate type of measurement unit used.

H. Identify results and conclusions.

I. Calculations shall be neat, orderly, and legible.

2.6 When computer programs are used ~~to perform~~**in the submitted** calculations~~s~~ **package**, the following **minimum** information shall **be included:** ~~accompany the calculation, including the following:~~

A. Program Name.

B. Program Abstract.

C. Program Purpose and Applications.

D. Complete descriptions of assumptions, capabilities and limitations.

E. Instructions for preparing problem data.

F. Instructions for problem execution.

G. List (and explanation) of program acronyms and error messages.

H. Description of deficiencies or uncorrected errors.

I. Description of output options and interpretations.

J. Sample problem(s), illustrating all input and output options and hardware execution statements. Typically, these problems shall be verified problems.

K. Computer printout of all supporting calculations.

L. The "User's Manual" shall also include a certification section. The certification section shall describe the methods and how they cover the permitted options and uses of the program.

2.7 Drawings shall be drawn, to scale, showing the location and relationship of proposed adjacent construction to existing ~~MTA~~**Metro** structures at various stages of construction along the entire adjacent alignment. The stresses and deflections induced in the existing ~~MTA~~**Metro** structures **shall**~~should~~ be provided**, if requested by Metro**.

2.8 The short~~-term~~ and long-term effects of the new loading due to the adjacent construction on the **existing Metro**~~MTA~~ structures shall be **evaluated and** provided. **The calculations shall consider site** ~~The~~ soil parameters and other pertinent geotechnical criteria contained in **the submitted contract documents.**~~existing contract documents for the affected structure, plus any additional conditions shall be used to analyze the existing MTA structures.~~

2.9 **Existing Metro**~~MTA~~ structures shall be analyzed for **all loading conditions which may be imposed from the adjacent development. The analysis must demonstrate to the satisfaction of Metro, that the new loading placed upon the existing Metro facilities will not adversely affect these structures.**~~differential pressure loadings transferred from the adjacent construction site.~~

A. If tieback anchors are used, the analysis shall consider the soil stress and strains resulting from the tieback anchorage force applied to the soil mass. The induced strains shall not adversely affect adjacent Metro facilities or equipment. The developer will be held responsible for any damages incurred to existing Metro structures by the tieback installation or function during the period of construction.

2.10 Proposed adjacent construction which will impose large foundation perimeter loads (gravity and/or lateral loads), shall be analyzed as special cases. The analysis shall be based on industry accepted geotechnical techniques and where applicable, the Metro Rail Design Criteria. The analysis shall demonstrate that the loading induced by the building foundation will not impose adverse effects on existing adjacent Metro facilities.

2.11 New construction shall maintain a minimum clear separation distance of 8 feet between the finished exterior foundations, walls and roof slabs of existing underground Metro station facilities and those of the proposed new building construction. Where temporary support elements are to be installed in close proximity to Metro underground structures, Metro may request additional details to demonstrate how the existing water/gasproofing membrane will be protected in place and/or how clearances will be maintained.

2.12 Where joint development passageways interface with Metro station facilities, calculations shall be provided to demonstrate that the new building elements have sufficient seismic and differential settlement ductility. Joint development passageways shall be designed to prevent over-stress to all new or existing structural elements. Details shall be included with the submittal to demonstrate how the integrity of the water/gas barrier system will be preserved between the new construction and the existing Metro structures. When specified or requested in the geotechnical investigation report, by the joint development, or by Metro, an analysis of the interaction between the existing Metro structure and the proposed new facility, shall be undertaken by the developers.

2.13 Temporary excavation support adjacent to existing Metro facilities shall limit lateral pile displacement to the larger of; 1) 0.001 times the overall height above the bottom of the base slab or 2) 1/2 inch (0.50 inch) deflection. The lateral forces used for the design of temporary excavation support shall consider both the static and dynamic loads.

3.0 MECHANICAL CRITERIA

3.1 Existing services to ~~MTA~~**Metro** facilities, including chilled water and condenser water piping, potable and fire water, storm and sanitary sewer, piping, are not to be used, interrupted nor disturbed without written approval of **Metro**~~MTA~~.

