

CHAPTER 4

SITE PREPARATION

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SITE PREPARATION

4.1 SITE REMEDIATION.

4.1.1 Disposal of Waste Materials

Burning on Developer's Property: Burning is not permitted on Developer's property.

Removal from Developer's Property: Remove waste materials and unsuitable or excess topsoil from Developer's property and legally dispose of it.

4.1.2 Excavation, Removal and Handling of Hazardous Material, as per Federal and State Regulations.

4.1.3 Site Decontamination: Removal of contaminated residue of toxic and hazardous materials, as per Federal and State Regulations.

4.2 SITE DEMOLITION.

4.2.1 Removal of Structures and Obstructions.

4.2.1.1 General. The work shall consist of the removal and satisfactory disposal of all foundations, fences, signs, structures, sidewalk, curbing, old pavements, traffic signal materials, abandoned pipelines, and any other obstructions which are not designated or permitted to remain, except for the obstructions to be removed and disposed of under other items in the contract. It shall also include the salvaging of designated material and back-filling the resulting trenches, holes and pits.

4.2.1.2 Construction: The Developer shall raze, remove and dispose of all foundations, signs, structures, fences, old pavements, abandoned pipelines, traffic signal materials and other obstructions, any portion of which are within the project limits, except utilities and those for which other provisions have been made for removal. Traffic signals and related materials shall include all attachment hardware

and other included materials such as, but not limited to, mast arms and span wire.

Concrete adhering to sign posts shall be removed. Pedestals and bases shall be removed to 1' below the surrounding ground or sub-grade.

Where portions of structures are to be removed, remaining portions shall be prepared to fit construction. The work shall be done in accordance plan details, and in such a manner that materials to be left in place shall be protected from damage. All damage to portions of structure to remain in place, shall be repaired by the Developer at their expense. Reinforcing steel projecting from the remaining structure shall be cleaned and aligned to provide bond with new extension. Dowels, as required by plans, are to be securely grouted with approved grout. Removal of sign panel shall include all work necessary to remove the panel and its attachment hardware from the existing installation.

Where culverts or sewers are to be left in place and plugged, the ends shall be filled with (*Class III Concrete*). Culvert and sewer ends are to be sufficiently filled to prevent future settlement of embankments.

Materials used in detour structures for the project, which are supplied by the Developer, shall be considered to be the property of the Developer. After the detour is abandoned, he shall completely remove the detour structure and shall dispose of materials as specified.

4.3 REMOVAL OF BRIDGES, CULVERTS AND OTHER DRAINAGE STRUCTURES.

4.3.1 Bridges, culverts and other drainage structures in use by traffic shall not be removed, until satisfactory arrangements have been made to accommodate traffic.

Unless otherwise directed, the substructures of existing structures shall be removed down to 1' below natural stream bottom or ground surface. Where such portions of existing structures lie wholly or in part within the limits for a new structure, they shall be removed as necessary to accommodate the construction of the proposed structure. Steel, pre-cast concrete, and wood bridges as specified shall be carefully dismantled without unnecessary damage. Steel members to be salvages shall be match-marked with waterproof paint.

4.3.2 Removal of Pipe. Unless otherwise provided, all pipe shall be carefully removed, cleaned, and every precaution taken to avoid breaking or damaging the pipe. Pipes to be re-laid shall be removed and stored when necessary, so that there will be no loss or damage before relaying.

In removing manholes, catch basins, and inlets, any live sewers connected with them shall be properly reconnected and satisfactory bypass service shall be maintained during such operations.

4.4 REMOVAL OF PAVEMENTS, SIDEWALKS AND CURBS, ETC.

PCC concrete or asphalt concrete that is to remain shall be cut in a straight, true line with a vertical face. PCC or asphalt concrete may be cut with a cutting wheel, saw, or broken to the directed point of removal. The Developer shall be responsible for the cost of removal and replacement of all over-break.

If the Developer cannot maintain a straight, true break-line by other means, the Director of Public Works shall order sawing.

The sawing shall be done carefully, and all damages to PCC or asphalt concrete to remain in place due to Developer's operations, shall be repaired by the Developer at his/her expense. The minimum depth of saw cut in concrete shall be 2".

