Vernon Hills Park District
Skate Park Development
Vernon Hills, IL

PROJECT MANUAL
BID DOCUMENTS

www.JSDinc.com

Prepared for:

Vernon Hills Park District
635 N. Aspen Drive
Vernon Hills, IL 60061

JSD Project No. 19-9431

Issued for Bid: January 6, 2020
Bid Opening: January 21, 2020 2:00 PM

JSD Professional Services, Inc.
• Engineers • Surveyors • Planners

SKATE PARK DEVELOPMENT
VERNON HILLS PARK DISTRICT

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VERNON HILLS PARK DISTRICT

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ADVERTISEMENT for BID

Project Name: Skate Park Development

Location: 635 Aspen Drive
Vernon Hills, IL 60061

The Vernon Hills Park District (the "District," "Park District" or "Owner") will receive sealed bids for the above referenced Project until **January 21 @ 2:00pm**, at the Vernon Hills Park District office, 635 Aspen Drive, Vernon Hills, Illinois 60061-1620, and thereafter will be publicly opened and read aloud.

Each bid must be placed in a sealed opaque envelope and shall be clearly marked **"Sealed Bid – Skate Park Development"** addressed and delivered to the **Vernon Hills Park District, Attn: James Kim, Parks Superintendent – 635 Aspen Drive Vernon Hills, IL 60061-1620.**

Bid Documents are available through the BHFX Planroom at www.bhfxplanroom.com/jobs/public or may be obtained from the Vernon Hills Park District website: www.vhparkdistrict.org. For more information, contact Lori Vierow, Landscape Architect, #630-362-6681 or lori.vierow@jsdinc.com.

The District reserves the right to waive all technicalities, to accept or reject any or all bids, to accept only portions of a bid and reject the remainder. Owner will award the Contract to the lowest most responsible and responsive Bidder, as determined by Owner. In considering the Bidder's responsibility, the Owner may evaluate, among other factors, the ability of the Bidder to provide experienced labor sufficient in numbers to timely and properly complete the Work, the financial capability of the Bidder, and the performance of the Bidder on other projects.

Bids shall not include federal excise tax or state sales tax for materials to be incorporated in, or totally consumed in the prosecution of the Work. A tax exemption certificate will be furnished by the Park District at the request of the Bidder. The Park District's tax exemption number shall only be used by the successful Bidder for the Work of this Project. After the bid opening, no bid may be withdrawn or canceled for a period of (60) calendar days.

The Work of this Project is subject to the Illinois *Prevailing Wage Act*, 820 ILCS 130/0.01 *et seq*. A prevailing wage determination has been made by the Park District, which is the same as that determined by the Illinois Department of Labor for public works projects in Lake County. The Contract entered into for the Work will be drawn in compliance with said law and proposals should be prepared accordingly and provide for payment of all laborers, workmen, and mechanics needed to perform the Work at no less than the prevailing rate of wages (or the prevailing rate for legal holiday and overtime work) for each craft, type of worker, or mechanic.

All bids must be accompanied by cashier's check or bid bond payable to the order of the Vernon Hills Park District for ten percent (10%) of the amount of the bid as provided in the Instructions to Bidders. No proposals or bids will be considered unless accompanied by such bond or check.

The Contractor(s) selected will also be required to comply with all applicable federal, state and local laws, rules, regulations and executive orders, including but not limited to those pertaining to equal employment opportunity.

The Vernon Hills Park District is an Equal Opportunity Employer and encourages "minority" business firms to submit bids on the approved Project and encourages the successful Contractor(s) to utilize minority businesses as sub-Contractors for supplies, equipment, services and construction.

Dated at the Vernon Hills Park District, Vernon Hills, Illinois, January 6, 2020

by_____
Jeff Fougerousse, Executive Director

INSTRUCTIONS TO BIDDER

DATE: January 6, 2020

BID REQUEST: Skate Park Development (the "Project").

Sealed bids will be accepted until **January 21, 2020 @ 2:00 pm** and immediately there after publicly opened and read aloud at **Vernon Hills Park District, 635 Aspen Drive Vernon Hills, IL 60061.** Bids arriving after this time will be rejected and will be returned unopened, including mailed bids regardless of when post marked. All Bidders are welcome to attend the bid opening. After bid opening, bids will be submitted for approval to the Vernon Hills Park District Board of Park Commissioners at a regularly scheduled meeting.

1. Preparation and Submission of Bid Proposal

It is the sole responsibility of the Bidder to see that his bid is received in proper time. **No faxed or e-mail bid or modification of a bid will be considered**. The Park District is not responsible for the premature opening of bids not marked as required. Any bid opened prematurely due to the failure of the Bidder to mark the envelope in accordance with these Bid Documents will be considered non-responsive. Bidders' prices are to include the delivery of all materials; including; equipment, supplies, tools, scaffolding, transportation, insurances, bonds, warranties, and all other items and facilities, and the performance of all labor and services, necessary for the proper completion of the Work except as may be otherwise expressly provided in the Contract Documents. Bids shall not include federal excise tax or state sales tax for materials to be incorporated in, or totally consumed in the prosecution of, the Work. An exemption certificate will be furnished by the Park District upon request of the Bidder.

Bidder must acknowledge all Addenda received in the spaces provided on the Contractor Bid Form. By submitting a bid, Bidder indicates that all considerations issued by Addendum are incorporated in the bid.

Bidders shall return the Bid Proposal Forms, Bid Recap, and ALL signed/notarized pages required with the bid.

Attached to the Bid Form will be one or more certifications regarding the Bidder's compliance with applicable laws. **Failure of a Bidder to complete/submit a required certification shall be the basis for immediate rejection of that Bidder's bid**. The certification of the successful Bidder shall become a part of the Contract with the Park District.

The Bidder shall submit its prices on the attached Contractor Bid Form. The Bid Form shall be executed properly and all writing, including all signatures, shall be with black ink. Failure

to use the Bid Form provided could result in rejection of the bid. Do not detach any portion of this document; invalidation of the bid could result.

The Bidder shall specify in figures, in the places provided, a price for each of the separate items called for in the Bid Form.

2. Requirement of Bidders

Bidders must be able to demonstrate that they: 1) have experience in performing and have successfully performed and are still actively engaged in performing work similar in kind and scope to the Work of the Project; and 2) are able to show that they have adequate laborers and materials to successfully complete the Work as indicated in t the Bid Documents and within the time required by the Bid Documents. The Contractor shall not have been debarred or determined ineligible for public contracts by any governmental agency.

The following information must be attached to the bid proposal. Failure to do so may result in disqualification of the Bidder.

On a separate sheet, list all construction projects your organization has in progress, giving the name of the project, project description, project address, owner and telephone number, architect and telephone number, contract amount, percent complete, and scheduled completion date.

On a separate sheet, list all construction projects your organization has completed in the past two years, which are comparable in scope, giving the name of the project, project description, project address, owner and telephone number. Also provide the original contract amount, the final contract amount, the substantial and final completion dates provided for in the contract and the actual dates of substantial and final completion. Where the final contract amount is materially greater than the contract amount included in the contract at the time of execution by both parties, provide an explanation of the reason(s) for the increase. Where the actual dates of substantial and/or final completion differ from those dates as included in the contact at time of execution by both parties, explain the reason for the delay in the substantial and/or final completion of the Work.

On a separate sheet, list all administrative proceedings and litigation filed by or against Bidder in the past five (5) years, including the name and case number, name/jurisdiction of the court or administrative agency, and a summary of each claim/case, including current status and if no longer pending, the disposition. The foregoing includes but is not limited to information regarding any proceedings and actions taken by any governmental agency to debar or disqualify the Bidder from bidding on public contracts, including the name of the agency initiating the proceeding/action, the nature of the proceeding/action, the claimed basis for the proceeding/action and the current status or disposition of the proceeding/action.

On a separate sheet, indicate all instances in which Bidder has been rejected for not being a responsible bidder, giving the name of the project, project description, project address, owner and telephone number, architect and telephone number, contract amount, and an explanation of the circumstances surrounding the rejection.

On a separate sheet, provide a list of all contracts to which you were a party and with respect to which you were declared to be in breach of one or more provisions, giving a the type of contract, the project location where applicable, the names and addresses of the parties to the contract, the name of the party declaring the breach, the nature of the claimed breach and current status or resolution of the claim. If a construction contract, also provide the name, address and telephone number of the architect and, if applicable also the construction manager or Owner's representative.

Other required submittals include: Bid proposal; Contractor's Compliance and Certification Attachment/ Substance Abuse Prevention Program Certification. **Failure of a Bidder to complete/submit these documents shall be the basis for immediate rejection of that Bidder's bid**.

3. Examination of Site, Drawings, Specifications

Each Bidder shall visit the site(s) of the proposed Work and fully acquaint himself with conditions, as they exist, and shall undertake such additional inquiry and investigation as he shall deem necessary so that he may fully understand the requirements, facilities, possible difficulties and restrictions attending the execution of the Work under the Contract. Bidder shall thoroughly examine and be familiar with all of the Bid Documents including but not limited to the Drawings and the written Specifications. Any conflicts or discrepancies found between or among Bid Documents including but not limited to the Drawings and written Specifications and the site conditions, or any errors, omissions or ambiguities in the Drawings or written Specifications shall be immediately reported to the Park District and the Architect and written clarification requested prior to submission of a bid.

The failure or omission of any Bidder to obtain, receive or examine any form, instrument, or information or to visit the Project site(s), and become knowledgeable with respect to conditions there existing, or to seek needed clarification shall in no way relieve any Bidder from any obligations with respect to his/her bid. By submitting a bid, the Bidder agrees, represents and warrants that he has undertaken such investigation as he deemed necessary, has examined the site(s) and the Bid Documents, has obtained all needed clarifications and where the Bid Documents indicate in any part of the Work, that a given result be produced, that the Bid Documents are adequate and the required result can be produced as indicated in the Specifications and Drawing(s). Once the award has been made, failure to have undertaken and completed the foregoing tasks shall not be cause to alter the original Contract or to request additional compensation.

4. Acceptance or Rejection of Bids

The Park District may accept the bid of, and award the contract for the Work to, the lowest responsive and responsible Bidder as determined by and in the sole discretion of the Park District.

The Owner reserves the right to (1) reject all bids; (2) reject only certain bids which are non-conforming or non-responsive to the bid requirements; (3) accept only a portion, part or specific items of Work of all and reject others, as the Owner shall in its sole discretion determine to be in its best interest; and/or (4) award the Contract to the responsible Bidder submitting the lowest bid responsive to the bidding requirements. No bid will be accepted from or Contract awarded to any person, firm or corporation that is in arrears or is in default to the Park District upon any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligation to said Park District or that has failed to perform faithfully any previous contract with the Park District.

In the event of a rejection of a portion, part, or certain items of Work of all bids, the bid of each Bidder shall automatically be deemed reduced by the amount of such rejected part or item at the unit price or other cost designated therefore by that Bidder on its submitted Contractor Bid Form. The successful Bidder so selected may not refuse to enter into a Contract with the Owner on the basis that the Owner awarded a Contract for less than all portions or items of the Work specified in the Bid Documents. The Vernon Hills Park District Board of Park Commissioners reserves the right to waive any technicalities or irregularities, and to disregard any informality on the bids and bidding, when in its opinion the best interest of the Park District will be served by such actions and in accordance with applicable law.

