CHAPTER 24

EARTHWORK MATERIAL SOURCES
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24.1 OVERVIEW

NYSDOT material sources are evaluated to assure quality. The procedural directives issued by the Department, specifically Geotechnical Control Procedure (GCP-14) Procedure for Control of Stone Filling and Rip Rap Items and Geotechnical Control Procedure (GCP-17) Procedure of Control and Quality Assurance of Granular Materials outline the procedures.

The purpose of evaluating a source is to allow the Department to effectively evaluate characteristics of the material, in a timely manner, to ensure that it meets specification requirements. As mentioned in NYSDOT GDM Chapter 7, Off-site manufacturing in the construction industry is described as an Off-site Construction Technique (OSCT). OSCT evaluation occurs in a gravel pit or quarry specifically erected for processing earthwork materials. OSCT of approved sources allow for reduced project construction time as the engineered granular mixes do not have to be (re)tested for quality. Items not stockpiled, which require conformance to a particular gradation, need only be sieve tested by earthwork inspection personnel.

24.1.1 Submittal of Proposed Earthwork Material Sources

A Preconstruction Meeting is held as soon as possible after the contract has been awarded to discuss the contract scope, work plan and schedule and review administrative procedures necessary to begin work. At the Preconstruction Meeting, the Contractor is to provide the sources of supply, types and contract pay item(s) of materials, which are proposed to be used in the work, in order to ensure that the materials are obtained from approved sources or that required inspection or approval will be completed in a timely manner.

- Once identified, no change is to be made in the types of materials or sources of supply without prior approval.
- No materials are to be utilized until the Engineer has received written notification of the acceptance of that material and such material will only be used so long as the quality remains equal to that of the accepted sample.
- The initial acceptance of a material does not preclude further examination and testing of a material at any time the Engineer suspects that the material is no longer properly represented by the accepted sample.
- The acceptance (at any time) of any materials will not bar its future rejection if it is subsequently found to be defective in quality or uniformity.

24.1.2 Permits

In accordance with the SPDES General Permit for Stormwater Discharges from Construction Activity, any construction activity that results in a soil disturbance of more than 1 acre (or 5000 square feet in the New York City East of Hudson Watershed) on a single property will require SPDES permit coverage from the NYS Department of Environmental Conservation (NYSDEC). When SPDES permit coverage is required, the property owner, as the “Operator” must develop
and implement a NYSDEC approved stormwater pollution prevention plan (SWPPP) and conduct required periodic inspections until the permit coverage is terminated.

In accordance with the Mined Land Reclamation Law, (Environmental Conservation Law Article 23, Title 27), all borrow pits and aggregate sources outside of the State right of way, where more than 1,000 tons or 750 cubic yards, whichever is less, of minerals are removed from the earth within any twelve successive calendar months, require mining permits obtained from NYSDEC. When a mining permit is required, the Contractor, in addition to complying with restoration requirements for all areas as stated in the NYSDOT Standard Specifications, may be required by the Engineer to meet pertinent standards contained in the law and/or 6 NYCRR Part 420 et. seq.

### 24.1.3 Protection and Restoration of Property and Landscape

The NYSDOT Standard Specifications requires the Contractor to protect and preserve all public and private property, including all existing vegetation and landscape features, within, along, and adjacent to the highway right of way.

- **Within the Right of Way**: The Contractor is required to request approval for the use of any area within the right of way but not within the limits of disturbance shown in the contract documents or is outside the contract limits. Approval will not be given if the area is not suitable for acceptable restoration or if serious or permanent environmental damage is foreseeable. This applies to areas such as borrow areas and spoil areas.

- **Outside the Right of Way**: The Contractor is required to notify the Engineer of the use of any specific area outside the right of way before work in any such area has begun, except areas which have been or are being used by the Contractor as its established and permanent headquarters, equipment storage sites or to commercial borrow sources, commercial gravel pits, commercial quarries, and all similar areas.

- **Restoration**: All areas disturbed by the Contractor are to be restored to a pleasing and acceptable condition, particularly those areas within sight of the finished highway or any other highway. The Contractor may be required to submit a grading plan to identify the sequence of operations, the erosion and sediment controls, final slopes and surface restoration details.

