S. Construction Impacts

100. Definitions

Construction impacts, though usually temporary, can include disruptive and noticeable effects of a project. The determination of their significance and, therefore, whether mitigation is required, is generally based on the duration and magnitude of the impact. An action's construction impacts are typically analyzed as part of the assessments performed for each specific technical area. They can be disclosed as part of the specific technical assessments, or in a separate section of the environmental assessment that summarizes those assessments.

For most projects, the construction analysis includes examination of at least the following:

- Traffic-related impacts, which may result from construction-induced traffic (including both construction employees' vehicles and trucks) and impacts associated with lane closings (e.g., where a crane would be placed in a portion of a street);
- Air quality—particularly, mobile source emissions from truck and vehicular traffic and fugitive dust emissions (dust that may occur during demolition or excavation activities or from operation of a concrete batching plant); and
- Noise associated with blasting, pile driving, and other construction activities.

Assessments of other technical areas can also be appropriate for particular actions. For actions that raise specific issues (such as actions that use an open space for a staging area, or actions that are located near historic resources), assessments of those technical areas should be performed. Impacts on historic resources and hazardous materials generally result from in-ground disturbance during construction; these impacts are typically analyzed and disclosed in those technical sections and cross-referenced in the construction impacts section. Natural resources can also be affected during construction, particularly during such activities as excavation; grading; site clearance or other vegetation removal; cutting; filling; installation of piles, bulkheads, or other waterfront structures; dredging; dewatering; or soil compaction from construction vehicles and equipment. Additionally, for actions with lengthy construction periods (such as large-scale actions with relatively long-term construction periods), it may be appropriate to examine additional technical areas. Technical areas that may be examined in these cases can include the following:

- Land use and neighborhood character;
- Socioeconomic conditions;
- Community facilities;
- Open space;
- Historic resources; and
- Infrastructure.

200. Determining Whether a Construction Impact Assessment is Appropriate

Construction impacts can be analyzed for any action that would involve construction or could induce construction. In general, for construction impacts not related to in-ground disturbance, the longer the duration of a potential impact, the more significant it becomes, and the likelier it will warrant more detailed analyses. If the duration of construction is expected to be short-term, those impacts are considered temporary and, therefore, not significant, and a detailed analysis is not needed. However, there are instances where a potential impact may be of short duration but of great severity, and, therefore, would be significant. (For example, the impacts of dredging contaminated material on an important fisheries habitat, or the effect of vibrations from construction on adjacent historic structures.) The impacts of this activity may be considered significant, warranting more detailed assessment.

A construction impact may also occur if construction or construction staging requires the removal of existing street trees or decorative sidewalk paving materials such as granite, blue stone, brick or special asphalt block.

The range of construction impact issues that may be assessed and circumstances where an assessment may be conducted are described below.

- *Land use and neighborhood character*. A construction impact analysis of land use and neighborhood character would typically be needed if construction requires continuous use of property for an extended duration, thereby affecting the nature of the land use and character of the neighborhood. This may occur, for example, if construction activity (such as staging) would occur on a particular

site in a neighborhood for an extended period of time.

- *Socioeconomic conditions*. If the proposed action would entail construction of a long duration that could affect the access and therefore viability of a number of businesses, and could cause the failure of those businesses and affect neighborhood character, a more detailed analysis may be conducted.

- *Community facilities*. A construction impact analysis may be conducted for any community facility that would be directly affected by construction (e.g., if construction would disrupt services of the facility, change an entrance, or close the facility temporarily, etc.). In some cases, depending on the community facility and nature of its services, even a limited disruption could trigger the need for more detailed analysis. (For example, the closing of a library branch for a one-month period would not likely be considered as significant, whereas the closing of a community health clinic may be considered significant.)

- *Open space*. A construction impacts analysis for open space may be conducted if an open space resource would be used for an extended period of time for construction-related activities, such as construction staging, or if access to the open space would be impeded during construction activities.

