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DATE: May 18, 2020

FROM: Wight & Company
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SUBJECT: ADDENDUM #1 TO THE BIDDING DOCUMENTS FOR:
BID GROUP #10
MASTER FACILITY PLAN IMPLEMENTATION
COMMUNITY HIGH SCHOOL DISTRICT 99
1436 NORFOLK STREET
DOWNERS GROVE, IL 60516

This addendum forms a part of the Bidding Contract Documents, dated May 15th 2020. Bidders must acknowledge receipt of this Addendum in the space provided on the Bid Form. Drawing revisions clouded and tagged with delta 33.

I. **Specifications:** Attached

END OF ADDENDUM

Project Manual For:

MASTER FACILITY PLAN IMPLEMENTATION

ISSUED FOR BID GROUP 10

May 11, 2020

Prepared For
COMMUNITY HIGH SCHOOL DISTRICT 99
1436 Norfolk St.
Downers Grove, IL 60516

VOLUME 1 – DIVISIONS 1-33

Prepared by:
Wight & Company
2500 North Frontage Road
Darien, IL 60561
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A/E Project No. 5274-42

SPECIFICATIONS

PROJECT: Master Facility Plan Implementation

Downers Grove South High School
1436 Norfolk Street
Downers Grove, Illinois 60516

OWNER: Community High School District 99
6301 Springside Avenue
Downers Grove, IL 60516

ISSUED FOR BID GROUP 10

Division	Section Title

SPECIFICATIONS GROUP

General Requirements Subgroup

Facility Construction Subgroup

END OF TABLE OF CONTENTS

SECTION 012300 – ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
2. Include as part of each alternate, costs of related coordination, modification, or adjustment incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. **Alternate No. 7.1: Metal-framed skylights.** Provide an additive alternate to include metal framed skylights C.1, C.2 & C.3 per specification section 086300 to be installed as part of Phase C. Refer to drawing sheet A2.04 OVERALL ROOF PLAN for location and size. Provide details similar to Phase B skylights.

B. **Alternate No. 7.2: Acoustical Baffles**. Provide a deductive alternate to remove the acoustical baffles and all associated hangers, rods, clips, etc. related specifically to the baffles from scope.

C. Refer to Wight Construction's documents for Alternates and additional instructions.

END OF SECTION 012300

SECTION 013300 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
5. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS AND GENERAL REQUIREMENTS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and/or Construction Managers responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and/or Construction Managers responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

D. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

E. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

F. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

G. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

H. The Contractor shall review, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

I. The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

J. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

K. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

L. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals.

M. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

N. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the

Contract Documents, the Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals. The Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with the design concept expressed in the Contract Documents.

O. Contractor/Construction Manager:

1. Review, stamp with approval and submit, with reasonable promptness and in orderly sequence so as to cause no delay in the Project, all Shop Drawings, Product Data and Samples required by the Contract Documents.
2. At the time of submission, inform the Architect in writing of any deviation from the requirements of the Contract Documents.
3. By approving and submitting Shop Drawings and Samples, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing and Sample with the requirements of the Work and of the Contract Documents.
4. Remain responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selection of fabrication process, for techniques of assembly, errors or omissions in the Shop Drawings or Samples, and for performing his Work in a safe manner.

P. Architect's Responsibility:

1. Submittals improperly submitted will be returned without review.
2. Submittals may be held in cases where partial submission cannot be reviewed until the complete submission has been received or until correlated items affected by them have been received. When held, the Contractor will be advised concerning reasons.
3. Marked-up paper or electronic copies will be returned. Contractor shall make and distribute copies.
4. The Architect will review and approve or take other appropriate action upon only those submittals of the Contractor requested by the Architect but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents and only twice for each such submittal as part of the Architect's services. The Owner will deduct from the amount owed the Contractor for the services of the Architect to review submittals more than twice the Contractor's submittals such as Shop Drawings, Product Data and Samples.
5. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review.

6. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents.
7. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations of this article.
8. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.
9. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and/or Construction Manager and additional time for handling and reviewing submittals required by those corrections.

B. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

C. Submit concurrently with the first complete submittal of Contractor's construction schedule.

D. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

E. Format: Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category: Action; informational.
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Architect and Construction Managers final release or approval.
7. Scheduled date of fabrication.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

B. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

C. Digital Drawing Software Program: The Contract Drawings are available in Autodesk Revit 2014

D. Contractor shall execute a data licensing agreement in the form of Digital Licensing Agreement

E. The following digital data files will by furnished for each appropriate discipline:

1. Floor plans.
2. Reflected ceiling plans.

F. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

G. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

H. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect’s receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor through the Construction Manager when a submittal is processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 10 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

I. Sections requiring sequential review.

1. Concurrent Consultant Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow 15 days for initial review of each submittal. Submittal will be returned to Construction Manager, through Architect before being returned to Contractor.

J. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.
3. Include the following information for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of subcontractor.
    g. Name of supplier.
    h. Name of manufacturer.
    i. Submittal number or other unique identifier, including revision identifier.

4. Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

    a. Number and title of appropriate Specification Section.
    b. Drawing number and detail references, as appropriate.
    c. Location(s) where product is to be installed, as appropriate.
    d. Other necessary identification.

5. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Construction Manager will return without review submittals received from sources other than Contractor.
7. Transmittal Form for Paper Submittals: A facsimile of sample form included in Project Manual.
8. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

    a. Project name.
    b. Date.
    c. Destination (To:).
    d. Source (From:).
    e. Name and address of Architect.
    f. Name of Construction Manager.
    g. Name of Contractor.
    h. Name of firm or entity that prepared submittal.
    i. Names of subcontractor, manufacturer, and supplier.
    j. Category and type of submittal.

k. Submittal purpose and description.
l. Specification Section number and title.
m. Specification paragraph number or drawing designation and generic name for each of multiple items.
n. Drawing number and detail references, as appropriate.
o. Indication of full or partial submittal.
p. Transmittal number[, numbered consecutively].
q. Submittal and transmittal distribution record.
r. Remarks.
s. Signature of transmitter.

K. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
4. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
5. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Architect**,** containing the following information:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of firm or entity that prepared submittal.
g. Names of subcontractor, manufacturer, and supplier.
h. Category and type of submittal.
i. Submittal purpose and description.
j. Specification Section number and title.
k. Specification paragraph number or drawing designation and generic name for each of multiple items.
l. Drawing number and detail references, as appropriate.
m. Location(s) where product is to be installed, as appropriate.
n. Related physical samples submitted directly.
o. Indication of full or partial submittal.
p. Transmittal number, numbered consecutively.
q. Submittal and transmittal distribution record.
r. Other necessary identification.
s. Remarks.

1.6 Metadata: Include the following information as keywords in the electronic submittal file metadata:

1. Project name.
2. Number and title of appropriate Specification Section.
3. Manufacturer name.
4. Product name.
5. Options: Identify options requiring selection by Architect.
6. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect and Construction Manager on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
7. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

    a. Note date and content of previous submittal.
    b. Note date and content of revision in label or title block and clearly indicate extent of revision.
    c. Resubmit submittals until they are marked with approval notation from Architect’s action stamp.

8. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
9. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.

    a. Architect, through Construction Manager, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.

    a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.

e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 11x17 inches, but no larger than 36 by 48 inches.
3. Submit Shop Drawings the following format:

a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of applicable Specification Section.
e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through the Construction Manager, will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in

manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect and Construction Manager will retain two Sample sets; remainder will be returned.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:

a. PDF electronic file.

F. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

K. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

L. LEED Submittals: Comply with requirements specified in Division 01 Section "Sustainable Design Requirements."

M. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

B. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

C. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

D. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to the Construction Manager.

B. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Construction Manager will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect and Construction Manager.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. “Approved:” When used to convey Architect's action on Contractor's submittals, applications, and requests, “approved” is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

J. "Installer": An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

K. The term "experienced," when used with an entity, means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

L. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.

32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/.
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csagroup.com.
65. CSA - CSA International; www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).

73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. ICBO - International Conference of Building Officials; (See ICC).
101. ICC - International Code Council; www.iccsafe.org.
102. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
103. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
104. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
105. IEC - International Electrotechnical Commission; www.iec.ch.
106. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
107. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
108. IESNA - Illuminating Engineering Society of North America; (See IES).
109. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
110. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
111. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
112. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
113. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.

114. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
115. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
116. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
117. ISO - International Organization for Standardization; www.iso.org.
118. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
119. ITU - International Telecommunication Union; www.itu.int/home.
120. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
121. LMA - Laminating Materials Association; (See CPA).
122. LPI - Lightning Protection Institute; www.lightning.org.
123. MBMA - Metal Building Manufacturers Association; www.mbma.com.
124. MCA - Metal Construction Association; www.metalconstruction.org.
125. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
126. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
127. MHIA - Material Handling Industry of America; www.mhia.org.
128. MIA - Marble Institute of America; www.marble-institute.com.
129. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
130. MPI - Master Painters Institute; www.paintinfo.com.
131. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
132. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
133. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
134. NADCA - National Air Duct Cleaners Association; www.nadca.com.
135. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
136. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
137. NBI - New Buildings Institute; www.newbuildings.org.
138. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
139. NCMA - National Concrete Masonry Association; www.ncma.org.
140. NEBB - National Environmental Balancing Bureau; www.nebb.org.
141. NECA - National Electrical Contractors Association; www.necanet.org.
142. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
143. NEMA - National Electrical Manufacturers Association; www.nema.org.
144. NETA - InterNational Electrical Testing Association; www.netaworld.org.
145. NFHS - National Federation of State High School Associations; www.nfhs.org.
146. NFPA - National Fire Protection Association; www.nfpa.org.
147. NFPA - NFPA International; (See NFPA).
148. NFRC - National Fenestration Rating Council; www.nfrc.org.
149. NHLA - National Hardwood Lumber Association; www.nhla.com.
150. NLGA - National Lumber Grades Authority; www.nlga.org.
151. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
152. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
153. NRCA - National Roofing Contractors Association; www.nrca.net.
154. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
155. NSF - NSF International; www.nsf.org.
156. NSPE - National Society of Professional Engineers; www.nspe.org.
157. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.

158. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
159. NWFA - National Wood Flooring Association; www.nwfa.org.
160. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
161. PDI - Plumbing & Drainage Institute; www.pdionline.org.
162. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
163. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
164. RFCI - Resilient Floor Covering Institute; www.rfci.com.
165. RIS - Redwood Inspection Service; www.redwoodinspection.com.
166. SAE - SAE International; www.sae.org.
167. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
168. SDI - Steel Deck Institute; www.sdi.org.
169. SDI - Steel Door Institute; www.steeldoor.org.
170. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
171. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
172. SIA - Security Industry Association; www.siaonline.org.
173. SJI - Steel Joist Institute; www.steeljoist.org.
174. SMA - Screen Manufacturers Association; www.smainfo.org.
175. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
176. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
177. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
178. SPIB - Southern Pine Inspection Bureau; www.spib.org.
179. SPRI - Single Ply Roofing Industry; www.spri.org.
180. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
181. SSINA - Specialty Steel Industry of North America; www.ssina.com.
182. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
183. STI - Steel Tank Institute; www.steeltank.com.
184. SWI - Steel Window Institute; www.steelwindows.com.
185. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
186. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
187. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
188. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
189. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
190. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
191. TMS - The Masonry Society; www.masonrysociety.org.
192. TPI - Truss Plate Institute; www.tpinst.org.
193. TPI - Turfgrass Producers International; www.turfgrasssod.org.
194. TRI - Tile Roofing Institute; www.tileroofing.org.
195. UL - Underwriters Laboratories Inc.; www.ul.com.
196. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
197. USAV - USA Volleyball; www.usavolleyball.org.
198. USGBC - U.S. Green Building Council; www.usgbc.org.
199. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
200. WA - Wallcoverings Association; www.wallcoverings.org.
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.

202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
205. WI - Woodwork Institute; www.wicnet.org.
206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
207. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of

the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.

6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
2. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015526 – TRAFFIC CONTROL

PART 1 - GENERAL

1.1 WORK INCLUDES

A. This work consists of furnishing, installing, maintaining, relocating and subsequently removing all signs, signals, markings, traffic cones, barricades, warning lights, flaggers and other traffic control devices which are to be used for the purpose of regulating, warning or guiding traffic during the construction of this improvement. Traffic Control must be in accordance with the applicable articles of Sections 701, 702 and 1084 of the Standard Specifications, the “Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any Special Details and Highway Standards contained herein and in the plans, except as herein modified and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including, but not limited to:
   1. 312000 – Earth Moving
   2. 024113.13– Removal of Existing Pavement
   3. 311216 – Hot Mix Asphalt Paving

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the Village of Downers Grove, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the Village of Downers Grove, Illinois. In the event of conflict between the existing Village of Downers Grove, Illinois codes and the contents of this document, the former will supercede the latter and/or the decision of the Village of Downers Grove, Illinois will prevail.
   1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions (IDOT SSRBC).
   2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.
   3. FHWA, Manual of Uniform Traffic Control Devices, latest revision.
   4. Illinois Department of Transportation, Construction Manual, latest revision, along with the Supplemental Specifications and Recurring Special Provisions (IDOT SSRBC).

PART 2 – PRODUCTS

2.1 MATERIALS

A. All traffic control devices shall be provided in accordance with the Manual of Uniform Traffic Control Devices, latest revision.

B. All traffic control devices shall be provided in accordance with the IDOT Construction Manual, latest revision.

PART 3 – EXECUTION

General Requirements: At the preconstruction meeting the Contractor must furnish the name of the individual in his direct employ who is to be responsible for the installation and maintenance of the traffic control for this project. If the actual installation and maintenance are to be accomplished by a subcontractor, consent must be requested of the Engineer at the time of the preconstruction meeting in accordance with Article 108.01 of the Standard Specifications. This will not relieve the Contractor of the foregoing requirement for a responsible individual in his direct employ. The Contractor must notify the Bureau of Traffic at 312/744-0330 a minimum of 48 hours before commencing construction or changing traffic flow.

The Contractor's vehicles must always move with and not against or across the flow of traffic. These vehicles must enter or leave work areas in a manner which will not be hazardous to or interfere with normal traffic and must not park or stop except within designated work areas. Personal vehicles will not be permitted to park within the right of way except in specific areas designated by the Engineer.

The placement of barricades and warning signs for the required lane closures must proceed in the direction of the flow of traffic. The removal of all signs and barricades must begin at the end of the construction areas and proceed toward oncoming traffic.

A. Furnish - The Contractor is required to furnish all traffic control devices indicated in the plans, specifications, and Standard Details. In addition, whenever the Engineer determines that vehicular traffic interferes with or endangers the Contractor's operation, additional traffic control devices for the purposes of protecting workers and the general public must be furnished at no extra cost to satisfy the requirements of the Engineer.

The Contractor must also provide the necessary flaggers, as determined by the Engineer, whenever construction operations obstruct or are a hazard to traffic.

A. Install - The Contractor must be responsible for the proper location, installation and arrangement of all traffic control devices furnished by him. Whenever the Engineer determines that a road closure requires the relocation of an already installed or existing traffic control device, the Contractor must remove and relocate the device in question.

The Contractor must cover all traffic control devices which are inconsistent with temporary signing and barricading or which conflict with detour patterns during the transfer from one construction stage to another. The Contractor must also post temporary "No Parking" signs within the limits of the improvement wherever needed in areas under construction. These signs must be posted no later than 24 hours prior to the start of construction in the area to be posted. These signs can be obtained from the Bureau of Traffic.

Barricades must be installed at the commencement of construction and remain in place to the end of the curing period specified for the project pavement under the contract. No traffic control devices may be removed except with the express permission of the Engineer.

The specific installation times and locations for road closures will be determined by the Engineer in accordance with the Detail Specifications, Detail Construction Standards and common construction practices. The Type III barricades as shown in the Detail construction Standards will be the only type of barricade allowed for street closures, with no other type permitted as a substitute. Type III barricades must not be spiked down as shown in the Detail Construction Standards, but must be held down by sand bags for ease of movement if emergency vehicles require entrance into the closed street. The Engineer will determine the number of sand bags required for stability of the Type III barricades.

There will be times when a work area at an intersection will be impassable to pedestrians. This condition creates an inconvenience and a danger to the pedestrians because they must twice cross the abutting street to cross the intersection. Therefore, allowing a work area to become impassable to pedestrians will be permitted only at times to be determined by the Engineer. Moreover, the sign guiding the pedestrians to the opposite side of the street must be posted only at times of actual closure to pedestrians and must be removed as soon as the work area can be made passable.

All advance warning signs for lane or street closures, intermediate information signs and standard signs must be installed at a minimum mounting height of five feet (5') to the bottom of the sign, unless there is parking in the area in which case the minimum mounting height must be seven feet (7').