3.2 Surface openings of ventilation shafts, emergency exits serving **Metro**~~MTA~~ underground facilities, and ventilation system openings of surface and elevated facilities are not to be blocked or restricted in any manner. Construction dust shall be prevented from entering ~~MTA~~**Metro** facilities.

3.3 Hot or foul air, fumes, smoke, steam, etc., from adjacent new or temporary facilities are not to be discharged within 40 feet of existing **Metro**~~MTA~~ ventilation system intake shafts, station entrances or portals. Tunnel ventilation shafts are both intake and discharge structures.

3.4 Clear access for the fire department to the ~~MTA~~**Metro** fire department connections shall be maintained at all times. Construction signs shall be provided to identify the location of ~~MTA~~**Metro** fire department connections. No interruption to fire protection water service will be permitted at any time.

3.5 Modifications to existing ~~MTA~~**Metro** mechanical systems and equipment, including ventilation shafts, required by new connections into the ~~MTA~~**Metro** System, shall only be permitted with prior review and approval by **Metro**~~MTA~~. If changes are made to ~~MTA~~**Metro** property as built drawings shall be provided reflecting these changes.

At the option of **Metro**~~MTA~~, the adjacent construction party shall be required to perform the field tests necessary to verify the adequacy of the modified system and the equipment performance. This verification shall be performed within an agreed time period jointly determined by ~~MTA~~**Metro** and the Party on a case by case basis.

Where a modification is approved, the party shall be held responsible to maintain original operating capacity of the equipment and the system impacted by the modification.

4.0 OPERATIONAL REQUIREMENTS

4.1 GENERAL

A. Normal construction practices must be augmented to insure adequate safety for the general public entering Metro Stations and riding on Metro Trains and Buses. Design of a building, structure, or facility shall take into account the special safety considerations required for the construction of the facility next to or around an operating transit system.

B. Projects which require work~~ing~~ over or adjacent to **existing Metro facilities**~~MTA station entrances~~ shall develop their construction procedures and sequences of work to meet the following minimum requirements:

1. Construction operations shall be planned, scheduled and carried out in a way that will afford the Metro patrons and the general public a clean, safe and orderly access and egress to the station entrance during revenue hours.
2. Construction activities which involve swinging a crane and suspended loads over pedestrian areas, ~~MTA~~**Metro** station entrances and escalators, tracks or Metro bus passenger areas shall not be performed during revenue hours. Specific periods or hours shall be granted on a case-by-case basis, with the approval of Construction Work Plan by ~~MTA~~**Metro** Construction Safety Department.
3. All cranes must be stored and secured facing away from energized tracks, when appropriate.
4. All activity must be coordinated through the ~~MTA~~**Metro** Track Allocation process in advance of work activity. All members of the work crew will be required to attend ~~MTA~~ **Metro** Safety Training.
5. In order to provide a safe zone to maintain adjacent developments. All developments adjacent to Metro At-Grade Stations, Aerial Stations or Track Guideways shall provide a minimum 5 foot setback from the Metro and developer's shared property line to the outside face of the proposed structure at Metro or the developer's property for maintenance to be performed or installed from within the zone created by this setbacks.

4.2 OVERHEAD PROTECTION - Station Entrances

A. Overhead protection from falling objects shall be provided over ~~MTA~~**Metro** facilities whenever there is possibility, due to the nature of a construction operation, that an object could fall in or around ~~MTA~~**Metro** station entrances, bus stops, elevators, or areas designed for public access to ~~MTA~~**Metro** facilities. Erection of the overhead protection for these areas shall be done during ~~MTA~~**Metro** non-revenue hours.

1. The design live load for all overhead protection shall be 150 pounds per square foot~~. minimum.~~ The **service level** design wind load on ~~the~~ temporary structures shall be **not less than that prescribed in the**

California Building Code, nor less than 20 pounds per square foot, on the windward and leeward sides of the structure.

2. The overhead protection shall be constructed of fire rated materials. Materials and equipment shall not be stored on the completed shield. The roof of the shield shall be constructed and maintained watertight.