- *Historic resources*. Construction impacts may occur on historic resources if in-ground disturbances or vibrations associated with project construction undermines the foundation or structural integrity of nearby historic resources. These impacts should be assessed for any action involving construction activities within 400 feet of a historic resource. Construction impacts on archaeological resources are the same as those that are analyzed in the archaeological impacts section (see Chapter 3F of this Manual) and may be cross-referenced in the construction impacts section.

- *Traffic*. A construction impact analysis of traffic is typically conducted when construction activity is expected to be long term and would generate sufficient traffic from employees and trucks to cause potential traffic impacts or would result in lane closings or traffic diversions, disrupting area traffic flow.

- *Transit & Pedestrians*. A construction impact analysis of Transit & Pedestrian facilities may be conducted when construction activity is expected to be long in term with a closure, relocation or narrowing of a pedestrian facility (sidewalk, walkway or stairway) or transit access (bus stop or subway entrance) to allow for construction related activity.

- *Air quality*. The air quality analysis for construction looks at stationary sources of fugitive dust and on-site construction equipment, and mobile sources from construction traffic. A particular concern would be a concrete batching plant or other sources of fugitive dust.

  Similar to the approach used for construction traffic, mobile source air quality emissions may be studied in detail if construction trip generation is similar to or greater than that of the proposed action, and significant mobile source impacts were identified for the action. Again, the analysis of these impacts is usually undertaken in detail only if their duration is expected over a long term.

  Additionally, if construction would result in fugitive dust emissions even of a short duration, the effect of those emissions is usually considered. However, this impact would not be considered significant if there is a commitment to implement appropriate measures to control fugitive dust. If substantial fugitive dust emissions are expected during construction, a more detailed analysis may be necessary. The stationary source analysis also examines emissions from on-site vehicles and equipment.

- *Noise*. Construction noise, generated by pile driving, truck traffic, blasting, demolition, etc., is generally analyzed in detail only when it would affect a sensitive receptor over a long period of time. In some circumstances, however, even a shorter term construction phase may affect highly sensitive locations (such as schools, hospitals, etc.), warranting further analysis.

- *Natural resources*. If a project or construction staging area is located near a sensitive natural resource (such as wetlands, etc., as defined in Chapter 3I of the Manual), construction impacts may result from the disruption of these

areas. Projects located on the waterfront may also have construction impacts on water quality relating to construction work in or near the water. An assessment of construction-related runoff is often appropriate, particularly focused on the potential destruction of resources and the effect of sediment generated during construction. If large land areas are expected to have surface soils exposed to precipitation, a detailed analysis of runoff may be warranted. In addition, the removal of natural resources, either directly or indirectly, may constitute an impact requiring assessment. An example of a direct impact may be, for example, the removal of trees or other natural vegetation to create a construction staging area. An example of an indirect impact may be the creation of a construction staging area within the root zone of a tree, where the construction activities could compact the soil, destroy the roots and/or kill the tree over a period of time that may extend beyond the duration of the construction project.

- *Infrastructure.* Infrastructure impacts may occur if project construction would affect or disrupt infrastructure service for extended or intermittent periods over a long period of time—for example, if in-ground construction would disturb a water main causing a long-term interruption in service. Another example for a large project would be the extensive number of construction-related heavy trucks and their effect on pavement conditions. If such disruptions were expected, a more detailed analysis would be warranted.

- *Hazardous materials.* Because soils are disturbed during construction and utility placement, any action proposed for a site that has been found to have the potential to contain hazardous materials in its assessment of that technical area should also consider the possible construction impacts that could result from that contamination (this is discussed in more detail in Chapter 3J, Hazardous Materials.

300. Assessment Methods

310. STUDY AREA

The study areas for construction impact analyses are typically not as formally defined as they are for other analyses. Generally, the areas that could be affected by construction are the uses immediately bordering the site and along major truck routes to and from the site. Baseline data for the construction impact analyses typically draw from the same baseline data as that used for other impact studies, and therefore use the same study areas as those studies.