In general, the restoration of disturbed areas includes:

1. The removal of all equipment and parts, junk, rubbish, excess materials and debris of all kind;
2. Clean up as required, grading as shown on a grading plan if required; or graded so as to blend into the surrounding ground forms;
3. Scarification of yards, batch sites, haul roads, etc., to the depth necessary to support vegetation;
4. The removal of pavement or granular surfacing from, and regrading of, temporary roads or areas;
5. The repair/removal of damaged trees;
6. The fertilizing, seeding and mulching of disturbed areas;
7. Grading the slopes of excavated areas to a stable condition, but in no case are earth cut faces to be left steeper than 1V on 1.5H. All rock cut slopes are to be scaled to remove any loose or unstable rock.

24.1.4 Recycled Materials

The Contractor is encouraged to provide reused or recycled materials to the maximum extent possible. See NYSDOT Chapter 7. Recycled materials currently approved by the Department include glass, recycled asphalt pavement (RAP), recycled portland cement concrete aggregate (RCA), blast furnace slag, fly ash, microsilica, waste stream plastics and tires.

In order to be considered for use by the Department, recycled or waste material are required to exhibit the desired engineering characteristics, consistently satisfy specification requirements, provide an acceptable level of performance, be economically competitive with available materials, and not be harmful to the environment. If waste materials are proposed to be used, the Contractor may need to obtain a beneficial use determination (BUD) from the NYS Department of Environmental Conservation prior to its use as specified in 6 NYCRR 360-1.15. The beneficial use determination, testing, evaluation and approval of unapproved waste materials can be a very long term process over multiple years, and should not be expected to be completed for any given contract. RCA (and RAP and glass in subbase) are considered to be pre-determined BUDs in regulation 6 NYCRR 360-1.15(b)(5) and (b)(11). Producers only need to obtain a license and can then file for a beneficial use exemption for the permitting process.

Long term performance of recycled materials can be dependant on the source of the material. Often times, deleterious materials or improper construction/demolition procedures can severely impact the long term strength of a recycled material. Therefore, all recycled materials utilized on a NYSDOT project must come from a previous NYSDOT project or a NYSDEC monitored source.

- **RAP**: applies to homogeneous placement of asphalt pavement pieces milled from previous NYSDOT projects. Pieces should have a maximum size of 2 in. If well mixed with other suitable earthwork materials, the RAP shall not make up more than 5% of the mixture by weight. This latter requirement also applies to asphalt pavement pieces from an unknown source. Larger pieces of RAP from NYSDOT projects can be placed outside the 1V on 1H embankment side slope, but the asphalt pavement pieces must be well mixed with other suitable earthwork materials, have a maximum size of 6 in., and should not make up more than 20% of the mixture by weight or visual interpretation.

- **RC and RCA**: applies to placement of crushed concrete (RC) or concrete aggregate pieces (RCA) that has been obtained from a NYSDOT project site or from a NYSDEC registered source. Recycled concrete (RC) may be placed as an aggregate or as larger broken pieces that are free of exposed rebar and mesh. Particle size and material testing of the RC and RCA is set by the material specification requirements. Large pieces of concrete can be placed within the embankment side slope area, but the pieces must be positioned to minimize any voids below.
24.1.5 Material Rejection

Any material which is rejected because of failure to meet the required tests, or that has been damaged so as to cause rejection, will immediately be removed from the site of the work. Material which has been rejected on the results of Department tests will not be resampled or retested unless otherwise directed by the Department. No rejected materials, the defects of which have been subsequently corrected, will be used until written notification of the acceptance of the material from the proper approving service group has been received by the Engineer.

24.2 REUSE OF SITE MATERIAL

The portion of suitable material excavated within the quantity required to construct all embankments on the project is to be reused. Suitable material is a material whose composition is satisfactory for use in embankment construction. The moisture content of the material has no bearing upon such designation. In general, any mineral (inorganic) soil, blasted or broken rock and similar materials of natural or man made (i.e. recycled) origin, including mixtures thereof, are considered suitable materials.

24.2.1 Earthwork Summary Sheets

Earthwork Summary Sheets are provided in the NYSDOT contract documents, which provide the Contractor with a summary of:

- Earthwork (i.e., a pay item quantity summary of item 203.02 Unclassified Excavation and Disposal, and item 203.03 Embankment In Place).
- Trench and culvert excavation (i.e., a pay item quantity summary of item 206.02 Trench and Culvert Excavation, and item 206.04 Trench and Culvert Excavation - O.G.).

