TECHNICAL SPECIFICATION

FOR

WEST SIDE COASTAL PLAN

VETERANS MEMORIAL PARK

PHASE I - CONSTRUCTION

CHRISTOPHER WZACNY & ASSOCIATES-DETROIT, INC.

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The following documents are a part of these Specifications as if specifically included herein:

1. Equipment used on the site will be limited to areas which are specifically designated by the Architect.

2. It will be the responsibility of the contractor to protect all existing trees and grass areas from damage during construction and to replace any damaged areas to the satisfaction of the Architect at no additional cost to the Owner.

3. Provide at least one person who shall be present at all times during the various phases of the construction who is completely familiar with all aspects of the Work.

4. In addition to complying with all federal, state and local rules and regulations, comply with the requirements of those insurance carriers providing coverage for this work.

5. No on-site burning or use of explosives will be allowed.

6. Barricades will be used to protect areas from damage during construction and to provide pedestrian protection.

7. Schedule all Work in a careful manner with all necessary consideration for neighbors and the public, and avoid interference with the use of adjacent properties and facilities.

8. Allowance (Light Fixtures):

   Include an allowance of $6,000.00 (Six Thousand Dollars & No Cents) for pedestrian light poles, fixtures, bases, anchor bolts - furnished and installed.

9. Verify all existing conditions in field.

SECTION 02100 - DEMOLITION, CLEARING AND GRUBBING

PART 1.00 - GENERAL

1.01 DESCRIPTION:

A. Work included but not necessarily limited to:

1. Removal and disposal of existing parking areas and curbs.

2. Removal and disposal of existing hockey rink, wood walls, etc.

3. Removal of existing light fixtures, poles, and underground electrical.

4. Removal of trash, roots, and other extraneous material encountered.

5. Protection of any existing underground utilities, valve boxes, utility valves, etc., which are to remain.

6. Excavation and removal of existing grass areas where required for the installation of new concrete slabs and berms.

7. Removal of all debris and excavated materials.

8. Protection of existing trees and their root systems.

1.02 JOB CONDITIONS:

A. Dust control:

Use all means necessary to prevent the spread of dust during performance of the Work of this Section; thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other Work on the site.

B. Burning:

On-site burning will not be permitted.

C. Protection:

Use all means necessary to protect existing objects designated to remain and, in the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

1.03 TEMPORARY BARRICADES:

Unless otherwise specifically approved by the Architect, use only new and solid lumber of Utility Grade or better to construct temporary barricades around the objects designated to remain.

1.04 EXPLOSIVES:

Do not use explosives on this Work.

1.05 PREPARATION:

A. Notification:

Notify the Architect and utility company's (MISS DIG) at least two (2) full working days prior to commencing the Work of this Section.

B. Site inspection:

1. Prior to all Work of this Section, carefully inspect the entire site and all objects designated to be removed and to be preserved.

2. Locate all existing utility lines and determine all requirements for disconnecting and capping.

3. Locate all existing active utility lines traversing the site and determine the requirements for their protection.

C. Clarification:

1. The Drawings do not purport to show all objects existing on the site.

2. Before commencing the Work of this Section, verify with the Architect all objects to be removed and all objects to be preserved.

D. Protection of utilities:

Preserve in operating condition all active utilities traversing the site and designated to remain.

1.06 DEMOLITION:

A. Concrete:

1. Remove all concrete or asphaltic concrete sidewalks, curbs and roadways as shown on the Drawings.

a. Saw cut all edges where material to be removed is adjacent to existing material to remain, leaving neat, straight edges, free from cracks and spalling.
b. Patch any areas damaged by the demolition or removal of concrete with material equal to or of higher quality than which is being matched.
c. Care shall be taken when removing concrete adjacent to building walls, underground utilities, roadways, and foundations to protect them from damage.

B. Turn over to the Owner those items removed which they deem to be salvageable.

C. Grubbing:

1. Remove all surface rocks and all stumps, roots, and other vegetation within the limits of construction as indicated by clearing limits shown on the Drawings.

2. Do not leave any root greater than three inches (3") in diameter in the ground except as specifically approved by the Architect.

1.07 CONSTRUCTION OF BARRICADES:

A. Layout:

1. At all unprotected holes deeper than six inches (6").

2. Make barricades at least three feet (3') high, consisting of two inch (2") by four inch (4") or larger posts set at least 18 inches into the ground at not more than six feet (6') on centers, joined at the top by one inch (1") by six inch (6") or larger boards firmly nailed to the posts.