B. Maintain - The Contractor must be responsible for the maintenance of all traffic control devices installed by him as designated in the Detail Construction Standards and Detail Specifications, and for any additional ones required by the Engineer. The Contractor must maintain a continuous surveillance of all barricades, warning signs and lights which he has installed.

This is to be done 24 hours a day, for every day during the duration of this contract. In the event of severe weather conditions, the Contractor must be required to furnish any additional personnel as

may be required by the Engineer, to maintain all traffic control devices.

C. Remove - The Contractor must remove all traffic control devices which were furnished, installed and maintained by him under this contract, and such devices must remain the property of the Contractor upon said removal. Any traffic control devices furnished, installed or maintained by the Department must be removed by **Village of Downers Grove** forces and must remain the property of the **Village of Downers Grove**. All traffic control devices must remain in place until specific authorization for removal is received from the Engineer.

Traffic Control and Protection drawings to specify the minimum required combination of traffic control devices in construction areas will be made available upon written request to the Engineer. Revisions by the Engineer to the Work or in the phasing of construction operations may require traffic control to be installed in accordance with a standard other than those included in the plans. In such cases, the standards will be made available to the Contractor at least one week in advance of the change in traffic control. Payment for traffic control required by these added standards will be in accordance with Article 109.04 of the Standard Specifications. Revisions or modification to increase the traffic control protection shown in the contract must be submitted by the Contractor to the Engineer for approval. A reduction of the traffic control shown in the contract will not be allowed.

Maintenance of Roadways: Beginning on the date when the Contractor begins work on this project he must assume responsibility for the normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance must include all repair work deemed necessary by the Engineer but will not include snow removal operations.

The work involved in maintaining the existing pavement as above specified will be considered as extra work, in accordance with Article 109.04 of the Standard Specifications.

Arrow Boards: A flashing arrow board meeting the requirements of Article 1106.03 of the Standard Specifications must be operating at all times when a lane is closed to traffic on a multi-lane roadway. Arrow boards must be provided and located in a head-on position within each lane closure taper.

Delays to the Contractor caused by complying with these requirements will be considered incidental to the item for Traffic Control and Protection, and no additional compensation will be allowed.

Charge for Traffic Control Deficiency: To ensure a prompt response to incidents involving the integrity of the work zone traffic control devices, the Contractor must provide a telephone number where a responsible individual can be contacted on a 24-hour-a-day basis. When the Engineer is notified or determines a deficiency exists, the Engineer will be the sole judge as to

whether the deficiency is an immediate safety hazard. The Contractor must dispatch sufficient resources within two (2) hours of notification to make needed corrections of deficiencies that constitute an immediate safety hazard. Other deficiencies must be corrected within 12 hours. If the Contractor fails to restore the required traffic control and protection within the time limits specified above, the Engineer will impose a daily monetary deduction for each 24-hour period (or portion thereof) the deficiency exists. This time period will begin with the time of notification to the Contractor and end with the Engineer's acceptance of the corrections.

For this project, the daily deduction will be $500.00 per day. In addition, if the Contractor fails to respond, the Engineer may correct the deficiencies and the cost thereof will be deducted from monies due or which may become due the Contractor. This corrective action will in no way relieve the Contractor of his/her Contractual requirements or responsibilities.

In addition, any work performed by the Contractor within the work zone that presents a hazard to vehicular or pedestrian traffic will be subject to charges for TRAFFIC CONTROL DEFICIENCY. Debris removal, fly dumping, improper access to abutting property, timely and correct placement of short term, temporary and permanent pavement markings, along with all items of work contained within this item are also subject to this charge.

END SECTION 015526

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Division 01 Section "Alternates" for products selected under an alternate.
2. Division 01 Section "Substitution Procedures" for requests for substitutions.
3. Division 01 Section "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements.
    b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

    a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
    b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a

product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 016400 – SUBSTITUTION REQUEST FORM

Please refer to Section 016000 – Product Requirements. Substitution requests will not be considered without submittal of this completed form.

REFERENCE TO: _____ Project No. _____

Having reviewed the requirements for the above Project, we hereby submit for consideration the following item in lieu of the specified item.

1. Section: _____ Specified Item: _____

2. Proposed Substitution: _____

3. Reason for Substitution: _____

4. Supporting Data Attached: _____

   Yes _____ No ___ Technical data, including laboratory tests, if applicable.

   Yes _____ No ___ Complete information on changes to Drawings/ Specifications that proposed substitution will require for proper installation.

   Yes _____ No ___ Effects of substitution on drawing dimensions.

5. Yes _____ No ___ The undersigned will pay for changes to the building and systems design, including engineering and detailing costs caused by the requested substitution.

6. Yes _____ No ___ Does the substitution effect other trades? Describe:

_____

7. Describe differences between proposed substitution and specified item:

_____

8. Yes _____ No ___ Maintenance and services parts will be as readily available as for specified item.

9. Yes _____ No ___ Manufacturer's guarantees for the proposed and specified items are the same; describe differences:

_____

The undersigned state that the function, appearance and quality of the proposed substitution are equivalent or superior to the specified item:

Submitted by:

Company: _____

Address: _____

_____

By: _____

Date: _____

Telephone: _____

Fax: _____

For Use by Architect:

Accepted: _____ Accepted as noted: _____

Not Accepted _____ Received too late: _____

By: _____

Date: _____

Remarks: _____

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.

B. Related Requirements:

1. Division 01 Section “Submittal Procedures” for submitting copies of submittals for operation and maintenance manuals.
2. Division 01 Section “Closeout Procedures” for submitting operation and maintenance manuals.
3. Division 01 Section “Project Record Documents” for preparing Record Drawings for operation and maintenance manuals.
4. Divisions 02 through 48 Sections for specific operation and maintenance manual requirements for products in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

1.5 SUBMITTALS

A. Operations and Maintenance Manuals Submittal: Submit 2 copies of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Name and address of Construction Manager.
8. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title “OPERATION AND MAINTENANCE MANUAL,” Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch, 20-lb/sq. ft. white bond paper.

5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.

3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section “Project Record Documents.”

G. Comply with Division 01 Section “Closeout Procedures” for the schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training digital video recordings.

B. Related Requirements:

1. Division 01 Section “Project Management and Coordination” for requirements for pre-instruction conferences.
2. Divisions 02 through 48 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not begin training until operation and maintenance data has been reviewed and approved by Architect.

1.4 SUBMITTALS

A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. At completion of training, submit one complete training manual(s) for Owner's use.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Demonstration and Training Digital Recording DVD's: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name of Architect and Construction Manager.
c. Name of Contractor.
d. Date digital video was recorded.
e. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.5 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section “Quality Requirements,” experienced in operation and maintenance procedures and training.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor is delegated design responsibility.
c. Operating standards.

d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Operations manuals.
c. Maintenance manuals.
d. Project Record Documents.
e. Identification systems.
f. Warranties and bonds.
g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

    a. Diagnostic instructions.
    b. Test and inspection procedures.

7. Maintenance: Include the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Procedures for routine cleaning
    e. Procedures for preventive maintenance.
    f. Procedures for routine maintenance.
    g. Instruction on use of special tools.

8. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.
    c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    d. Instructions for identifying parts and components.
    e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

    1. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

    1. Schedule training with Owner, through Construction Manager, with at least seven days' advance notice.

C. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING DIGITAL VIDEO RECORDINGS

A. General: Where required in Divisions 02 through 48 Sections, record demonstration and training digital video disks. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record learning objective.

B. Digital Video Recording Format: Provide high-quality color DVD's.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

D. Narration: Describe scenes on digital video recording by audio narration by microphone while digital video is recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.

END OF SECTION 017900

SECTION 024113.15 – SAW CUTTING PAVEMENT

PART 1 - GENERAL

1.1 WORK INCLUDES

A. This item consists of sawing joints in the pavements in order to separate that portion to be removed from that which will remain in place. This work must be performed at the locations specified on the plans and as otherwise designated by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including but not limited to:
1. 321206 – Asphalt Paving
2. 321613 – Concrete Curbs and Gutters
3. 321383 – Portland Cement Concrete Sidewalks

B. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions (herein referred to as the "Standard IDOT Specification"). (Method of Measurement and Basis of Payment shall not apply.)

1.3 QUALITY ASSURANCE

A. The following documents shall provide the standards for construction within the **Village of Downers Grove** unless otherwise stated in these specifications. In the event of conflict between these specifications and the existing **Village of Downers Grove** codes, the **Village of Downers Grove** codes will prevail.
1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)

B. Exceptions: All references in the Illinois Department of Transportation Standard Specifications to method of measurements and compensation shall not apply.

1.4 SUMMARY

A. The Contractor must saw a full depth vertical cut at locations where pavement removal is required as noted on the plans. It is the responsibility of the Contractor to determine the composition and thickness of the existing pavement, and the extent to which it is reinforced. No additional compensation will be allowed because of variations from the assumed thickness or from thickness shown on the plans or for variations in the amount of reinforcement. Should the Contractor deface the edge, a new sawed joint must be constructed and any additional work, including removal and replacement, will be done at the

Contractor's expense.

B. The Contractor must make all saw cuts with a concrete sawing machine meeting the approval of the Construction Manager.

END OF SECTION 024113.15

SECTION 107500 – FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes ground-set flagpoles make from aluminum.

B. Related Requirements:

1. Division 03 Section "Cast-in-Place Concrete" for concrete footings for flagpoles.

C. Owner-Furnished Material: Flags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.

B. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Spiral wrap flagpoles with heavy kraft paper or other weathertight wrapping and enclose in a hard fiber tube or other protective container.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Manufacturer: The basis-of-design manufacturer for flagpoles is American Flagpole; a Kearney-National Inc. company. Subject to compliance with requirements, provide either the names product, or a comparable product by one of the following:

1. American Flagpole 26252 Hillman Highway Abingdon, VA 24210 1.855.530.4078 http://www.americanflagpole.com
   a. Flagpole Model: Titan Series – IRW/IWW, Internal Halyard – Revolving, Wire Cable Halyard With Winch, or approved equal.
   b. Finial (Ornament): American Beacon Light, or approved equal.

B. Source Limitations: Obtain flagpole as a complete unit, including fittings, accessories, bases, and anchorage devices, from a single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Flagpoles assemblies, including anchorages and supports, shall withstanding the effects of gravity loads, and wind loads as determined according to the building code in effect for this Project or NAAMM FP 1001, "Guide Specifications for Design Loads of Metal Flagpoles," whichever is more stringent.

1. Basic Wind Speed: 90 mph; 3-second gust speed at 33 feet aboveground.
2. Base flagpole design on polyester flags of maximum standard-size flag suitable for use with pole or flag size indicated, whichever is more stringent.

2.3 FLAGPOLES

A. Aluminum Flagpoles: Cone-tapered flagpoles, fabricated from seamless extruded tubing complying with ASTM B 241, alloy 6063, with a minimum wall thickness of 3/16 inch.

B. Exposed Height: 25 feet.

C. Construct poles in one piece, if possible. If more than one piece is necessary, comply with the following:

1. Fabricate shop and field joints without using fasteners, screw collars, or lead calking.
2. Provide flush hairline joints using self-aligning, snug-fitting, internal sleeves.

D. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, 0.060-inch nominal wall thickness, sized to suit flagpole and installation. Provide with 3/16-inch steel bottom plate and support plate; 3/4-inch-diameter, steel ground spike; and steel centering wedges welded together. Galvanize steel after assembly. Provide loose hardwood wedges at top of foundation tube for plumbing pole.

1. Flashing Collar: Same material and finish as flagpole.

2.4 FITTINGS

A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match pole-butt diameter.

1. 0.063-inch spun aluminum, finished to match flagpole.

2. Style: American Beacon Light or approved equal

B. Internal Halyard Winch System: Provide one (1) complete internal halyard 1/8” stainless steel wire cable assembly with plastic coated counterweight and beaded sling assembly. A manually operated mechanical winch having automatic brake system and operated with a removable hand crank will be concealed inside the flagpole behind a flush access door having a cylinder lock.

C. Halyard Flag Snaps: Provide two (2) stainless steel swivel snap hooks with neoprene covers.

2.5 MISCELLANEOUS MATERIALS

A. Concrete: Provide concrete composed of portland cement, coarse and fine aggregate, and water mixed in proportions to attain a 28-day compressive strength of not less than 3000 psi, complying with ASTM C 94.

B. Sand: ASTM C 33, fine aggregate.

C. Elastomeric Joint Sealant: Single-component neutral-curing silicone joint sealant complying with requirements in Division 07 Section "Joint Sealants" for Use NT (nontraffic) and for Use M, G, A, and, as applicable to joint substrates indicated, O joint substrates.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M32C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of flagpole work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.

B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.

C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.

D. Place concrete immediately after mixing, complying with Division 03 Section "Cast-in-Place Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for not less than seven days or use a nonstaining curing compound.

E. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to base perimeter.

3.3 FLAGPOLE INSTALLATION

A. General: Install flagpoles where shown and according to manufacturer's written instructions.

B. Ground Set: Place foundation tube or sleeve, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube or sleeve and allow concrete to cure. Install flagpole, plumb, in foundation tube or sleeve.

1. Foundation Tube: Place tube seated on bottom plate between steel centering wedges and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch layer of elastomeric joint sealant and cover with flashing collar.

END OF SECTION 107500

SECTION 311000 – SITE CLEARING

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required to complete site clearing and disposal shown on the drawings.

1.2 RELATED DOCUMENTS

A. Specified elsewhere within these specifications:
1. 312000 – Earth Moving

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the contents of this document and the existing **Village of Downers Grove** codes, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.
1. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)

1.4 JOB CONDITIONS

A. Restore damaged improvements to their specified condition acceptable to the Construction Manager. When required by the drawings, control monuments shall be re-established.

B. Provide protection of property adjoining the project and limit work to the construction area delineated by the silt fence as shown on the drawings.

C. Materials removed from the site shall be disposed of off the site in a legal manner.

1.5 JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS (JULIE)

A. The Trade Contractor is responsible for calling JULIE at 1-800-892-0123 at least 48 hours prior to beginning any excavation. The Trade Contractor shall notify the Construction Manager with the JULIE dig number at least 48 hours prior to beginning any excavation. The Trade Contractor is responsible for maintaining utility marking throughout construction.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Equipment shall be at the option of the Trade Contractor within the limits of the "Construction Requirements" of Section 201 of the Standard Specifications.

2.2 DISPOSAL

A. Disposal of surplus materials shall be in accordance with Article 202.03 of the Standard Specifications.

B. Disposal of unstable and unsuitable material shall be off the site in a legal manner at a location provided by the Trade Contractor. Unsuitable and unstable material includes but is not limited to rocks, trees, stumps, and soil not suitable for compaction.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the area where and conditions under which clearing and site preparation are to be performed. Notify Construction Manager in writing of conditions detrimental to proper and timely completion of the work.

3.2 SITE CLEARING

A. Clearing and site preparation shall be performed in accordance with Section 201 of the Standard Specifications.
   1. Remove vegetation, improvements or obstructions interfering with installation of new construction.
   2. Fill depressions caused by clearing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding six inches loose depth, and thoroughly compact to specified density.
   3. Existing roadways and drainage structures that are to remain shall be protected and maintained in their present condition. All items damaged shall be repaired at the Trade Contractor's expense.

END OF SECTION 311000

SECTION 312000 – EARTH MOVING

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required to complete site grading as shown on the Grading Plans for this project, including building excavation, and site preparation.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including, but not limited to:
1. 311000 – Site Clearing
2. 312333 – Trenching and backfill

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the existing **Village of Downers Grove** codes and the contents of this document, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.
1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

B. Testing Laboratory Services:
1. The Owner shall secure and pay for the services of a Geotechnical Engineer to classify existing soil materials, to recommend and to classify proposed borrow materials when necessary, to verify compliance of materials with specified requirements, and to perform required field and laboratory testing.

C. The Contractor shall not rely on the Owner to provide Source Site Certifications for removal of any materials.

D. Form LPC-663, Uncontaminated Soil Certification by Licensed Professional, can be downloaded from http://www.epa.state.il.us/land/regulatory-programs/permits-and-management/forms/clean-construction-demo-

debris/index.html

E. The contractor shall provide the Owner and the engineer with copies of all executed forms, documents, and correspondences regarding Clean Construction Demolition Debris (CCDD).

1.4 SUMMARY

A. Section Includes:
1. Site clearing.
2. Earth moving and excavation.
3. Utilities trenching.
4. Grading.
5. Backfilling.
6. Filling.
7. Compacting.

1.5 REFERENCES

1. ASTM D 1556-00 -- Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

2. ASTM D 1557-02 -- Test Methods for Laboratory Compaction Characteristics of Soils Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

3. ASTM D 2167-94(2004) -- Standard Test Method for Density and Unit Weight of Soil In-Place by the Rubber Balloon Method.