In addition, they provide the Contractor with a breakdown of the rock and non-rock quantity associated with the overall item quantity. This may be used as a basis for any item adjustment afforded by the Standard Specifications.

Only unsuitable materials, or that portion of suitable material excavated in excess of the quantity required to construct all embankments on the project, is considered as surplus. Where disposal of surplus materials cannot be accommodated within the right of way, the excess becomes the Contractor's property for disposal. All surplus material disposed of within the right-of-way shall be placed in accordance with the Standard Specifications.

24.3 BORROW MATERIAL

When the portion of suitable material excavated within the quantity required to construct all embankments on the project is insufficient, the Contractor is required to obtain a borrow source to supply the fill material.
24.3.1 Borrow Source Approval

The Contractor is required to notify the Engineer in advance of opening any borrow area, and request approval of the source under the pay item involved. The management of a borrow source and the acceptability of all borrow material is subject to approval of the Engineer at all times.

Provisions regarding borrow areas include:
- Test pits required by the Engineer to evaluate the acceptability and limits of the source are to be provided by the Contractor at the Contractor's own expense.
- Concurrent removal of material for more than one pay item from a single source or pit is prohibited, except with the written permission of, and under such conditions and restrictions as may be imposed by the Engineer.
- All borrow pits are to be stripped of sod, topsoil and vegetable matter well in advance of any working face. The minimum distance by which stripping is to lead the excavation for a given source will be established by the Engineer to suit local conditions.
- Where a borrow source is not under direct control of the Contractor or where special conditions exist, the Engineer may waive any of the above requirements and establish alternative provisions for the control and acceptability of borrow material.
- Where borrow pits result in the formation of ponds or low areas intermittently filled with water, the Contractor is to provide the Engineer with a copy of its agreement with the landowner permitting the use of such areas. If such an area is within sight of any highway, the Regional Director’s written approval is required prior to the removal of borrow from such a location. Grading plans may be required for such areas and due consideration given to the appearance of the areas if they are visible from any highway.

Acceptance of borrow material will be based on:
- Ordinary Borrow: Ordinary borrow is accepted for use contingent upon the material qualifying as suitable material.
- Select Borrow: Select borrow is accepted for use contingent upon the material qualifying as suitable material and meeting the additional provisions of the engineered granular mix (See NYSDOT Chapter 7).

24.3.2 Borrowing from NYSDOT Right-of-Way

Approval may be granted for the modification of cut slopes (and other means of obtaining material) which is not part of the NYSDOT contract, so long as the Contractor makes provisions to prevent any unsafe conditions, damages, and nuisances to property, wildlife areas, and haul routes within and outside the contract limits. Prior to modifying rock cut slopes, the Geotechnical Engineering Bureau is to be consulted. If rock cut slopes are flattened sufficiently to eliminate the need for presplitting, an additional rebate will be necessary. Therefore, if a Contractor intends to obtain borrow material by modifying the contract details, the final deposition of the material, haul routes, hauling hours, and other particulars are required to be submitted for review.
Provisions regarding borrow areas within the R.O.W. limits (which are not designated as available sources of borrow by a Special Note in the contract proposal) where the Contractor requests and is granted permission to modify slopes to obtain material for use on NYSDOT contract work only include:

- The Contractor will be required to reimburse the State with a rebate for the material obtained in these areas. The rebate is comprised of:
  - A royalty based on the actual value of the excavated material. The royalty is to be appropriate for the item for which it is to be utilized and is to be comparable to the current price being paid to purchase similar material in the area.
  - A credit for the difference in the Contractor's handling costs, if these handling costs have been reduced. If the Contractor's handling costs associated with obtaining material from within the R.O.W. limits are greater than those for obtaining material from other acceptable sources, these additional handling costs will be borne by the Contractor. The difference in the Contractor's handling cost will be determined by an analysis based on a comparison of haul lengths, hauling equipment, hauling operation, use of haul roads or public highways, preparation and restoration of the borrow areas, and any other variables involved.

### 24.4 GRANULAR MATERIAL SOURCES

The Regional Geotechnical Engineer maintains a list of Approved Sources for granular materials. The requirements for acceptance to the list of Approved Sources are outlined in the Geotechnical Control Procedure (GCP-17) *Procedure for the Control and Quality Assurance of Granular Materials*.