320. ANALYSIS TECHNIQUES

The construction impact analyses are typically based on the analyses conducted for the different technical areas. When more detailed analyses are called for, the methodology for analysis is the same as that used in conducting impact analyses for the action condition. The primary difference in assessing construction impacts is that the nature of the impacts (i.e., fugitive dust, construction noise, etc.) associated with construction are usually unique to construction.

The construction analysis typically considers the anticipated construction activities and phasing of the project, and identifies where construction staging would occur, if applicable. For multiphase projects, the equipment and activities associated with each major phase on each portion of the site and the duration of each phase are documented and used in the analyses. This information serves as the basis for describing and analyzing construction impacts. For analysis of multiphase construction, the assessment can often be broken into two or three major phases, during which different portions of the site would be used in varying phases of construction. (For example, during the first phase, construction may be initiated on the northern portion of the site while the center portion of the site is used for construction staging; during the second phase construction would be completed on the northern end, initiated on the center of the site, and the southern portion of the site used for staging, etc.)

An assessment could also include an inventory of existing street trees within the construction impact zone.

The following technical approaches and analysis methodologies may be useful in preparing construction impact analyses where the potential exists for significant impacts.

- *Land use and neighborhood character.* A land use and neighborhood character assessment for construction impacts looks at the construction activities that would be occurring on the site

(or portions of the site) and their duration. The analysis determines whether the type and duration of the activities would constitute a "land use" and could thereby affect land use patterns in the neighborhood, or neighborhood character. (For example, a property may be used for staging for several years. This use of a single piece of property for an extended duration and its compatibility with neighboring properties should be assessed. In this case, the subject site used for construction staging would become industrial in nature. Over an extended period of time, this may be a significant adverse impact if the surrounding area is residential in character and use.) The detailed assessment methodologies are described in the land use and neighborhood character chapters of this Manual (Chapters 3A and 3H).

- *Socioeconomic conditions*. An analysis of construction impacts on socioeconomic conditions focuses on construction conditions affecting access to existing businesses, the potential consequences concerning their continued viability, and the potential effects of their loss on the character of the area. The detailed analysis methodologies for this type of impact are discussed in the socioeconomic conditions chapter of this Manual (Chapter 3B).

- *Community facilities*. The analysis of construction impacts on community facilities examines the service disruption to those facilities that may occur during construction. Detailed assessment methodologies are the same as those described in Chapter 3C of this Manual.

- *Open space*. Occasionally the use of Department of Parks and Recreation open space may be proposed for construction staging or other construction activities. If this use would be over an extended period, the assessment of impact follows the same basic guidance provided for open space analyses. The analysis usually documents the amount of open space proposed for use as staging, the length of time that the open space would be used, and the current condition of the open space and current utilization by the community.

- *Historic resources*. The assessment of construction impacts on historic resources considers the possibility of physical damage to any architectural or archaeological resources identified in the action's historic resources assessment (outlined in Chapter 3F of this Manual).

  Impacts on archaeological resources from construction are assessed as part of the overall evaluation of the action's effect on archaeological resources (see Chapter 3F).

- *Traffic*. A detailed study of construction traffic is usually undertaken only for proposed actions having a very long construction duration and where construction traffic may have more significant impacts than disclosed in the action's build condition analyses.

  The initial assessment of construction traffic considers vehicles generated by both construction employees driving to and from the site as well as trucks and other vehicles associated with project construction. This assessment can be performed as follows:

  1. Using the data gathered for the traffic analysis, assess whether the peak hour for construction would be comparable to the peak hour for the project or whether construction would occur during off-peak hours (usually, the construction peak hour is in the early AM, and is earlier than the traffic peak).
  2. Estimate the construction employee and truck trips that would be generated by construction during the construction peak hour. This information is usually developed by or in close coordination with the project's engineers.