5. Surety

All bids must be accompanied by a bid bond or bank cashier's check payable to the Vernon Hills Park District for ten percent (10 %) of the amount of the bid and drawn on a responsive and responsible bank doing business in the United States. All bids not accompanied by a bid security, when required, will be rejected.

The bid security of all except the three (3) lowest responsive and responsible Bidders will be returned after the decision to accept or reject bids by the Vernon Hills Park District Board of Park Commissioners. The bid security of the successful Bidder will be returned after acceptance by the owner of an acceptable Performance Bond, Labor and Materials/Payment Bond and a certificate of insurance naming the Vernon Hills Park District as the certificate holder and as additional insured, and the successful Bidder has executed and returned to the owner a Contract for the Work presented by the Park District.

Prior to beginning Work, the successful Bidder shall furnish a Performance Bond, and Labor and Materials/Payment Bond in the amount of 110% of the Contract Sum, using a form

similar to the AIA-A312-2010 form, or its current equivalent, or one acceptable to Owner, cosigned by a surety company licensed to conduct business in the State of Illinois and with at least an "A" rating and a financial rating of at least "X" in the latest edition of the Best Insurance Guide. Said bond shall guarantee the faithful performance of the Work in accordance with the Contract, the payment of all indebtedness incurred for labor and materials, and guarantee correction of Work for a period of one (1) year after Final Completion. The cost of each bond shall be included in the Contract Sum. The Bidder and all Subcontractors shall name the Park District as an obligee on all bonds. Said bonds shall meet the requirements of the Illinois Public Construction Bond Act, 30 ILCS 550/0.01 *et seq.* and any further amendments thereto. Bidder shall include in its Performance Bond and Labor and Material Payment Bond such language as shall guarantee the faithful performance of the Prevailing Wage Act as required in these Bid Documents.

The Performance Bond and Labor and Material Payment Bond will become a part of the Contract. The failure of the successful Bidder to enter into the Contract and supply the required bonds and evidence of insurance within ten (10) days after the Contract is presented for signature, or within such extended period as the Park District may grant, shall constitute a default, and the Park District may either award the Contract to the next responsible Bidder, or re-advertise for bids. In the event of a default, the Owner need not return the defaulting Bidder's bid surety and may charge against the defaulting Bidder for the full difference between the amount for the bid and the amount for which a Contract for the Work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the defaulting Bidder's bid surety.

6. Withdrawal of Bid

Bidders may withdraw or cancel their bids at any time prior to the advertised bid opening time by signing and submitting a request for said withdrawal. After the bid opening time, no bid shall be withdrawn or canceled for a period of sixty (60) calendar days.

7. Award, Acceptance and Contract

Owner will award the Contract to the lowest most responsible and responsive Bidder, as determined by Owner. In considering the Bidder's responsibility, the Owner may evaluate, among other factors, the ability of the Bidder to provide experienced labor sufficient in numbers to timely and properly complete the services, conformity with the Specifications, serviceability, quality, and the financial capability of the Bidder, and the performance of the Bidder on other projects.

Bids will be awarded to one Bidder for the entire Project or to any series of Bidders for an appropriate proportion of the Project. If specified in the Bid Form, awards will be based upon the submitted unit prices.

The acceptance of a bid will be by a Notice of Award, signed by a duly authorized representative of the Park District; no other act by the Park District shall constitute the acceptance of a bid. The acceptance of a bid by the Park District shall bind the successful Bidder to execute and perform the Work of the Contract. The successful Bidder to whom the Contract is awarded by the Park District shall sign and deliver to the Park District for execution by the Park District all required copies of the Contract, along with all required insurance and surety documents within ten (10) days after presentation to him of the Contract for signature. In case the Bidder shall fail or neglect to do so, he will be considered as having abandoned the Contract, and as being in default to the Owner. The Owner may thereupon re-advertise or otherwise award said Contract and forfeits the Bid Security.

The Invitation to Bid, Instructions to Bidders, General Conditions, Supplementary and/or Special Conditions, if any, Drawings, Specifications, Contractor Bid Form, Addenda, if any, Contractors Compliance and Certifications Attachment, and Substance Abuse Certification and the Prevailing Wage Determination and Supersedes Notice comprise the Bid Documents. The Bid Documents, together with the Standard /Form of Agreement between Owner and Contractor AIA Document A101-2007, as modified by the Park District and included in these Bid Documents, and the Performance Bond and Labor Material Payment Bond and proof of insurance comprise the Contract Documents.

8. Interpretation of the Contract Documents

The Park District shall in all cases determine the amount or quantity of the several kinds of Work which are to be paid for under this Contract, and shall decide all questions which may arise relative to the execution of the Contract on the part of the Contractor, and all estimates and decisions shall be final and conclusive. The Park District shall have the right to make alterations in the lines, grades, plans, forms, or dimensions of the Work herein contemplated either before or after the commencement of the Work. If such alterations diminish the quantity of the Work to be done, they shall not constitute a claim for damage or for anticipated profits on the work dispensed with, or if they increase the amount of Work, such increase shall be paid according to the quantity actually done and at the price or prices stipulated for such Work in the Contract. The Park District reserves the right to approve, an equal to or superior to product or equipment required under the Specifications, or to reject as not being and equal to or superior to the product or equipment required under the Specifications. If the Bidder is in doubt as to the interpretation of any part of the Bid Documents, or finds errors, discrepancies or omissions from any part of the Contract Documents, he must submit a written request for interpretation thereof not later than five (5) days prior to opening of bids to the Park District. Address all communications to Mike Moorman at the Park District. If an error or omission is discovered in the Bid Documents after the bid opening, the Park District reserves the right: i) to determine whether to require the submission of new bids; or ii) if the error or omission is of such a nature that it was reasonably discoverable upon a

careful review of the Bid Documents, to award the Contract to the lowest responsive and responsible Bidder as determined by the Park District and to require that Contractor to perform the Work in accordance with an issued correction by the Park District and/or Architect and for the amount bid by the Contractor. Such decisions are final and not subject to recourse. Errors and omissions made by the Bidder cannot be corrected after the bid opening.

9. Addenda

Any interpretation, correction to, or addition to the Bid Documents will be made by written Addendum and will be delivered by mail or fax to each prime Bidder of record. The written Addenda constitute the only interpretations of the Bid Documents; the Park District accepts no responsibility for any other claimed interpretations or communications.

It is the responsibility of each Bidder to verify that he has received all Addenda prior to submitting a bid. It is also the responsibility of each Bidder to verify that all subcontractors and material suppliers whose prices are incorporated in the Bidder's bid are familiar with the Bid Documents in their entirety, including all Addenda issued up to the time of bid opening.

In the event a conflict or omission is discovered in the Bid Documents after the issuing of the last Addendum such that an interpretation cannot be issued by the Park District prior to bidding, the Bidder is directed to estimate on and provide the quantity and quality of material and labor consistent with the overall represented and indicated Work so as to provide all materials, equipment, labor, and services necessary for the completion of the Work in accordance with the Bid Documents.

10. Substitutions during Bidding

Unless otherwise indicated, the use of brand names in the Specifications is used for the purpose of establishing a grade or quality. Bidders proposing to use an alternate that is equal to or superior to in every respect to that required by the Specifications must request approval in writing to the Park District at least seven (7) business days prior to the bid opening and mark the item as 'or approved equal'.

Additionally, Bidders requesting approval for use of an alternate must provide certification by the manufacturer that the substitute proposed is equal to or superior in every respect to that required by the Contract Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated. The Bidder, in submitting the request for substitution, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the request for substitution.

The Park District may request additional information or documentation necessary for evaluation of the request for substitution. The Park District will notify all Bidders of acceptance of the proposed substitute by means of an Addendum to the Bid Documents. Park District's approval of a substitute during bidding does not relieve the Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents, including but not limited to proper performance of all components of the Work and suitability for the uses specified.

Bids proposing alternates not previously approved by the Park District will be considered non-responsive and rejected. The Park District reserves the right to determine whether a substituted selection, in its judgment, is equal to or better quality and therefore an acceptable alternate. Such decisions are final and not subject to recourse.

BID FORM

Proposal of (name of Contractor)_____hereinafter called "Bidder",

(a)/ (an) (corporation, partnership, individual) doing business as _____

To the Vernon Hills Park District, herein after called the "Owner."

Skate Park Development having examined the Plans and Specifications, hereby proposes to furnish and deliver all labor, materials and supplies in accordance with the Specifications, within the time set forth therein and at the prices stated below. These prices are to cover all expenses including delivery to Vernon Hills, Illinois.

Bidder agrees to perform all of the Work described in the Contract Documents for the following price (please read entire bid for project specifications):

Skate Park Development $_____

Bidder hereby agrees to start work after receipt of "Notice to Proceed" from the Owner and to substantially complete the Project/provide the services as and when specified.

Communications concerning this Bid shall be addressed to the Bidder indicated below:

Name:_____

Street Address: _____

(City) (State) (Zip)

Phone: _____

If Bidder is:
An Individual:

By: _____(SEAL)
(Individual's Name)
doing business as _____

Business Address: _____

Phone Number: _____

A Partnership:

By: _____(SEAL)
(Firm Name)

_____
(General Partner)
Business Address: _____

Phone Number: _____

A Corporation:

By: _____ (SEAL)
(Corporation Name)

_____
(State of Incorporation)
By: _____
(Name of Person Authorized to Sign)

Title: _____ Attest _____
(Secretary)

(CORPORATE SEAL)

Business Address: _____

Phone Number: _____

By submission of its bid, the Bidder acknowledges, agrees, represents, declares and warrants:

1. That it has visited and examined the site, and is fully familiar with and has satisfied itself as to the site and the local and other conditions under which the Work is to be performed, including without limitation, (i) surface conditions of the site and subsurface conditions readily observable or ascertainable upon the exercise of reasonable diligence and all structures and obstructions thereon and thereunder, both natural and manmade; (ii) the nature, location, and character of the general area in which the Project is located, including without limitation, its climatic conditions, available labor supply and labor costs, and available equipment supply and equipment costs; and (iii) the quality and quantity of all materials, supplies, tools, equipment, labor, and professional services necessary to complete the Work in the manner and within the cost and time frame indicated by the Contract Documents; and has

correlated the Bidder's personal observations with the requirements of and matters indicated in or by the proposed Contract Documents;

2. To hold the bid open for sixty (60) days subsequent to the date of the bid opening;

3. To enter into and execute a Contract with the Owner within ten (10) days after the date of the Notice of Award, if awarded on the basis of this bid, and in connection therewith to:

(a) Furnish all bonds and insurance required by the Contract Documents;
(b) Accomplish the Work in accordance with the Contract Documents; and
(c) Complete the Work within the time requirements as set forth in the Contract Documents;

4. That the Bidder has carefully examined the Instructions to Bidders, the Drawings and Specifications, and the Project Manual in its entirety, in order to determine how these affect the bid proposal, the forms of the Contract, the required Contract bonds, and duration thereof, and that the Bidder has inspected in detail the site of the proposed Work, and been familiarized with all of the requirements of construction, and of the governing municipalities under whose jurisdiction the Project falls (its codes, ordinances and construction requirements therein), and understands that in making this proposal, the Bidder waives all rights to plead any misunderstanding regarding the same;

5. That if this proposal is accepted, the Bidder is to provide all of the necessary equipment, tools, apparatus, labor, and other means of construction, and to do all of the Work and to furnish all of the materials specified in the Contract Documents in the manner and at the time therein prescribed, and in accordance with the requirements set forth;

6. To furnish Bid Bond in accordance with the Instructions to Bidders;

7. To furnish Performance/Labor and Material Payment Bond in accordance with the Instructions to Bidders;

8. To commence Work as specified in the Instructions to Bidders, and to prosecute the Work in such a manner, and with sufficient materials, equipment and labor as will ensure its completion within reasonable time, it being understood and agreed that the completion within such reasonable time is an essential part of this Contract;

9. To give the total base bid amount, the total add alternate and/or subtract alternate amounts (if requested) both in words and in figures. The total bid amount in each case shall be the sum of all of the total item amounts as applicable and as described above;

10.That he has checked carefully the bid figures and understands that he shall be responsible for any errors or omissions based on these Specifications and alternates as submitted on the Bid Proposal Form; and

11. That it is understood and agreed that the Vernon Hill Park District reserves the right to accept or reject any or all bids, or to combine or separate any section or work, and to waive any technicalities.

