

SECTION 31 20 00
EARTH MOVING

PAT 1 - GENERAL

1.1 DESCRIPTION

A. The Work of this Section specifies the requirements for furnishing all equipment, materials, labor, tools, and techniques for earthwork including, but not limited to, the following:

1. Site preparation.
2. Subsoil and topsoil materials.
3. Excavation.
4. Filling and backfilling.
5. Grading.
6. Soil Disposal.
7. Clean Up.

1.2 DEFINITIONS

A. Unsuitable Materials:

1. Fills: Topsoil; frozen materials; construction materials and materials subject to decomposition; clods of clay and stones larger than 2 inches; organic material, including silts, which are unstable; and inorganic materials, including silts, too wet to be stable and any material with a liquid limit and plasticity index exceeding 35 and 25 respectively. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction, as defined by ASTM D 698.
2. Existing Subgrade (Except Footing Subgrade): Same materials as 1.2.A.1, that are not capable of direct support of slabs, pavement, and similar items with possible exception of improvement by compaction, proofrolling, or similar methods.

B. Building Earthwork: Earthwork operations required in area enclosed by a line located 5 feet outside of principal building perimeter. It also includes earthwork required for auxiliary structures and buildings.

C. Trench Earthwork: Trenchwork required for utility lines.

D. Site Earthwork: Earthwork operations required in area outside of a line located 5 feet outside of principal building perimeter and within new construction area with exceptions noted above.

E. Degree of compaction: Degree of compaction is expressed as a percentage of maximum density obtained by laboratory test procedure. This

percentage of maximum density is obtained through use of data provided from results of field test procedures presented in ASTM D1556.

- F. Fill: Satisfactory soil materials used to raise existing grades. In the Construction Documents, the term "fill" means fill or backfill as appropriate.
- G. Backfill: Soil materials or controlled low strength material used to fill an excavation.
- H. Unauthorized excavation: Removal of materials beyond indicated sub-grade elevations or indicated lines and dimensions without written authorization by the COTR. No payment will be made for unauthorized excavation or remedial work required to correct unauthorized excavation.
- I. Authorized additional excavation: Removal of additional material authorized by the COTR based on the determination by the soils testing agency that unsuitable bearing materials are encountered at required sub-grade elevations. Removal of unsuitable material and its replacement as directed will be paid on basis of Conditions of the Contract relative to changes in Work.
- J. Subgrade: The undisturbed earth or the compacted soil layer immediately below granular sub-base, drainage fill, or topsoil materials.
- K. Structure: Buildings, foundations, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- L. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- M. Drainage course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- N. Bedding course: Layer placed over the excavated sub-grade in a trench before laying pipe. Bedding course shall extend up to the spring line of the pipe.
- O. Sub-base Course: Layer placed between the sub-grade and base course for asphalt paving or layer placed between the sub-grade and a concrete pavement or walk.
- P. Utilities include on-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.
- Q. Debris: Debris includes all materials located within the designated work area not covered in the other definitions and shall include but

not be limited to items like vehicles, equipment, appliances, building materials or remains thereof, tires, any solid or liquid chemicals or products stored or found in containers or spilled on the ground.

- R. Contaminated soils: Soil that contains contaminants as defined and determined by the COTR or the Government's testing agency.

1.3 RELATED WORK

- A. Safety requirements: Section 01 00 00, GENERAL REQUIREMENTS, HEALTH AND SAFETY PLAN.
- B. Protection of existing utilities, fire protection services, existing equipment, roads, and pavements: Section 01 00 00, GENERAL REQUIREMENTS.
- C. Subsurface Investigation: Section 01 00 00, GENERAL REQUIREMENTS, Article, PHYSICAL DATA.
- D. Materials testing and inspection during construction: Section 01 45 29, TESTING LABORATORY SERVICES.
- E. Erosion Control: Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.
- F. Concrete placement: Section 03 30 00 CAST-IN-PLACE CONCRETE.
- G. Site preparation: Section 02 41 10, DEMOLITION AND SITE CLEARING.
- H. Utilities: Section 33 10 33 WATER UTILITIES, Section 33 30 00 SANITARY SEWERAGE UTILITIES, Section 33 41 00 STORM UTILITY DRAINAGE PIPING, Section 33 46 00 SUBDRAINAGE, Section 33 49 00 STORM DRAINAGE STRUCTURE.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Furnish to COTR:
 - 1. Contactor shall furnish resumes with all personnel involved in the project including Project Manager, Superintendent, and on-site Engineer. Project Manager and Superintendent should have at least 3 years of experience on projects of similar size.
 - 2. Soil samples or Product Data.
 - a. Classification in accordance with ASTM D2487 for each on-site or borrow soil material proposed for fill, backfill, engineered fill, or structural fill.
 - b. Laboratory compaction curve in accordance with ASTM D 698 for each on site or borrow soil material proposed for fill, backfill, engineered fill, or structural fill.