B. Lighting in public areas and around affected ~~MTA~~**Metro** facilities shall be provided under the overhead protection to maintain a minimum level of twenty-five (25) footcandles at the escalator treads or at the walking surface. The temporary lighting shall be maintained by the Party.

C. ~~Wooden c~~**C**onstruction fencing shall be installed at the boundary of the areas with public access. The fencing shall be at least eight-feet high, and shall meet all applicable code requirements.

D. An unrestricted public access path shall be provided at the upper landing of the entrance escalator-way in accordance with the following:

1. A vertical clearance between the walking surface and the lowest projection of the shield shall be 8'-0".
2. A clear pedestrian runoff area extending beyond the escalator newel shall be provided, the least dimension of which shall be twenty (20) feet.
3. A fifteen (15) foot wide strip (other than the sidewalk) shall be maintained on the side of the escalator for circulation when the escalator is pointed away from a street corner.
4. A clear path from any ~~MTA~~**Metro** emergency exit to the public street shall be maintained at all times.

E. Temporary sidewalks or pedestrian ways, which will be in use more than 10 days, shall be constructed of four (4") inch thick Portland cement concrete or four (4") inches of asphaltic concrete placed over a minimum four (4”) inches of untreated base material, and finished by a machine.

4.3 OVERHEAD PROTECTION - Operating Right-of-Way Trackage

A. ~~MTA~~**Metro** Rail Operations Control Center shall be informed of any intent to work above, on, or under the ~~MTA~~**Metro** right-of-way. Crews shall be trained and special flagging operations shall be directed by ~~MTA~~**Metro** Rail Operations Control Center. The party shall provide competent persons to serve as Flaggers. These Flaggers shall be trained and certified by ~~MTA~~**Metro** Rail Operations prior to any work commencing. All costs incurred by ~~MTA~~**Metro** shall be paid by the party.

B. A construction project that will require work over, under or adjacent to the at grade and aerial **Metro**~~MTA~~ right-of-way should be aware that the operation of machinery, construction of scaffolding or any operation hazardous to the operation of the ~~MTA~~**Metro** facility shall require that the work be done during non-revenue hours and authorized through the ~~MTA~~**Metro** Track Allocation process.

C**.** ~~MTA~~**Metro** flagmen or inspectors from ~~MTA~~**Metro** Operations shall observe all augering, pile driving or other work that is judged to be hazardous. Costs associated with the flagman or inspector shall be borne by the Party.

D. The party shall request access rights or track rights to perform work during non-revenue hours. The request shall be made through the ~~MTA~~**Metro** Track Allocation process.

4.4 OTHER METRO FACILITIES

A. Access and egress from the public streets to fan shafts, vent shafts and emergency exits must be maintained at all times. The **vent and fan** shafts shall be protected from dust and debris. See Exhibit A for details.

B. **Prior to excavation, a comprehensive survey of all Metro power lines and other utilities within the vicinity of the work area shall be fully discovered.** Any excavation in the vicinity of ~~MTA~~**Metro** power lines feeding the Metro System shall be through hand excavation and only after authorization has been obtained through the ~~MTA~~**Metro** Track Allocation process. ~~MTA~~**Metro** Rail Operations Control Center shall be informed before any operations commences near the ~~MTA~~**Metro** power system.

C. Flammable liquids shall not to be stored over or within 25 feet ~~horizontally~~ of ~~MTA~~**Metro** ~~underground~~ facilities. If installed within 25 to 100 feet horizontally of the structure, protective encasement of the tanks shall be required in accordance with NFPA **30**~~STD 130~~. Existing underground tanks located within 100 feet horizontally of ~~MTA~~**Metro** facilities and scheduled to be abandoned are to be disposed of in accordance with Appendix C of NFPA **30**~~STD 130~~. NFPA **30**~~STD 130~~ shall also be applied to the construction of new fuel tanks.