B. Protection:

Take special care to protect utility valves and lines.

C. Removal of debris:

Trash, roots, and other extraneous materials within the Work area shall be removed as required to meet the approval of the Architect. All materials resulting from the clearing and grubbing operations shall be removed promptly from the site to a solid waste disposal site properly licensed under the latest revision, Act 87 of the Public Acts of 1965 of the State of Michigan. No open burning of debris or rubbish will be permitted at the site.

SECTION 02200 - EXCAVATING, FILLING, AND GRADING

PART 1.00 - GENERAL

1.01 DESCRIPTION:

Work included but not necessarily limited to:

1. Excavation for footings and foundations.
2. Filling and backfilling to attain proper grades.
3. Trenching and backfilling.
4. Rough and finish grading.

1.02 FILL MATERIAL:

A. Approval required:

1. All fill material shall be subject to approval of the Architect.
2. All backfill material shall be free from large or frozen lumps, blue clay, grey clay, sod, wood, debris, and other extraneous material. Any material necessary to complete the backfill as shown on the Drawings shall be furnished by the contractor. Backfill under structures, gravel, stone, or paved roads shall be granular material, conforming to M.D.S.H. & T. Class 1 requirements.

B. Notification:

For approval of imported fill material, notify the Architect at least four (4) working days in advance of intention to import material, designate the proposed borrow area, and permit the Architect to sample as necessary from the borrow area for the purpose of making acceptance tests to prove the quality of the material.

1.03 ON-SITE FILL MATERIAL:

All on-site material shall be soil or soil-rock mixture which is free from organic matter and other deleterious substances; it shall contain no rocks or lumps over six (6) inches in greatest dimension and not more than 15% of the rocks or lumps shall be larger than 2-1/2 inches in greatest dimension.

1.04 IMPORTED FILL MATERIAL:

All imported fill material shall meet the requirements of Article 1.03, above, and shall, in addition, be predominantly granular with a maximum particle size of two (2) inches and a plasticity index of 12 or less.

1.05 GRANULAR FILL:

All granular fill shall be sand.

1.06 OTHER MATERIALS:

All other materials, not specifically described but required for proper completion of the Work of this Section, shall be as selected by the contractor subject to the approval of the Architect.

1.07 BACKFILLING PRIOR TO APPROVALS:

1. Do not allow or cause any of the Work performed or installed to be covered up or enclosed by Work of this Section prior to all required inspections, tests, and approvals.

2. Should any of the Work be so enclosed or covered up before it has been approved, uncover all such Work at no additional cost to the Owner.

3. After the Work has been completely tested, inspected, and approved, make all repairs and replacements necessary to restore the Work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

1.08 EXISTING UTILITIES:

Prior to excavation, locate existing utilities and provide protection as required to insure their continual use.

1.09 BACKFILL:

It is the intent of these Specifications that backfill shall be so placed and consolidated that no appreciable subsequent settlement will occur.

Backfill shall be placed in uniform layers not exceeding eight (8) inches in depth and each layer shall be thoroughly compacted by tamping, sheeps-foot-roller, or by other effective means approved by the Architect. All backfill shall be compacted to at least 95% of maximum density, at optimum moisture content as specified in AASHO T-180 or Michigan Cone Density, whichever is greater. Compaction by flooding will not be permitted.

1.10 FINISH ELEVATIONS AND LINES:

For setting and establishing finish elevations and lines, secure the services of a registered civil engineer acceptable to the Architect; carefully preserve all data and all monuments set by the civil engineer and, if displaced or lost, immediately replace to the approval of the Architect and at no additional cost to the Owner.

1.11 TRENCHES:

Where elevations are not shown on the Drawings, trench to sufficient depth to give a minimum of 18 inches of fill above the top of the pipe from the adjacent finished grade.

1.12 SUBGRADE:

The subgrade for all structures shall be prepared so as to have as near as practicable a uniform density throughout the entire area. The subgrade shall be compacted to 95% maximum density at optimum moisture content by rolling or by other approved methods. After being prepared, the subgrade shall be maintained until concrete for the structures has been placed thereon.

Soil found to be unstable in the subgrade shall, when required to meet the Architect's approval, be excavated to firm soil and replaced with granular backfill thoroughly compacted.

1.13 FILL AND COMPACTION:

A. Filling:

After subgrade compaction has been approved by the Architect, spread approved fill material in layers not exceeding eight (8) inches in uncompacted thickness.