4. ASTM D 2487-00-- Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

5. ASTM D 2922-01 -- Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

6. ASTM D 3017-01 -- Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

7. ASTM D 698-00a --Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).

8. ASTM D448-03a -- Standard Classification for Sizes of Aggregate for Road and Bridge Construction

1.6 SUBMITTALS

A. Test Reports: Testing laboratory will submit the following reports directly to the Construction Manager and shall copy the Trade Contractor:
1. Analysis of soil materials, whether procured on or off site, and including fill, backfill, and borrow materials.

2. Verification of each footing subgrade.
3. In-place density test reports.
4. Moisture-density relationship test reports.
5. Compressive strength or bearing test reports.

1.7 SITE CONDITIONS

A. Traffic: Do not interfere with or close public ways without permission of governing authorities. Do not interfere with adjacent private facilities.

B. Site Utilities:
1. Advise utility companies of excavation activities before starting excavations. Locate and identify underground utilities passing through work area before starting work.
2. If underground utilities are encountered in locations other than indicated, immediately advise Utility Owners before proceeding. Amend project record documents to show actual locations.
3. Protect existing utilities indicated to remain.
4. Do not interrupt existing utilities without advance notice to and written approval from the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Where sufficient approved materials are not available from required excavations on site, obtain and pay for materials from approved sources off site without charge to the Owner.

B. For each soil material proposed for use as fill or backfill, whether obtained on or off site, testing laboratory shall classify soil material, develop Proctor curve, and perform any other tests required.

C. Obtain approval of the Geotechnical Engineer and Construction Manager for each soil material.

D. Topsoil: Refer to landscape drawings.

E. Satisfactory Topsoil: Fertile agricultural soil, typical for locality, capable of sustaining vigorous plant growth; free of subsoil, rocks larger than 2 inches in diameter, clay, toxic matter, plants, weeds, and roots.

F. Backfill and Fill Materials: Materials classified as satisfactory.

G. Satisfactory Soil Material (ASTM D 2487): Free of stones larger than 2 inches in any dimension, trash, debris, organic material, other objectionable material and classified as follows:

1. GW (well-graded gravel).
2. GC (clayey gravel).
3. SW (well-graded sand).

4. SC (clayey sand).
5. CL (lean clay).

H. Unsatisfactory Soil Material (ASTM D 2487):
1. GP (poorly graded gravel).
2. GM (silty gravel).
3. SP (poorly graded sand).
4. SM (silty sand).
5. ML (silt).
6. OL (organic clay).
7. OL (organic silt).
8. CH (fat clay).
9. MH (elastic silt).
10. OH (organic clay).
11. OH (organic silt).
12. PT (peat).

I. Aggregate Fill outside Tree Drip Line: Crushed Concrete; 100 percent passing a 1-1/2-inch sieve; not more than 2 percent passing a No. 4 sieve

J. Aggregate Fill within Tree Drip Line: Clean, crushed rock or gravel or uncrushed gravel; 100 percent passing a 1-1/2-inch sieve; not more than 2 percent passing a No. 4 sieve.

K. Subbase Material: Well-graded, clean, sound, durable particles of crushed concrete, crushed blast furnace slag, and screenings. Obtain the Construction Manager's approval of source, quality, and gradation.

2.2 PLASTIC WARNING TAPE

A. Acid- and alkali-resistant polyethylene film specifically manufactured for marking and identifying underground utilities.
1. Minimum width, 2 inches; minimum thickness, 4 mils.
2. Metallic core encased in protective jacket against corrosion and detectable by metal detector when tape is buried 1 foot deep.
3. Continuous printed inscription shall describe utility. Tape color:
a. Electric: Red.
b. Gas: Yellow.
c. Water system: Blue.
d. Sewer: Green.
e. Phone: Orange

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection: Provide markers indicating limits of work and clear identification of items and areas requiring protection utilizing construction fencing as necessary.

B. Provide barricades, warning signs, and warning lights around open excavations as necessary to prevent injury to persons.

C. The Trade Contractor is solely responsible for determining the potential for injury to persons and damage to property.
   1. Where such potential is present, take appropriate protective measures.
   2. Protect persons from injury and protect existing and new improvements from damage caused directly or indirectly by construction operations.

D. Do not allow excavation subgrades and soil at foundations to be subjected to freezing temperatures or frost. Provide protective insulating materials as necessary. Should prepared, compacted subgrades be damaged by freezing, remove soil materials to the depth required by the Geotechnical Engineer and replace and recompact in conformance with specified requirements.

3.2 EROSION CONTROL

A. To the maximum extent practicable, prevent erosion or displacement of soils and discharge of soil-bearing water runoff to adjacent properties and waterways.

B. Provide erosion control during the entire project in accordance with applicable regulations, including Section 313500 - Slope Protection, and as shown on the drawings.

3.3 PROTECTION OF TREES

The Contractor shall contract with an Arborist to obtain recommendations for tree preservation alternatives and procedures, as required.

A. Provide temporary guards to protect trees and vegetation to remain. Place guards so as to prevent all forms of vehicular traffic or parking within drip lines.
   1. Do not allow excess foot traffic within drip lines.
   2. Do not stockpile construction materials, soil, or aggregates within drip lines.
   3. Water trees and other vegetation to remain within limits of the area of construction activities as required to maintain their health during course of construction operations.

B. Excavate within drip line of trees only where indicated.

C. Where underground utilities must pass within drip line, hand-dig tunnels to avoid cutting main lateral roots and taproots. Minor roots may be cut only when necessary.

D. Where excavation must occur within drip line, hand excavate to avoid damage to roots. Minimize over-excavation by providing sheeting in lieu of sloped embankments.
   1. Re-establish exposed roots in areas to be backfilled where practicable. Extend excavation along major roots to facilitate gradual bending of roots into backfill areas. Cut roots only where roots cannot be re-established.
   2. Where root system is damaged or cut back, prune branches to maintain

root/branch balance.

E. Immediately protect exposed roots until re-establishment in backfill. Cover with approved mulching material and keep continuously moist.

F. Maintain existing grade within drip line of trees, unless otherwise indicated.

G. Lowering Grades:
1. Follow recommendations of Arborist to achieve required grades and optimize chances of survival for trees. Use hand excavation within drip line.
2. Prune branches as recommended by Arborist and provide further maintenance as recommended by Arborist until substantial completion.

H. Raising Grades:
1. Minor fills less than 6 inches: Place specified topsoil without compacting, and finish grade by hand.
2. Moderate fills, 6 to 12 inches:
a. Place aggregate fill on existing grade. On all sides of tree trunk, hand place aggregate fill within an 18 inch radius of trunk up to a level approximately 2 inches above finish grade.
b. Elsewhere within drip line, hand place aggregate fill up to 6 inches below finish grade, then hand place 6 inches of topsoil to finish grade. Slightly over fill to allow for future settlement.
c. Finish grade by hand without compacting fill.

I. Where cutting is required, cut branches and roots using properly sharpened tools and without breaking members.

3.4 CLEARING AND GRUBBING

A. Remove any trash or debris from site, including below-ground portions. Completely remove existing trees indicated to be removed, including stumps and roots.

B. Remove all vegetable matter from within the limits indicated on the drawings.
1. Fill holes thus created with approved, compacted soil.
2. Remove and dispose of grass and other vegetation before stripping topsoil. Strip topsoil down to subsoil without contaminating topsoil with subsoil.
3. Stockpile in a manner to freely drain surface water and to prevent contamination by subsoil or other materials; cover if necessary to prevent wind-blown dust.
4. Do not strip topsoil within driplines of trees indicated to remain.

3.5 DEWATERING

A. Do not allow surface or ground water to flow into or accumulate in excavations.

B. Do not allow water to flow in an uncontrolled fashion across the project site or to erode slopes or to undermine foundations. Do not allow water to be diverted

onto adjacent properties. Arrange excavation operations so as to provide continual and effective drainage of excavations.

C. Provide and maintain temporary diversion ditches, dikes, and grading as necessary; do not use trench excavations for this purpose. When required by surface or subsurface water conditions, provide sumps, wellpoints, french drains, pumps, and other control measures necessary to keep excavations free of water. When existence of ground water near or above final excavation level is indicated or suspected, provide control measures prior to excavating to water level and maintain water level continuously below working level.

3.6 EXCAVATION

A. General: Excavation includes the removal of any materials necessary to achieve the required subgrade elevations and includes reuse or disposal of such materials.

B. Unnecessary Excavation: The expense of excavation of materials outside of limits indicated or ordered in writing by the Geotechnical Engineer and the correction thereof to the satisfaction of the Engineer shall be borne by the Trade Contractor.
1. Unnecessary excavation under footings: Either deepen footings to bear on actual subgrade elevation without changing top elevations or place concrete fill up to required elevation, as required by the Geotechnical Engineer.
2. Unnecessary excavation other than under footings: Either place compacted fill or otherwise correct conditions, as required by the Engineer.

C. Approval of Subgrade: Notify the Engineer when required elevations have been reached.
1. When required by the Geotechnical Engineer due to the unforeseen presence of unsatisfactory materials or other factors, perform additional excavation and replace with approved compacted fill material in accordance with the Geotechnical Engineer's instructions.
2. Payment for unforeseen additional work will be made in accordance with established unit prices or, if none, in accordance with provisions for changes in the work. No payment will be made for correction of subgrades improperly protected against damage from freeze-thaw or accumulation of water, or for correction of otherwise defective subgrades.

D. Excavation Stabilization: Wherever it is possible to slope faces of excavations to achieve stabilization, do so in compliance with requirements of governing authorities. Otherwise, provide shoring and bracing.
1. Design, provide, maintain, and remove shoring and bracing in compliance with requirements of governing authorities. Remove temporary shoring and bracing when stabilization is no longer required.

E. Excavation for Structures:
1. Excavate beyond footings and foundations so as to allow proper

construction and inspection of concrete formwork and other materials. Excavate to the required elevation.

a. Tolerance: Plus or minus 0.10 foot.

F. Excavation for Footings and Foundations:

1. Delay excavation to final grade and final compaction until just before concrete will be placed.
2. Remove any loose or sloughed material and adjust excavations to conform to required lines, grades, and tolerances and to form a suitable bearing surface. Do not disturb bottom of completed excavations.

G. Excavation for Pavements: Excavate, shape, and compact to the lines, subgrade elevations, and cross sections indicated.

H. Excavation for Trenches:

1. Unless otherwise required, begin trenching, utility installation, and backfilling at lowest portion of utility line, working toward highest portion of line.
2. Dig trenches to uniform widths indicated.
   a. Where indicated trench widths are exceeded, redesign, stronger pipe, or special installation procedures may be required by the Engineer at no additional cost to the Owner.
3. Unless otherwise indicated, trench walls for piping shall be vertical from trench bottom to one foot above top of pipe or to top elevation of initial backfill, whichever is higher.
4. Excavate trenches to the depths necessary to achieve required flow lines and invert elevations and to prevent freezing of liquids or frost heave during winter.
5. Dig trenches so as to provide not less than the following minimum cover:
   a. Water lines: 5.5 feet.
   b. Gas distribution: 3 feet.
   c. Electric lines: 2 feet.
   d. Sanitary sewer: In accordance with plans.

   Storm sewer: In accordance with plans.
6. Trench bottoms: Unless otherwise indicated, excavate and shape trench bottoms as follows:
   a. Support pipes and conduit up to 5 inches diameter on smooth, accurately graded subgrade. Shape surface by hand to provide continuous support on undisturbed soil for bell and body of pipe and joints, fittings, and body of conduit.
   b. Support pipes and conduit 6 or more inches diameter on 4 inches of approved subbase material. Place and carefully compact additional layer of subbase material of depth required to support pipe haunches. Shape surface to provide continuous support for bell and body of pipe and joints, fittings, and body of conduit.

I. Clean Construction Demolition Debris:

1. The contractor shall be responsible for the lawful removal of all excavated material, soil, clean construction and demolition debris in accordance with Public Act 96-1416. All costs for but not limited to removal, hauling, disposing fees,

charges, documenting, testing or certifications related to Public Act 96-1416 shall be incidental to the cost of the contract
2. If the Contractor chooses to dispose of surplus soil material at a registered uncontaminated soil fill location, Form LPC-663 must be executed and submitted to the operator of that location prior to material being delivered to the location. The contractor shall take care not to stockpile or mix together clean material with contaminated material or material from another site before hauling material for off-site disposal.
3. The contractor shall provide the Owner and the engineer with copies of all executed forms, documents, and correspondences regarding Clean Construction Demolition Debris (CCDD).

3.7 STORAGE

A. Stockpile materials to be used for filling and backfilling, including excavated materials classified as satisfactory soil materials, at locations indicated or as directed. Stockpile in a manner to freely drain surface water; cover if necessary to prevent wind-blown dust.
   1. Store soil materials without intermixing. Protect from contamination with other soils or debris.
   2. Do not stockpile materials inside of drip line of trees to remain.
   3. Install silt fence around the perimeter at each stockpile.
   4. If a stockpile is to remain in place for over 30 days, it shall be seeded with temporary seeding.

3.8 PLASTIC WARNING TAPE

A. Install tape directly above utilities, 4 to 6 inches below finished grade.

3.9 BACKFILLING

A. Preparation: Backfill excavations as soon as practicable. Complete the following operations before backfilling:
   1. Inspection and acceptance of below-grade construction.
   2. Inspection, testing, and approval of underground utilities.
   3. Surveying of underground utilities for record documents.
   4. Concrete formwork removal.
   5. Removal of loose material, muck, debris, and trash from excavation.
   6. Installation of temporary or permanent horizontal bracing for structures to receive backfill.

B. Remove temporary shoring and bracing as the work progresses and when its use is no longer necessary.

C. Testing of Piping:
   1. Before performing testing of utilities (specified elsewhere):
      a. Backfill and compact utility trenches to a level as required by local ordinances or IDOT.

D. Backfilling near footings, general: Where trenches occur underneath of footings, or where trench bottoms occur below and within 18 inches horizontally

of footing bottoms, backfill trench with concrete to top of footing and up to 4 feet perpendicularly from each face of footing.

E. Installation: Place approved soil materials in layers to required elevations. Do not place material on muddy or frozen surfaces or on surfaces containing frost.

F. Installation: Place satisfactory soil materials in layers to required subgrade elevations.

3.10 FILLING

A. Preparation: Verify that area has been stripped of vegetation including roots below grade. Remove and dispose of any unsatisfactory soils.
1. When filling slopes steeper than 1 in 4 rise, plow, step, or break up surfaces to promote bond of new to existing material.
2. Should density of subgrade to receive fill be less than specified for fill, break up and pulverize subgrade to a depth of at least 6 inches, moisture condition if necessary, and recompact to required density at optimum moisture content.

B. Installation: Place fill materials to required elevations in maximum lifts of 6 inches. Provide fill materials beneath each area as indicated.
1. Planted areas: Satisfactory soil materials.
2. Paved areas: Combination of subbase material and satisfactory soil materials as indicated on drawings.
3. Piping/conduit: Subbase material and/or imported trench backfill where indicated and required; otherwise use satisfactory soil materials.

3.11 PAVEMENT SUBBASE COURSE PLACEMENT

A. Place lifts such that compaction true to grade and level is accomplished with a minimum of surface disturbance and segregation or degradation of materials. Maintain grade control and cross section by means of line and grade stakes. Maintain moisture content within prescribed limits during placing and compacting.

B. When the total thickness of subbase is less than the maximum lift thickness permitted, place material in a single lift. When the total thickness of subbase is greater than the maximum lift thickness permitted, place materials in two or more lifts of uniform thickness with no lift less than 3 inches in thickness.

C. Cut any overbuild to grade. Should top elevation be lower than allowable tolerances, scarify to a depth of 3 inches, add new material, and recompact to bring to grade within required tolerances.

3.12 COMPACTION

A. Place materials used in backfilling and filling in layers not exceeding loose depths as follows:
1. Heavy equipment compaction: 8 inches.
2. Hand-operated tampers: 4 inches.

B. Place material simultaneously on opposite sides of walls, small structures, utility lines, etc. to avoid displacement or overstressing.

C. In-Place Density Requirements: Compact soil to not less than the values given below, expressed as a percentage of maximum density at optimum moisture content.
1. Unpaved areas: Top 6 inches of subgrade and subsequent lifts - 90 percent.
2. Building and Paved areas: Top 12 inches of subgrade and subsequent lifts - 95 percent.
3. Utility trenches: Compact backfill and fill materials to in-place density specified for applicable area of trench, as required by ISPE Standard Specifications.

D. Moisture Control: During compaction, control moisture of subgrades and subsequent lifts to within tolerances from optimum moisture content as recommended by testing laboratory. Wet surface with water when additional moisture is required. Aerate soil to aid in drying or replace soil when excessive moisture is present.