D. Isolation of ~~MTA~~**Metro** Facilities from Blast

~~Subsurface areas of new adjacent private buildings where the public has access or that cannot be guaranteed as a secure area, such as parking garages and commercial storage and warehousing, will be treated as areas of potential explosion.~~ **At Metro's discretion,** NFPA **30**~~130~~, Standard for Fixed Guideway Transit Systems, life safety separation criteria **shall**~~will~~ be applied **for all joint development passageways, adjacent parking garages, commercial storage facilities, or other subsurface spaces of new buildings which are not secure and are accessible to the public, or in Metro's opinion may be considered areas subject to potential explosion** ~~that~~ assum**ing**~~es~~ **that** such spaces contain Class I flammable, or Class II or Class III combustible liquids. For structural and other considerations, **separation and** isolation for blast**, explosion over-pressures shall** ~~will~~ be **compared to seismic loading, the larger pressure shall govern where applicable.**~~treated the same as seismic separation, and the more restrictive shall be applied.~~

E. Any proposed facility that is located within 20 feet radius of an existing Metro facility ~~will~~**may, at Metro's discretion,** require a blast and explosion study and recommendations to be conducted by a specialist who is specialized in the area of blast force attenuation. This study must assess the effect that an explosion in the proposed non-Metro facility will have on the adjacent Metro facility and provide recommendations to prevent any catastrophic damage to the existing Metro facility. Metro must approve the qualifications of the proposed specialist prior to commencement of any work on this specialized study.

F. Anticipated patronage projections when new shared entrances to rail systems are planned must be included in the design analysis and implemented subject to Metro review and approval.

4.5 SAFETY REGULATIONS

A. Comply with Cal/OSHA Compressed Air Safety Orders Title 8, Division 1, Chapter 4, Subchapter 3. Comply with California Code of Regulations Title 8, Title 29 Code of Federal Regulations; and/or the Construction Safety and Health Manual (Part F) of the contract whichever is most stringent in regulating the safety conditions to be maintained in the work environment as determined by the Authority. The Party recognizes that government promulgated safety regulations are minimum standards and that additional safeguards may be required

B. Comply with the requirements of Chemical Hazards Safety and Health Plan, (per 29 CFR 1910.120 entitled, (Hazardous Waste Operations and Emergency Response) with respect to the handling of hazardous or contaminated wastes and mandated specialty raining and health screening.

C. Party and contractor personnel while within the operating ~~MTA~~**Metro** right-of-way shall coordinate all safety rules and procedures with ~~MTA~~**Metro** Rail Operations Control Center.

D. When support functions and electrical power outages are required, the approval MUST be obtained through the ~~MTA~~**Metro** Track Allocation procedure. Approval of the support functions and power outages must be obtained in writing prior to shutdown.

E. Designs shall comply with the requirements of NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems.

4.6 COMMUNICATIONS

Various forms of Metro communications infrastructure (Wireless, CCTV, Public Address Systems, etc.) can be adversely affected by Adjacent Property development if proper accommodations are not implemented early in the development phase. Therefore, the adjacent property developer must acknowledge their responsibility to coordinate and preserve the applicable Metro communication systems through Construction to the final Commissioning of New Adjacent Properties.

A. Wireless Communications: Metro utilizes radio/microwave communications to enable field contact with; LAPD, LAFD, and LASD and Metro Ops personnel (Operations and Security). Depending on the nature of the proposed buildings and facilities associated with the adjacent development, radio interference and/or obstructed line of sight issued are possible without proper planning and coordination. Equipment locations may need to be moved. In some cases, the antennas and supporting equipment may need to be attached and/or installed in the proposed buildings and facilities associated with the adjacent development.

B. CCTV Systems: Metro utilized CCTV systems for security and surveillance to enable LAPD, LASD, and Metro Ops personnel (Operations and Security) to monitor activities. Depending on the nature of the proposed buildings and facilities associated with the adjacent development, CCTV obstructed line of sight issues are possible, and could cause security and surveillance issues, without proper planning and coordination. Equipment locations may need to be moved. In some cases, the Cameras and supporting equipment may need to be moved on the Metro facilities or attached to the proposed buildings and facilities associated with the adjacent development.

C. Public Address (PA) Systems: PA Systems if used by the adjacent development have the potential to interfere with existing Metro PA Communications. If the developer will be including a PA system in the proposed development this issue must be coordinated with Metro Systems Group.