- c. Test reports for compliance with ASTM D 2940 requirements for subbase material.
- d. Pre-excavation photographs and videotape in the vicinity of the existing structures to document existing site features, including surfaces finishes, cracks, or other structural blemishes that might be misconstrued as damage caused by earthwork operations.
- e. The Contractor shall submit a scale plan daily that defines the location, limits, and depths of the area excavated.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only. Use the latest edition of the referenced publication.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - T99.....Moisture-Density Relations of Soils Using a 2.5 kg (5.5 lb) Rammer and a 305 mm (12 inch) Drop
 - T180.....Moisture-Density Relations of Soils using a 4.54 kg (10 lb) Rammer and a 457 mm (18 inch) Drop
- C. American Society for Testing and Materials (ASTM):
 - D448.....Standard Classification for Sizes of Aggregate for Road and Bridge Construction
 - D698.....Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft. lbf/ft³ (600 kN m/m³))
 - D1556.....Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - D1557.....Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2700 kN m/m³))
 - D2216.....Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 - D2487.....Standard Classification of Soil for Engineering Purposes (Unified Soil Classification System)
 - D2937.....Standard Test method for Density of Soil in Place by the Drive-Cylinder Method

D2940.....Standard Specifications for Graded Aggregate
Material for Bases or Subbases for Highways or
Airports

D3017.....Moisture Content of Soil and Soil Aggregate In
Place by Nuclear Methods (Shallow Depth)

D6938.....Standard Test Method for In-Place Density and
Water Content of Soil and Soil-Aggregate by
Nuclear Methods (Shallow Depth)

D. Society of Automotive Engineers (SAE):

J732-92.....Specification Definitions - Loaders

J1179-02.....Hydraulic Excavator and Backhoe Digging Forces

1.6 SOURCE QUALITY CONTROL

- A. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D698.
- B. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D 698, and ASTM D 2974.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide borrow soil material when sufficient satisfactory soil materials are not available from excavations.
- B. Fills: Material in compliance with ASTM D2487 Soil Classification Groups CL (silty clays), CL (sandy clays), or SC (clayey sands), or any combination of these groups; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. Material approved from on site or off site sources having a minimum dry density of 110 pcf, a Plasticity Index within the range of 5 to 25, and a maximum Liquid Limit of 35.
 - 1. Native soil fill: Native excavated and re-used material; limiting organic content to no more than 3% and no large roots allowed.
- C. Engineered Fill: Naturally or artificially graded mixture of compliance with ASTM D2487 Soil Classification Groups CL (silty clays), CL (sandy clays), or SC (clayey sands), or any combination of these groups, or as approved by the Engineer or material with at least 90 percent passing a

1 1/2-inch sieve and not more than 12 percent passing a No. 200 sieve, per ASTM D2940. Minimum dry density of 110 pcf, a Plasticity Index within the range of 5 to 25, and a maximum Liquid Limit of 35. Fill to be approved by COTR and project geotechnical engineer at least 48 hours prior to be transported to the site.

- D. Topsoil: Per 32 90 00 PLANTING.
- E. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; 3/4" or 1/2"; having a minimum of one fractured face.
- F. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; free of shale, clay, friable material and debris; ASTM D448; coarse-aggregate grading Size 57; with the following gradation:

DRAINAGE FILL #57	
Sieve Size	Percent Passing
1 1/2"	100
1"	95 - 100
1/2"	25 - 60
No. 4	0 - 10
No. 8	0-5

- G. Granular Fill:
- Under concrete slab, crushed stone or gravel graded from 1 inch to No. 4, per ASTM D2940.
- H. Pea Gravel: Natural rounded stone conforming to ASTM D 448; free of shale, clay, friable material, debris or other deleterious substances, No. 78 Size or a clean washed gradation for Class 2 permeable material.
- The class or kind of permeable material to be used will be specified in the plans. Class 1 and Class 2 permeable material shall conform to the requirements in these specifications.
 - The percentage composition by mass of permeable material in place shall conform to the following gradations:

FLOWABLE GRAVEL - CLASS 1	
Sieve Sizes	Percent Passing
3/4"	100
1/2"	90-100
3/8"	40-75
No. 4	5-25
No. 8	0-10
No. 16	0-5

FLOWABLE GRAVEL - CLASS 2	
Sieve Sizes	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No.4	25-40
No.8	18-33
No.30	5-15
No.50	0-7
No.200	0-3

3. Class 1 and Class 2 permeable material shall have a Durability Index of not less than 40.
4. Class 2 permeable material shall have a Sand Equivalent value of not less than 75.