3.13 GRADING

A. General: Smooth grade to a uniform surface that complies with compaction requirements and required lines, grades, and cross sections and is free from irregular surface changes.

B. Provide smooth transition between existing adjacent grades and changed grades. Cut out soft spots, fill low spots, and cut down high spots to conform to required surfaces tolerances.

C. Slope grades to direct water away from structures and to prevent ponding. Finish subgrade to required elevations within the following tolerance:
1. Unpaved areas: Plus or minus 0.10 foot.
2. Paved areas: Plus or minus 0.1 foot.
3. Exterior steps and ramps: Plus or minus 0.05 foot.

3.14 PROOFROLLING

A. After completion of required compaction and immediately prior to proceeding with subsequent construction, proofroll in the presence of the Construction Manager, Engineer, and testing laboratory representative.

B. The test vehicle for proofrolling shall consist of a tandem axle truck loaded to a minimum gross weight of 40,000 lb, and verification of vehicle weight must be presented at time of proofroll.

C. Proof roll as required by the **Village of Downers Grove** Standard Specifications and IDOT Standard Specifications.

D. Proofroll Areas to Receive: Pavement, and any areas required by the engineer

3.15 FIELD QUALITY CONTROL

A. Testing Laboratory Services: Provide timely notice to testing laboratory. Do not proceed with construction until testing of each subgrade and lift of fill or backfill has been performed and required inspections and approvals have been obtained.

B. Maximum Density at Optimum Moisture Content: Determine in accordance with ASTM D 1557, Procedure C.
1. For each subgrade, fill, and backfill material, perform one moisture-density relationship test for each 1500 cubic yards, or fraction thereof, of material used.

C. In-Place Density Tests: ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2922 (nuclear method), as applicable.
1. When ASTM D 2922 is used, check and adjust calibration curves using ASTM D 1556 only. ASTM D 3017 shall be performed to measure water content of soil at the time in-place density tests are conducted. Calibrate density and moisture gages at the start of testing on each type of material encountered and at intervals as directed.

D. Footing Subgrades: Test footing subgrades to determine bearing capacity of each soil stratum encountered. At the option of the Geotechnical Engineer and Construction Manager, visual inspection of subsequent similar subgrades and comparison with tested strata may be allowed.

E. Areas under Slabs and Pavements: Conduct not less than one in-place density test of subgrade and one in-place density test of each compacted fill or backfill layer for every 3000 square feet of overlying paved area, but in no case less than 3 tests per lift.

F. Foundation Wall Backfill: Conduct not less than 2 in-place density tests per lift.

G. Trench Backfill: Conduct not less than 2 in-place density tests per lift per trench.

H. If testing service reports indicate that subgrade or fills are below specified density, scarify or remove and replace to the required depth, recompact, and retest at no cost to the Owner.

3.16 MAINTENANCE

A. Completed Areas: Protect from damage by pedestrian or vehicular traffic, freezing, erosion, and contamination with foreign materials. Repair and re-establish grades to specified tolerances in settled, eroded, or rutted areas.

B. Damaged Areas: Where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction and whether due to subsequent construction operations or weather conditions, restore materials to required

conditions: Scarify or remove and replace to the required depth, return to optimum moisture content, and compact materials to the required density before continuing construction.

C. Correction: Should settling occur within the project correction period, remove finished surfacing, add additional approved material, compact material, and reconstruct surfacing. Construct surfacing to match and blend in with adjacent surfacing as nearly as practicable.

3.17 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Stockpile any excess satisfactory topsoil in locations on site as directed by the Construction Manager. Properly dispose of unsatisfactory topsoil off site as directed by the Construction Manager.

B. Remove any material not required for use on the project (including unsatisfactory soil, excess satisfactory soil, trash, and debris) and legally dispose of it off the Owner's property.

B. On-site burning is not permitted.

END OF SECTION 312000

SECTION 312333 – TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required for satisfactory trenching, backfilling, compaction and removal of excess excavation for sanitary sewers, storm sewers and water main. Electrical and communications conduits covered elsewhere.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
   1. 311000 – Site Clearing
   2. 312000 – Earth Moving
   3. 334000 – Storm Drainage Utilities
   4. 321613 – Concrete Curbs and Gutters
   5. 321413 – Porous Unit Paving

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the existing **Village of Downers Grove** codes and the contents of this document, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.

   1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
   2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

1.4 PROJECT RECORD DOCUMENTS

A. Record the limits of Trench Backfill.

END OF SECTION 312333

SECTION 313500 – SLOPE PROTECTION

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required to construct and maintain permanent and temporary erosion control devices as shown on the drawings.

B. All labor, materials, and equipment required for the application of seeding, fertilizer and straw mulch on all areas within the site construction limits disturbed by construction operations that will not be surfaced as shown on the drawings.

1.2 RELATED DOCUMENTS

A. Specified elsewhere:
1. 311000 - Site Clearing
2. 312000 – Earth Moving

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the existing **Village of Downers Grove** codes and the contents of this document, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.

1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
2. Latest addition of the Illinois Environmental Protection Agency Illinois Urban Manual.

1.4 SUBMITTALS

A. Submit certificates showing manufacturers' or vendors' analysis of seed, materials and fertilizers to be used to the Construction Manager.

B. Submit seed vendors' certified statement for each grass seed mixture stating botanical and common name, percentage by weight, and percentages of purity, germination and weed seed for each grass seed species to the Construction Manager.

1.5 JOB CONDITIONS

A. All disturbed areas to remain pervious shall be hydroseeded and mulched immediately after completing final grading operations.

B. When conflict between these requirements and pollution control laws, rules or regulations of other Federal or State agencies occurs, notify the Owner in writing and suggest a solution. Take sufficient precautions to prevent pollution of streams, lakes and reservoirs with fuels, oils, bitumens, calcium chloride or other harmful materials.

PART 2 - MATERIALS

2.1 EROSION CONTROL

A. Temporary erosion control materials shall be in accordance with the Standard Specifications. All erosion control measures shall comply with the requirements of the Illinois Environmental Protection Agency Illinois Urban Manual, 1995.

B. Mulch and related materials shall be in accordance with Section 251 and Section 1081 of the Illinois Department of Transportation Standard Specifications.

2.2 SEEDING

A. All seeding materials, including mulch, fertilizer and limestone, shall be in accordance with Sections 250, 251 and 1081 of the Illinois Department of Transportation Standard Specifications.

B. For permanent seeding, the seed mixture shall be as specified in Article 250.07 of the Illinois Department of Transportation Standard Specifications, preferably a Class 1, 1B or 3, or as indicated otherwise on the plans and Special Provisions.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the area where and conditions under which slope protection and erosion control work are to be performed. Notify the Construction Manager in writing of conditions detrimental to the proper and timely completion of the work.

3.2 TEMPORARY EROSION CONTROL

A. Incorporate all erosion control features into the project prior to commencing other construction activities as specified in the drawings.

3.3 SEEDING

A. After all work has been completed and approved and after all trenches have been backfilled, the areas to be seeded shall be prepared in accordance with Article 250.05 of the Standard Specifications.

B. The rate of application of permanent seeding mixture shall be as required by the Standard Specifications, or as specified on the plans and Special Provisions.

3.4 FERTILIZER

A. Fertilizer nutrients shall be provided in accordance with Article 250.04 of the IDOT Standard Specifications and the Illinois Urban Manual.

B. Seeding: Fertilizer application shall be made to all areas to be seeded. A second application shall be used if necessary to ensure growth.

3.5 MULCHING

A. All seeded areas shall be mulched. Mulching equipment and construction operations shall be in accordance with Section 251 of the Standard Specifications. Mulch shall be applied uniformly to seeded areas at the rate specified by Method 3 as described in Article 251.03 of the Standard Specifications except where final slopes are in excess of 6:1 grade, or as otherwise noted on the plans.

B. For slopes greater than 6:1 the method of seeding and mulching is the hydromulch method as described by Method 2 Procedure 3 of Article 251.03 of the Standard Specifications. Erosion Control blanket shall be installed in these areas in accordance with Article 251.04 of the IDOT Standard Specifications and as noted in the Special Provisions.

3.6 MAINTENANCE

A. The temporary erosion control systems shall be properly maintained to control siltation at all times during the life of the contract.

END OF SECTION 313500

SECTION 313519.22 – FILTER FABRIC

PART 1 - GENERAL

1.1 WORK INCLUDES

A. This work shall consist of all material, labor and equipment to install filter fabric as shown in the plans and details, or as otherwise directed by the Construction Manager.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, including but not limited to:
   1. 312000 – Earth Moving
   2. 334000 – Storm Drainage Utilities

B. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions (herein referred to as the "Standard IDOT Specification"). (Method of Measurement and Basis of Payment shall not apply.)

C. Work under this Section shall be done in accordance with the applicable construction standards set by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. The following documents shall provide the standards for construction within the **Village of Downers Grove** unless otherwise stated in these specifications. In the event of conflict between these specifications and the existing **Village of Downers Grove** codes, the **Village of Downers Grove** codes will prevail.
   1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)

B. Exceptions: All references in the Illinois Department of Transportation Standard Specifications to method of measurements and compensation shall not apply.

1.4 SUMMARY

A. Filter fabric is to be used to as a barrier between soils and aggregate to prevent the shifting of fines into void areas. Product is to completely surround the aggregate area as shown in the plans on all sides with a minimum of 6 inch overlap.

PART 2 - PRODUCT

A. Fabric:
   1. Construction: non - woven resin-bonded polypropylene.
   2. Inert to biological degradation
   3. Minimum weight: 4.0 ounces per square yard.

B. Products:
   1. Mirafi NC-140 or approved equivalent

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Comply with Standard IDOT Specifications and as directed by the Construction Manager.

3.2 CLEAN UP

A. Upon completion of the work, remove all surplus materials, packaging, rubbish and debris resulting from the work and legally dispose of off the site.

END OF SECTION 334419

SECTION 321313 – CONCRETE PAVING

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required to satisfactorily complete the Portland Cement paving, as shown on the plans.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, including, but not limited to:
1. 312000 – Earth Moving

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove** In the event of conflict between the contents of this document and the existing **Village of Downers Grove** codes, the former will supercede the latter and/or the decision of **Village of Downers Grove** will prevail.
1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

1.4 SUBMITTALS

A. Concrete Mix Design:
1. Certified copy of the concrete mix design demonstrating conformance with the specified concrete type.

1.5 SPECIAL REQUIREMENTS:

Submittal Requirements – Utilize a lighter concrete with a reflectivity of at least 0.3 to mitigate urban heat island effects for all surface type applications. This requirement will not be necessary for concrete roadway patching applications which will be overlaid with a bituminous binder and surface.

1.6 MATERIALS:

A. Cement
For all Concrete Pavements – Blended Hydraulic Cement: ASTM C 595, Type 1 (SM) using a mixture of Portland Cement and not more than 25% by weight of ground granulated blast furnace slag to achieve a white looking concrete with a reflectivity of at least 0.3.

END OF SECTION 321313

SECTION 321383 – PCC SIDEWALKS

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required to complete in place the P.C. Concrete Sidewalk as indicated on the drawings, as hereinafter specified or as required to properly complete the WORK.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including, but not limited to:
1. 311000 – Site Clearing
2. 312000 – Earth Moving
3. 321216 – HMA Paving
4. 321313 – Concrete Paving
5. 321613 – Concrete Curbs and Gutters

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove** In the event of conflict between the contents of this document and the existing **Village of Downers Grove** codes, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.
1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

1.4 SPECIAL REQUIREMENTS:

Submittal Requirements – Utilize a lighter concrete with a reflectivity of at least 0.3 to mitigate urban heat island effects for all surface type applications. This requirement will not be necessary for concrete roadway patching applications which will be overlaid with a bituminous binder and surface.

1.5 MATERIALS:

A. Cement

For all Concrete Pavements – Blended Hydraulic Cement: ASTM C 595, Type 1 (SM) using a mixture of Portland Cement and not more than 25% by weight of ground granulated blast furnace slag to achieve a white looking concrete with a reflectivity of at least 0.3.

PART 2 - EXECUTION

2.1 CONSTRUCTION

A. Handicap ramps shall be constructed where shown on the plans and as per the latest Illinois Accessibility Code Standards.

END OF SECTION 321383

SECTION 321413 – POROUS UNIT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Porous paving consisting of concrete pavers set in aggregate setting beds.
2. Cast-in-place concrete edge restraints.

B. Related Sections include the following:

1. Division 31 Section "Earthwork" for excavation and compacted subgrade.
2. Division 32 Section "Concrete Paving" for cast-in-place concrete curbs that serve as edge restraints for porous paving.

1.3 SUBMITTALS

A. Samples for Initial Selection:

1. Each type of unit paver indicated.
2. Aggregate fill.

B. Samples for Verification:

1. Full-size units of each type of unit paver indicated.
2. Aggregate fill.

C. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements.

1. For solid interlocking paving units, include test data for freezing and thawing according to ASTM C 67.

E. Utilize a lighter Paver with a reflectivity of at least 0.3 to mitigate urban heat island effects for all surface type applications. Provide manufacturer test data to document SRI.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of porous paver from one source that has resources to provide materials and products of consistent quality in appearance and physical properties.

B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

PART 2 - PRODUCTS

2.1 CONCRETE UNIT PAVERS

A. Solid Concrete Pavers for Porous Paving: Solid interlocking paving units of shapes that provide openings between units, complying with ASTM C 936 and made from normal-weight aggregates.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following, or approved equal:

a. Unilock, Aurora, IL 1.800.864.5625.

1. Surface Pavement type – Eco Priora, Premier Finish.
2. Edge Paver – Single soldier course Eco Priora, 5” x 10”.

2. Thickness: 3-1/8 inches (80 mm).
3. Face Size and Shape: 5” x 10”.
4. Color: From standard color range.
5. Laying pattern – Herringbone for mechanical installation. **STAGGER CLUSTERS TO BREAK UP BOND LINES, SEE LAYING PATTERN DESIGN AT END OF SPECS. NO CONTINUOUS BOND LINES ALLOWED. USE HAND INSTALLATION WHERE APPLICABLE. SUBMIT LAYING PATTERN FOR APPROVAL PRIOR TO INSTALLATION. LAYING PATTERN SHALL ALIGN WITH EXISTING PAVERS.**

2.2 AGGREGATE SETTING-BED MATERIALS

A. Graded Aggregate for Subbase: Sound crushed stone or gravel complying with CA-1, subbase material.

B. Graded Aggregate for Base Course: Sound crushed stone or gravel complying with CA-7, base-course material.

C. Graded Aggregate for Leveling Course: Sound crushed stone or gravel complying with CA-16.

D. Graded Aggregate for Porous Paver Fill: Sound crushed stone or gravel complying with Vulcan VECO Joint Coarse or approved equal (provide sieve analysis).

PART 3 - EXECUTION

3.1 PREPARATION

A. Proof-roll prepared subgrade according to requirements in Division 2 Section "Earthwork" to identify soft pockets and areas of excess yielding. Proceed with porous paver installation only after deficient subgrades have been corrected and are ready to receive subbase and base course for porous paving.

3.2 INSTALLATION, GENERAL

A. Do not use unit pavers with chips, cracks, voids, discolorations, and other defects that might be structurally unsound or visible in finished work.

B. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

C. Tolerances:

1. Variation in Plane between Adjacent Units (Lipping): Do not exceed 1/16-inch (1.5-mm) unit-to-unit offset from flush.
2. Variation from Level or Indicated Slope: Do not exceed 1/2 inch in 10 feet (12 mm in 3 m). Leave pavers approximately 1/4 inch to 3/8 inch above curb.

D. Provide curbs as indicated. Install curbs before placing unit pavers.

3.3 SETTING-BED INSTALLATION

A. Compact soil subgrade uniformly to at least 90% percent of ASTM D 698 laboratory density.

B. Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Construction Manager, and replace with compacted backfill or fill as directed.

C. Place aggregate subbase in six (6) inch lifts, compact with 12-ton vibratory roller compactor.

D. Place aggregate base, compact to 100% percent. Proof-roll the area, upon completion, to confirm no movement or depressions in base.

E. Place leveling course and screed to a thickness of 2 inches, taking care that moisture content remains constant and density is loose and constant until pavers are set and compacted.

3.4 PAVER INSTALLATION

A. Set unit pavers on leveling course, being careful not to disturb leveling base. Use string lines to keep straight lines. Fill gaps between units that exceed 3/8 inch (10 mm) with pieces cut to fit from full-size pavers.

1. When installation is performed with mechanical equipment, use only equipment that lifts an entire face-pallet load at one time.