4.5 PAVEMENT.

Bituminous pavement shall be removed to clean, straight lines by saw cutting. Concrete pavement shall be removed to neatly sawed edges to a minimum depth of 1½". If the removed portion falls within 3' of a construction joint, cold joint, expansion joint or edge, the concrete shall be removed to the joint or edge. The pavement cut shall follow a line parallel to the pipe centerline and 12" beyond the trench side-wall. In the event pavement beyond the original pavement beyond the original pavement cut is undermined or damaged during construction, additional pavement shall be removed after trench back-filling. The additional pavement shall consist of a cut parallel to the pipe centerline with transitions to the original cut on each side. Any paving that is damaged by the Developer outside the above stated limits shall be replaced at the Developer's expense. All excavated paving and concrete shall be stockpiled separately and disposed of by the Developer off-site of the work at his/her expense and shall not be used as trench backfill material.

4.6 CONCRETE.

Concrete Curb, Gutter, Sidewalk, Crosspans, Driveways and Alley Intersections: Concrete shall be removed to edges that are neatly sawed to a minimum depth of 1½". Sidewalks, driveways, alleys and pans shall be saw cut in straight lines either parallel to the curb or perpendicular to the alignment of the sidewalk or curb. No section to be replaced shall be less than 3' in either width or length. If proposed saw cuts in the sidewalk, driveway or alley fall within 3' of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge.

4.6.1 Salvage: All salvageable material shown on the plans shall be removed, without unnecessary damage, in sections or pieces which may be readily transported, and shall be stored by the Developer in locations designated by the

Director of Public Works. The Developer shall be required to replace any materials lost from storage or damaged by negligence or by use of improper methods.

4.6.2 Disposal: The Developer shall make all necessary arrangements for obtaining suitable disposal locations and the cost involved shall be include in the work. If disposal is to be at other than established dump sites, the Director of Public Works may require the Developer to furnish written permission from the property owner on whose property the materials are placed. Broken concrete or asphalt shall not be disposed of in the Town.

4.6.3 Backfill:. Except in areas to be excavated, all cavities left by structure removal shall be back-filled with suitable material and compacted in accordance with these Specifications. Jetting or ponding will not be allowed.

4.7 SITE CLEARING.

4.7.1 General: The work shall consist of clearing, grubbing, removing and disposing of all vegetation and debris within the limits of the project and such other areas as may be indicated on the plans or required by the work. Exclusive of this work, are those objects designated to remain or which are to be removed in accordance with other sections of these Specifications. This work shall also include the preservation from injury or defacement of all vegetation and objects designated to remain.

4.7.2 Construction: The Consultant will establish construction lines per Town discretion and designate all trees, shrubs, plants and other objects to remain. The Developer shall preserve all objects designated.

All surface objects and all trees, stumps, roots and other protruding obstructions not designated to remain, shall be cleared and/or grubbed, including mowing, as required, except

non-perishable solid objects which will be a minimum of 2' below subgrade. Perishable objects shall be removed to a depth of 3' below the existing ground or subgrade, whichever is lower.

Except in areas to be excavated, stump holes and other holes from which obstructions are removed shall be back-filled with suitable materials and compacted in accordance with these Specifications. Materials and debris shall be disposed of in a manner acceptable to the Director of Public Works. Burning will not be permitted.

The Developer shall make all necessary arrangements for obtaining suitable disposal locations. If disposal is to be at other than established dump sites, the Director of Public Works may require the Developer to furnish, in writing, permission from the property owner on whose property the materials and debris are placed. Branches of trees or shrubs shall be removed as directed. Branches of trees extending over the roadbed shall be trimmed to give a clear height of 20' above the roadbed surface. All trimming shall be done by skilled workmen and in accordance with good tree surgery practices.

The Developer shall scalp areas where excavation or embankment is to be made, except that mowed sod need not be removed where the embankment to be constructed is 4' or more in height below subgrade elevation. Scalping shall include the removal of materials such as brush, roots, sod, grass, residue of agricultural crops, sawdust and other vegetable matter from the surface of the ground.