2.2 FINE AGGREGATE MATERIALS

- A. Sand: Natural river or bank sand conforming to AASHTO M-6 or ASTM C-33; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded within the following limits:

SAND	
Sieve Sizes	Percent Passing
No. 4	90-100
No. 200	<5

PART 3 - EXECUTION

3.1 SITE PREPARATION

- A. Call OUPS (Ohio Utility Protection Services) before starting any Work.
- B. Clearing: Clear within limits of earthwork operations as shown. Work includes removal of trees, shrubs, fences, foundations, incidental structures, paving, debris, trash, and other obstructions. Remove materials from Cemetery Property.
- C. Grubbing: Remove stumps and roots 2 inch and larger diameter. Undisturbed sound stumps, roots up to 2 inch diameter, and nonperishable solid objects a minimum of 3 feet below subgrade or finished embankment may be left. Do not leave material within burial profile up to 8 feet below finished grade.
- D. Trees and Shrubs: Trees and shrubs, not shown for removal, may be removed from areas within 15 feet of new construction and 7.5 feet of utility lines when removal is approved in advance by COTR. Remove

materials from Cemetery Property. Trees and shrubs, shown to be transplanted, shall be dug with a ball of earth and burlapped in accordance with latest issue of, "American Standard for Nursery Stock" of the American Association of Nurserymen, Inc. Transplant trees and shrubs to a permanent or temporary position within two hours after digging. Maintain trees and shrubs held in temporary locations by watering as necessary and feeding semiannually with liquid fertilizer with a minimum analysis of 5 percent nitrogen, 10 percent phosphorus, and 5 percent potash. Maintain plants moved to permanent positions as specified for plants in temporary locations until conclusion of contract. Box, and otherwise protect from damage, existing trees and shrubs which are not shown to be removed in construction area.

Immediately repair damage to existing trees and shrubs by trimming, cleaning and painting damaged areas, including roots, in accordance with standard industry horticultural practice for the geographic area and plant species. Do not store building materials closer to trees and shrubs, which are to remain, than farthest extension of their limbs.

- E. Stripping Topsoil: Strip topsoil from within limits of earthwork operations as specified. Topsoil shall be a fertile, friable, natural topsoil of loamy character and characteristic of locality. Topsoil shall be capable of growing healthy horticultural crops of grasses. Stockpile topsoil and protect as directed by COTR. Eliminate foreign materials, such as weeds, roots, stones, subsoil, frozen clods, and similar foreign materials larger than 1/2 cubic foot in volume, from soil as it is stockpiled. Retain topsoil on station. Remove foreign materials larger than 2 inches in any dimension from topsoil used in final grading. Topsoil work, such as stripping, stockpiling, and similar topsoil work shall not, under any circumstances, be carried out when soil is wet so that the composition of the soil will be destroyed.
1. Test the soil for chemicals, pesticides and fertilizers to verify suitability for use as topsoil in the Cemetery where new lawn areas are to be established.

- F. Stockpile materials on site at locations designated by COTR or as indicated on the Construction Documents. Stockpile in sufficient quantities to meet Project schedule and requirements. Separate differing materials with dividers or stockpile apart to prevent mixing. Direct surface water away from stockpile site to prevent erosion or

deterioration of materials. Material shall be stockpiled on impervious material and covered over with same material, until disposal. Place erosion control measures as required by the Storm Water Pollution Prevention Plan. Remove stockpile at end of construction or when no longer needed, whichever is earlier; leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

G. Lines and Grades: Registered Professional Land Surveyor or Registered Civil Engineer, specified in Section 01 00 00, GENERAL REQUIREMENTS, shall establish lines and grades.

1. Grades shall conform to elevations indicated on plans within the tolerances herein specified. Generally grades shall be established to provide a smooth surface, free from irregular surface changes. Grading shall comply with compaction requirements and grade cross sections, lines, and elevations indicated. Where spot grades are indicated the grade shall be established based on interpolation of the elevations between the spot grades while maintaining appropriate transition at structures and paving and uninterrupted drainage flow into inlets.