  If the construction peak would generate fewer trips than the project peak, and would occur during off-peak hours or during hours comparable to the project, and if the project's impacts are not significant or can be easily mitigated, then the conclusion may be drawn that the construction of the project would have lesser impacts than that of the project. In this instance, the analysis may be described qualitatively and further analysis would not be necessary.

  Alternatively, if construction trips would occur during the network peak and if construction would generate a number of vehicular trips similar to or greater than the proposed action,

and if the project's action analyses indicate significant impacts, a more detailed traffic assessment may be necessary. This traffic assessment would follow the same steps as described in the traffic and parking chapter of this Manual (Chapter 3O).

If the proposed action would require the installation of a crane or any other activity that could affect the capacity of the roadway network in an area where the project is predicted to result in the potential for a significant impact, a detailed analysis is usually conducted for the same peak hours as that examined under the action analyses. This traffic assessment would follow the same steps as described above in the traffic chapter of this Manual.

For projects involving traffic diversions or temporary closings, additional construction traffic analysis may need to examine the traffic diversions that would occur during the construction phasing, until the new roadway system is functioning. This assessment would follow the methodology described in the Chapter 3O.

Any plans developed must be approved by the New York City Department of Transportation (NYCDOT) Office of Construction Mitigation and Control.

- *Transit & Pedestrians*. A detailed study of construction would be conducted for proposed projects where key pedestrian processors (e.g. sidewalks, crosswalks, corners) or access points to transit would be relocated, closed, narrowed, or otherwise impeded due to construction activity.

  For pedestrian analyses, the extent which any sidewalks or walkways would be closed or narrowed to allow for construction related activity would be identified. There should also be a discussion of how pedestrian access to adjacent land uses and through the area would be maintained. On major sidewalks or walkways, which would already be near capacity under no action conditions, a full quantitative assessment may be required following the methodology described in Chapter 3P. Such plans should be approved by NYCDOT Office of Construction Mitigation and Control.

  Should any bus stops, subway access points, or bus routes be affected by construction activity, such impacts must be identified and also reviewed with New York City Transit (NYCT) and NYCDOT as described in Chapter 3P.

- *Air quality*. The air quality analyses for construction may examine mobile sources from construction traffic and stationary sources from activities on-site.

  The mobile source analysis follows the same basic steps outlined for the construction traffic assessment:

  1. Based on the action condition traffic analyses, determine whether the construction peak hour is comparable to the project peak hour or would clearly be during an off-peak traffic hour.
  2. Determine whether the vehicle trips generated during the construction peak hour would be fewer than or greater than the vehicular trips generated by the proposed action in the peak hour.

  If the action condition for the project would not result in significant mobile source impacts, and if the vehicular trip generation from construction would be less than that of the proposed action, then a more detailed assessment is usually not necessary. If this is the case, the analysis may be described qualitatively, describing how the determination of no significant impact was reached.

  Alternatively, if the construction peak would generate significantly more vehicles than the project peak or if significant air quality impacts are expected under the action condition, more detailed analyses may be necessary. These analyses would follow the same methodology detailed in the air quality chapter (Chapter 3Q).

  The stationary source air quality analysis for construction impacts usually focuses on emissions of fugitive dust and is done quantitatively, for example when a concrete batching plant is proposed. The New York City Air Pollution Control Code regulates fugitive dust under Section 1402.2-9.11, "Preventing Particulate Matter from Becoming Air-Borne; Spraying of Asbestos Prohibited; Spraying of Insulating Material and Demolition

Regulated." Documentation of these measures and commitment to adherence to these requirements should be included in the environmental assessment. The analysis usually quantifies the length of time the dust-causing activities are expected to last, and describes the measures that are undertaken to mitigate the emissions of fugitive dust (i.e., watering down of excavation sites, etc.). If the project sponsor has committed to implementation of these measures they may be incorporated into the project description and analyzed as a project component, thereby reducing project impacts. For large projects, where construction vehicles and equipment would operate on-site for an extended duration, a stationary source analysis of emissions from these sources is usually appropriate.