Hedges shall be pulled or grubbed in such a manner as to assure complete and permanent removal. Scattered hedge or shrubs not classified as hedge shall be removed as specified for hedge. Sod not required to be removed shall be, thoroughly disced before construction of embankment.

4.8 DEWATERING.

4.8.1 General.

- 4.8.1.1 Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding project site and surrounding area.
- 4.8.1.2 Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- 4.8.1.3 Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of foundation bottoms, undercutting footings and soil changes detrimental to the stability of subgrades and foundations. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey the water away from the site.
- 4.8.1.4 Convey water removed from excavations and rainwater to collecting or run-off areas acceptable to authorities having jurisdiction. Do not use trench excavations from site utilities as temporary drainage ditches.

4.9 SHORING AND UNDERPINNING.

4.9.1 Stability of Excavations.

- 4.9.1.1 Comply with local codes, ordinances and requirements of authorities having jurisdiction to maintain stable excavations including Federal and State Law. A clear area shall be maintained a sufficient distance back from the top edge of the excavation to avoid overloading which may cause slides or caving of the trench walls. The excavated material shall be kept trimmed in such a manner as to be of as little inconvenience as possible to the

public and adjoining property owners. Unless otherwise authorized by the Director of Public Works all public thoroughfares and crossroads shall be kept open to traffic. At street crossings, sidewalks and other points where the Inspector deems necessary, the trenches shall be bridged in a safe manner so as to prevent serious interruptions of travel and to provide access to fire hydrants and public and private premises. Such bridging must be approved by the Inspector.

4.10 REBUILT MISCELLANEOUS STRUCTURES.

4.10.1 General. This item shall consist of removing, relaying, resetting or adjusting structures, fences, guardrail, signs, pipe, end sections, traffic signals and related materials. All designated items shall be carefully removed and every precaution taken to avoid damage. Coordinate relocation of permanent traffic devices with the Public Works Department. The Developer will be required to replace or repair any material damaged due to their operations at their own expense. The work shall include the back-filling of any resulting trenches, holes or pits.

4.10.2 Construction. Pipe to be re-laid and structures to be reset shall be thoroughly cleaned. Removal sites shall be neatly back-filled with suitable material and compacted in accordance with these Specifications.

Materials in good condition from removed structures or fences may be used in the rebuilding operations. All removed material not reused shall be salvaged or disposed of as directed.

Where fences are to be rebuilt or reset, it will be the Developer's responsibility to supply and install any new materials required to restore the fence to acceptable condition. Unless otherwise stated, the Developer may reuse any existing material that is

salvageable. The quality of construction of the reset fence shall equal or exceed that of the existing fence.

Unserviceable material from structures shall be replaced with new material of dimensions similar to those used in building the original structure. Replacement parts and new materials, including concrete footings, necessary to restore these structures to service at new locations shall be provided and installed by the Developer as part of these items.

All new materials and replacement parts shall be of similar quality to those used in the original structure or as specified. Gates designated or noted on plans to be reset shall be removed and restored for service at the new locations indicated.

Mailboxes complete with supporting structures are to be removed and temporarily reset at points near their original location to be easily accessible for mail delivery service. Immediately upon completion of surfacing operations, the boxes shall again be reset to a height of 42" to 48" at the locations designated. A supporting structure may contain one or more mailboxes.

Resetting of all traffic control signs and traffic signaling devices will conform to the pertaining Section of the Town's Roadway Design and Construction Standards and be coordinated with the Public Works Department.

Adjusting structures shall include, but not be limited to, manhole rings and covers, inlet gratings and frames, water valve boxes, water meters, gate posts and other structures and facilities. Construction operations shall include any raising, lowering, moving, removing masonry or concrete, adding brickwork, masonry or concrete and resetting grates, frames or rings and covers to fit the new construction. At no time shall manholes and valve boxes be covered up or buried. Valve boxes and manholes

are to be maintained fully accessible at all times for emergency and maintenance operation by the Town personnel. Work on water services shall be, subject to observation and testing by the owners. Damage to any fire hydrant or any part of the system due to Developer's operations shall be repaired immediately at the Developer's expense.