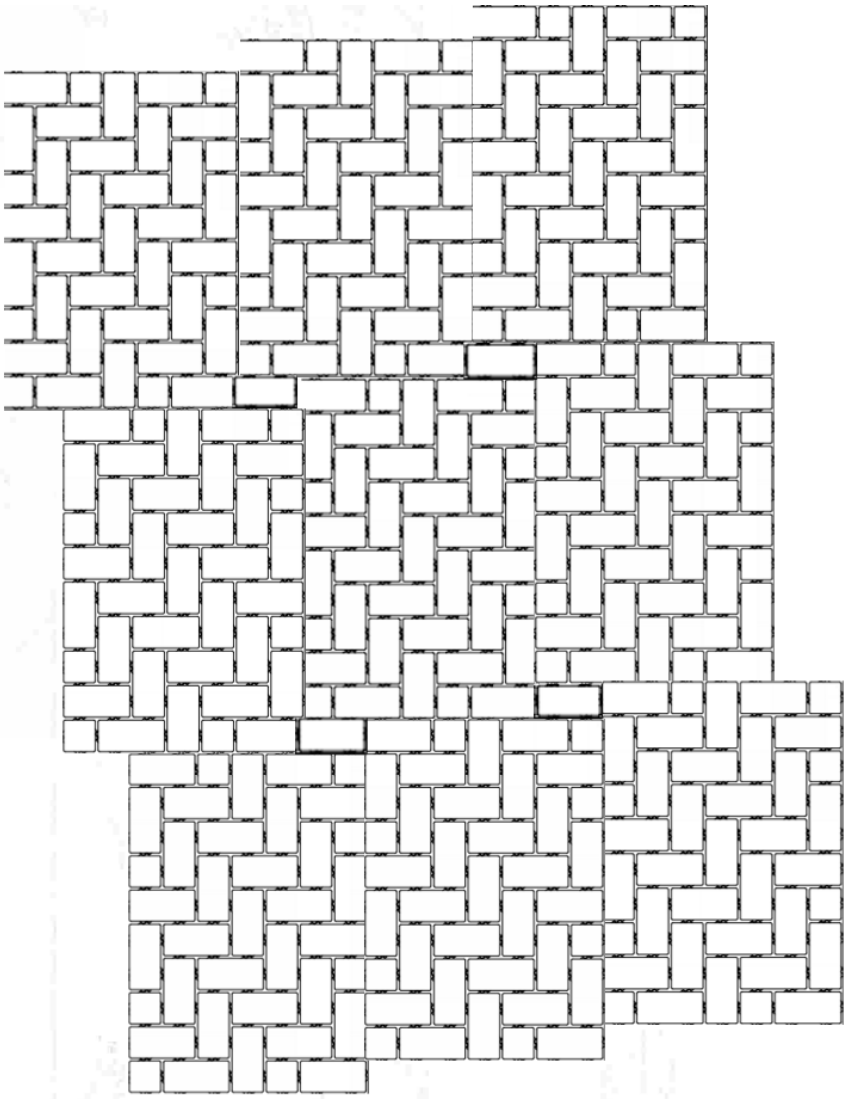
B. Compact pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf (16- to 22-kN) compaction force at 80 to 90 Hz. Use vibrator without a neoprene mat on face of plate. If pavers crack or chip, remove and replace that paver. Perform at least three passes across paving with vibrator.

1. Compact pavers when there is sufficient surface to accommodate operation of vibrator, leaving at least 36 inches (900 mm) of uncompacted pavers adjacent to temporary edges.
2. Before ending each day's work, compact installed concrete pavers except for 36-inch (900 mm) width of uncompacted pavers adjacent to temporary edges (laying faces).
3. As work progresses to perimeter of installation, compact installed pavers that are adjacent to permanent edges unless they are within 36 inches (90 mm) of laying face.

C. Place graded aggregate fill immediately prior to the first compaction pass. After compaction has been complete, sweep additional aggregate into the voids of the pavers as required.

1. Before ending each day's work, place aggregate fill in installed porous paving except for 42-inch (1067-mm) width of unfilled paving adjacent to temporary edges (laying faces).
2. As work progresses to perimeter of installation, place aggregate fill in installed paving that is adjacent to permanent edges unless it is within 42 inches (1067 mm) of laying face.

D. Remove and replace pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement. **Engineer will inspect all pavers at the end of installation for chips, cracks, broken, stained or otherwise that will be required to be replaced as marked in the field.**



STAGGERED MECHANICAL CLUSTER INSTALLATION PATTERN. EC0-PRIORA LAYING PATTERN E, 5X10. MITER CORNERS.

END OF SECTION 321443

SECTION 321613 – CONCRETE CURBS AND GUTTERS

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, material, and equipment required to complete the construction of concrete curb and combination concrete curb and gutter as indicated on the drawings, as hereinafter specified; or as required to properly complete the WORK.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including but not limited to:
1. 311000 – Site Clearing
2. 312000 – Earth Moving

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the existing **Village of Downers Grove** codes and the contents of this document , the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.

1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)

2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

END OF SECTION 321613

SECTION 321723 – PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 WORK INCLUDES

A. All labor, material, and equipment required for the placement of pavement markings for parking stalls or other pavement marks as indicated on the drawings, as hereinafter specified, or as required to properly complete the work.

1.2 RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including, but not limited to:
   1. 321216 – Asphalt Paving.

2. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the contents of this document and the existing **Village of Downers Grove** codes, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.
   1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
   2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.
   3. FHWA, Manual of Uniform Traffic Control Devices, latest revision.

B. The Illinois Department of Transportation Supplemental Specifications and Recurring Special Provisions, latest revision.

C. Exceptions: All reference in the IDOT Specifications to method of compensation shall not apply.

1.4 GUARANTEE

A. Guarantee the new markings under this section to serve for a minimum of two years.

Service shall be considered satisfactory only if the lines remain visible at the end of the specified period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pavement marking shall be paint, meeting the requirements of Article 1095.02 of the IDOT Specifications noted herein.

B. The color shall be yellow, unless otherwise specified on the plans.

C. The glass beads will not be required and may be omitted.

PART 3 - EXECUTION

3.1 CONSTRUCTION OF MARKING LINES

A. Before commencing pavement marking work, examine substrata surfaces to determine that they are free of conditions which might be detrimental to proper and timely completion of the work. Start of work shall indicate acceptance of the substrata.

B. Properly clean all areas to receive paint immediately before applications begin.

C. Lines shall be machine painted to the length and patterns shown on the drawings. Lines shall be straight and true. Lines shall be 4 in. wide or as otherwise required.

D. The lines and figures shall not be exposed to traffic until they have dried.

E. Painted symbols shall be constructed as detailed on the drawings or as detailed in the IDOT Highway Standards.

3.2 CLEAN UP OF MARKING PAINT

A. Remove any paint spills or drips that occur outside the marking lines on the finished pavement.

END OF SECTION 321723

SECTION 323119 – DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Decorative aluminum fences.

B. Related Requirements:

   1. Division 03 Section "Cast-in-Place Concrete" for concrete post concrete fill.
   2. Division 31 Section "Earthwork" for site excavation, fill, and backfill where decorative metal fences and gates are located.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each fence material and for each color specified.

   1. Provide Samples 12 inches in length for linear materials.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for decorative metallic-coated steel tubular picket fences, including finish, indicating compliance with referenced standard.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

PART 2 - PRODUCTS

2.1 DECORATIVE ALUMINUM FENCES

A. Decorative Aluminum Fences: Fences made from aluminum extrusions.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Ameristar Fence Products; Echelon II 4' H 3-Rail Majestic, or comparable product by one of the following:

a. Alumi-Guard, Inc.
b. Carfaro, Inc.
c. Delair Group, L.L.C.
d. Elegant Aluminum Products, Inc.
e. Elite Fence Products, Inc.
f. Iron Eagle Industries, Inc.
g. Japra Group International.
h. Jerith Manufacturing Company, Inc.
i. Master Halco.
j. Merchants Metals; a division of MMI Products, Inc.
k. Royal Aluminum and Steel, Inc.
l. Specrail; a division of Porcelen LLC.
m. Tymetal Corp.

B. Posts: Square extruded tubes.

1. Line Posts: **2-1/2 by 2-1/2** inches with **0.080**-inch wall thickness.
2. End and Corner Posts: 2-1/2 by 2-1/2 inches with 0.080-inch wall thickness.

C. Post Caps: Aluminum castings that cover entire top of posts.

D. Rails: Extruded-aluminum channels, 1-3/4 by 1-3/4 inches with 0.120-inch-thick sidewalls and 0.100-inch-thick top.

E. Pickets: Extruded-aluminum tubes, 1-inch square, with 0.062-inch wall thickness.

1. Terminate tops of pickets at top rail for flush top appearance.
2. Picket Spacing: 4 inches clear, maximum.

F. Fasteners: Manufacturer's standard tamperproof, corrosion-resistant, color-coated fasteners matching fence components with resilient polymer washers.

G. Fabrication: Assemble fences into sections by fastening pickets to rails.

1. Fabricate sections with clips welded to rails for fastening to posts in field.
2. Drill clips for fasteners before finishing.

H. Finish exposed welds to comply with NOMMA Guideline 1, Finish #2 - completely sanded joint, some undercutting and pinholes okay.

I. Finish: Baked enamel or powder coating.

2.2 ALUMINUM

A. Aluminum, General: Provide alloys and tempers with not less than the strength and durability properties of alloy and temper designated in paragraphs below for each aluminum form required.

B. Extrusions: ASTM B 221, Alloy 6063-T5.

C. Tubing: ASTM B 429, Alloy 6063-T6.

D. Plate and Sheet: ASTM B 209, Alloy 6061-T6.

E. Die and Hand Forgings: ASTM B 247, Alloy 6061-T6.

F. Castings: ASTM B 26, Alloy A356.0-T6.

2.3 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

1. For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for strength and compatibility in fabricated items.

B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Division 03 Section "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch maximum aggregate size.

2.4 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 2 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

1. Construction layout and field engineering are specified in Division 01 Section "Execution Requirements."

3.3 DECORATIVE FENCE INSTALLATION

A. Install fences according to manufacturer's written instructions.

B. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches plus 3 inches for each foot or fraction of a foot that fence height exceeds 4 feet.

C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts and sleeves and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Exposed Concrete: Extend 2 inches above grade. Finish and slope top surface to drain water away from post.

3. Posts Set in Concrete: Extend post to within 6 inches of specified excavation depth, but not closer than 3 inches to bottom of concrete.

a. Extend posts at least 5 inches into concrete.
b. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink grout, mixed and placed to comply with grout manufacturer's written instructions. Finish and slope top surface of grout to drain water away from post.

4. Space posts uniformly at 8 feet o.c.

END OF SECTION 323119

SECTION 329100 – SOIL AND LANDSCAPE BED PREPARATION, LANDSCAPE EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section Includes

1. Stockpile excavated topsoil and relocate on site to meet finished grade elevations.
2. Furnish and place of subsoil, topsoil, and organic compost to meet finished grade elevations.
3. Soil testing of supplemental topsoil.
4. Preparation and placement of topsoil in landscape planting beds and turf areas to required finished grades including all soil amendments.
5. Finished grading of all landscape beds and turf areas.

1.02 RELATED SECTIONS

A. Section 312100 – Rough Grading

B. Section 329200 – Lawns and Grasses

C. Section 329300 – Woody and Herbaceous Plant Installation

1.03 QUALITY ASSURANCE

A. Qualifications

1. The contractor shall be a company specializing in landscape construction with a minimum of five (5) years of experience on comparable projects.

B. Code and Standards Compliance

1. All materials and work shall comply with applicable codes, standards and with the requirements of local agencies. The Contractor shall obtain all permits required.

1.04 SUBMITTALS

A. Topsoil Data

1. Provide, to the Landscape Architect, the location(s) and name(s) of topsoil sources from which supplemental topsoil is to be obtained for the project, approximate quantities obtained at each site, depth at which soil was taken and indicate whether crops had grown on site(s).

B. Other Samples

1. The following materials shall be submitted to the Architect for approval prior to delivery to the site.

    a. Submit 1 quart samples of imported topsoil, sand, and organic compost to be used.
    b. Submit manufacturer’s data for fertilizers and amendments recommended by the soil testing analysis.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Topsoil and Organic Compost

1. Coordinate and deliver topsoil and organic compost to pre-approved staging areas. Inform the Architect of all delivery schedules, twenty-four (24) hours in advance of delivery.
2. All deliveries of topsoil and organic compost which in any way fails to meet the requirements of these specifications will be rejected, and the Contractor shall immediately remove such rejected material from the premises and supply suitable material in its place.
3. No deliveries will be permitted when weather conditions are unsatisfactory, or if the approved staging area is not in a satisfactory condition to receive material. No frozen material will be accepted. Do not deliver or handle soil in wet, muddy or frozen conditions. Protect stockpiles from winds and disturbance with landscape fabric or other material.
4. Trucks making deliveries shall use routes as directed to avoid damage to property. The Contractor shall deliver material in dump trucks having pneumatic tires and shall be unloaded from the trucks where directed. All material that is deposited other than in the place designated shall be moved.

B. Other Materials

1. Handle and store all other materials according to manufacturer’s recommendations.

1.06 JOB CONDITIONS

A. General

1. Prior to beginning work, the Contractor shall examine and verify the acceptability of the job site and notify the Landscape Architect of unsatisfactory conditions. The Contractor shall not proceed with the work until unsatisfactory conditions have been corrected or resolved.
2. Where soil preparation occurs in close proximity to other site improvements, adequate protection shall be given to all features prior to commencing work. Any items damaged during soil preparation operations shall be promptly repaired to their original condition at no additional cost to the Owner.

B. Utilities

1. Have all underground utilities located by servicing agencies. In the vicinity of utilities, hand excavate to minimize the possibility of damage to underground utilities.

C. Excavation

1. When conditions detrimental to plant growth are encountered such as limestone, rubble fill, adverse drainage conditions, or obstruction, notify the Landscape Architect prior to placement of any soil.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Subsoil Fill

1. Where site conditions require a layer of fill below the specified bed depth, provide a clean, debris-free mineral material with a brown sandy clay content and granular material with no stones measuring larger than one inch in diameter. The pH should range between 5.5 to 6.5 with no limestone present. Gray clay soils shall not be accepted.

B. Topsoil

1. Utilize on-site topsoil to complete work. Provide imported topsoil material as needed to supplement on-site topsoil.
2. Topsoil, whether on site or imported, shall be uniformly pulverized and blended.
3. Topsoil shall be a sandy loam mineral soil, uniform in color and texture; corresponding to native soils; containing no grass roots, sod, weeds, rocks, stiff clay, clods, or any other substance undesirable to plant growth. The soil shall be loose, friable, and of good tilth. The pH shall range between 5.5 to 6.5.
4. Nutrient data as follows. All soil sampling and testing shall comply with procedures in the USDA Ag. Handbook 60: Diagnosis and Improvement of Saline and Alkali Soils.

Phosphorus	Min. 75 lbs./ac.
Potassium	Min. 300 lbs./ac.
Calcium	Min. 1,500 ppm
Cation Exchange Capacity	Min. 20 mea/100g
Soluble Salt	Max. 1,000 ppm

a. Organic content shall not be less than 3 percent and not greater than 5 percent determined by loss of ignition.
b. Gradation:

Sieve Designation	Percent Passing
No. 4 (4.76 mm)	100
No. 10 (2.00 mm)	95 - 100
No. 18 (1.00 mm)	90 - 100
No. 35 (500 micron)	65 - 100
No. 60 (250 micron)	0 - 50
No. 140 (105 micron)	0 -20
No. 270 (53 micron)	0 -10

c. Textural Grades:

Fine gravel, course sand, medium sand	20 - 40 %
Silt	25 - 60 %
Clay	5 - 20 %

Clay content shall be determined by Bouyoucous hydrometer Test.

C. Sand shall be clean, sharp, course sand passing 1/4” mesh screen and free of foreign and organic matter. The pH shall range between 5.5 to 6.5.

D. Organic Compost shall be thoroughly decomposed organic waste produced at an IEPA registered composting facility. The compost shall have no glass or metal shards present. Any plastic or other man made material shall be no larger than 1/4 in. and sieved out to be less than one percent of the total dry weight. A copy of the compost test results complying with IEPA standards for General Use Compost and certification of IEPA registration shall be provided to the Engineer with each shipment of compost. Compost shall be capable of supporting and germinating vegetation.

E. pH Adjustment

Soil pH adjustments will be made based on soil test lab recommendations.

1. Limestone: Calcium carbonate (ground limestone) with 50% passing a No. 200 mesh sieve, 90% passing a N0. 100 mesh sieve and 100% passing a No.10 mesh sieve. Total carbonates shall not be less than 80%.
2. Sulfur: Granular sulfur.