B. Moisture-conditioning:

Water or aerate the fill material as necessary and thoroughly mix to obtain a moisture content which will permit proper compaction.

C. Compaction, general:

Compact each soil layer to at least the specified minimum degree; repeat compaction process until plan grade is attained.

D. Degree of compaction requirements:

1. Structural fill:

Densify all structural fill, including recompacted existing fill and backfill, to a minimum degree of compaction of 95%.

2. Concrete (pavement areas):

   Compact the upper six (6) inches of fill in pavement areas to a minimum degree of compaction of 95%.

3. Trenches in building and pavement areas:

   a. Compact cohesive backfill material to a minimum degree of compaction of 90%.
   b. Compact the upper six (6) inches of backfill in pavement areas to a minimum degree of compaction of 95%.

E. Unfavorable weather:

1. Do not place, spread, or roll any fill material during unfavorable weather conditions.

2. Do not resume operations until moisture content and fill density are satisfactory to the Architect.

F. Flooding:

Provide berms or channels to prevent flooding of subgrade; promptly remove all water collecting in depressions.

G. Softened subgrade:

Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and recompact as specified for fill and compaction below.

H. Dewatering:

1. Provide and maintain at all times during construction, ample means and devices with which to promptly remove and dispose of all water from every source entering the excavations or other parts of the Work.

2. Dewater by means which will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations.

1.14 TRENCHES/BEDDING FOR PIPES:

A. General:

Place the specified cohesionless material in the trench, simultaneously on each side of the pipe for the full width of the trench, to a maximum depth of three (3) feet and a minimum depth of one (1) foot above the outside diameter of the pipe barrel.

B. Densification:

1. Densify the bedding material after placing by thoroughly saturating with water and vibrating with jetting equipment and a concrete vibrator stinger at maximum intervals of two (2) feet along both sides of the pipe.

2. Take special care to provide firm bedding support on the underside of the pipe and fittings for the full length of the pipe.

C. Alternate bedding:

Other bedding procedures and materials may be used if prior written approval has been obtained from the Architect.

1.15 PLACING GRANULAR FILL:

Carefully place the granular fill in areas as detailed and shown in the Drawings or specified. Uniformly attaining the thickness detailed and providing all required transition planes.

1.16 GRADING:

A. General:

Except as otherwise directed by the Architect, perform all rough and finish grading to attain the elevations indicated on the Drawings.

B. Rough grading:

1. Grading tolerances:

a. Rough grade -

Concrete walks	±0.1 foot
Landscape areas	±0.2 foot

b. Finish grade -

Gravel under concrete slabs	±0.1 foot
Landscape areas	±0.1 foot

C. Grade elevations:

Rough grade shall bear the following relationships to finish grades indicated on the Drawings:

1. Sod areas - allow for 6" of topsoil

2. Concrete slabs - 10"

D. Treatment after completion of grading:

1. After grading is completed and the Architect has finished his inspection, permit no further excavation, filling, or grading except with the approval of and inspection of the Architect.

2. Use all means necessary to prevent the erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

SECTION 02800 - PLANTING/SODDING

PART 1.00 - GENERAL

1.01 DESCRIPTION:

A. Work included:

1. Planting required for this Work is indicated on the Drawings and, in general, includes planting and sodding and maintenance throughout the Work.

1.02 QUALITY ASSURANCE:

A. Standards:

1. All plants and planting material shall meet or exceed the specifications of federal, state and county laws requiring inspection for plant disease and insect control.

2. Quality and size shall conform with the current edition of "Horticultural Standards" for number one grade nursery stock as adopted by the American Association of Nurserymen.

3. All plants shall be true to name and one of each bundle or lot shall be tagged with the name and size of the plants in accordance with the standards of practice of the American Association of Nurserymen. In all cases, botanical names shall take precedence over common names.

1.03 SUBMITTALS:

A. Materials list:

Within twenty-one (21) days after award of Contract, and before any planting materials are delivered to the jobsite, submit to the Architect a complete list of all plants and other items proposed to be installed.

1. Include complete data on source, size and quality, to include photographs or site visit to nursery to see "specimen" quality materials.

2. Demonstrate complete conformance with the requirements of this Section.

3. This shall in no way be construed as permitting substitution for specific items described in the Drawings or these Specifications unless the substitution has been approved in advance by the Architect and in writing.