4.11 EARTHWORK.

4.11.1 Grading/General: Uniformly grade areas to a smooth surface, free from irregular surface changes.

Comply with compaction requirements and grade to cross-sections, lines and elevations indicated. Provide a smooth transition between existing adjacent grades and new grades.

Cut out soft spots, fill low spots and trim high spots to conform to required surface tolerances.

4.11.2 Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish sub-grades to required elevations within the following tolerances:

A) Lawn or Unpaved Areas: Plus or minus 1.2".

B) Walks: Plus or minus 1.2".

C) Pavements: Plus or minus ½".

Grading Inside Building Lines: Finish sub-grade to a tolerance of ½ inch when tested with a 10' straightedge.

4.12 EXCAVATION AND FILL (extraction, removal and disposal of material and structures)

4.12.1 Excavation.

4.12.1.1 Explosives: The use of explosives will not be permitted without a blasting permit.

4.12.1.2 Unclassified Excavation: Excavation is unclassified and includes excavation to required sub-grade

elevations regardless of the character of materials and obstructions encountered.

4.12.1.3 Unauthorized Excavation: Unauthorized excavation consists of removal of materials beyond specified elevations, without the specific direction of the Director of Public Works. Replace unauthorized excavation by back-filling and compacting as specified for authorized excavations.

4.12.1.4 General: This work shall consist of excavation, disposal, shaping or compaction of all material encountered within the limits of the work, including excavation for ditches and channels.

4.12.1.5 Embankment Material: Embankment material shall consist of approved material acquired from excavations, hauled and placed in embankments in reasonable close conformity with the line, grades, thickness' and typical cross-sections shown on the plans or as established.

The type of relative compacting required shall be as called for on the plans or as designed.

When the source of embankment materials is not designated on the plans, approval of the source will be contingent on the material having a resistance value of at least 15, or as shown on the plans, when tested by the Hveem Stabilometer, and a maximum dry density of not less than 95 pounds per cubic foot.

4.12.2 Excavation for Structures.

4.12.2.1 Excavate to indicated elevations and dimensions within a tolerance of plus

or minus 1.2". Extend excavations a sufficient distance from structures for placing and removing concrete form work, installing services and other construction and for inspections.

A) Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

B) Excavation for Underground Tanks, Basins and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1.2". Do not disturb bottom of excavation intended for bearing surface.

4.12.3 Excavation for Walks and Pavements.

4.12.3.1 General: Set and build into form work anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instruction and directions provided by suppliers of items to be attached.

Excavate surfaces under walks and pavements to indicated cross-sections, elevations and grades.

4.12.4 Excavation for Utility Trenches.

A) Excavate trenches to indicated slopes, lines, depths and invert elevations.

1) Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line of 4.5'.

B) Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12" higher than top of pipe or conduit, unless otherwise indicated.

1) Clearance: 12" each side of pipe or conduit.

C) Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for joints, and barrels of pipes, and for joints, fittings, and bodies of conduits. Remove stones and sharp objects to avoid point loading.

1) For pipes or conduit less than 6" in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed sub-grade.

2) For pipes and conduit 6" or larger in nominal diameter, shape bottom of trench to support bottom 90° degrees of pipe circumference. Fill depressions with tamped sand backfill.

3) Where encountering rock or another unyielding bearing surface, carry trench excavation 6" below invert elevation to receive bedding course.

4.13 EMBANKMENT.

4.13.1 General: The excavation and embankments shall be finished to reasonably smooth and uniform surfaces. Variation from the sub-grade plane shall not be more than 0.08' for soil, nor more than 0.50' for rock. Materials shall not be wasted without permission of the Director of Public Works. Excavation operations shall be conducted so that material outside of the limits of slopes will not be disturbed. Prior

to beginning grading operations in any area, all necessary clearing and grubbing and topsoil in that area shall have been performed in accordance with the pertaining Sections of the Town's Roadway Design and Construction Standards.