PART 3 - EXECUTION

3.01 PREPARATION

Protection of Site Improvements: Protect all existing site improvements during excavation. If any existing improvements are damaged, replace or make arrangements with the proper authorities for repair.

3.02 PERFORMANCE

A. Permanent Grass and Sod Bed Preparation: Place topsoil to the required depths per the plans. Distribute required soil amendments evenly and thoroughly per soil test results and incorporate fertilizer into the top 2 inches of dry topsoil as described in Section 329200 – Lawns and Grasses.

B. Landscape Bed Preparation: Prior to installation of any shrubs and herbaceous material, incorporate 2 inches minimum of organic compost into the top 10 inches of topsoil by disking or tilling.

C. Landscape Planter Preparation: Prior to the installation of any shrubs and herbaceous material, place the soil mixture consisting of 2 parts topsoil and 1 part sand to the required depths per the plans. The sand, in the amount required to produce an acceptable planter soil blend, shall be mechanically blended during the pulverization process prior to placement into the planter. The planter soil mixture shall be placed in two lifts. The first lift shall be 2/3 of the planter soil depth. After placing each lift, moisten the surface at a rate sufficient to hydraulically settle the soil. Allow the water to thoroughly percolate through the soil before placing the next lift.

D. Landscape Excavation and Backfill

1. Planting pits shall be round, with vertical sides and flat bottoms, and sized in accordance with the dimensions shown on the drawings.
2. If rotating augers or other mechanical diggers are used to excavate holes, the vertical sides of the pits shall be scarified, fractured, or otherwise broken down to eliminate impervious surfaces.
3. Loosen or scarify soil in the bottom of all plant pits to a depth of four (4”) inches.
4. Existing native soils are to be used as backfill during plant installation. The existing native topsoil and sub-soils used for herbaceous or shrub backfill shall meet the requirements as specified within this section. Landscape beds shall be excavated to proper depths and amended as specified. Landscape beds shall be brought to a smooth and even surface conforming to established grades.
5. Where pavement and other structures have been removed, bring planting bed to sub-grade with suitable subgrade fill.

3.03 CLEANUP AND PROTECTION

A. Clean Up

1. Debris and excess material shall be removed from the site immediately after installation.
2. When an excavation or backfill area is completed, completely clean up all soil piles and sweep all walks and drives.
3. All existing sidewalks and driveways providing access to on-site buildings shall be kept clean and free of obstructions. Other paved areas shall be cleaned when work in adjacent areas is completed

B. Protection

1. Protect all completed work from disturbance from operations of other trades and trespassers. Replace damaged work to specified conditions at no additional cost to the owner.

3.04 ACCEPTANCE

A. Completion of the Work

1. Upon completion of work, the Contractor shall notify the Landscape Architect and the Owner at least ten (10) days prior to requested date of substantial completion of all or portions of the work. Landscape Architect will review all of the work and prepare a punch list of work not installed or not installed in conformance with the contract documents. All work in the punch list must be completed within five (5) working days from date of issue. Where work does not comply with requirements, replace rejected work and continue specified protection and maintenance until reviewed by Landscape Architect and found to be acceptable.

B. Certificate of Substantial Completion

1. Certificate of substantial completion will be issued for acceptable work at sole discretion of the Landscape Architect. If punch list items are issued with the certificate, they must be

corrected within five (5) working days. If items are not corrected within five (5) working days than the certificate of substantial completion will be revoked and reissued when the punch list items are corrected.

C. Final Acceptance

1. After the certificate of substantial completion the Landscape Architect and the Owner will review the work for final acceptance. Upon satisfactory completion of repairs and / or replacements the Landscape Architect will certify, in writing, final acceptance of the work, which will serve as evidence that Contractor's obligations have been met.

END OF SECTION 329100

SECTION 329200 – LAWNS AND GRASSES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work includes furnishing and placing black earth (topsoil), fertilizer, seed and/or sod as stated in the project specifications, and performing all operations in connection with seeding and sodding, all complete and subject to the terms and conditions of the contract.

1.2 RELATED SECTIONS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1. Section 311000 – Site Clearing
2. Section 312000 – Earth Moving
3. Section 329100 – Soil and Landscape Bed Preparation, Landscape Excavation and Backfill
4. Section 329300 – Woody and Herbaceous Plant Installation

1.3 DESCRIPTION

A. Work includes furnishing all labor, materials and equipment required to complete the work described herein in strict accordance with the drawings and terms of the Contract.

B. The landscape contractor shall be familiar with the project premises and how the existing conditions will affect the work.

C. All previous grading to conform with the Drawings and Specifications

1.4 INSPECTION

A. Become familiar with project requirements, site and existing conditions impact on scope of work

B. Inspect existing conditions prior to commencing any work under this Section. Report any discrepancies to Landscape Architect.

C. Failure to report discrepancies to Landscape Architect implies acceptance of existing conditions.

1.5 REFERENCES

A. Illinois Department of Transportation “Standard Specifications for Road and Bridge Construction” (Standard Specifications) most recent edition

B. ASTM International: ASTM C602 - Standard Specification for Agricultural Liming Materials.

1.6 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.7 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.

C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

D. Samples and Analysis:

1. Submit, for review, samples and certified analysis by approved laboratory for seed,

2. fertilizer, and lime prior to delivery to the site.

3. Manufacturer's analysis for standard products will be acceptable.

E. Acceptance of samples shall not be construed as final acceptance. The Landscape Architect reserves the right to have samples taken of the materials delivered to the site of the Work and analyzed for compliance with the Specifications.

1.8 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.9 QUALITY ASSURANCE

A. Provide at least one person thoroughly trained and experienced in the skills required completely familiar with the design and application of the work described in this Section, and who shall be present at all times during progress of the work under this Section and shall direct all work required and performed under this Section.

B. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

C. Seed: Conform to current U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act of August 9, 1939 and all subsequent revisions thereto, and the requirements of the state seed laws.

D. Perform Work in accordance with Standard Specifications.

1.10 QUALIFICATIONS

A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum five years documented experience.

1.11 WORKMANSHIP

A. During seeding, keep all areas neat and clean and with precautions taken to avoid damage to existing plants, turf and structures.

B. Remove all debris and waste material resulting from seeding operations from the project and the area cleaned up upon completion of seeding operation.

C. Repair or restore to original condition any damaged areas caused by the landscape contractor.

1.12 PROTECTION AND REPAIR

A. Use all means necessary to protect site seeding areas before, during, and after installation and to protect the installed work and materials of all other trades.

B. In the event of damage to the site seeding areas including mulch or erosion control blanket, immediately make all repairs or replacements necessary to the approval of the Owner and at all no additional cost to the Owner.

C. Install necessary barricades, temporary fences or signs to protect newly seeded or hydro-seeded/mulched areas until acceptance of the Work.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

D. Protect seed, and other required materials against weather conditions and injuries during transit and job storage.

E. Deliver all items to the site in their original containers with all labels intact and legible at time of Owners representative inspection.

F. Use all means necessary to protect all items before, during and after installation and to protect the installed work and materials of all trades

G. Replacements:

1. Repair all damaged or rejected materials immediately
2. Make all repairs and replacements necessary to the approval of the Owners Representative at no additional cost to the owner.

1.14 GAURANTEE

A. Guarantee this portion of the through the maintenance period and until final acceptance (See Paragraph 3.6 this section.)

B. Within the guarantee period, replace all lawn areas which have failed to flourish and produce a stand of turf acceptable to the Owner due to defective materials or workmanship, or unfavorable weather conditions.

C. The decision of the Owner for replacement Work shall be conclusive and binding upon the Contractor.

D. The Contractor is responsible for all damage to persons or property caused by defective materials or workmanship or by the re-working of areas not acceptable.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil – See Section 329100 – Soil and Landscape Bed Preparation, Landscape Excavation and Backfill.

B. Fertilizer

1. Commercial Fertilizer shall be delivered to the site in unopened, original containers, each bearing name and address of the manufacturer, name brand or trademark and manufacturer's guaranteed analysis.
2. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.
3. The fertilizer formula shall contain a minimum basis percentage by weight of the following:
   Nitrogen, 33% insoluble in water 24%
   Phosphoric Acid 4%
   Potash 8%

4. The balance of the fertilizer shall be made up of materials usually present in such a product, and shall contain IBDU (Isobutylidene Urea).
5. Fertilizer shall be of the inorganic type in composition, dry and free flowing, equal to "PAREX" IBDU. Not more than 2% shall be retained on a 14-mesh sieve and not more than 25% shall pass thru a 65-mesh sieve. It shall be free from dust, sticks, sand, stone and other debris.

C. Kentucky Blue Grass Sod

1. General

a. Kentucky Blue Grass Sod

1. Kentucky Blue Grass Sod shall be nursery grown sod consisting of a blend of Kentucky Blue Grass species. with a minimum of two years growth. Sod shall show evidence of dense well-rooted growth and be practically free from weeds and non-specified species. Grass height of sod shall be approximately 2 inches. Sod shall be raked free of undesirable debris. Sod shall be as specified as follows or an approved equal:
2. It shall contain no bent grass, quack grass or other noxious weed growth and shall be free from fungus and other pests and/or diseases.
3. It shall be of firm, tough texture, having a compact growth of grass and good root development.
4. The sod root zone shall be of good, fertile, natural field soil and free from stones and debris and the sod shall contain sufficient moisture to maintain its vitality during transportation.

2. Harvesting of Sod

a. Mowing: Before being cut and lifted, the sod shall have been mowed at least twice with a lawn mower, with the final mowing not more than seven days before the sod is cut.
b. Cutting: The sod shall be carefully cut into uniform strips one inch thick, and 36-inches long. All strips shall be of the same width, which may be from 12-inches to 18-inches. Strips less than 12-inches or more than 18-inches in width will not be accepted. Each strip shall be rolled as compactly as is possible without breaking the turf.
c. Sod cut for more than 24 hours shall not be used without the approval of the engineer.

3. Inspection of Sod

a. All sod shall be fresh and green when placed. Any sod that is dried out, burned, inferior in quality, or in any way failing to meet the requirements of these specifications will be rejected and the Contractor shall immediately remove such rejected material from the premise and supply suitable material in its place.

PART 3 - EXECUTION

3.1 SITE PREPARATION

A. Spreading and Rough Grading of topsoil as specified in Section 329100: Soil and Landscape Bed Preparation, Landscape Excavation, and Backfill. The Contractor shall spread and rough grade the areas to an elevation approximately 0.2 feet plus or minus below the finish grade as directed by the engineer. All equipment used for spreading and rough grading work shall be as approved by the engineer.

B. Tilling: All areas to be seeded or sodded shall be thoroughly prepared to the required depth of approximately three inches, by disking, harrowing or by other approved means. Limited areas shown on the drawing, which are too small to make these operations practicable shall receive special scarification prior to final tilling. Tilling shall continue until the condition of the soil is acceptable to the engineer as suitable for the specified type of seeding or sodding. When conditions are such, by reason of drought, excess moisture, or other factors that satisfactory results are not likely to be obtained, the work will be stopped by the engineer and shall be resumed only when directed. Undulations or irregularities in the surface that would interfere with further Contractor's operations or maintenance shall be leveled before the next specified operation.

C. Cleanup: After completion of tilling operations, the surface shall be cleared of all stones, stumps or other objects larger than 1-inch in thickness of diameter and of roots, brush, wire, grade stakes and other objects that may be a hindrance to maintenance operations. Adjacent paved areas shall be kept clean and soil or other dirt that may be brought upon the surface shall be removed promptly.

D. Fine Grading: Final grades on the areas to be seeded or sodded are shown on the drawings by contour lines. The surfaces shall be left at the indicated grades in an even and properly compacted condition which insofar as practicable, will not provide dips and pockets where water may stand. Upon completion of tilling operations and immediately prior to sowing seed or placing sod, the area shall be finish graded as needed to correct surface irregularities produced by the preceding operations or by other cause and to restore design grades.

3.2 SPREADING FERTILIZER

A. Fertilizer shall be distributed uniformly at a rate of 300 pounds per acres, over the areas indicated to be seeded or sodded, and shall be incorporated into the soil to a depth at least 2-inches by disking, harrowing or other acceptable methods. The incorporation of fertilizer may be a part of the tillage operation specified above.

3.4 SODDING

A. General

1. The surface on which sod is to be laid shall be firm and free from footprints or other depressions.
2. Sod shall be laid in such a manner that joints between courses do not coincide. Sod shall be tightly fitted and tamped lightly to ensure contact with the surface of the soil at all points.
3. All laid sod shall be protected from usage by workmen or equipment, so as not to disturb joints or cause depressions through footprints or vehicle ruts.
4. Any disturbed areas shall be redone to conform to grade.
5. On slopes steeper than 2:1 and elsewhere where so directed, the sod shall be fastened in place with suitable wooden pins or by other approved methods.

B. Watering

1. Sod shall be thoroughly watered immediately after installation.

2. The sod shall be watered as often as necessary to ensure sufficient water shall be applied to wet the sod bed at least 2-inches deep.
3. Watering shall be done in a manner that will avoid erosion due to application of excessive quantities, and the water equipment shall be of a type that will prevent damage to the finished surfaces.
4. If water is not available on site, the Contractor shall supply water from his own source. The Contractor shall furnish the hose and proper equipment for watering purposes.

C. Mowing

1. The Contractor shall be solely responsible for mowing during construction.

D. Sodded lawn areas to be acceptable shall be in a green and healthy condition, devoid of bare spots.

E. Protection

1. The Contractor is responsible for the proper care of the sodded areas during the period when the vegetation is being established.
2. Newly sodded areas shall be protected against traffic or other use, by enclosing the areas with snow fencing or other approved barrier.
3. “NEWLY SODDED” or other appropriate approved warning placards shall be posted until all work under the contract is completed and accepted.

F. Repair

1. If at any time before completion and acceptance of the entire work covered by this contract, any portion of the sodded surface becomes damaged, dies due to lack of water, becomes rutted due to improper protection, has been winter-killed or otherwise damaged or destroyed, the affected portion shall be repaired to re-establish the condition and grade of the soil prior to sodding and shall then be resodded as specified hereinbefore by the Contractor, at no additional cost to the Owner.

G. Maintenance during Sod Establishment: Maintenance including watering of grass shall continue until all sodding work under this contract has been completed and accepted by the Owner.

3.5 MAINTENANCE

A. Maintenance

1. The Contractor shall be responsible for maintenance until 30 days after the certificate of substantial completion. After the 30 day period from the date on the certificate of substantial completion, the Owner shall be responsible for all aspects of the maintenance.
2. Maintenance during this time period shall include all requirements aforementioned within this specification.
3. The contractor is responsible for the control of weeds during establishment and the maintenance period. Weeds shall be spot treated with a broad-leaved herbicide that is safe for grass or hand pulled. Do not broadcast herbicide applications. The contractor shall remedy all damage resulting from improper herbicide use.

3.6 ACCEPTANCE

A. Completion of the Work

1. Upon completion of work, the Contractor shall notify the Landscape Architect and the Owner at least ten (10) days prior to requested date of substantial completion of all or portions of the work. Landscape Architect will review all of the work and prepare a punch list of work not installed or not installed in conformance with the contract documents. All work in the punch list must be completed within five (5) working days from date of issue. Where work does not comply with requirements, replace rejected work and continue specified protection and maintenance until reviewed by Landscape Architect and found to be acceptable.

B. Certificate of Substantial Completion

1. Certificate of substantial completion will be issued for acceptable work at sole discretion of the Landscape Architect. If punch list items are issued with the certificate, they must be corrected within five (5) working days. If items are not corrected within five (5) working days than the certificate of substantial completion will be revoked and reissued when the punch list items are corrected.

C. Final Acceptance

1. After the 30 day maintenance period following the date of substantial completion the Landscape Architect and the Owner will review the work for final acceptance. Upon satisfactory completion of repairs and / or replacements the Landscape Architect will certify, in writing, final acceptance of the work, which will serve as evidence that Contractor's obligations have been met.

END OF SECTION 329200

SECTION 329300 – WOODY AND HERBACEOUS PLANT INSTALLATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide, install, and maintain trees, shrubs, vines, and herbaceous materials as shown and specified in the contract plans. The work includes:

1. Woody plant material including trees, shrubs, and vines
2. Herbaceous plant material including annuals, biennials, perennials, ornamental grasses, vines, bulbs, and plugs
3. Mulch and Planting Accessories
4. Existing Tree Care
5. Maintenance and Warranty Period

1.02 RELATED SECTIONS

A. Section 329100 – Soil and Landscape Bed Preparation, Landscape Excavation and Backfill

B. Section 329200 – Lawns and Grasses

1.03 QUALITY ASSURANCE

A. Qualifications

1. The Contractor shall be a company specializing in landscape installation with a minimum of five (5) years of experience on comparable projects.