Submitted this _____ day of _____, 2020

Name: _____

By: _____

Signature _____

Title: _____

SUBSCRIBED AND SWORN TO before me

this_____ day of _____ 2020.

_____

Notary Public

STATE OF ILLINOIS)
)
COUNTY OF_____)

BID FORM
Skate Park Development

The quantities shown in the Unit Price Schedule are estimated and provisional, and are given for the bidder's convenience as well as provide a common basis for bidding. The bidder is responsible for verifying all estimated quantities in the Bid Form and/or perform his or her own quantity take off of work items. Quantities should be computed net from the drawings and no allowance should be made for bulking, shrinkage, or waste. Quantities should be rounded up or down where appropriate and spurious accuracy should be avoided. The Bidder is responsible for adding all costs and scope of work required for a complete project as described in the plan and specifications regardless of whether a work items in included or listed in the bid form.

Item / Description	Approx. Qty	Unit	Unit Price	Subtotal
A GENERAL CONDITIONS				
1. General conditions include project management, temporary facilties, mobilization, and transportation.	X	lump sum		
2 As-built drawings	X	lump sum		
SUBTOTAL				
B. REMOVALS:				
1. Sawcut and remove existing bituminous path as shown on plan.	128	square yard		
2. Remove existing landscape planting bed.	X	lump sum		
3. Remove existing concrete pad.	356	square feet		
SUBTOTAL				
C. CONSTRUCTION FENCING AND EROSION CONTROL MEASURES:				
1. Furnish, install, and maintain temporary 6' link construction fencing to secure site during construction.	826	linear feet		

BID FORM
Skate Park Development

Item / Description	Approx. Qty	Unit	Unit Price	Subtotal
2. Furnish and install erosion control fencing as shown on plan. See detail.	812	linear feet		
3. Furnish and install construction entrance as shown on plan, and inlet protection. See detail.	**X**	lump sum		
SUBTOTAL				
D. SITE GRADING AND EXCAVATION:				
1. Strip and stockpile all topsoil encountered during grading operations as necessary to accommodate improvements.	X	lump sum		
2. Excavation, placement and compaction to obtain grades as shown in the drawings to accommodate improvements.	X	lump sum		
3. Spread stockpiled topsoil 6" thick over all prepared subgrades within landscape areas.	X	lump sum		
SUBTOTAL				
E. SITE DRAINAGE/UTILITIES:				
1. Furnish and install Pro-flo Drain Inlet or approved equal. See detail.	2	ea.		
2. 6" Rigid, non perforated PVC-SDR-26 with porous granular backfill.	165	linear feet		
3. 6" dia. Perforated PVC-SDR-26 with washed gravel backfill, and soil separator and filter fabric sock.	21	linear feet		
4. 4" Rigid, non perforated PVC-SDR-26 with porous granular backfill.	20	linear feet		

BID FORM
Skate Park Development

Item / Description	Approx. Qty	Unit	Unit Price	Subtotal
5. Furnish and install 6" wye.	2	ea.		
6. Furnish and install observation well.	1	ea.		
7. CA-7 aggregate base and soil media mix for Bioretention Area. See detail.	X	lump sum		
SUBTOTAL				

F. CONCRETE

1. 5" thick reinforced concrete walk ONLY. **Skatepark concrete included in Item H below.**	442	square feet		
SUBTOTAL				

G. STRUCTURES

1. Install Shade Structure over benches. Cost to include shelter as supplied by ICON or approved equal. Cost to include all hardware, labor and materials needed to assemble, erect and install the structure as supplied, including all other items as shown on the plans.	1	each		
SUBTOTAL				

BID FORM
Skate Park Development

Item / Description	Approx. Qty	Unit	Unit Price	Subtotal
H. SKATE PARK				
1. Furnish and install poured-in-place shotcrete skate park as designed and detailed by Evergreen Skateparks or approved equal. See plans and construction details.	X	Lump Sum		
SUBTOTAL				
SUBTOTAL FOR SITE IMPROVEMENTS				
ALTERNATE BID ITEMS				
Add Alternate #1: Turf Restoration				
1. Fine grade, fertilize and seed all areas using a blended bluegrass seed as supplied by the Park District and as shown on the plans. Install with erosion control blanket. Apply at rate per manufacturer's instructions. See specifications.	0.3	acre		
SUBTOTAL				
Add Alternate #2: Landscape Plantings				
Furnish and install the following plant material as shown and noted on the plan.				
Deciduous Trees				
Acer miyabei	2	3" bb		
Cladratis kentuckea	2	3" bb		

BID FORM
Skate Park Development

Item / Description	Approx. Qty	Unit	Unit Price	Subtotal
Ormanental Trees				
Amelanchier canadensis	5	6' bb		
Perennials				
Calamintha nepeta ssp. nepeta	18	#01 (gal)		
Coreopsis palmata	17	#01 (gal)		
Hemerocallis 'Rosy Returns'	43	#01 (gal)		
Physostegia virginiana	21	#01 (gal)		
SUPPLIES				
1. Supply and install shredded hardwood cedar mulch at 3" deep within all planting beds.	4	cubic yard		
2. Furnish and install 3" deep mushroom compost in all perennial and groundcover beds.	1	cubic yard		
SUBTOTAL				

UNIT PRICES

The following unit prices will be used to establish costs for changes to the contract. Provide the following unit prices based on the plans, details and specifications.

1. Surplus material hauled off site.	50	cubic yard	
2. Remove unsuitable soils and dispose of off-site and provide 6-in clean black screened topsoil	50	cubic yard	
3. Topsoil	50	cubic yard	

BID SUMMARY SKATE PARK, VERNON HILLS PARK DISTRICT

BASE BID TOTAL COST _____

ALTERNATE BID ITEM #1 _____

ALTERNATE BID ITEM #2 _____

_____

Signed this _____ day of _____, 2020

Firm Name: _____

Address: _____

Telephone: _____ Fax: _____

Bidders Signature: _____

Title: _____

Corporate Seal:

ACKNOWLEDGEMENT OF ADDENDA
SKATE PARK DEVELOPMENT

1.1 Each bidder for this project shall be responsible for acknowledging all addenda that have been received during the bidding period. In appropriate places, please sign for each addendum received.

ADDENDUM #1 _____
Signature Title

ADDENDUM #2 _____
Signature Title

ADDENDUM #3 _____
Signature Title

ADDENDUM #4 _____
Signature Title

ADDENDUM #5 _____
Signature Title

ADDENDUM #6 _____
Signature Title

ADDENDUM #7 _____
Signature Title

ADDENDUM #8 _____
Signature Title

CONTRACTOR COMPLIANCE AND CERTIFICATIONS ATTACHMENT

Note: The following certifications form an integral part of the Agreement between the Owner and Contractor. Breach by Contractor of any of the certifications may result in immediate termination of the Contractor's services by Owner.

THE UNDERSIGNED CONTRACTOR HEREBY ACKNOWLEDGES, CERTIFIES, AFFIRMS AND AGREES AS FOLLOWS:

A. Contractor has carefully read and understands the contents, purpose and legal effect of this document as stated above and hereafter in this document. The certifications contained herein are true, complete and correct in all respects.

B. Contractor shall abide by and comply with, and in contracts which it has with all persons providing any of the services or Work on this Project on its behalf shall require compliance with, all applicable Federal, State and local laws and rules and regulations including without limitation those relating to 1) fair employment practices, affirmative action and prohibiting discrimination in employment; 2) workers' compensation; 3) workplace safety; 4) wages and claims of laborers, mechanics and other workers, agents, or servants in any manner employed in connection with contracts involving public funds or the development or construction of public works, buildings or facilities; and 5) steel products procurement.

C. All contracts for this Project are subject to the provisions of the Illinois Prevailing Wage Act (820 ILCS 130/0.01 *et seq.*), providing for the payment of the prevailing rate of wage to all laborers, workmen and mechanics engaged in the Work. Contractor shall pay prevailing rates of wages in accordance with the wage determination included with the Contract Documents and any subsequent determinations issued by the Illinois Department of Labor which shall supersede the determination included in the Contract Documents, all in accordance with applicable law. Contractor is responsible for determining the applicable prevailing wage rates at the time of bid submission and at the time of performance of the Work. Failure of Contractor to make such determination shall not relieve it of its obligations in accordance with the Contract Documents. Contractor shall also comply with all other requirements of the Act including without limitation those pertaining to inclusion of required language in subcontracts, job site posting, maintenance and submission of certified payroll records and inspection of records. Contractor is not barred from entering into public contracts under Section 11a of the Illinois Prevailing Wage Act due to its having been found to have disregarded its obligations under the Act.

D. To the best of Contractor's knowledge, no officer or employee of Contractor has been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois, or any unit of local government, nor has any officer or employee made an admission of guilt of such conduct which is a matter of record.

E. Contractor is not barred from bidding on or entering into public contracts due to having been convicted of bid-rigging or bid rotating under paragraphs 33E-3 or 33E-4 of the Illinois Criminal Code. Contractor also certifies that no officers or employees of the Contractor have been so convicted and that Contractor is not the successor company or a new company created by the officers or owners of one so convicted. Contractor further certifies that any such conviction occurring after the date of this certification will be reported to the Owner, immediately in writing, if it occurs during the bidding process or otherwise prior to entering into the Contract therewith.

F. Pursuant to the Illinois Human Rights Act (775 ILCS 5/2-105), Contractor has a written sexual harassment policy that includes, at a minimum, the following information: (i) a statement on the illegality of sexual harassment; (ii) the definition of sexual harassment under State law; (iii) a description of sexual harassment utilizing examples; (iv) the Contractor's internal complaint process including penalties; (v) the legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Human Rights Commission and directions on how to contact both; and (vi) protection against retaliation as provided by Section 6-101 of the Illinois Human Rights Act. Contractor further certifies that such policy shall remain in full force and effect. A copy of the policy shall be provided to the Illinois Department of Human Rights upon request.

G. Contractor shall abide by the "Employment of Illinois Workers on Public Works Act" (30 ILCS 570/0.01 *et seq.*) which stipulates that whenever there is a period of excessive unemployment in Illinois, defined as any month immediately following two (2) consecutive calendar months during which the level of unemployment in Illinois exceeds five percent (5%) as measured by the U.S. Bureau of Labor Statistics in its monthly publication of employment and unemployment figures, the Contractor shall employ only Illinois laborers unless otherwise exempted as so stated in the Act. ("Illinois laborer" means any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident). Other laborers may be used if Illinois laborers are not available or are incapable of performing the particular type of work involved if so certified by the Contractor and approved by the Owner.