B. Manual:

Upon completion of the installation, deliver to the Owner and Architect one (1) copy each of a manual for the care and maintenance of all materials installed. Specify watering, pruning, fertilizing, most common insects/diseases.

C. Certificates:

1. All certificates required by law shall accompany shipments.

2. Upon completion of the installation, deliver all certificates to the Architect.

1.04 PLANTING MIXTURE:

A. Planting mixture shall be the proposed soil which is used in tamping around the balls and roots in the process of planting. It shall be prepared on the site by mixing four (4) parts topsoil to one (1) part peat and one (1) part clean masons sand, adding five (5) pounds of superphosphate to each cubic yard of the mixture. This mixing shall be done by mechanical means subject to approval of the Architect. For ericaceous plants use an acidifying fertilizer approved by the Architect instead of superphosphate.

B. Peat:

Peat shall be granulated raw peat or baled peat, containing not more than 9% mineral on a dry basis. For ericaceous plants baled peat with a pH of 4.0 shall be used.

C. Superphosphate:

Superphosphate shall contain 20% of phosphoric acid.

D. Acid rich fertilizer:

To have a pH of 5.5 to 6.0.

1.05 SPREADING TOPSOIL:

A. Topsoil, as provided by the contractor, shall meet the following requirements:

1. Topsoil shall be fertile, friable and representative of productive soil, capable of sustaining vigorous plant growth and shall be dark organic natural surface soil, exclusive of peat, muck and/or dark brown or black loam, clay loam, silt loam or sandy loam, to a depth of 6".

2. Acidity range shall be between pH 5.0 and 7.5.

1.06 FERTILIZER:

A. Fertilizer - shall be commercial, meeting the following chemical analysis:

1. 20% nitrogen
10% phosphorus
10% potash

2. Fertilizer shall conform to applicable fertilizing standards. It shall be delivered to the site in unopened containers which bear the manufacturers statement of chemical analysis. Storage shall be in weatherproof locations to insure dryness and effectiveness.

1.07 PLANT MATERIALS:

A. Plants shall be sound, healthy, vigorous, free from plant diseases and insects or their eggs, and shall have normal, healthy root systems, of the size and type as indicated on the Drawings.

B. Caliper measurement shall be taken 12" above the ground level.

C. All other measurements such as number of canes, ball sizes, quality designations, etc., shall be in accordance with the latest edition of "Horticultural Standards of the American Association of Nurserymen, Inc.".

D. Trees planted in rows shall be uniform in size and shape.

E. The contractor shall furnish the Architect with complete information as to location of the plant materials which he proposes to use for the Work, and all materials shall be subject to the approval of the Architect prior to installation.

1.08 TREE SUPPORTS:

A. Tree stakes shall be sound wood of nominal 2" x 4" stock, 30" in length.

B. Guying cables shall be galvanized, seven strands woven into a single cable, 1/8" diameter.

C. Turnbuckles shall be zinc coated.

D. Hose used for covering wire shall be at least 1/2" diameter reinforced rubber hose.

1.09 TREE WRAPPING:

Tree wrapping will be an approved two (2) ply kraft tree wrapping or approved substitute.

1.10 OTHER MATERIALS:

All other materials, not specifically described but required for a complete and proper planting installation, shall be as selected by the contractor subject to the approval of the Architect.

1.11 SURFACE CONDITIONS:

A. Inspection:

1. Prior to all Work of this Section, carefully inspect the installed Work of all other trades and verify that all such Work is complete to the point where this installation may properly commence.

2. Verify that planting may be completed in accordance with the original design and the referenced standards.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Architect.

2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

1.12 SPREADING OF TOPSOIL:

A. Finish grading:

All finish grading will be performed under SECTION 02200 of these Specifications to the tolerances described therein.

B. Fine grading:

Upon completion of finish grading, perform all fine grading required in planting and sod areas, using topsoil as specified, to a minimum of 6".

1.13 PLANTING TREES AND SHRUBS:

A. General:

1. Plant nursery stock immediately upon delivery to the site and approval by the Architect except that, if this is not feasible, heel-in all bare-root and balled material with damp soil and protect from sun and wind.

2. Regularly water all nursery stock in containers and place them in a cool area protected from sun and drying winds.

3. No balled and burlapped plant shall be planted if the ball is cracked or broken, unless approved by the Architect.

4. Metal and tar paper containers shall be removed from all container grown plant material. Biodegradable paper-mache containers may be left in place, but additional holes shall be punched through the sides to provide adequate drainage. The upper collars of such containers should be removed such that they do not protrude above grade. Burlap should not be removed from balled and burlapped plants, but care should be taken to remove plastic type ropes from the trunks to prevent future girdling.