2. Locations of existing elevations indicated on plans, except spot elevations, are approximate from a site survey that measured spot elevations and subsequently generated existing contours and spot elevations. Proposed spot elevations and contour lines have been developed utilizing the existing conditions survey and developed contour lines and may be approximate. Contractor is responsible to notify COTR of any differences between existing elevations shown on plans and those encountered on site by Surveyor described above. Notify COTR of any differences between existing or constructed grades, as compared to those shown on the plans.

3. Subsequent to establishment of lines and grades, Contractor will be responsible for any additional cut and/or fill required to ensure that site is graded to conform to elevations indicated on plans.

4. Finish grading is specified in Section 32 90 00, PLANTING.

H. Disposal: All materials removed from the property shall be disposed of at a legally approved site, for the specific materials, and all removals shall be in accordance with all applicable Federal, State and local regulations. No burning of materials is permitted onsite.

3.2 EXCAVATION

- A. Shoring, Sheet piling and Bracing: Shore, brace, or slope, its angle of repose or to an angle considered acceptable by the local OSHA and Authority, banks of excavations to protect workmen, banks, adjacent paving, structures, and utilities.
 - 1. Design of the temporary support of excavation system is the responsibility of the Contractor.
 - 2. Construction of the support of excavation system shall not interfere with the permanent structure and may begin only after a review by the COTR.
 - 3. Extend shoring and bracing to a minimum of 5 feet below the bottom of excavation. Shore excavations that are carried below elevations of adjacent existing foundations.
- B. Excavation Drainage: Operate pumping equipment, and/or provide other materials, means and equipment as required to keep excavation free of water and subgrade dry, firm, and undisturbed until approval of permanent Work has been received from COTR. Approval by the COTR is also required before placement of the permanent Work on all subgrades.
- C. Subgrade Protection: Protect subgrades from softening, undermining, washout, or damage by rain or water accumulation. Reroute surface water runoff from excavated areas and not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches. When subgrade for foundations has been disturbed by water, remove disturbed material to firm undisturbed material after water is brought under control. Replace disturbed subgrade in trenches with concrete or material approved by the COTR.
- D. Blasting: Not permitted.
- E. Proofrolling:
 - 1. After rough grade has been established in cut areas and prior to placement of fill in fill areas under building and pavements, proofroll exposed subgrade with a fully loaded dump truck to check for pockets of soft material.
 - 2. Proofrolling shall consist of at least two complete passes with one pass being in a direction perpendicular to preceding one. Remove any areas that deflect, rut, or pump excessively during proof rolling, or that fail to consolidate after successive passes to suitable

soils and replaced with compacted fill. Maintain subgrade until succeeding operation has been accomplished.

F. Trench Earthwork:

1. Utility trenches (except sanitary and storm sewer):
 - a. Excavate to a width as necessary for sheeting and bracing and proper performance of the Work.
 - b. Grade bottom of trenches with bell holes scooped out to provide a uniform bearing.
 - c. Support piping on undisturbed earth unless a mechanical support is shown.
 - d. Length of open trench in advance of pipe being laid shall not be greater than is authorized by COTR.
2. Sanitary and storm sewer trenches:
 - a. Trench width shall be as indicated on Construction Drawings. When not indicated, trench width shall not exceed pipe diameter plus 18 inches.
 - b. Bed bottom quadrant of pipe granular fill.
 - 1) Bell holes shall be no larger than necessary for jointing.
Granular Fill: Depth of fill shall be 12 inches below pipe to 12 inches above top of pipe or as indicated on the Construction Drawings. Place and tamp fill material by hand.
 - c. Place and compact as specified remainder of backfill using acceptable excavated materials. Do not use unsuitable materials.
 - d. Use granular fill for bedding where rock or rocky materials are excavated.

- G. Site Earthwork: Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation. Excavation shall be accomplished as required by drawings and specifications. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, complying with OSHA requirements, and for inspections.

1. Remove subgrade materials that are determined by COTR as unsuitable, and replace with acceptable material. If there is a question as to whether material is unsuitable or not, the Contractor shall obtain samples of the material, under the direction of the COTR, and the materials shall be examined by an independent testing laboratory for soil classification to determine whether it is unsuitable or not. When unsuitable material is encountered and removed, Contract price and time will be adjusted in accordance with Articles, DIFFERING SITE CONDITIONS, CHANGES and CHANGES-SUPPLEMENT of the GENERAL REQUIREMENTS as applicable. Adjustments to be based on volume in cut section only.