H. (i) Contractor's bid proposal was made without any connection or common interest in the profits anticipated to be derived from the Contract by Contractor with any other persons submitting any bid or proposal for the Contract; (ii) the Contract terms are in all respects fair and the Contract will be entered into by Contractor without collusion or fraud; (iii) no official, officer or employee of the Owner has any direct or indirect financial interest in Contractor's bid proposal or in Contractor, (iv) the Contractor has not directly or indirectly provided, and shall not directly or indirectly provide, funds or other consideration to any person or entity (including, but not limited to, the Owner and the Owner’s employees and agents), to procure improperly special or unusual treatment with respect to this

Agreement or for the purpose of otherwise improperly influencing the relationship between the Owner and the Contractor. Additionally, the Contractor shall cause all of its officers, directors, employees, (as the case may be) to comply with the restrictions contained in the preceding sentence.

I. Contractor knows and understands the Equal Employment Opportunity Clause administrated by the Illinois Department of Human Rights, which is incorporated herein by this reference, and agrees to comply with the provisions thereof. Contractor further certifies that Contractor is an "equal opportunity employer" as defined by Section 2000 (e) of Chapter 21, Title 42 of the United States Code Annotated and Executive Orders #11246 and #11375 as amended, which are incorporated herein by this reference.

J. Neither Contractor nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the U.S. Export Administration Act of 1979 or the regulations of the U.S. Department of Commerce promulgated under that Act.

K. Contractor is not barred from contracting with the Owner because of any delinquency in the payment of any tax administrated by the Illinois Department of Revenue, unless it is being contested. Contractor further certifies that it understands that making a false statement regarding delinquency in taxes is a Class A misdemeanor and, in addition, voids the Contract and allows the Owner, a municipal entity, to recover in a civil action all amounts paid to the Contractor.

L. If Contractor has 25 or more employees at the time of letting of the Contract, Contractor knows, understands and acknowledges its obligations under the Illinois Drug Free Workplace Act (30 ILCS 580/1 *et seq*.) and certifies that it will provide a drug-free workplace by taking the actions required under, and otherwise implementing on a continuing basis, Section 3 of the Drug Free Workplace Act. Contractor further certifies that it has not been debarred and is not ineligible for award of this Contract as the result of a violation of the Illinois Drug Free Workplace Act.

M. Contractor knows, understands and acknowledges its obligations under the Substance Abuse Prevention on Public Works Act, 820 ILCS 265/1 *et seq.* A true and complete copy of Contractor's Substance Abuse Prevention Program Certification is attached to and made a part of this Contractor Compliance and Certification Attachment.

N. The Contractor shall comply with the requirements and provisions of the Freedom of Information Act (5 ILCS 140/1 *et. seq*.) and, upon request of the Vernon Hills Park District's designated Freedom of Information Act Officer (FOIA Officer), Contractor shall within two (2) business days of said request, turn over to the FOIA Officer any record in the possession of the Contractor that is deemed a public record under FOIA.

_____
CONTRACTOR

By: _____
Its: _____

STATE OF _____)
)ss
COUNTY OF _____)

I, the undersigned, a notary public in and for the State and County, aforesaid, hereby certify that _____ appeared before me this day and, being first duly sworn on oath, acknowledged that he executed the foregoing instrument as his/her free act and deed and as the act and deed of the Contractor.

Dated:_____

_____
(Notary Public)
(SEAL)

SUBSTANCE ABUSE PREVENTION PROGRAM CERTIFICATION

The Substance Abuse Prevention on Public Works Projects Act, 820 ILCS 265/1 et seq., ("Act") prohibits any employee of the Contractor or any Subcontractor on a public works project to use, possess or be under the influence of a drug or alcohol, as those terms are defined in the Act, while performing work on the project. The Contractor/Subcontractor **[circle one],** by its undersigned representative, hereby certifies and represents to the Vernon Hills Park District that **[Contractor/Subcontractor must complete either Part A or Part B below]**:

A. The Contractor/Subcontractor **[circle one]** has in place for all of its employees not covered by a collective bargaining agreement that deals with the subject of the Act a written substance abuse prevention program, a true and correct copy of which is attached to this certification, which meets or exceeds the requirements of the Substance Abuse Prevention on Public Works Act, 820 ILCS 265/*1 et seq.* **[Contractor/Subcontractor must attach a copy of its substance abuse prevention program to this Certification.]**

_____
Name of Contractor/Subcontractor (print or type)

_____
Name and Title of Authorized Representative (print or type)

_____ Dated: _____
Signature of Authorized Representative

B. The Contractor/Subcontractor **[circle one]** has one or more collective bargaining agreements in effect for all of its employees that deal with the subject matter of the Substance Abuse Prevention on Public Works Projects Act, 820 ILCS 265/1 *et seq.*

_____
Name of Contractor/Subcontractor (print or type)

_____
Name and Title of Authorized Representative (print or type)

_____ Dated: _____
Signature of Authorized Representative

IMPORTANT NOTICE OF RESPONSIBILITY FOR PERIODIC REVISIONS TO PREVAILING WAGE RATES

Revisions of the following Prevailing Wage Rates are made periodically by the Illinois Department of Labor website. Bidders and Contractors performing work on this Project are responsible for determining the applicable prevailing wage rates for **LAKE COUNTY** at the time of bid submission and performance of the Work. Failure of a Bidder/Contractor to make such determination shall not relieve it of its obligations in accordance with the Contract Documents. In consideration for the award to it of the Contract for this Project, the Contractor agrees that the foregoing notice satisfies any obligation of the public body in charge of this Project to notify the Contractor of periodic changes in the prevailing wage rates and the Contractor agrees to assume and be solely responsible for, as a material obligation of the Contractor under the Contract, the obligation to determine periodic revisions of the prevailing wage rates, to notify its subcontractors of such revisions, to post such revisions as required for the posting of wage rates under the Act, and to pay and require its subcontractors to pay wages in accordance with such revised rates.

Certified payroll is to be submitted on the Illinois Department of Labor website through the new online submission portal. Contractor is to print or retain a receipt of compliance along with final pay application. Do not submit a certified payroll to the owner.

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The American Institute of Architects "AIA Document A201-2007 General Conditions of the Contract for Construction," 2007 Edition, as modified by Owner, and included in this Project Manual are the General Conditions.

SUPPLEMENTAL CONDITIONS

The "General Conditions of the Contract, AIA Document A201, 2007 Edition" (the "General Conditions"), as modified by Owner, are hereby amended to include the following:

I. Insurance and Indemnity Requirements

Contractor shall procure and maintain for the duration of the contract, insurance against claims for death, injuries to persons, or damages to property which may arise from or in connection with the performance of work hereunder by the Contractor, his agents, representatives, employees or subcontractors of the types and in the amounts listed below.

A. **Commercial General and Umbrella Liability Insurance.** Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than $1,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it shall apply separately to this project/location. CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01, or a substitute form providing equivalent coverage, and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract). Owner shall be included as an insured under the CGL, using ISO additional insured endorsement CG 20 10 or a substitute providing equivalent coverage, and under the commercial umbrella, if any. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance afforded to Owner and Architect. There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from pollution, explosion, collapse, or underground property damage.

B. **Continuing Completed Operations Liability Insurance.** Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella liability insurance with a limit of not less than $1,000,000 each occurrence for at least three years following substantial completion of the work. Continuing CGL insurance shall be written on ISO occurrence form CG 00 01, or substitute form providing equivalent coverage, and shall, at minimum, cover liability arising from products-completed operations and liability assumed under an insured contract. Continuing CGL insurance shall have a products-completed operation aggregate of at least two times its each occurrence limit. Continuing commercial umbrella coverage, if any, shall include liability coverage for damage to the insured's completed work equivalent to that provided under ISO form CG 00 01.

C. **Business Auto and Umbrella Liability Insurance.** Contractor shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than $1,000,000 each accident. Such insurance shall cover liability arising out of any auto including owned, hired and non-owned autos. Business auto insurance shall be written on Insurance Services Office (ISO) form CA 00 0 I, CA 00 05, CA 00 12, or a substitute form providing equivalent liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01.

D. **Workers Compensation Insurance. Contractor shall maintain workers compensation as required by statute and employers liability insurance. The commercial umbrella and/or employers liability limits shall not be less than $1,000,000 each accident for bodily injury by accident or $1,000,000 each employee for bodily injury by disease. If Owner has not been included as an insured under the CGL using ISO additional insured endorsement CG 20 10 under the Commercial General and Umbrella Liability Insurance required in this Contract, the Contractor waives all rights against Owner and its officers, officials, employees, volunteers and agents for recovery of damages arising out of or incident to the Contractors work.**

E. **General Insurance Provisions.**

1. Evidence of Insurance prior to beginning Work, Contractor shall furnish Owner with a certificate of insurance and applicable policy endorsements, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth above. All certificates shall provide for 30 days written notice to Owner prior to the cancellation or material change of insurance referred to therein. Written notice to Owner shall be by certified mail, return receipt requested. Failure of Owner to demand such certificate, endorsement or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance. Owner shall have the right, but not the obligation, of prohibiting Contractor or any subcontractor from entering the project site until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and approved by Owner. Failure to maintain the required insurance may result in termination of this Contract at Owner's option. With respect to insurance maintained after final payment in compliance with a requirement above, an additional certificate shall provide certified copies all insurance policies required above within 10 days of Owner's written request for said copies.

2. Acceptability of Insurers. For insurance companies which obtain a rating from A.M. Best, that rating should be no less than A VII using the most recent edition of the A.M. Bests Key Rating Guide. If the Bests rating is less than A VII or a Best's rating is not

obtained, tile Owner has the right to reject insurance written by an insurer it deems unacceptable.

3. Cross-Liability Coverage. If Contractor's liability policies do not contain the standard ISO separation of insureds provision, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

4. Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to the Owner. At the option of the Owner, the Contractor may be asked to eliminate such deductibles or self-insured retentions as respects the Owner, its officers, officials, employees, volunteers and agents or required to procure a bond guaranteeing payment of losses and other related costs including but not limited to investigations, claim administration and defense expenses.

5. Subcontractors. Contractor shall cause each subcontractor employed by Contractor to purchase and maintain insurance of the type specified above. When requested by the Owner, Contractor shall furnish copies of certificates of insurance evidencing coverage for each subcontractor.

F. Indemnification

To the fullest extent permitted by law, the Contractor shall waive all right of contribution and shall indemnify and hold harmless the Owner and its officers, officials, employees, volunteers and agents from and against all claims, damages, losses and expenses, including but not limited to legal fees (attorney's and paralegals fees and court costs), arising out of or resulting from the performance of the Contractor's work, provided that any such claim, damage, loss or expense (i) is attributable to bodily injury, sickness, disease or death, or injury to or destruction of tangible property, other than the work itself, including the loss of use resulting therefrom and (ii) is caused in whole or in part by any wrongful or negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph. Contractor shall similarly protect, indemnify and hold and save harmless the Owner, its officers, officials, employees, volunteers and agents against and from any and all claims, costs, causes, actions and expenses including but not limited to legal fees, incurred by reason of Contractor's breach of any of its obligations under, or Contractor's default of, any provision of the Contract.