B. Excavation:

1. Dig all holes of diameter and depth as shown and detailed in the Drawings. In no case shall the pit bottom be above that of the concrete planter bottom.

2. The contractor shall be responsible for planting at correct grades and alignment.

3. Subsoil dug from the plant pits shall be disposed of by the contractor.

4. In the event that existing subsoil is found to contain heavy clay, notify the Architect.

C. Planting:

1. Scarify bottom of tree pit to minimum depth of 12".

2. On the bottom of all tree pits or trenches shall be placed a layer of planting mixture at least six inches (6") thick and as much more as is necessary so that the ball or roots will rest thereon when the plant is set to the required grade. All plants shall be so set that when settled, they will bear the same relation to the finished grade as they bore to the natural grades before being transplanted. Each plant shall be set in planting mixture in the center of the pit or trench. The contractor shall make adjustments in the location of plants where necessary as directed by the Architect.

3. Fill holes with planting mixture as specified.

4. Fill to proper height to receive the plant and thoroughly tamp the mixture before setting the plant.

5. Set plant in upright position in the center of the hole and compact the planting mixture around the ball or roots.

6. Thoroughly water each plant when the hole is 2/3 filled.

7. After watering, tamp the soil in place until the surface of the backfill is level with the surrounding area and the crown of the plant is at the finished grade of the surrounding area, or as detailed in the Drawings.

D. Staking:

Stake all trees with a minimum of three (3) stakes per tree as shown and detailed in the Drawings.

E. Mulching:

All planting shall be mulched with a 3" cover of woodchips. Plant rows and plant beds shall be completely covered with mulch to a depth of 4" unless otherwise specified on the Drawings. Ground cover shall be mulched with a 2" cover of peat.

F. Protection:

Contractor shall protect all plants and lawn from damage at all times. If plants or lawns are damaged, they shall be replaced or treated as required by the Architect.

G. Maintenance:

1. Maintenance of trees, shrubs and evergreens by the contractor consists of pruning, keeping guys taut and trees erect, raising tree balls which settle below detailed height, for a time of one (1) year from the date of initial acceptance by the Owner.

2. General maintenance, including weekly irrigation throughout the growing season, shall be accomplished by the Owner's personnel following the initial maintenance requirements as noted above and in accordance with the maintenance manual provided by the contractor.

1.14 GUARANTEE:

A. The contractor agrees to guarantee all plants and sod for a period of one (1) year from time of initial acceptance by Owner.

B. The contractor shall not assume responsibility for damage or loss of plants caused by fire, flood, lightening, storms, freezing rains, winds over 60 miles per hour, or vandalism.

C. At the end of the guarantee period final acceptance will be made by the Owner provided all requirements of the Specifications have been fulfilled. The contractor shall remove all guying, staking, wrapping, and saucers from the site.

D. Only one (1) replacement of any plant material is required.

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1.00 - GENERAL

1.01 DESCRIPTION:

A. Provide all labor, materials and equipment necessary for cast-in-place concrete which is required for this Work, but not necessarily limited to:

1. Footings and foundations
2. Formwork
3. Concrete reinforcing
4. Flat work
5. Curbs
6. Patching of existing street pavement as required due to existing curb removal

1.02 CONCRETE:

A. General:

1. All concrete, unless otherwise specifically permitted by the Architect, shall be transit-mixed in accordance with ASTM C-94.

B. Concrete:

1. All concrete shall have the following minimum compressive strength at 28 days and shall be proportioned within the following limits:

Min psi @ 28 days:	Max size aggregate:	Min sacks of cement/cu yd:	Max slump in inches:
3500	1-1/2 inch	6	4

C. Admixtures:

1. Air entraining admixture shall be 5.5% ±1.5 (Air) and conform to ASTM C260.
2. Acceptable admixture manufacturers: W.R. Grace (Darex-Horn), Master Builders Co., Sika Chemical Corp., or approved substitutes.

3. The use of calcium chloride or flyash is specifically prohibited.

4. No admixtures other than the air entraining agent shall be added without the written consent of the Architect.

D. Joints:

Expansion joints shall consist of asphalic felt, 1/2" thick, with a width equal to the walk thickness plus 1/2" and a length equal to the width of the walk.