4.13.1.1 Embankment: Embankment construction shall consist of constructing roadway embankments, including preparation of the areas upon which they are to be placed. These areas include the construction of dikes; the placing and compacting of approved material within project areas where unsuitable material has been removed; and the placing and compacting of embankment material in holes, pits and other depressions within the project area. Only approved materials shall be used in the construction of embankment and back-fills.

Free running water shall be drained from the material before the material is placed. Rocks, broken concrete, or other solid materials more than 6" in greatest dimension shall not be placed in embankment areas less than 1' deep measured from the subgrade. Materials less than 150 pounds may be placed in fills over 1' deep, provided there remains 1' minimum cover measured from the subgrade, with the approval of the Town Engineer.

Slopes that are steeper than 4:1 when measured longitudinally or at right angles to the roadway shall be continuously benched over those areas where it is required as the work is brought up in layers. This applies when the embankment is to be placed and compacted on hillsides, or when new embankment is to be compacted against existing embankments or when

embankment is built one-half width at a time.

Benching shall be well-keyed and, where practical, a minimum of 8' wide. Each horizontal cut shall begin at the intersection of the original ground and the vertical sides of the previous cuts. Material thus cut out shall be re-compacted along with the new embankment material at the Developer's expense.

If embankment can be deposited on one side only of abutments, wing walls, piers, or culvert headwalls, care shall be taken that the area immediately adjacent to the structure is not compacted to the extent that it will cause overturning of, or excessive pressure against, the structure. The fill adjacent to the end bent of a bridge or to a box culvert shall not be placed higher than the bottom of the back wall of the bent or floor slab of the box, until the superstructure is in place. When embankment is to be placed on both sides of a concrete wall or box type structure, operations shall be conducted so that the embankment is always at approximately the same elevation on both sides of the structure.

The Developer shall notify the Director of Public Works in sufficient time before beginning excavation that the necessary cross-sections may be taken. The Developer shall not excavate beyond the dimensions and elevations established, and material shall not be removed prior to the staking and cross-sectioning of the site. When the Developer's excavating operations encounter remains of

prehistoric peoples' dwelling sites or artifacts of historical or archaeological significance, the operations shall be temporarily discontinued. The Developer will contact archaeological authorities to determine the disposition thereof. When directed, the Developer shall excavate the site in such manner as to preserve the artifacts encountered and shall remove them for delivery to the custody of the proper State authorities.

The Developer shall at all times take precautions for the protection of culverts, irrigation crossings, mailboxes, driveway approaches, valve boxes, manholes, survey monuments, underground or overhead utility lines, and all other public or private installations that may be encountered during construction. The Developer shall be responsible for the repair of any installations damaged due to their work. Manholes and valve boxes shall be, observed by the Director of Public Works for displacements and introduction of foreign matter. It shall be the Developer's responsibility to correct any displacement and to remove any foreign matter resulting from his/her work.

4.13.2 Excavation.

4.13.2.1 Rock: Unless otherwise specified, rock shall be excavated to a minimum depth of 6" below subgrade within the limits of the roadbed, and the excavation back-filled with material designated on the plans or as approved.

4.13.2.2 Unclassified: When material encountered within the limits of the work is considered unsuitable by the

Director of Public Works, such material shall be excavated as directed by the Director and replaced with suitable material. All excess or unsuitable excavated material, including rock and boulders, that cannot be used in embankments will be disposed of as approved by the Director.

Wherever shown on the plans or considered necessary, intercepting ditches shall be made above the top of cut slopes and carried to outlets near the ends of the cuts. In order to blend the intersection of cut slopes with the slope of the adjacent natural ground surfaces in a uniform manner, the tops of all cut slopes shall be flattened and rounded.

Excess quantities of excavation not necessary for the construction of embankments, unless otherwise specified on the plans or special provisions, shall become the property of the Developer and shall be disposed of as specified as above. The Director of Public Works may allow disposal by widening and flattening fill slopes, if right-of-way conditions permit and if no damage results.

- 4.13.2.3 Borrow: Borrow material should not be placed until after the excavation has been placed in the fill. If the Developer places more borrow than is required and thereby causes a waste of excavation, the amount of such waste will be deducted from the borrow volume. Borrow areas shall be finished so that water will not collect or stand therein, unless otherwise specified.