All run-of-bank material, or material in storage or surge piles, is evaluated as a non-stockpiled material. Each year, a list of sources anticipated to be used for upcoming NYSDOT contracts is submitted to the Geotechnical Engineering Bureau for a determination of the number of monitoring samples that will be required for an evaluation. The number and depth of samples is dependent upon the topography of the area, stratification of the deposit and quality of the material. Samples are chosen to characterize the source.

Material from each Source will be evaluated for quality using the Magnesium Sulfate Soundness and Plasticity Index tests before it is allowed to be used on NYSDOT contracts. The source evaluation is valid for a 12 month period. Note the gradation still needs to be checked in the field.

Material acceptance is discussed in NYSDOT GDM Chapter 7.

### 24.5 STONE FILL SOURCES

The Regional Geotechnical Engineer maintains a list of Approved Sources for stone fill and rip rap items. The requirements for acceptance to the list of Approved Sources are outlined in the
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Geotechnical Control Procedure (GCP-14) Procedure for Control of Stone Filling and Rip Rap Items.

The Departmental Geotechnical Engineer will submit to the Geotechnical Engineering Bureau, at the beginning of each calendar year, a list of anticipated sources. New sources may be submitted at any time during the calendar year. A Departmental Engineering Geologist will review records of the source, make a site inspection (if deemed necessary), and provide recommendations for the Item Types shown in Table 24-1. The Director of the Geotechnical Engineering Bureau is responsible for the assignment of Item Type.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Obtained from a source which historically produces material of acceptable soundness for that item. No geologic evaluation field inspection required for project soundness approval</td>
</tr>
<tr>
<td>B</td>
<td>Obtained from a source necessitating a geologic evaluation field inspection for project soundness approval.</td>
</tr>
</tbody>
</table>

Table 24-1 Stone Fill Designation Type Based on Source

Material acceptance is discussed in NYSDOT GDM Chapter 7.

24.5.1 Aggregate Sources

The Materials Bureau of the Office of Technical Services maintains an Approved List of Sources of Fine and Coarse Aggregates. The requirements for acceptance to the Approved List are outlined in the Materials Method (NY29) Aggregate Source Acceptance Procedure. A majority of the sources identified on the Approved List of Sources of Fine and Coarse Aggregates correspond with the list of Approved Sources held by the Regional Geotechnical Engineer. However, a Contractor is encouraged to notify the Regional Geotechnical Engineer as to the proposed source of materials to be used on the NYSDOT contract.

Part of the submission to appear on the Approved List is to have an accepted Geological Source Report (GSR). A GSR is divided into three levels: static, cyclic, and annual.

1. Static - Information that does not change, including the location map, geology, drilling, petrographic information, and information that may not change for the life of the mine.
2. Cyclic - Information that is continuously changing, including the source map, geologic cross sections, plant flow and photographs.
3. Annual - The Operations Plan must be submitted annually and includes information that addresses aggregate quality monitoring both in the mine and in the processing plant.
Source Number. The Department assigns a number to an Approved Source by using the following designations:

(Region No.)-(Site No.) followed by:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Fine Aggregate</td>
</tr>
<tr>
<td>GFM</td>
<td>Fine Aggregate produced from Gravel</td>
</tr>
<tr>
<td>RFM</td>
<td>Fine Aggregate produced form Stone</td>
</tr>
<tr>
<td>RSFM</td>
<td>Fine Aggregated produced from Selectively Quarried Stone</td>
</tr>
<tr>
<td>RFMW</td>
<td>White Fine Aggregate produced form Quarried Stone</td>
</tr>
<tr>
<td>G</td>
<td>Gravel</td>
</tr>
<tr>
<td>L</td>
<td>Lightweight Aggregate</td>
</tr>
<tr>
<td>R</td>
<td>Stone</td>
</tr>
<tr>
<td>RS</td>
<td>Selectively Quarried Stone</td>
</tr>
<tr>
<td>S</td>
<td>Slag</td>
</tr>
</tbody>
</table>

Example: **2-118F1**: Region 2 source number 118, F – Fine Aggregate produced, 1 – Blend or material from a different deposit.

The Source Location is identified by the nearest city, village, etc., on highway map to pit or quarry.
24.6 REFERENCES