II. <u>Progress Schedule, Meetings and Reports</u>

- The Contractor will be required to provide a schedule within ten (10) calendar days of receipt of the executed Contract, outlining the necessary steps to meet the Completion Dates listed in the Specifications. All critical dates must be shown on the construction schedule. This

schedule will also be required to describe the construction sequence that will be followed for the implementation of the improvements contained within this set of Contract Documents.

- Progress meetings with Contractor will be held regularly with Owner, unless both the Owner and Contractor modify the schedule. The Contractor is required to send representatives who can commit the Contractor to a decision at the meetings.

III. Execution, Correlation, Intent and Interpretations

- Figured dimensions and marked data shall take precedence over scale measurements, and details shall take precedence over smaller scale general Drawings. Discrepancies or ambiguities found in Drawings or Specifications shall at once be reported to the Owner for clarification.

- If Work is required in a manner to make it impossible to produce first-class work, or should discrepancies appear among Contract Documents, or if the Contractor has any questions regarding the meaning of Contract Documents, the Contractor must request the Owner's interpretation and clarification before proceeding with Work. If the Contractor fails to make such request, no excuse will thereafter be entertained for failure to carry out the Work in a satisfactory manner. Should any conflict occur in or between Drawings and Specifications, the Contractor is deemed to have estimated on, and agreed to provide the greater quantity or better quality of materials and Work unless he shall have, before submission of proposal, asked for and obtained written decision of the Owner as to which method or materials will be required.

- Wherever any provision of the Specifications conflict with any agreements or regulations of any kind at any time in force among members of any trade associations, unions or councils, which regular or distinguish what work shall not be included in the work of any particular trade, the Contractor shall make all necessary arrangements to reconcile any such conflict without delay, damage or cost to the Owner and without recourse to the Owner. In case the progress of the Work is affected by any undue delay in furnishing or installing any items of material or equipment required under the Contract because of a conflict involving any such agreement or regulation, the Architect/Owner may require that other material or equipment of equal kind or quality be provided at no additional cost to the Owner.

- The obligations of the Contractor shall be construed to include, but not be limited to, injury or damage consequent upon failure to use or misuse of the Contractor, his agents and employees, of any scaffold, hoist, crane, stay, ladder, support or other mechanical contrivance erected or constructed by any person; or any or all other kinds of equipment whether or not owned or furnish by the Owner.

IV. Sub-contractors

- Proper and complete execution of all Work shall be the responsibility of the Contractor and should he properly subcontract certain parts of the Work, the Owner will hold the Contractor responsible for proper and complete execution thereof. If the Contractor elects to enter into subcontracts for any section of the Work, he shall assume all responsibility of ascertaining that the sub-Contractor for the Work is thoroughly acquainted with all conditions of Work and that the sub-Contractor has included all materials and appurtenances in connection therewith. It shall also be the responsibility of the Contractor to notify sub-Contractors at time of request for bids of all requirements of the Contract Documents that he, the Contractor, intends to include as part of subcontract.

- The Contractor shall not subcontract any Work without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed subcontract, which statement shall contain such information as the Owner may require.

- The Contractor shall submit with his bid, the names of sub-Contractors for other parts of the Work. The Contractor shall not employ any sub-Contractor that the Owner may, within a reasonable time, object to as incompetent or unfit.

- The Contractor shall be as fully responsible to the Owner for the acts and omissions of his sub-Contractors, and of persons either directly or indirectly employed by them, as he is for his acts and the acts and omissions of persons directly employed by him.

- The Contractor shall cause the appropriate provisions to be inserted in all subcontracts relative to the Work to bind sub-Contractors to the Contractor by the terms of the Contract Documents, and to require sub-Contractors to comply with the Contract Documents, and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.

- Nothing contained in the Contract shall create any contractual relation between any sub-Contractor and the Owner.

- Contractor shall cause each sub-Contractor employed by Contractor to purchase and maintain insurance of the type specified above. When requested by the Owner, Contractor shall furnish copies of certificates of insurance evidencing coverage for each sub-Contractor.

V. Uncovering and Correction of Work

- Contractor's duty to correct Work shall not be limited to a period of one (1) year from the date of completion if the defect was of a latent nature or occurred in materials or workmanship covered by Contractor before Owner was able to inspect same contrary to the requirements of the Contract Documents, or as otherwise specified by the Contract Documents. All correction of unacceptable work shall be made before final payment is made.

VI. Miscellaneous Provisions

- Protection of Work and Property - The Contractor shall continuously maintain adequate protection of all the Work from damage and shall protect the Owner's property from injury or loss arising in connection with this Contract.

- Contractor shall comply with all federal, state and local laws, rules and regulations applicable to the work, all Village of Vernon Hills' building codes, and all laws and regulations pertaining to occupational and work safety and disposal of landscape waste and construction debris.

- Access to Work - The Owner and his representatives shall at all times have access to the Work whenever it is in preparation or progress.

- Clean Up - The Contractor shall at all times keep the Work site free from accumulation of waste materials or rubbish caused by his employees or work and, at the daily completion of the Work, he shall remove all waste materials/rubbish from the worksite.

VII. Payments and Completion

- Partial progress payments may be made, as the Work progresses, once each calendar month, based on receipt of an itemized invoice/application for payment and partial/final lien waivers for the amount shown on the invoice and otherwise in accordance with the Contract Documents.

- In making such partial payments, there shall be retained 10 percent (10%) of the estimated amount until Final Completion and acceptance of all Work covered by the Contract Documents.

- All pay requests are subject to board approval. Pay requests must be submitted by 9am on Monday to JSD Professional Services for review and approval prior to that month's board meeting. Checks will be released the day after the board meeting if approved.

- Upon completion of the Work, the Contractor shall submit to the Owner an itemized application for payment, supported by Final Lien Waivers/Release of Lien from sub-Contractors and suppliers and any other documents as required by the Contract Documents.

- The Owner may withhold or nullify all or part of any payment to such an extent as may be necessary to protect the Owner from loss on account of defective Work not remedied, claims filed or reasonable evidence indicating probable filing of claims, failure of Contractor to make payments to sub-Contractors or for material or labor, or for any other reason as specified in the Contract Documents.

SPECIAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

1. GENERAL

The term “Work” shall mean and comprise the completed installation of site features required by the Contract Documents and shall include all labor, supervision, and services necessary to meet satisfactory performance and all materials and equipment incorporated or to be incorporated in the installation.

Anything mentioned in the governing specifications and not shown on the plans, or shown on the plans and not mentioned in the governing specifications, shall be of like effect as if shown on or mentioned in both. In case of any discrepancy in the plans or governing specifications, the matter shall be immediately submitted to Owner/Landscape Architect, without whose decision said discrepancy shall not be adjusted by Contractor, save only at his own risk and expense. Figured dimensions shall govern over scaled dimensions. Where "as shown," "as indicated," "as detailed," or words of similar import are used, it shall be understood that reference to the drawings is made unless stated otherwise.

The term Landscape Architect refers to the Owner’s designated representative. The Owner refers to the Vernon Hills Park District.

2. OBLIGATIONS AND LIABILITY OF THE CONTRACTOR

The Contractor shall do all the work and perform and furnish all the labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies and all other things (except as otherwise expressly provided herein) necessary and as herein specified for the proper performance and completion of the Work in the manner and within the time hereinafter specified, in strict accordance with the Drawings, Specifications and other Contract Documents. (the “Work”). All parts of the Work and all fixtures, equipment, apparatus and other items indicated on the Drawings and not mentioned in the Specifications, or vice versa, and all work and material usual and necessary to make the Work complete in all its parts, including all incidental work necessary to make it complete and satisfactory and ready for use and operation, whether or not they are indicated on the Drawings or mentioned in the Specifications, shall be furnished and executed the same is if they were called for both by the Drawings and the Specifications.

3. AUTHORITY OF THE LANDSCAPE ARCHITECT

The Landscape Architect shall be the sole judge of the intent and meaning of the Drawings and Specifications and his decisions thereon and interpretation thereof shall be final, conclusive and binding on all parties.

4. SUB-CONTRACTING LIMITATIONS

The **Prime Contractor** of record shall perform, on site, with their own staff, Work equivalent to at least thirty-five percent (35%) of the total amount of this Contract Work at the site. Only pay items of the construction Contract will be used in computing the total amount of the **Prime Contractor's** Work. "Pay Items" shall exclude all general conditions, including but not limited to, insurance and bonding expenses, and **non-construction** overhead expenses.

5. COMPLIANCE WITH LAWS

It will be the responsibility of the Contractor to become aware of and at all times observe and comply with all laws, rules, regulations and orders of any governmental authority having jurisdiction over the Agreement or the Work. Where the specifications contained herein are in conflict with those of the governing agency, the most stringent will apply. When requested, the Contractor shall furnish evidence satisfactory to Owner of such compliance. The Contractor warrants that all articles furnished were and shall be produced in compliance with the Fair Labor Standards Act of 1938, as amended and that **all he/she (the Contractor) and his/her subcontractors must be licensed and bonded with the Vernon Hills Park District prior to start of construction.**

6. QUALIFICATIONS OF WORKMAN

Contractor shall maintain at the Work site, at all times during the progress of the Work, a competent superintendent who shall be thoroughly familiar with the type of materials being installed and the best methods for their installation, and who shall direct all work performed under this section.

The superintendent will be the representative of Contractor at the site and shall have authority to act on behalf of Contractor in all matters pertaining to the Work. Notices and other communications given to the superintendent shall be as binding as if given to Contractor.

7. WORKMANSHIP

High quality workmanship and craftsmanship will be expected for all phases of this Contract Work. All elements of completed Work found unacceptable or not meeting these standards will be removed and replaced by the Contractor at the sole cost and expense of the Contractor until satisfactory results are obtained.

8. WORK DESCRIPTION

The Work shall consist of furnishing, transporting and installing all equipment, apparatus, fixtures and other materials required for 1) Demolition/Removal, 2) Site Grading, 3) Excavation, 4) Storm Drainage, 5) Concrete Walks, 6) Shotcrete Skate Park, and 7) Landscape Plantings

9. CHANGES IN WORK/SUBSTITUTIONS

Contractor shall make no changes in the Work and shall receive no compensation for changes except those authorized by written Change Orders. The Contractor will be allowed 15% maximum overhead and profit for approved changes.

If the specified work item or species cannot be secured, Contractor shall submit alternate for Owner/Landscape Architect. Substitutions will not be permitted without written request from the Contractor for approval by the Owner/Landscape Architect. Contractor should be aware that more than one vendor might be required to obtain all plant materials. The desire to use a single plant vendor is not sufficient reason to request a substitution.

10. ADDITIONAL WORK

The Contractor, as requested, shall perform extra Work as directed by the Owner. A written “Work Addition Order” shall be submitted to and accepted by the Owner before any extra Work is begun

11. PRICING DISCREPANCIES

Discrepancies and/or errors in the multiplication or units of Work and unit prices will be resolved in favor of the unit prices. Errors between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

12. EXISTING TREE PRESERVATION AND JOB CONDITIONS

In order to preserve the existing character of the site, it is the essence of this contract to preserve and protect all existing mature trees and vegetation unless designated for removal. Any inappropriate work means, method or procedure that compromises the integrity of an existing tree will be responsible for its replacement at a value deemed appropriate by the Owner and Landscape Architect.