E. Reinforcing:

1. Wire fabric: Shall be welded, cold drawn steel wire fabric conforming to current ASTM A185 in flat sheets. Fabric shall be 6 x 6 #10/10 unless otherwise shown.

2. Deformed Billet: Steel bars shall have a minimum yield point of 60,000 psi, and conform to ASTM A 615, Grade 60.

F. Water:

All water shall be potable, clean and free from deleterious matter.

G. Curing compound:

Exterior liquid curing compound shall conform to ASTM C309, of the white pigmented type, liquid membrane - forming curing compound such as W.R. Grace & Co., Code 2803-A, W.R. Meadows, Inc., WP-40 or approved substitute.

1.03 PREPARATION:

A. Notification:

Notify the Architect at least 48 hours before placing concrete.

1.04 PLACING CONCRETE:

A. Compaction:

1. Thoroughly consolidate all concrete by suitable means during placement, working it around all embedded fixtures and into corners of forms.

2. During placement, thoroughly compact the concrete by hand tamping and by mechanical vibration.

B. Acceptability:

Do not use retempered concrete or concrete that has been contaminated by foreign materials.

1.05 TEMPERATURE:

A. Placing temperature: When the temperature of the surrounding air is expected to be below 35 degrees F., during concrete placing or within 24 hours thereafter, the temperature of the plastic concrete, as placed, shall be no lower than 55 degrees F. for sections less than 12 inches in any dimension nor 50 degrees F. for any other sections. The temperature of the concrete as placed shall not be so high as to cause difficulty from loss of slump, flash set, or cold joints, and should not exceed 90 degrees F. When the temperature of the concrete exceeds 90 degrees F., precautionary measures approved by the Architect shall be put into effect. When the temperature of steel forms and reinforcement is greater than 120 degrees F., such steel surfaces shall be sprayed with water just prior to placing the concrete.

1.06 LEVELING AND FINISHING:

A. Edging and jointing:

1. Cut all concrete from forms to a depth of 1 inch.

2. All concrete edges shall be edged with a 1/4" radius.

3. All jointing will be done with a double edged jointing tool having 1/4" radius.

B. Broom finish:

1. Immediately after the float finish, the entire surface shall be broom finished with a broom specially made for texturing concrete.

2. The roughness of the broom finish shall be approved by the Architect.

1.07 CURING:

A. General:

Freshly placed concrete shall be protected as required to maintain the temperature of a concrete as not less than 40 degrees F. nor more than 80 degrees F. and in a moist condition continuously for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Changes in temperature of the concrete during curing shall be as uniform as possible and shall not exceed 5 degrees F. in any one hour nor 50 degrees F. in any 24 hour period.

B. Curing formed surfaces:

1. While forms are in place, curing of formed surfaces shall be accomplished by moist curing.

2. If forms are removed before the end of the curing period, final curing of concrete surfaces shall be accomplished by any of the curing methods specified above.

C. Curing slabs and other flat surfaces:

1. Curing shall start as soon as the free water has disappeared from the surface of the concrete after finishing.

2. Curing of concrete apron, walks, and other exterior concrete surfaces shall be accomplished by membrane curing using exterior liquid curing compound.

1.08 WEATHER PROTECTION OF CONCRETE DURING CURING:

A. Cold weather protection:

When the temperature of the atmosphere is 35 degrees F. and below, the concrete shall be protected by heating, insulation covering, housing of combination thereof, as required to maintain the temperature of the concrete at or above 50 degrees F., and in a moist condition continuously for the concrete curing period. Cold weather protection shall meet the requirements of ACI Standard 306.

B. Hot weather protection:

When the temperature of the atmosphere is 90 degrees F. and above, or during other climatic conditions which will cause too rapid drying of the concrete, the concrete shall be protected by windbreaks, shading, fog spraying, light colored moisture-retaining covering, or a combination thereof as required to maintain the temperature of the concrete below 80 degrees F. and in a moist condition continuously for the concrete curing period. Hot weather protection shall meet the requirements of ACI Standard 305.

1.09 DEFECTIVE WORK:

A. Inspection/patching:

1. Immediately after forms and curing membranes have been removed, inspect all concrete surfaces and patch all pour joints, voids, rock pockets, form tie holes, and other imperfections before the concrete is thoroughly dry, in a manner acceptable to the Architect.