5.0 CORROSION

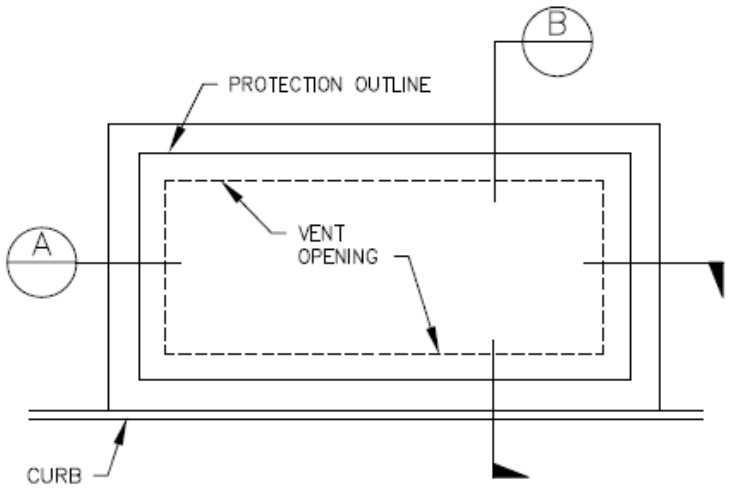
5.1 STRAY CURRENT PROTECTION

A. Because **underground** stray currents **produced by the Metro Direct Current Rail System** may be present in the area of the project, the Party shall investigate the site for stray currents and provide the means for mitigation when warranted.

B. Installers of facilities that will require a Cathodic Protection (CP) system must coordinate their CP proposals with **Metro.**~~MTA. Inquiries shall be routed to the Manager, Third Party Administration.~~

C. The Party is responsible for damage caused by its contractors to ~~MTA~~**Metro** corrosion test facilities in public right-of-way.

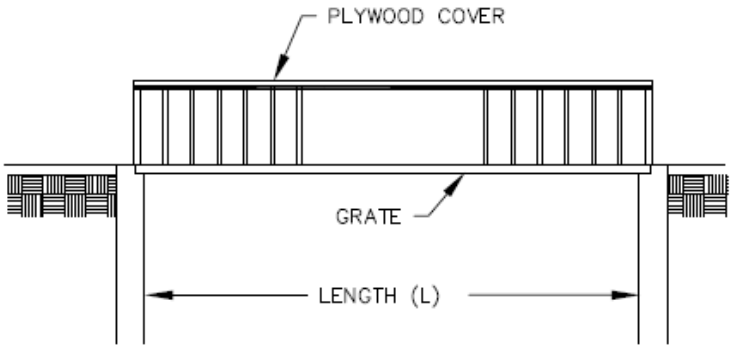
EXHIBIT A – VENT AND SHAFT PROTECTION DURING DEMOLITION



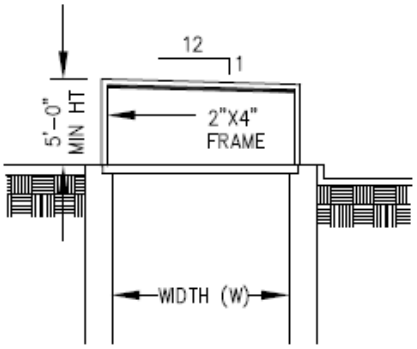
PLAN

NOTES:

1. COVER THREE SIDES AND ROOF LEAVE STREET SIDE OPN.
2. WIRE BASE PLATES TO GRATE OR PROVIDE TEMPORARY ANCHORAGE.
3. OPENING MUST EQUAL 80% OF GRATE AREA.
4. COVER MUST NOT INTERFERE WITH FIRE DEPARTMENT ACCESS TO METRO STANDPIPE.
5. COVER AND GRATE MUST PERMIT FREE VENTILATION.
6. DETAILS OF THIS PROTECTION SYSTEM TO BE DESIGNED BY CALIFORNIA LICENSED PROFESSIONAL ENGINEER.
7. NOT FOR INSTALLATION AT EMERGENCY ACCESS HATCHES



SECTION – A



SECTION – B

End of Section