Likewise, prior to installation, Contractor shall examine and evaluate grades, soils, and water levels, observe the conditions under which the Work is to be performed, and provide written notification to the Owner/Landscape Architect of unsatisfactory

conditions. Such notification shall indicate the location(s) of conditions detrimental to the proper and timely completion of the Work. Contractor shall not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

If obstructions below ground, soil profile and content or poor drainage affect the contract operation during the course of the Work, proposed adjustments to site amenities, furnishings, plant location, type of plant and planting method or drainage correction shall be submitted to and approved by the Landscape Architect prior to implementation.

13. SITE TOPSOIL

Prior to the stripping of topsoil, all areas within the grading limits containing existing debris shall be cleaned sufficiently to permit easy use of the topsoil free of unmanageable debris. All topsoil should be stockpiled prior to grading operations or properly managed during the grading operations to provide an ample supply for re-spreading over all landscape areas. All topsoil to be furnished by the Contractor must be approved by the Owner/Landscape Architect. (Submit samples.)

14. EXCESS EXCAVATED MATERIAL AND DEBRIS

All excess excavated material and debris generated from this Work shall be hauled from the site at the Contractor's expense. Whenever possible, excess suitable soils generated from the grading requirements will be used on site. However, this cannot be an implied guarantee.

15. INTENT OF GRADING – CUT AND FILL

The intent of the **Grading and Excavation** is to achieve a balance between **cut** and **fill**. Excess soils must be used on site in berms at the direction of the Landscape Architect.

16. TRADE NAMES AND MATERIALS

Where materials or equipment are specified by a trade or brand name, it is not the intention to discriminate against an equal product of another manufacturer, but rather to set a definite standard of quality or performance. Where the words "equivalent," "proper," or "equal to" are used, they shall be understood to mean that the product referred to shall be proper, the equivalent of, or equal to some other product, in the opinion or judgment of Owner/Landscape Architect. Unless otherwise specified, all materials shall be the best of their respective kinds and shall be in all cases fully equal to approved samples. Notwithstanding that the words "or equal to" or other such expressions may be used in the specifications in connection with a material, manufactured article, or process, the materials, article, or process

specifically designated shall be used, unless a substitute shall be approved in writing by the Landscape Architect, and the Owner/Landscape Architect shall have the right to require the use of such specifically designated materials, article, or process.

17. PROSECUTION AND PROGRESS OF WORK

Time and Order of Completion

A. In performance of the Work, the Contractor shall diligently prosecute the Work to the end that it will be completed by the time provided in the Contract Documents. Contractor shall prosecute the Work at such times and order of precedence as will be most conducive to economy of installation.

B. Contractor shall supervise and direct the Work competently and diligently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in a good and workmanlike manner, to the end that the completed Work shall comply strictly with the contract Documents. Contractor is and shall remain an independent Contractor and shall be solely responsible for the means, methods, techniques, sequences and procedures of landscape installation, the Owner and Landscape Architect being interested only in the results to be obtained and conformity of the completed Work to the Contract Documents.

C. Contractor shall initiate and maintain, at all times during the progress of the Work, necessary precautions and procedures for the safety of, and shall provide protection necessary to prevent damage, injury or loss to, personnel employed on the Work and other persons and organizations who may be affected thereby and adjacent or adjoining property which may be affected by the Work.

D. Contractor shall comply with all laws, rules, regulations and orders of any governmental authority having jurisdiction over the Work for the safety of persons (including, but not limited to, those which apply to employees) or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

18. LIMIT OF CONSTRUCTION AND CONSTRUCTION TRAFFIC

Construction traffic and staging shall be permitted only within the construction limits or construction fence limits as indicated on the plan. The Contractor shall be responsible for repair of any areas disturbed outside of this area, including grading,

sodding, pavements, access roads, streets, and walks, at no additional expense to the Owner.

19. OWNER'S ACCESS

The Owner's representative shall at all times have access to the Work area. The Contractor shall keep the Owner advised of the progress of the project and shall provide opportunity for the Owner or his representative to inspect each phase of the project. The Contractor shall provide proper and safe facilities for such access and for inspection.

20. CONSTRUCTION ACCESS

Construction access shall be permitted only through the access points shown on the plan. No other access will be permitted. The Contractor shall be responsible for protection of existing curbs and pavements and for replacement of curbs and pavements should any damage occur.

21. ON-SITE MATERIAL STORAGE

For the performance of the Contract, the Contractor will be permitted to occupy such portions of the site as shown on the plans, or as permitted by the Owner and the Landscape Architect. A reasonable number of tools, materials, or equipment for construction purposes may be stored in such places, but not more than is necessary to avoid delays in construction. Excavated and waste materials shall be removed from the site immediately as it is generated to avoid access problems for other trades and Contractors.

22. CONCRETE TESTING

The Contractor will be required to provide samples of all concrete used for this project. One test cylinder will be required from each truckload of concrete delivered to the site. Each test cylinder must be clearly marked with the date of the pour, load ticket number and the name of the concrete supplier. The Owner, at their own cost will test these cylinders to determine if concrete meets project specifications. The Contractor will be responsible for disposing of all untested cylinders.

23. GUARANTEE OF CONCRETE WORK

As an additional guarantee beyond the implied one (1) year guarantee of the Performance Bond, the Contractor will be required to extend that guarantee to a total of two (2) years after the installation. This guarantee will be for structural failures, as well as surface erosion due to spalling caused by frost popping soft aggregates (chert) within the concrete and surface erosion due to faulty

workmanship. A high quality of workmanship will be demanded of the concrete Work. All Work not meeting high industry standards will be removed and replaced immediately at the Contractor's sole cost and expense. No graffiti or defacing of concrete will be accepted. Any concrete containing graffiti will be removed and replaced by the Contractor at no additional cost to the Owner.

24. GUARANTEE

The Contractor shall guarantee all materials and workmanship for a period of not less than one (1) year from the date of final acceptance by the Owner.

25. EMPLOYEE PARKING

It will be the responsibility of the Contractor to control employee parking limited to those areas designated by the Owner/Landscape Architect. Vehicles will not be permitted within the Work zone unless they are engaged in the Work process directly. Employee parking is prohibited on any portion of adjacent streets, roads, or private ways without obtaining permits therefore from the proper authorities.

26. INTOXICATION LIQUORS

The Contractor shall not sell and shall neither permit nor suffer the introduction or use of intoxication liquors upon or about the Work.

27. UNIT PRICES

The Contractor will be responsible for notifying the Landscape Architect and Owner of any discrepancies or additions to Work items completed on a unit price basis. This notification must take place prior to the execution of the Work. The purpose of this requirement is to make the Owner aware of the extra items affecting the cost of the original Contract amount.

28. LAYOUT OF WORK

It shall be the responsibility of the Contractor to verify all existing conditions and dimensions shown on the plan. Woody plants shall not be staked in the field by the Owner/Landscape Architect. The Contractor shall capture the general intent of the design plan. Strict adherence to the design plan will be enforced.

29. PROTECTION OF PERSONS AND PROPERTY

It is the responsibility of the Contractor to adequately keep the work areas "buttoned up" and completely closed off from the public *daily at the end of each work day, including weekends.* The Contractor must also protect his Work from

accidental damage. The responsibility for furnishing, installing, and maintaining temporary construction (security) fencing in conformance with the construction documents will be the responsibility of the Contractor. Failure to maintain this fencing will result in the correction of the problem by the Owner at a cost of $100 per man-hour, back-charged to the Contract. The Contractor is also responsible for erecting signs, and other barriers necessary to protect the public welfare, as well as his employees. (See Barricades). The Contractor shall also bear the cost of repairing or replacing damaged Work or equipment. The Contractor shall confine his equipment, the storage of materials, and the equipment and the operation of all personnel to limits indicated by the Owner/Landscape Architect.

30. PROTECTION OF INSTALLED WORK

Protect installed work from damage by construction operations. Prohibit traffic from landscape areas.

31. OCCUPYING PRIVATE LAND

The Contractor shall not (except after written consent form the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the right-of-way or property of the Owner. A copy of the written consent shall be given to the Owner/Landscape Architect.

32. BARRICADES

The Contractor must place solid physical barricades around all holes or trenches which must remain open overnight. Construction fence, A-frame blinkers, etc., may be used. Any unsafe areas discovered by the Owner to have been left by the Contractor without appropriate barricades may be corrected by the Owner at a cost of $100 per man hour, back-charged to the Contractor. This right of the Owner shall not create any obligation by, or liability of the Owner to discover and correct such deficiencies, it being understood that the obligation to provide appropriate barricades shall remain at all times the sole obligation of the Contractor.

33. CONSTRUCTION DEBRIS

At the end of each working day, all construction debris generated shall be consolidated within a fenced area or an area on site specifically designated as a dump area and fenced.

34. UNDERGROUND UTILITIES

The locations of public or private utilities shown on the plans are approximate and are not guaranteed to be inclusive. This information represents only the opinion of

the Engineer and the Landscape Architect as to the location and elevation of these utilities and is only included for the convenience of the bidders. THE LANDSCAPE ARCHITECT AND THE OWNER ASSUME NO RESPONSIBILITY WHATEVER IN RESPECT TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS RELATIVE TO THE LOCATION AND ELEVATION OF UTILITY FACILITIES. The Contractor will be required to ascertain the exact horizontal and vertical locations of such utilities and exercise care during operations so as not to damage them. Each Contractor and subcontractor shall obtain from respective utility companies detailed information relative to the location and elevation of their facilities and the working schedules of the utility companies for removing or adjusting them. Prior to excavating, call Joint Utilities Location Information for Excavators (J.U.L.I.E.) at 1-800-892-0123. The Contractor must exercise extreme caution while working around existing utilities. Where underground utilities exist, field adjustments must be approved by the Owner/Landscape Architect prior to installation.

35. SANITARY REGULATIONS

The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required.

36. WATER

The Contractor will be responsible for supplying all hoses, connectors and miscellaneous appurtenances necessary to water seed/sod areas or landscape plantings. The Contractor must make arrangements with the Owner for water usage.

37. PROVISIONS FOR CONTRACT COMPLIANCE

Where provisions of the Special Conditions are in conflict with the General Conditions and/or the Specifications, the provisions of the Special and Supplementary Conditions will apply.

38. TIME OF COMPLETION

The date of substantial completion of Work is the date certified by the Owner/Landscape Architect when the construction is a minimum complete, in accordance with the plans and details so the Owner can occupy the project, or a designated portion thereof for the use for which it is intended. Final completion for this project refers to all scheduled work, punch list, and close out items being 100% complete.

Punch list: On the date of substantial completion, a list of items to be completed or corrected shall be prepared by the Contractor and verified or amended by the Owner/Landscape Architect. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the plans. The date of commencement of warranties for items on the punch list will be the date of final payment unless otherwise agreed to in writing.

39. FINAL CHECKING OF CONTRACTOR GRADING

The Contractor will notify the Owner/Landscape Architect when he has completed his grading requirements. The Owner/Landscape Architect will make arrangements to have these completed grades checked for accuracy. The Contractor will be responsible for maintaining the grading plan grid for this checking to follow. The proper interpretation of grade breaks or changes between grid points will be the responsibility of the Contractor to provide during the grading. These same grid points and breaks will be checked for their accuracy. Only after the grading has been checked and approved can seeding/ sodding take place. Again, efficiency of the grading for this project will be paramount to ensure that the seeding requirements are completed as early as possible.