2. Do not patch until concrete has been inspected by the Architect.

B. Major defective areas:

If the defects are serious or affect the strength of the structure, or if patching does not satisfactorily restore the quality and appearance of the surface, the Architect may require the concrete to be removed and replaced complete in accordance with the provisions of this Section, all at no additional cost to the Owner.

SECTION 05500 - MISCELLANEOUS METAL

PART 1.00 - GENERAL

1.01 DESCRIPTION:

A. Work included in this Section consists of furnishing all labor, materials, equipment and incidentals required for complete installation of miscellaneous metal work mentioned or scheduled on Drawings and/or herein, but not limited to:

1. Metal gratings.

2. Manhole covers.

1.02 SUBMITTALS:

A. Shop drawings:

1. Within 21 days after award of Contract, and before any miscellaneous metal is delivered to the job site, submit Shop Drawings to the Architect for approval.

2. Show all locations, markings, quantities, materials, sizes, and shapes and indicate all methods of connecting, anchoring, fastening, bracing, and attaching to the Work of other trades.

1.03 MATERIALS:

A. Manhole covers:

Shall be med. duty, net clear opening of 24", for the intended use, as manufactured by Neenah Foundry Company (#R-2510 & R-1690), or approved substitute.

B. Miscellaneous angles and sleeves (where required):

Provide miscellaneous steel framing, supports, sleeves, as required to complete Work.

1.04 OTHER MATERIALS:

All items not specifically described shall be subject to approval by the Architect.

1.00 GENERAL:

All work shall comply with Local, State and National Electrical Codes.

2.00 PERMITS:

A. All necessary permits, electrical and otherwise, shall be obtained and paid for by the electrical contractor or his subcontractor, as required.

B. It is the responsibility of the electrical contractor to contact all Governmental Agencies involved for permission to begin work, whether permits are required or not.

3.00 SAFETY REQUIREMENTS:

A. Barricades shall line both sides of open trenches. Safety lights shall be installed on both sides during darkness.

B. All spoil and debris shall be removed from site daily. Work areas shall be swept clean after debris removal.

C. No accumulation of debris will be allowed on sidewalks.

4.00 TRENCHING:

A. Prior to trenching pavement shall be saw cut through to soil.

B. Trenches shall be machine and/or hand dug to the depth indicated on drawings. Width of trenches shall be kept the minimum required for proper placement of conduit, backfill and compaction.

C. The use of excavated materials for backfill will not be permitted. Backfill material shall be compacted in 8" layers as specified in SECTION 02200 of these Specifications.

D. Protection:

1. Use all means necessary to protect existing objects designated to remain and, in the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

2. It shall be the responsibility of this contractor to use special care during existing curb removal to protect the existing street paving from damage.

3. Replacement of cast-in-place concrete shall be as specified in SECTION 03300 of these Specifications.

5.00 CONDUIT & WIRE:

A. Conduit shall be a minimum size of 1" trade size or as indicated on the Drawings. Conduit shall be hot-dipped galvanized steel. All conduit connections shall be threaded type.

B. Wire shall be a minimum size of #10 AWG. Wire shall be stranded copper THWN. Color coding: Black, Red, Blue for phase and line voltage wiring. White or Gray for neutral. Green or Bare for grounding.

C. An equipment ground wire, minimum size #10 AWG, shall be run continuous through all conduits. This ground wire shall be connected at all metallic box openings such as lighting pole bases, switch boxes, junction boxes, etc.

D. Conduit in trenches shall be buried to a minimum depth of 30".

6.00 SERVICE, FEEDERS, BRANCH CIRCUITS:

A. Service shall be obtained from the cable pole as indicated on the Drawings in strict compliance with local utility company requirements.

B. Location of service entrance equipment and metering shall be as indicated on the Drawings. Service entrance equipment shall bear U.L. label stating suitability. Enclosures shall be NEMA-3R with pad loading capability.

C. Separate circuits shall be provided for receptacles and lighting. Circuit breakers for receptacles shall be GFI Type. Number and size of branch circuit breakers and panelboards shall be as indicated on the Drawings. Enclosures shall be NEMA-3R with pad loading capability.

D. Conduit and cable size and quantity shall be as indicated on the Drawings.

7.00 EXISTING UTILITIES:

A. The electrical contractor shall make every effort to locate existing buried utilities in the excavated areas. The electrical contractor shall protect the existing utilities from damage by hand digging instead of machine digging and concrete encasing if necessary.