B. Code and Standards Compliance

All materials and work shall comply with applicable sections of the following references:

1. American Association of Nurserymen, Inc. (MN) Standard: American Standard for Nursery Stock (ANSI Z60.1 -1990)

2. Hortus Third, Cornell University, 1976

C. Source Quality Control

1. All landscape materials shall be from stock inspected and certified by authorized governmental agencies. The stock shall comply with governmental regulations prevailing at the supply source and the job site. The Architect reserves the right to ask for certification by authorized governmental agencies.
2. All landscape materials that have been treated with herbicides, pesticides, insecticides, fungicides, etc. should have been applied by a licensed applicator and been treated with products that comply with governmental regulations. The Architect reserves the right to ask for certification.

3. Products packaged in sealed containers shall be labeled with manufacturer's certified analysis. The composition of bulk materials shall be tested by an approved laboratory in accordance with procedures established by the Association of Official Agricultural Chemists, wherever applicable, or as specified by product specifications referenced herein.

4. Plant Material Selected by Contractor

    a. Contractor shall locate all plant material to be supplied for the project and inform the Landscape Architect and Owner in writing of plant location(s) at least thirty (30) days prior to scheduled installation date.
    b. In the event plant material is found to be unacceptable after review by the Landscape Architect, the Contractor shall pursue other sources until acceptable plant material is found, at no additional cost to the Owner and Landscape Architect.
    c. Selection or lack of selection at the plant source does not impair the right of the Landscape Architect to review and reject material at the time of shipping, during installation of the work, or after the installation of the work.

D. Substitutions

1. If specified landscape material is not obtainable, notify the Landscape Architect, who will identify alternate sources or substitutes. If substitutions are smaller in size than the specified material, credits to the base bid contract will be made based on comparable cost differentials customary for materials and sizes involved.

1.04 SUBMITTALS

A. Qualifications

1. The Contractor shall submit qualifications.

B. Nursery List

1. Submit nursery list that complies with the above items under Section 1.03, Quality Assurance.

C. Samples and Product Data

1. Submit samples and/or product data for all items listed below in Section 2.01, Materials.

D. Schedule

1. Upon authorization to proceed with the work, a schedule indicating the dates of each of the following items will be prepared by the Contractor and submitted to the Landscape Architect:

    a. Tagging of plant material in nurseries.
    b. Staking of plant locations on the site.
    c. Digging and preparation of plant pits and beds.
    d. Delivery of plant material to the site.
    e. Planting schedule.

f. Substantial completion of the work.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. General

1. Notify the Landscape Architect and the Owner forty-eight hours in advance of all delivery times for plant material.
2. Store materials only in locations approved by the Landscape Architect and the Owner.

B. Packaged Materials

1. Deliver packaged materials in unopened containers showing weight, analysis, and name of manufacturer. During shipment and storage on site, protect materials from breakage, moisture, heat, or other damage and according to manufacturer’s recommendations.

C. Woody and Herbaceous Plant Materials

1. Schedule shipping to minimize on site storage of plants. Stock shall not be shipped until the planting preparations have been completed.
2. Label the size and variety of plant and securely attach to individual plants or to bundles of like variety and size.
3. During shipment, plants shall not be bent, stacked, or bound in a manner that damages bark, breaks branches, deforms root balls, or destroys natural shape.
4. Plant material shall be transported within enclosed trailers or covered by tarpaulin to protect the material from damage caused by drying winds, heat, freezing, or other exposure that may be harmful to the plants. Plant material arriving at the site in a damaged condition shall be rejected and removed from the site.
5. If delays beyond the Contractor's control occur after delivery, plants shall be kept watered and protected from sun, wind, and mechanical damage; root balls shall be covered with topsoil or mulch. Container-grown stock shall not be removed from containers until planting time. Keep the roots constantly moist until planted.
6. Handle plants at all times in accordance with the best horticultural practices. Lift balled and burlapped materials from the bottom of the ball only. Balled and burlapped plants which have cracked or broken balls shall be rejected and removed from the site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Woody and Herbaceous Plant Material

1. Provide plant materials true to name and variety established by the American Joint Committee on Horticultural Nomenclature Standardized Plant Names, Second Edition, 1942, as indicated on the Drawings.
2. All planting stock shall be nursery-grown in accordance with good horticultural practice. Plants shall be free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injures, abrasions, or disfigurement. They shall be sound, healthy and vigorous, of uniform growth, typical of the species and variety, well formed, free from

irregularities, with the minimum quality conforming to American Standard for Nursery Stock.

3. Plants indicated, as “specimen plants” shall be exceptionally heavy, symmetrical, and tightly knit, cultured, to be unquestionably superior in form, branching, compactness, and symmetry.
4. Plants indicated as plugs shall be, at a minimum, grown in 2 ½ inch diameter containers with sidewall grooves, ribs, or slits.
5. The minimum acceptable sizes of all plants shall be measured before pruning and with branches in normal position. Unless otherwise designated on the drawings, all plant dimensions shall conform to those listed in ANSI Z60.1, American Standard for Nursery Stock.

    a. Where height is indicated within a range, the smaller dimension is the minimum acceptable; the larger dimension represents the maximum permissible except with approval of the Landscape Architect. The average dimension of all plants must at least equal the average of the height range specified.
    b. Spread shall meet the minimum dimension specified in all directions and must be considered as pivoting on the center of the plant. Where range is shown between two spread dimensions, the smaller dimension is the minimum acceptable. Spreads shall at least average on the average of the range indicated.
    c. Caliper is the trunk diameter taken at a specified distance above root collar as described in ANSI Z60.1.
    d. Branching point is the distance above ground where balanced branching occurs or where a dimension on trunk appears to form the head of the tree.
    e. Provide plant material of sizes shown or specified. Plant material of a larger size may be used, if acceptable to the Landscape Architect, and if sizes of roots or root-balls are increased proportionately in accordance with ANSI Z60 standards or greater. Increased size shall result in no additional cost to the Owner.

6. Root Treatment

    a. Root treatments on all plants shall conform to the requirements of ANSI Z60.1. Plants shall be dug and prepared for shipment in a manner that will not cause damage to branches, shape, and future development after planting.
    b. Balled and burlapped (B & B) plants shall have a firm, natural ball of earth of sufficient diameter and depth to encompass the fibrous and feed root systems necessary for full recovery of the plant. Ball shall be securely wrapped with burlap and bound with cord. Ball sizes shall meet the requirements of the ANSI Z60.1.
    c. Plants furnished in containers shall have the roots well established in the soil mass and shall have grown in the container for at least one growing season. Containers shall be large enough to provide earth-root mass of adequate size to support the plant tops being grown. Plants, other than ground covers, over-established in the container, as evidenced by pot-bound root ends, will not be accepted.

7. Plant materials shall be subject to final approval by the Landscape Architect at the site. The Landscape Architect reserves the right to reject any plant material that does not meet project specifications at the time of planting.

B. Topsoil

1. Topsoil for landscape work shall be amended as specified in specification section 329100, Soil and Landscape Bed Preparation, Landscape Excavation and Backfill.

C. Backfill

1. Backfill for landscape work shall be amended as specified in specification section 329100, Soil and Landscape Bed Preparation, Landscape Excavation and Backfill.

D. Shredded Hardwood Bark Mulch

1. Hardwood bark mulch shall be shredded or double-ground, composted hardwood, not to exceed two (2) inches in its largest dimension, free of foreign matter, sticks, stones, roots, soil and/or other unacceptable material.
2. Proportion of fines (material passing sieve size #60) shall not exceed 10% as determined by weight.
3. Contractor shall provide a 1 quart (minimum) sample of mulch to the Landscape Architect project manager for review and approval, before starting work.

E. Anti - Transpirant

1. Anti - transpirant shall be a protective film emulsion providing protective film over evergreen plant surfaces only, permeable to permit transpiration, as manufactured by Wilt Pruf Products, Inc. or approved equal. Mix and apply in accordance with manufacturer's instructions.

F. Herbicide

1. Herbicides shall be products with rates of application that conforms to registered uses and is applied by a licensed professional applicator.

    a. For woody materials ten (10') feet or further from a water body: Garlon 4 herbicide as manufactured by DowElanco or approved equal.
    b. For woody and/or herbaceous material ten (10') feet or further from a water body: Roundup Pro herbicide as manufactured by DowElanco or approved equal.
    c. For woody and herbaceous materials within ten (10') feet of a water body: Rodeo herbicide as supplied by DowElanco or approved equal.

G. Pesticides, Insecticides, Fungicides, etc.

1. If plant material becomes infected with any pests or insects, the most practical and environmentally benign methods should be utilized to control the problem. All products should comply with government regulations and be applied by a licensed applicator. The Landscape Architect reserves the right to ask for certification.

H. Water

1. If water is not available on site, the Contractor shall supply water from his own source. The Contractor shall furnish the hose and proper equipment for watering purposes.

I. Tree Watering Bags

1. Tree watering bags shall be by Treegator or approved equal. Bags shall be installed for all trees installed from June 1 through September 15.

J. Guying and Staking Materials

1. Guying and staking shall only be performed as noted on the plans or as directed by the Landscape Architect.
2. Stakes for tree support shall be hardwood free from knot, rot, cross grain or other defects that would impair strength. Stakes shall be a minimum of 2” by 2” in diameter by 8’-0” long and pointed on one end.
3. Ground anchors for guying shall be 2” x 2” x 3’-0” long wood stake, pointed on one end.
4. Guying wire shall be 12 gauge annealed galvanized steel.
5. Guying cable shall be a minimum of five strands, making a 3/16” diameter steel cable.
6. Hose chafing guards shall be new or used 2-ply, one half inch reinforced rubber or plastic hose and shall be the same color on the project. Length shall be one and one-half times the circumference of the plant at its base.
7. Survey flags to be fastened to guys shall be white plastic surveyor’s tape, 6” in length.
8. Turnbuckles shall be galvanized or cadmium-plated steel and have a 3” minimum lengthwise opening fitted with screw eyes.

PART 3 - EXECUTION

3.01 PROJECT CONDITIONS

A. General

1. Prior to beginning work, the Contractor shall examine and verify the acceptability of the job site and notify the Owner of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected or resolved.
2. Where planting occurs in close proximity to other site improvements, provide adequate protection for all site areas prior to commencing work. Any items damaged during planting operations shall be promptly replaced or repaired to their original condition at the Contractor’s expense and no additional cost to the Owner.
3. A list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings for convenience of the Owner. Verify and supply the quantities required to complete the work as drawn.

B. Utilities

1. Contractor shall be solely responsible for determining location of all utilities. Contractor shall be responsible for obtaining site utility plans and contacting local utility locator service, and shall perform no work on site until utility locator service has marked site utilities. Perform work in a manner that will avoid possible damage. Excavate to avoid underground utilities including hand digging as required. All damage to utilities resulting from work covered in these contract documents will be repaired at the Contractor's expense and no additional cost to the Owner. No time extension will be allowed due to delay in utility location.

C. Planting Season

1. Plant material shall be dug and planted only during the planting season appropriate for each individual plant species. Pre-digging of plants with proper storage may extend the planting season. However, the installation of plant material outside the normal planting season shall be done only with the approval of the Landscape Architect.
2. Evergreen Material: Plant evergreen materials between September 2 and November 1 or in spring before new growth begin. If project timeline requires planting at other times, spray plants with anti-transpirant prior to planting operations.
3. Deciduous Trees: Plant deciduous trees in a dormant condition. If deciduous trees are planted in-leaf, spray with an anti-transpirant prior to planting operations.
4. Woody Material: Plant woody plant materials in Spring between April 1 to June 30 or in Fall between September 1 to November 30.
5. Herbaceous Material: Plant herbaceous materials (including plugs) in Spring between April 15 (with no threat of frost) and June 30 or in Fall between September 1 to October 15.
6. Bulbs: Plant bulbs in a dormant condition between November 1 and 30.
7. When the ground is frozen, no planting activities shall occur.

D. Coordination with Other Work

1. Proceed with complete landscape work as rapidly as portions of the site become available, working within the season limitations for each kind of landscape work is required.

3.02 PREPARATION

A. Layout

1. Layout and plant installation cannot begin until all landscape bed preparation, as detailed within Section 329100, and final grading has been achieved. Once complete, the Contractor must layout all planting areas as shown on the contract drawings/plan. The layout must be performed by qualified personnel. The tree and shrub locations must be marked by staking and all bed limits must be painted. The Landscape Architect must approve the layout prior to installation.
2. Individual plant locations for trees and shrubs as noted on the plan shall be staked on the project site by the Contractor and approved by the Landscape Architect before any planting operations commence. The Landscape Architect reserves the right to adjust plant material locations to meet field conditions, without additions to the base contract price.
3. Accurately stake plant material according to the drawings. Where location or spacing dimensions are not clearly shown, request clarification from the Landscape Architect.
4. If obstructions are encountered that are not indicated, do not proceed with planting operations until alternate plant locations have been selected and approved in writing by the Landscape Architect.
5. If alternate locations are not possible, notify the Landscape Architect of the adverse conditions so the Landscape Architect can request a proposal from the Contractor for method of correction. The Contractor shall obtain approval from the Owner for the additional work prior to continuing work in the affected area.

3.03 PERFORMANCE

A. General

1. Rocks/underground obstructions shall be removed and proper planting depths shall be established to conform to Section 329100 – Soil and Landscape Bed Preparation, Landscape Excavation and Backfill.
2. Plant Pit Excavation

    a. Planting pits shall be round, with vertical sides and flat bottoms, and sized in accordance with the specification and dimensions shown on the drawings.
    b. If rotating augers or other mechanical diggers are used to excavate holes, the vertical sides of the pits shall be scarified, fractured, or otherwise broken down to eliminate impervious surfaces.
    c. Loosen or scarify soil in the bottom of all plant pits to a depth of four (4”) inches.

3. Existing native topsoil are to be used as backfill during installation. The existing native topsoil used for herbaceous or shrub backfill shall meet the requirements as specified within Section 329100 – Soil and Landscape Bed Preparation, Landscape Excavation and Backfill. Landscape beds shall be excavated to proper depths and amended as specified. Landscape beds shall be brought to a smooth and even surface conforming to established grades.

B. Planting Operations

1. When the ground is frozen, no planting activities shall occur.
2. Balled and burlapped (B & B) trees and large shrubs:

    a. Set the plant in the pit to the same relationship to the grade as in the original container or at the top of the burlap ball, faced to give the best appearance or relationship to one another and adjacent structures. Cut away burlap, rope, wire, or other wrapping materials one-third (1/3) of the way from the top of the ball and remove from pit. Do not remove burlap or ties from sides or bottom of ball. If plastic wrap or other non-biodegradable materials are used in lieu of burlap, completely remove them before placing of backfill. Cleanly cut off broken or frayed roots. Place approved topsoil and fertilizer around the ball and carefully compact to avoid injury to the roots and to fill the voids. Apply fertilizer at a rate recommended by the manufacturer. After backfilling planting pit, approximately two-thirds full, add water and allow planting mixture to settle. After the water has been absorbed, fill the planting pit with topsoil tamp light to grade and form a watering basin of the size indicated. In tree grates, set top of root ball to allow a two-inch air space between the mulch layer and the bottom of the grate.
    b. Plant container-grown shrubs as specified above for balled and burlapped plants and as modified herein. Remove containers before planting and loosen the sides of root ball in several places, freeing the roots on the outside of the ball sufficiently to encourage rapid root extension into the surrounding soil and to prevent girdling of root mass.

3. Plant groundcover, perennials, plugs and annuals so that the top of the root mass is even with the surrounding grade. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Backfill planting with specified planting mixture and fertilizer at a rate recommended by manufacturer.

4. Where erosion control blanket is specified on the plan documents, plant herbaceous plugs after placement of erosion control blanket. Contractor will be required to carefully slit installed erosion control blanket for plug installation. Contractor shall ensure minimal disturbance to the erosion control blanket during installation.
5. Plant bulbs to the depths and spacing as indicated on the plans and details.
6. Planting of shrubs, groundcovers, bulbs and annuals around tree root balls shall occur beyond the perimeter of the root ball. Do not plant directly over any root balls.

C. Mulching

1. General

a. Mulch shall be applied by hand, with appropriate tools and equipment, in such a way as to prevent and preclude damage to the plant material being mulched. Plant material damaged or destroyed due to improper mulching operations will be replaced by the contractor, at his expense.
b. Plant material shall be mulched with approved mulch to the following depths:
c. Shredded Hardwood Bark Mulch

1. Woody plant material to receive a maximum depth 4”; minimum 3” of shredded hardwood bark mulch

d. Mulch shall be applied evenly over the entire area to be mulched with the following exceptions:

1. Mulch shall be held back a minimum of 1” from the base of tree trunks, and tapered up to the adjacent depth.
2. Mulch shall not be placed against, among or between the trunks or stems of multi-stemmed trees, shrubs, perennials, or any other plant material.
3. Leafy stems of groundcover or vines shall not be buried under mulch material.
4. Plant material requiring differing depths of mulch which are present in one planting bed shall be mulched to each plant type’s required depth; transitions between areas of differing depths of mulch shall be accomplished as to minimize uneven surfaces.

e. Prior to installation of new mulch, old decomposed mulch is to be removed as necessary to proper depth of new mulch.
f. “Volcano” mulching, the practice of heaping mulch against the stems or trunks of plant material is strictly forbidden. Plant material with bark or trunk damage due to this practice will be replaced by the Contractor, at his expense.