40. EXISTING LINES

The Contractor will be responsible for the location and protection of all existing electrical utility lines on the project site. Should any electrical line be damaged, the Contractor must immediately notify the Landscape Architect and the Owner, and make repairs accordingly. The Contractor must use Scotch-Cast waterproof splice kit as manufactured by 3M to make all splices. The Contractor must notify the Owner immediately after repairs have been made, prior to backfilling so that repairs can be inspected and approved.

41. LANDSCAPE MULCH QUANTITY

Where planting beds meet turf areas, the Contractor should provide a cultivated edge. For all landscape planting beds shown, install mulch at 3" thick. **Quantity specified in Bid Form includes only the mulch quantity required for planting beds**. For trees planted in turf areas, the Contractor shall provide a 6' diameter mulch ring at 3" thick with cultivated edge. **This shall be considered incidental to tree plantings.**

42. EXISTING DRAINAGE STRUCTURES AND LINKS

The Contractor is responsible for locating all existing drainage structures and lines prior to making connections to them, and to determine if they are functioning. Any

drainage lines intercepted during site excavation shall be repaired or abandoned as determined by the Owner/Landscape Architect.

43. CLEAN-UP

Contractor shall confine the storage of materials and equipment and the operations of workers to the work site areas identified in the Contract Documents, rights-of-way, or easements that may be obtained by Contractor. Contractor shall not unreasonably encumber the Work site with equipment or other materials.

Contractor shall repair or replace all lawn, fences, concrete walls, concrete curbs, gravel and asphalt driveways, signs, culverts, and all other miscellaneous improvements, at no additional expense to Owner, damaged by Contractor due to his operations on the project, to a condition equal to or better than their condition before the Work was completed.

During the progress of the Work, Contractor shall keep the Work site free from accumulations of rubbish and debris and shall keep pavements clean and work areas and adjoining areas in an orderly condition. Debris shall be removed daily from the project site. Upon completion of the Work, Contractor shall remove all rubbish and debris as well as all equipment and machinery of Contractor and its sub-contractors. Local regulations regarding hauling and disposal shall apply.

Upon completion of the Work and before acceptance and final payment will be made, Contractor shall clean and remove from the site of the work surplus and discarded materials, temporary structures, and debris of every kind. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations.

44. CERTIFIED PAYROLL REPORTING

Certified Payroll Report: The Contractor is required to submit a weekly certified payroll report beginning with the first week of commencement on the project and for every week afterward until the work is completed. The Contractor shall number each payroll report beginning with the #1 and clearly mark the last payroll for the project “Final”. The Contractor may use the Payroll Form WH-347 form or other type of payroll computerized formats as long as it contains all of the information that is required on the WH-347. Each payroll report must be signed and contain language certifying that the information is true and correct.

45. POSTING BONDS AND INSURANCE

The Contractor shall be required to post all necessary bonds and required certificates of insurance for work on or adjacent to any State or County highway or for work within their respective rights-of-way. The cost of the specified insurance and bond shall be borne by the Contractor and considered incidental to the contract and no separate payment will be made.

46. HOURS OF WORK

Normal hours of operation are 7:00 a.m. to 7:00 p.m., Monday through Friday, 8 a.m. to 7 p.m. on weekends.

Work will not be permitted before or after these normal hours of work, nor on public holidays unless the Contractor has given the Owner/Landscape Architect at least 48 hours' notice of each day such work is intended. Approval must be obtained from the Owner/Landscape Architect prior to such work proceeding.

47. NOISE CONTROL

The Contractor shall take all practical precautions to minimize noise so as to not impact the neighboring residences. As a general rule, noisy activity required along the south and east property lines shall be carried out between 9:00 a.m. and 5:00 p.m. weekdays.

48. EXTENSION OF TIME

Should Contractor be delayed in the completion of the Work by the wrongful act or neglect of Owner or Landscape Architect, or by other work performed on the Work site, or by changes ordered in the Work, or by strikes, lockouts, fire, or unusual delay by common carriers, or by other unavoidable causes beyond Contractor's control, except financial, then the time for performance shall be extended sufficiently to compensate for the delay, provided Contractor gives Owner/Landscape Architect prompt notice of the delay, with reasonable full particulars concerning the cause.

49. CUSTODY OF DRAWING AND SPECIFICATION

The Drawings and Specifications shall remain the sole property of the Landscape Architect. The copyright of all documents shall vest in the Landscape Architect and the Drawings and Specifications may not be reproduced in part or in whole, without written authority of the Landscape Architect.

50. BIDDING/CONSTRUCTION DOCUMENTS & WRITTEN SPECIFICATIONS

The Landscape Architect and consultants do not warrant or guarantee the accuracy and completeness of the work product therein beyond a reasonable diligence. If any mistakes, omissions, or discrepancies are found to exist with the work product, the Landscape Architect shall be promptly notified so that they may have the opportunity to take any steps necessary to resolve the issue. Failure to promptly notify the Landscape Architect and the Owner of such conditions shall absolve them from any responsibility for the consequences of such failure. Actions taken without the knowledge and consent of the Landscape Architect and the Owner, or in contradiction to the Landscape Architects work product or recommendations, shall become the responsibility not of the Owner and the Landscape Architect but for the parties responsible for the taking of such action.

51. METHOD OF PAYMENT

Separate payment shall be made for only those items listed on the Proposal Form. All items necessary for construction and not so listed shall be considered as incidental items.

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Contract description.
2. Contractor's use of site.
3. Work sequence and coordination.
4. Contractor's responsibility.
5. Owner occupancy.
6. Limits of construction and construction traffic
7. Storm water structures and lines.
8. Construction vehicle parking.
9. Underground utilities.
10. Workmanship.
11. Permits.
12. Specification conventions.

B. Documents affecting work of this section include, but are not limited to, General Conditions, and Sections in Division 1 of these Specifications.

1. Section 01 20 00 - Price and Payment Procedures
2. Section 01 30 00 - Administrative Requirements
3. Section 01 32 16 - Construction Progress Schedule
4. Section 01 50 00 - Temporary Facilities and Controls
5. Section 01 70 00 - Execution and Closeout Requirements

1.2 CONTRACT DESCRIPTION

A. Work of the Project includes construction of:

1. Demolition/Excavation
2. Grading/Drainage
3. Skate Park Development
4. Pre-fabricated Shelters
5. Concrete Pavement
6. Site Furnishings
7. Landscape Restoration

B. Perform Work of Contract under fixed cost lump sum Contract with Owner according to Conditions of Contract.

1.3 CONTRACTOR'S USE OF SITE

A. Limit use of Site to allow:

1. Owner occupancy.

B. Construction Operations: Limited to areas indicated on Drawings.

1. Noisy and Disruptive Operations (such as Use of Jack Hammers and Other Noisy Equipment): Not allowed in close proximity to existing building during regular hours of operation. Coordinate and schedule such operations with Owner to minimize disruptions.

C. Time Restrictions for Performing any Work:

1. Weekdays 7:00 AM to 7:00PM.

2. Weekends 8:00 AM to 5:00 PM.

D. Utility Outages and Shutdown:

1. Coordinate and schedule electrical and other utility outages with Owner.

2. Outages: Allowed only at previously agreed upon times. In general, schedule outages at times when facility is not being used.

3. At least one week before scheduled outage, submit Outage Request Plan to Landscape Architect itemizing the dates, times, and duration of each requested outage.

E. Coordination with Landscape Architect

1. Coordinate use of premises under direction of the Owner's representative.

F. Assume full responsibility for the protection and safekeeping of materials and equipment under this Contract, stored on the site.

G. Move any stored equipment or materials under Contractor's control, which interfere with operations of the Owner or separate contractor.

H. Obtain and pay for the use of additional storage or work areas needed for operations.

1.4 WORK SEQUENCE AND COORDINATION

A. Coordinate the construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Contracts.

1.5 CONTRACTOR'S RESPONSIBILITY

A. Contractor shall provide layout of site development and establish and guarantee all main lines, levels, etc. to be called for on the drawings.

B. Contractor shall be responsible for the lines, level, etc., of all his or her subcontractors

1.6 OWNER OCCUPANCY

A. Owner will occupy Site during entire period of construction for conduct of normal operations.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner occupancy.

D. Contractor shall, at all times, conduct all their operations as to ensure the least inconvenience to the general public.

1.7 LIMITS OF CONSTRUCTION AND CONSTRUCTION TRAFFIC

A. Construction traffic and staging shall be permitted only within the construction limits or construction fence limits as indicated on the plan. The Contractor shall be responsible for repair of any areas disturbed outside this area.

1.8 STORM WATER STRUCTURES AND LINES

A. The Contractor is responsible for locating all existing storm water structures and lines prior to making connections to them, and to determine if they are functioning properly. All storm water lines intercepted during site excavations shall be repaired or abandoned as determined by the Owner's representative.

1.9 CONSTRUCTION VEHICLE PARKING

A. It will be the responsibility of the Contractor to control construction vehicle parking. Vehicles will not be permitted within the work zone unless they are engaged directly in the work in progress.

1.10 UNDERGROUND UTILITIES

A. The Contractor is responsible for locating and identifying all existing underground utilities prior to beginning any excavation of trenching. Contact J.U.L.I.E. prior to commencing work.

1.11 WORKMANSHIP

A. High quality, first class workmanship, will be expected for all phases of this Contract. Any element of completed work found unacceptable or not meeting standards will be removed and replaced with acceptable workmanship by the Contractor at the sole cost and expense of the Contractor.

1.12 PERMITS

A. Furnish all necessary permits for construction of Work including the following:

1. NPDES permit.

1.13 SPECIFICATION CONVENTIONS

A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words “shall be” are included by inference where a colon (:) is used within sentences or phrases.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 10 00

SECTION 01 20 00 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Schedule of Values.

B. Application for Payment.

C. Change procedures.

D. Documentation of changes in contract sum and contract time.

E. Procedures for preparation and submittal of application for final payment.

1.2 SCHEDULE OF VALUES

A. Submit printed schedule on AIA G703 - Continuation Sheet for G702.

B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section.

D. For each major line item list sub-values of major products or operations under the item.

E. Revise schedule to list approved Change Orders with each Application for Payment.

F. Upon request of the Landscape Architect, support the values with data which will substantiate their correctness.

1. The Schedule of Values, unless objected to by the Landscape Architect, shall be used only as the basis for the Contractor's Applications for Payment.

G. Form and Content of Schedule of Values:

1. Type schedule on 8-1/2" x 11" white paper; Contractor's standard forms and automated printout will be considered for acceptance by Landscape Architect upon Contractor's request. Identify schedule with:

    a. Title of Project and location
    b. Landscape Architect and Project number
    c. Name and Address of Contractor
    d. Contract designation
    e. Date of submission

2. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.

3. For the various portions of the Work:

    a. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
    b. For items on which progress payments will be requested for stored materials not paid for, breakdown the value into:

        1) The cost of the materials delivered and unloaded, with taxes paid.
        2) The total installed value

4. The sum of all values listed in the schedule shall equal the total contract sum.

1.3 APPLICATION FOR PAYMENT

A. Submit three copies of each Application for Payment on AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702 with all copies containing original signatures and notarization as required. The forms included at the end of this section must be used for pay requests (see Samples).

B. The Item and Description columns in the AIA G703 form must be filled out to follow the Contract bid sheets which may be abbreviated (use as many as required). A computer-generated form may be substituted for the AIA forms.