H. Site Grading:

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
3. Slope grades to direct water away from buildings and to prevent ponds from forming where not designed. Finish subgrades to required elevations within the following tolerances:
 - a. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - b. Walks: Plus or minus 1/2 inch.
 - c. Pavements: Plus or minus 1 inch.

3.3 FILLING AND BACKFILLING

- A. General: Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation. For fill and backfill, use excavated materials and borrow meeting the criteria specified herein, as applicable. Borrow will be supplied at no additional cost to the Government. Do not use unsuitable excavated materials. Do not backfill until foundation walls have been completed above grade and adequately braced, waterproofing or dampproofing applied, foundation drainage, and pipes coming in contact with backfill have been installed and Work inspected and approved by COTR.
- B. Placing: Place materials in horizontal layers not exceeding 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers and then compacted. Place backfill and fill materials

evenly on all sides of structures to required elevations, and uniformly along the full length of each structure. Place no material on surfaces that are muddy, frozen, or contain frost.

- C. Compaction: Compact with approved tamping rollers, sheepsfoot rollers, pneumatic tired rollers, steel wheeled rollers, vibrator compactors, or other approved equipment (hand or mechanized) well suited to soil being compacted. Moisten or aerate material as necessary to provide moisture content that will readily facilitate obtaining specified compaction with equipment used. Compact soil to not less than the following percentages of maximum dry density, according to ASTM D698 or ASTM D1557 as specified below:

1. Fills, Embankments, and Backfill

- a. Under proposed paved areas, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material in accordance with ASTM D698, 95 percent.
- b. Curbs, curbs and gutters, ASTM D698, 95 percent.
- c. Under Sidewalks, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material in accordance with ASTM D698, 95 percent.
- d. Landscaped areas, top 16 inches, ASTM D698, 85 percent.
- e. Landscaped areas, below 16 inches of finished grade, ASTM D698, 90 percent.

2. Natural Ground (Cut or Existing)

- a. Under paved areas, top 6 inches, ASTM D698, 95 percent.
- b. Curbs, curbs and gutters, top 6 inches, ASTM D698, 95 percent.
- c. Under sidewalks, top 6 inches, ASTM D698, 95 percent.

3.4 GRADING

- A. General: Uniformly grade the areas within the limits of this Section, including adjacent transition areas. Smooth the finished surface within specified tolerance. Provide uniform levels or slopes between points where elevations are indicated, or between such points and existing finished grades. Provide a smooth transition between abrupt changes in slope.
- B. Cut rough or sloping rock to level beds for foundations. In pipe spaces or other unfinished areas, fill low spots and level off with coarse sand or fine gravel.

- C. Finish grade earth floors in pipe basements as shown to a level, uniform slope and leave clean.
- D. Finished grade shall be at least 6 inches below bottom line of window or other building wall openings unless greater depth is shown.
- E. Place crushed stone or gravel fill under concrete slabs on grade, tamped, and leveled. Thickness of fill shall be 6 inches unless otherwise shown.
- F. Finish subgrade in a condition acceptable to COTR at least one day in advance of paving operations. Maintain finished subgrade in a smooth and compacted condition until succeeding operation has been accomplished. Scarify, compact, and grade subgrade prior to further construction when approved compacted subgrade is disturbed by Contractor's subsequent operations or adverse weather.
- G. Grading for Paved Areas: Provide final grades for both subgrade and base course to +/- 0.25 inches of indicated grades.

3.5 DISPOSAL OF UNSUITABLE AND EXCESS EXCAVATED MATERIAL

- A. Remove surplus waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Cemetery property.
- B. Transport surplus satisfactory soil to designated storage areas on Cemetery property. Stockpile or spread soil as directed by COTR.
- C. Place excess excavated materials suitable for fill and/or backfill on site where directed during construction operations.
- D. Remove from site and dispose of any excess excavated materials after all fill and backfill operations have been completed.
- E. Segregate all excavated contaminated soil designated by the COTR from all other excavated soils, and stockpile on site on two 6 mil polyethylene sheets with a polyethylene cover. A designated area shall be selected for this purpose. Dispose of excavated contaminated material in accordance with State and Local requirements.

3.6 CLEAN UP

- A. Upon completion of earthwork operations, clean areas within Contract limits, remove tools, and equipment. Provide site clear, clean, free of debris, and suitable for subsequent construction operations. Remove all debris, rubbish, and excess material from Cemetery Property.

- - - END OF SECTION 31 20 00 - - -