2. Mulch tree rings

a. Maintain and/or re-establish existing mulched tree rings

1. Remove excess or decomposed mulch to prevent build up over tree roots and/or against the trunk
2. Mulched tree rings shall be a minimum of 6 ft diameter on trees of 8” caliper or less; larger trees shall have mulch rings a minimum of 3 ft radius, measured from the outside of the base of the tree (for a tree 24” in caliper, the mulch ring will be 8 ft in diameter: 3 ft + 24” + 3 ft = 8 ft).

3. Supply and install approved shredded hardwood mulch to trees rings as needed to bring mulch depth to that specified.
4. Edge mulch rings as necessary to maintain a clean, crisp edge.

b. Establish new mulched tree rings

1. Remove grass, weeds and all other existing cover, including surface roots, from areas to be developed as mulch rings.
2. Mulched tree rings shall be a minimum of 6 ft diameter on trees of 8” caliper or less; larger trees shall have mulch rings a minimum of 3 ft radius, measured from the outside of the base of the tree (for a tree 24” in caliper, the mulch ring will be 8 ft in diameter: 3 ft + 24” + 3 ft = 8 ft).
3. Edge mulch rings as specified on drawings.
4. Supply and install approved shredded hardwood mulch to depth as specified.

c. Edging of tree rings
1. All tree rings within lawn or turf areas are to be edged as necessary to maintain a clean, crisp appearance.
2. Edging is to be accomplished by hand with an edging tool, or by using a rotating or vibrating blade power driven machine which produces a maximum 2” deep x 2” wide trench at the transition edge. Edging machines which produce a cut deeper than 2” are not acceptable.
3. All edging work is to be performed and accomplished in such a way as to prevent and preclude damage or injury to surface roots.
4. All debris generated by edging activities is to be removed from adjacent surfaces.

3. Mulch Perennial and Shrub Landscape Beds

a. Maintain and/or re-establish existing mulched landscape beds

1. Remove excess or decomposed mulch to prevent build up over crown of plant
2. Supply and install approved shredded hardwood to landscape beds as needed to bring mulch depth to that specified.
3. Edge existing landscape beds as necessary to maintain a clean, crisp edge.

b. Establish new landscape beds

1. Remove grass, weeds and all other existing cover in areas shown in plans, including surface roots as directed by landscape architect, from areas to be developed as planting beds.
2. Mulched landscape beds shall have a clearance buffer of (6) six inches between the first row of planting and landscape bed edge.
3. Supply and install approved organic shredded leaf mulch to depth as specified.

c. Edging of landscape beds

1. All landscape beds within lawn or turf areas are to be edged to maintain a clean, crisp appearance.
2. Edging is to be accomplished by hand with an edging tool, or by using a rotating or vibrating blade power driven machine which produces a maximum 2” deep x

2” wide trench at the transition edge. Edging machines which produce a cut deeper than 2” are not acceptable.
3. All edging work is to be performed and accomplished in such a way as to prevent and preclude damage to existing and installed plant material.
4. All debris generated by edging activities is to be removed from adjacent surfaces.

D. Pruning

1. General

a. Pruning is to be performed by Certified Arborists only. Plant material is to be pruned only to remove damaged or broken material. The Architect shall approve pruning techniques and appearance before proceeding with all pruning.
b. Trimmings shall be removed from the site and legally disposed.

2. Trees

a. Prune trees by removing all dead wood, badly formed, interfering limbs, and sufficient other growth to ensure healthy and symmetrical growth of new wood. The proportion is, in all cases, subject to the approval of the Architect. The central leader shall not be removed.
b. In the case of multiple leaders, preserve the one which will best promote the symmetry of the tree, and remove or cut back the remainder so that they will not compete with the selected leader. Cut back surrounding top branches to conform to the leader.
c. Specified multi-Stem trees are to be pruned per the direction of the landscape architect to help maintain canopy clearance for accessibility and room for lower landscape plantings.
d. Contractor to contact landscape architect at least 24 hours before installation and before commencement of pruning activities.

3. Shrubs

a. Prune shrubs by removing all dead wood and broken branches, thinning out canes and cutting back or removing asymmetrical branches. Pruning shall result in a loose outline conforming to the natural shape of the shrub type. Shearing to unnatural shapes will not be accepted.

3.04 CLEAN UP AND PROTECTION

A. Clean Up

1. Excess and waste material shall be removed daily. Keep pavement clean and work area in an orderly condition.
2. When planting in an area has been completed, the area shall be cleared of all debris, soil piles, containers and all paved areas swept.
3. At least one paved pedestrian access route and one paved vehicular access route to each building shall be kept clean at all times. Other paving shall be cleaned when work in adjacent areas is completed.

B. Repairs

1. Any damage to existing landscape, paving, or other such features as a result of work related to this contract shall be repaired by the responsible Contractor to its original condition. Treat, repair, or replace damaged work at the Contractor's expense and at no additional cost to the Owner.

C. Protection

1. Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods.

D. Insurance

1. Insurance on plant material and other materials stored or installed is the responsibility of the Contractor. Such insurance shall cover fire, theft, vandalism, and any other damage that may occur to the plant material. Should the Contractor elect not to provide such insurance, the Contractor will in no way hold the Owner responsible for any losses incurred during the project. The Contractor is responsible for all costs incurred in replacing materials prior to date of substantial completion.

3.05 MAINTENANCE

A. Maintenance

1. The Contractor shall be responsible for maintenance until 1 year after the certificate of substantial completion. After the 1 year period from the date on the certificate of substantial completion, the Owner shall be responsible for all aspects of the maintenance. The Contractor should review the site periodically during the warranty period to determine what changes, if any, should be made in the maintenance program.
2. Maintenance during this time period shall include pruning, cultivating, weeding, watering, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.

    a. Re-set settled plants to proper grade and position. Restore and replenish mulch beds per specifications.
    b. Water-in woody and herbaceous plant material at the time of initial planting. Water should be enough to saturate the soil and provide adequate coverage to settle the soil and remove any air pockets or voids within the planting bed. If settling occurs add additional topsoil and mulch as necessary to restore the final grade as shown on plans taking care to not cover crowns. Additional material needed to perform this work shall come at no additional cost to the Owner.
    c. After initial water-in, the Contractor is responsible to water the plant material at a minimum of twice per week until 1 year after substantial completion during the first growing season.

3. Maintenance review should occur at a minimum of 1 time per month during the warranty period to confirm the condition of plant material.

3.06 ACCEPTANCE

A. Completion of the Work

1. Upon completion of work, the Contractor shall notify the Landscape Architect and the Owner at least ten (10) days prior to requested date of substantial completion of all or portions of the work. Landscape Architect will review all of the work and prepare a punch list of work not installed or not installed in conformance with the contract documents. All work in the punch list must be completed within five (5) working days from date of issue. Where work does not comply with requirements, replace rejected work and continue specified protection and maintenance until reviewed by Landscape Architect and found to be acceptable.

B. Certificate of Substantial Completion

1. Certificate of substantial completion will be issued for acceptable work at sole discretion of the Landscape Architect. If punch list items are issued with the certificate, they must be corrected within five (5) working days. If items are not corrected within five (5) working days than the certificate of substantial completion will be revoked and reissued when the punch list items are corrected.

C. Warranty

1. Maintain and warrant for a period of one (1) year, following the certificate of substantial completion, all work, against any defects (including death and unsatisfactory growth) as determined by the Landscape Architect. Defects resulting from neglect by the Owner, abuse or damage by others, or unusual phenomena or incidents beyond the Contractor's control are exceptions. Should questions arise concerning the responsibility of replacement, the Landscape Architect shall be the sole judge of the need for replacement.
2. Remove and replace all work found to be dead or in unhealthy condition during warranty period as determined by Landscape Architect.
3. Replacements shall match adjacent specimens of same species. Replacements are subject to all requirements stated in the contract documents and are subject to review by the Landscape Architect at the project site and should be installed during appropriate planting seasons.
4. Repair grades, paving and any other damage resulting from replacement planting operations, at no additional cost to the Owner.
5. Replacements made during the warranty period or following review for final acceptance will carry an additional one (1) year warranty beginning at the time of replacement.

D. Final Acceptance

1. One (1) years after date of substantial completion the Landscape Architect and the Owner will review the work for final acceptance. Upon satisfactory completion of repairs and / or replacements the Landscape Architect will certify, in writing, final acceptance of the work, which will serve as evidence that Contractor's one (1) year warranty obligations have been met.

END OF SECTION 329300

SECTION 330513 – MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.01 WORK INCLUDES

A. Storm sewer manholes, catch basins and inlets, sanitary sewer manholes and water main valve vaults, as specified on the plans.

1.02 RELATED WORK

A. Specified elsewhere:
1. 312333 – Trenching and Backfill
2. 333000 – Sanitary Sewerage Utilities
3. 331000 – Water Utilities
4. 334000 – Storm Drainage Utilities

1.03 QUALITY ASSURANCE

A. The following documents shall provide the standards for construction within the **Village of Downers Grove** unless otherwise stated in these specifications. In the event of conflict between these specifications and the existing **Village of Downers Grove** codes, the **Village of Downers Grove** codes will prevail.
1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

B. Utility Compliance: Comply with local utility regulations and standards pertaining to storm sewerage systems.

C. Exceptions: All references in the Illinois Department of Transportation Standard Specifications and the Standard Specifications for Water and Sewer Main Construction in Illinois to method of measurements and compensation shall not apply.

1.04 SUBMITTALS

A. Manufacturer's Data.
1. Manufacturer's standard data sheet showing compliance with applicable codes and specifications. Data shall indicate joint material for joining of precast sections. Submit data on: sanitary sewer manholes, storm sewer manholes, storm sewer catch basins, water main valve vaults and other associated structures.

PART 2 - PRODUCTS

2.01 PRECAST SECTIONS

A. Sanitary and storm sewer manholes and precast storm sewer inlets shall be precast concrete in accordance with ASTM C478. Manholes less than four feet in depth shall have precast concrete flat slab top while manholes greater than four feet in depth shall have precast concrete cone sections unless shown otherwise on the drawings. All joints between precast sections shall be made with a rubber gasket. Manhole steps shall be cast iron or reinforced plastic. Manhole frame shall be sealed to top precast section with bitumastic material. Access hatches where shown on the drawings shall be cast in place. Pipe openings shall be equipped with a cast in place flexible pipe seal. Storm Sewer Manholes shall meet the requirements of IDOT Standard Specifications Section 602.

2.02 FRAMES AND COVERS

A. Storm Manhole Frames and Covers: Type as specified on the plans, from East Jordan Foundry Company, Neenah Foundry Company, or approved equal. Solid lids are to have the word “STORM” indented and cast into the lid.

B. Sanitary Manhole Frames and Lids: Lids are to be solid, self-sealing with a pick hole. Product is to be from East Jordan Foundry Company, Neenah Foundry Company, or approved equal. The word “SANITARY” is to be indented and cast into the lid.

C. Water Valve Vaults Frames and Lids: Lids are to be solid, self-sealing with a pick hole. Product is to be from East Jordan Foundry Company, Neenah Foundry Company, or approved equal. The word “WATER” is to be indented and cast into the lid.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine the area where and conditions under which manholes, catch basin or vaults are to be installed. Notify Engineer in writing of conditions detrimental to proper and timely completion of the work.

3.02 COORDINATION

A. Schedule work and notify all crafts in time so that provisions for their work can be made without delaying the project.

3.03 INSTALLATION

A. Excavation
1. In order to permit the joints to be installed properly and also to permit proper compaction of the backfill material, the excavation shall be made to a diameter of at least two feet greater than the outside diameter of the structure.

B. Subbase Preparation
   1. Adequate foundation for all manhole structures shall be obtained by removal and replacement of unsuitable material with well-graded granular material, by tightening with coarse ballast rock, or by such other means provided for foundation preparation of the connected sewers.

C. Manhole Base Installation (Precast Base)
   1. A well-graded granular bedding course conforming to the requirements for aggregate for trench backfill (Section 312300), not less than four inches in thickness and extending to the limits of the excavation, shall be firmly tamped and made smooth and level to assure uniform contact and support of the precast element. A precast base section shall be carefully placed on the prepared bedding so as to be fully and uniformly supported in true alignment and making sure that all entering pipes can be inserted on proper grade.

D. Precast Manholes
   1. Precast manholes may be constructed with a precast base section or a monolithic base structure as specified. Precast sections shall be placed and aligned to provide vertical sides and vertical alignment of the ladder rungs. The completed manhole shall be rigid, true to dimensions and shall be watertight.
   2. All lift holes on precast elements shall be completely filled with an approved bitumastic material. All joints between precast elements on sanitary sewer manholes shall be made with an O-ring rubber or neoprene gasket.

E. Construction Details
   1. Inlet and Outlet Pipes for Break-in Connections. Pipe or tile placed in the masonry for inlet or outlet connections shall extend through the wall and beyond the outside surface of the wall a sufficient distance to allow for connections, and the masonry shall be carefully constructed around them so as to prevent leakage along the outer surfaces. Special care shall be taken to see that the openings through which pipes enter the structure are completely sealed by use of nonshrink, non-metallic grout. A rubber gasket shall be installed on the barrel of the pipe prior to grouting it in place. No break-in connections will be allowed without written authorization from the Construction Manager.

   2. Placing Castings: Casting adjustments of less than two inches shall be with mortar. The mortar shall be mixed in proportion of one part cement to three parts sand, by volume, based on dry materials. Castings shall be set accurately to the finished elevation so that no subsequent adjustment will be necessary. Castings shall be sealed to concrete sections with bitumastic material.
   3. Manhole Inverts: Construct manhole flow channels of concrete of sewer pipe, which shall be of semicircular section conforming to the inside diameter changes in size or grade gradually, and changes in direction shall be by true curves. Provide channels for all connecting sewers to each manhole and benching shown on the drawings.

F. Backfill
1. The space between the sides of the excavation and the outer surfaces of the manhole shall be backfilled with aggregate for trench backfill when the manhole is within a pavement area or when the nearest point of the excavation for the manhole falls within two feet of the pavement edge.

G. Cleaning
1. All newly constructed manholes shall be cleaned of all accumulation of silt, debris or foreign matter of any kind and shall be free of such accumulations at the time of final inspection.

END OF SECTION 330513

SECTION 334000 – STORM DRAINAGE UTILITIES

PART I - GENERAL

1.1 WORK INCLUDES

A. All labor, materials, and equipment required to satisfactorily install the storm sewer and appurtenances as shown on the plans.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, including, but not limited to:
1. 312333 – Trenching and Backfill

B. Work under this Section shall be done in accordance with the applicable provisions of the “Code of Ordinances”, latest edition, as adopted by the **Village of Downers Grove**, Illinois.

1.3 QUALITY ASSURANCE

A. Unless specifically stated in the specifications, the following documents shall provide general requirements and covenants applicable to construction within the **Village of Downers Grove**. In the event of conflict between the existing **Village of Downers Grove** codes and the contents of this document, the former will supercede the latter and/or the decision of the **Village of Downers Grove** will prevail.

1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, latest revision, along with the Supplemental Specifications and Recurring Special Provisions. (Method of Measurement and Basis of Payment shall not apply.)
2. I.S.P.E., Consulting Engineers Council of Illinois, et. al., Standard Specifications for Water and Sewer Main Construction in Illinois, latest revision.

B. Environmental Compliance: Comply with applicable portions of local Environmental Agency regulations pertaining to storm sewerage systems.

C. Utility Compliance: Comply with local utility regulations and standards pertaining to storm sewerage systems.

1.4 SUMMARY

A. This Section includes storm sewerage system piping and appurtenances as indicated on the plans outside the building to the point of disposal.

1.5 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections:
   1. Product data for drainage piping specialties.
   2. Shop drawings for precast concrete storm drainage manholes, catch basins and inlets, including frames, covers, and grates.

1.6 PROJECT CONDITIONS

A. Site Information: Perform site survey, research public utility records, and verify existing utility locations. Verify that storm sewerage system piping may be installed in compliance with original design and referenced standards.

1.7 PROJECT RECORD DOCUMENTS

A. Record location of pipe runs, service connections, manholes, cleanouts, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

END OF SECTION 334000