Similarly, the regulations of the New York City Asbestos Control Program include specific procedures that must be adhered to for the control of asbestos during construction. In instances where demolition of existing building could result in the emissions of asbestos, the qualitative analysis should document a commitment to the adherence of these measures and requirements during construction.

- *Noise*. Construction noise is regulated by the New York City Noise Control Code and by EPA noise emission standards for construction equipment. These local and federal requirements mandate that certain classifications of construction equipment and motor vehicles meet specified noise emissions standards; that, except for special circumstances, construction activities be limited to weekdays between the hours of 7 AM and 6 PM; and that construction material be handled and transported so as not to create unnecessary noise. A statement of adherence to these requirements should generally be included.

  As described in Chapter 3R, Section 335, detailed construction noise analysis methodologies have been developed by a variety of federal agencies including the Federal Highway Administration (FHWA), Federal Transportation Administration (FTA) and the Environmental Protection Agency (EPA).

  For projects with extended construction duration, such as a multiphase project, a more detailed analysis of construction noise may be necessary. This analysis looks at the specific activities, types of equipment, and duration of activities planned for specific locations and the combined effects of the noise on nearby sensitive receptors. For example, if pile driving would be occurring on one section of the site while building erection would be occurring on another area of a site, the construction noise analysis would logarithmically add the noise from each of these sources to estimate noise levels at nearby sensitive receptors. The detailed analysis would follow the analysis procedures described under the noise chapter of this manual (Chapter 3R). A listing of sound pollution level (SPL) ranges from construction equipment is included in Table 3R-2.

  If the initial assessment indicates the need to conduct a mobile source noise analysis for construction (associated with heavy truck trips passing sensitive receptors over a long period of time), the detailed analysis procedure would follow that methodology outlined in the noise chapter of this Manual.

- *Natural resources*. The assessment of natural resources generally follows the methodology outlined in Chapter 3I. To address potential impacts associated with runoff of sediments, the analysis documents the activities that might generate sediments (these may include demolition, excavation, grading, erosion, unpaved and exposed soil areas, etc.). Usually the assessment is more qualitative in nature, since these potential impacts can be mitigated to a great extent. The analysis documents the size of any exposed soil areas and duration that exposed soil areas may be subject to erosion, and the measure that will be undertaken to minimize sediment contributions to nearby surface water features. The analysis of construction's effects on natural resources would also consider the loss or additional destruction of natural resources on the project site or in the staging area. The assessment of such issues is described in Chapter 3I.

- *Infrastructure*. If construction would cause a disruption of infrastructure, the analysis is usually qualitative. Measures to minimize disruption are generally documented. For example, in an instance where important infra-

structure lines run beneath an area of project construction or where significant new infrastructure would be developed with the project, necessitating the rerouting of infrastructure lines, the construction impacts section would disclose these service disruptions and their durations. The discussion would then describe the measures taken to minimize these disruptions in service. These measures may include construction of a bypass connection before services would be interrupted. Close coordination with the appropriate agency is recommended to ensure that any disruption is temporary.

- *Hazardous Materials*. For any potential construction sites and areas along the routes of proposed utilities that have been found to have a potential to contain hazardous materials, the possible effects on construction workers and the surrounding community during construction should be assessed. This is typically part of the hazardous materials analysis, and is described in the discussion of that technical area (Chapter 3J).

400. Determining Impact Significance

The determination of the significance of construction impacts is based on the same criteria for technical analyses as described for the different technical areas of this Manual. If construction impacts would be short term, in most cases the impacts are described as temporary and not significant. However, determination of significance should be considered for each technical area, because short-term impacts can sometimes be significant. Noise impacts on a school, for example, or disruption of a health care center may be considered significant, even if they are temporary.

500. Developing Mitigation

Significant construction impacts can often be mitigated in the same ways as other impacts in the particular technical area of concern. Such mitigation measures are described in the different technical chapters of this Manual and, depending on the impact, may also include such measures as alternative scheduling of construction phases.

Mitigation may also include the implementation of protection measures such as tree guards to reduce the likelihood of accidental tree losses and the replacement of removed street trees. Another mitigation measure could be the preparation of plans to restore or replace decorative paving materials that are impacted by a construction project.

Other measures that are appropriate specifically for construction impacts are described below.

- *Land use and neighborhood character*. Impacts associated with the use of land for construction staging or for activities associated with construction may be mitigated by fencing, or the use of an alternative site not in a sensitive area.

- *Socioeconomic conditions*. Potential measures for socioeconomic impacts include different phasing of construction to avoid extended periods when existing businesses may have a loss of access.

- *Open space*. If construction staging would require the use of an open space or a loss of access to an open space, mitigation may involve expansion and improvement of another nearby open space or the creation of an open space of similar characteristics at a nearby location, or to mitigate a loss of access, alternative access may be provided. Mitigation may also include the restoration of any open space impacted by a construction project.

- *Traffic*. Mitigation of traffic related to construction activities may involve temporary changes in signal timing or other traffic regulations. An example would be prohibition of turns onto a street with reduced capacity due to narrowing.

- *Transit & Pedestrians*. Mitigation for construction affecting access to a bus stop or subway access point should be coordinated with NYCT. Access may need to be maintained to certain locations through temporary walkways, or temporary signage may be required directing transit users to other access points.

  If construction requires the closure of a sidewalk, a temporary walkway might be constructed along side the site. At mid-block construction sites where pedestrians are diverted to the opposite side of the street (provided there is enough capacity), a temporary traffic signal may be required to

facilitate the crossing.

- *Air quality*. Mitigation for impacts from fugitive dust follows the requirements of the New York City Air Pollution Control Code and includes the use of water to control dust during demolition or excavation, and planting or paving areas where exposed soil would be exposed to wind conditions, including dirt paths and roads and on stock piles.

- *Noise*. Mitigation for construction noise impacts may include noise barriers, as well as use of low noise emission equipment. Generally, this mitigation is committed to be included in the action's construction contract documents; this commitment may be documented in the project description, thereby reducing project impacts.

- *Natural resources*. Mitigation for impacts from runoff and sedimentation may include planting, fencing or the protection of exposed soil areas, and the implementation of best management practices (BMPs) (e.g., filter fences and sediment ponds) or similar measures, to minimize erosion because of precipitation. Where the loss of natural resources is inevitable, replacement plans should be developed as mitigation.

- *Infrastructure*. If impacts from the disruption of infrastructure service during construction are anticipated, mitigation should be developed in close coordination with the appropriate agency.

600. Developing Alternatives

In general, alternatives to address impacts during construction are focused on the design of the proposed action. For example, if a wetland impact may be expected due to excavation for footing of a proposed project, the alternative would either be a differently designed project to avoid the wetland area, or locating the proposed action at a different location. Alternative scheduling of construction phases can also serve to alleviate impacts, particularly those related to traffic.

700. Regulations and Coordination

710. REGULATIONS AND STANDARDS

Regulations governing air emissions of fugitive dust are found in the New York City Air Pollution Control Code; regulations governing asbestos control during construction and demolition are available from the New York City Division of Asbestos Control Management, 59-17 Junction Boulevard, Elmhurst, NY 11368. Regulations governing noise emissions during construction are included in the New York City Noise Control Code.

720. APPLICABLE COORDINATION

Depending on the potential impact, it is advisable to coordinate with agencies responsible for implementing required mitigation measures. The agencies that may be contacted are specified within the different technical chapters of this Manual.