C. Sworn Statement for Contractor and Subcontractor to Owner, #589 or 3619, by the F.R. Walker Company. The Sworn Statement must be submitted with each request showing all sub-contractors with amounts being requested for each. This will be the basis for waivers to be submitted during each subsequent pay request.

D. Content and Format: Use Schedule of Values for listing items in Application for Payment.

E. Submit information in typewritten form

F. Execute certification by signature of authorized officer.

G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

I. Submit three copies of each application for payment.

J. Include three copies of the following with the application:

1. Partial release of liens from all Subcontractors and vendors from previous payout.
2. Partial release of lien from General Contractor for current pay request.
3. Contractor’s Sworn Statement for the Contract Price.
4. Certified Payroll.

K. When Landscape Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

L. Submit updated construction schedule with each Application for Payment.

M. Payment Period: monthly.

N. Submit submittals with transmittal letter as specified in Section 01 33 00 - Submittal Procedures.

1. Construction Progress Schedule, revised and current as specified in Section 01 33 00 - Submittal Procedures.

1.4 CHANGE PROCEDURES

A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Landscape Architect will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions.

C. Landscape Architect may issue Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change and with the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 7 days.

D. Contractor may propose changes by submitting a request for change to Landscape Architect, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation.

E. Change Order Forms: AIA G701 - Change Order.

F. Execution of Change Orders: Landscape Architect will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

G. Correlation of Contractor Submittals:

1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
2. Promptly revise Progress Schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change and resubmit.
3. Promptly enter changes in Record Documents.

1.5 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted contract sum, previous payments, and sum remaining due.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 20 00

SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Preconstruction meeting.

B. Progress meetings.

C. Closeout meeting.

1.2 PRECONSTRUCTION MEETING

A. Architect/Engineer will schedule and preside over meeting after Notice of Award.

B. Attendance Required: Architect/Engineer, Owner, Resident Project Representative, Contractor and major Subcontractors as directed by the contractor.

C. Minimum Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
5. Designation of personnel representing parties in Contract, and Architect/Engineer.
6. Communication procedures.
7. Procedures and processing of requests for interpretations, field decisions, field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.
9. Housekeeping procedures.
10. Security procedures.

D. Contractor: Record minutes and distribute copies to participants within four days after meeting, with three copies each to Architect/Engineer, Owner, and those affected by decisions made.

1.3 PROGRESS MEETINGS

A. Schedule Regular Meetings at a time and place to be determined at the Pre-Construction Conference. Special meetings may be held on an as-needed basis.

B. Attendance Required: Job superintendent, major Subcontractors Contractors and suppliers, and Architect/Engineer, Owner, as appropriate to agenda topics for each meeting.

C. Location of Meetings: As indicated in notice.

D. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Coordination of projected progress.
10. Maintenance of quality and work standards.

11. Effect of proposed changes on Progress Schedule and coordination.
12. Other business relating to Work.

E. Contractor: Record minutes and distribute copies to participants within four days after meeting, with three copies each to Architect/Engineer, Owner, and those affected by decisions made.

1.4 CLOSEOUT MEETING

A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.

B. Attendance Required: Contractor, Architect/Engineer, Owner, and others appropriate to agenda.

C. Notify Architect/Engineer four days in advance of meeting date.

D. Minimum Agenda:

1. Start-up of facilities and systems.
2. Operations and maintenance manuals.
3. Testing, adjusting, and balancing.
4. System demonstration and observation.
5. Operation and maintenance instructions for Owner's personnel.
6. Contractor's inspection of Work.
7. Contractor's preparation of an initial "punch list."
8. Procedure to request Architect/Engineer inspection to determine date of Substantial Completion.
9. Completion time for correcting deficiencies.
10. Inspections by authorities having jurisdiction.
11. Certificate of Occupancy and transfer of insurance responsibilities.
12. Partial release of retainage.
13. Final cleaning.
14. Preparation for final inspection.
15. Closeout Submittals:
    a. Project record documents.
    b. Operating and maintenance documents.
    c. Operating and maintenance materials.
    d. Affidavits.
16. Final Application for Payment.
17. Contractor's demobilization of Site.
18. Maintenance.

E. Record minutes and distribute copies to participants within four days after meeting, with three copies each to Architect/Engineer, Owner, and those affected by decisions made.

PART 2 - PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION 01 30 00

SECTION 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Construction Schedule.

1.2 RELATED SECTIONS

A. General Conditions of the Contract

B. Supplementary Conditions of the Contract

C. Special Provisions of the Contract

D. Owner – Contractor Agreement

E. Section 01 10 00 - Summary

F. Section 01 70 00 - Execution and Closeout Requirements

1.3 CONSTRUCTION SCHEDULE

A. Promptly Within 10 days after date of Owner-Contractor Agreement, submit proposed preliminary estimated construction progress schedule including sub-schedules of related activities essential to progress of the Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

1. Include written certification that major contractors have reviewed and accepted proposed schedule.
2. Within 10 days after joint review, submit complete schedule.
3. Submit updated schedule with each application for payment.

1.4 QUALITY ASSURANCE

A. Scheduler: Contractor's personnel or specialist consultant with one-year minimum experience in scheduling construction work of a complexity comparable to this project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

B. Contractor's Administrative Personnel: 2 years' minimum experience in using and monitoring schedules on comparable projects.

1.5 BAR CHART SCHEDULES

A. Format: Bar chart Schedule, to include at least:

B. Include a separate bar for each major portion of work or operation.

C. Identify the first work day of each week.

D. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:

1. Subcontract Work.
2. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.

3. Move-in and other preliminary activities.
4. Equipment and equipment system test and startup activities.
5. Project closeout and cleanup.
6. Work sequences, constraints, and milestones.
7. Diagram Sheet Size:

    a. Maximum 22 x 17 inches or width required.
    b. Sheet Size: Multiples of 8-1/2 x 11 inches.

8. Scale and Spacing: To allow for notations and revisions.

E. Identification of the following:

1. Horizontal time frame by year, month, and week.
2. Duration, early start, and completion for each activity and subactivity.
3. Critical activities and Project float.
4. Subschedules to further define critical portions of Work.

F. Preliminary Schedule

1. Prepare preliminary schedule in the form of a horizontal bar chart.

G. Content

1. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
2. Identify each item by specification section number.
3. Identify work of separate stages and other logically grouped activities.
4. Provide sub-schedules for each stage of work.
5. Provide sub-schedules to define critical portions of the entire schedule.
6. Include conferences and meetings in schedule
7. Show accumulated percentage of completion of each item, and total percentage of work completed, as of the first day of each month.
8. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products. Products identified under allowances, and dates reviewed submittals will be required from Landscape Architect. Indicate decision dates for selection of finishes.
9. Indicate delivery dates for owner-furnished products.
10. Coordinate content with schedule of values specified in this Section.
11. Provide legend for symbols and abbreviations used.

1.6 REVIEW AND EVALUATION

A. Participate in joint review and evaluation of schedules with Landscape Architect at each submittal.

B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.

C. After review, revise schedules incorporating results of review, and resubmit within 10 days.

1.7 UPDATING SCHEDULES

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update schedules to depict current status of Work.

C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

D. Upon approval of a Change Order, include the change in the next schedule submittal.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit sorts as required to support recommended changes.

G. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect including effects of changes on schedules of separate Contractors.

1.8 DISTRIBUTION

A. Following joint review, distribute copies of updated schedules to Contractor's Project site file, to Subcontractors, suppliers, Landscape Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 32 16

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Product data.

C. Use of electronic CAD files of Project Drawings.

D. Shop Drawings.

E. Samples.

F. Design data.

G. Test reports.

H. Manufacturer's instructions.

I. Contractor review.

1.2 SUBMITTAL PROCEDURES

A. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

B. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.

C. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

D. Schedule submittals to expedite Project and deliver to Landscape Architect at business address. All submittals shall be received by the Landscape Architect within 30 days. Coordinate submission of related items.

E. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.

F. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

G. Allow space on submittals for Contractor and Landscape Architect review stamps.

H. When revised for resubmission, identify changes made since previous submission.

I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

J. Submittals not requested will not be recognized nor processed.

K. Incomplete Submittals: Landscape Architect will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Landscape Architect.

1.3 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Landscape Architect for review for assessing conformance with information given and design concept expressed in Contract Documents.

B. Submit number of copies Contractor requires, plus two copies Landscape Architect will retain.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.4 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

1. Use of files is solely at receiver's risk. Landscape Architect does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Landscape Architect of discrepancy and use information in hard-copy Drawings and Specifications.
2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
4. Receiver shall not hold Landscape Architect responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Landscape Architect has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Landscape Architect responsible for such viruses or their consequences, and shall hold Landscape Architect harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.5 SHOP DRAWINGS

A. Shop Drawings: Action Submittal: Submit to Landscape Architect for assessing conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.

1. Include signed and sealed calculations to support design.
2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. Submit in form of one reproducible transparency and two opaque reproductions.

E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.6 SAMPLES

A. Samples: Action Submittal: Submit to Landscape Architect for assessing conformance with information given and design concept expressed in Contract Documents.

B. Samples for Selection as Specified in Product Sections:

1. Submit to Landscape Architect for aesthetic, color, and finish selection.
2. Submit Samples of finishes, textures, and patterns for Landscape Architect selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual Specification Sections; Landscape Architect will retain one Sample.

F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.

G. Samples will not be used for testing purposes unless specifically stated in Specification Section.

H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.7 TEST REPORTS

A. Informational Submittal: Submit reports for Landscape Architect's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.8 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Landscape Architect's knowledge as Contract administrator or for Owner.

B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Landscape Architect in quantities specified for Product Data.

C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.9 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to Landscape Architect.

B. Contractor: Responsible for:

1. Determination and verification of materials including manufacturer's catalog numbers.
2. Determination and verification of field measurements and field construction criteria.
3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Landscape Architect.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality control.

B. References.

C. Mockup requirements.

D. Testing and inspection services.

1.2 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work using persons qualified to produce required and specified quality.

D. Products, materials, and equipment may be subject to inspection by Architect/Engineer and Owner at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.

E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.

B. Obtain copies of standards and maintain on Site when required by product Specification Sections.

C. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

D. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.4 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.

B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mockups shall be comparison standard for remaining Work.

D. Where mockup has been accepted by Architect/Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Architect/Engineer.

1.5 TESTING AND INSPECTION SERVICES

A. The Contractor shall furnish samples of materials for testing, if requested by the Landscape Architect, at no additional cost. Tests by the Landscape Architect will be made in accordance with commonly recognized standards of national materials testing organizations and any such other special methods as deemed necessary.

B. Ant and all materials necessary for the construction of any part of the work and associated improvements not specified shall be of the best available quality acceptable to the Landscape Architect.

C. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

D. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Architect/Engineer. Payment for retesting or re-inspection will be charged to Contractor.

PART 2 - PRODUCTS - **Not Used**

PART 3 - EXECUTION - Not Used

END OF SECTION 01 40 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:

1. Temporary electricity
2. Temporary water service
3. Temporary sanitary facilities

B. Construction Facilities:

1. Vehicular access
2. Parking
3. Progress cleaning and waste removal
4. Project identification
5. Traffic regulation

C. Temporary Controls:

1. Barriers
2. Enclosures and fencing
3. Portable Temporary Panels (Chain Link)
4. Security
5. Water control
6. Dust control
7. Erosion and sediment control
8. Pollution control

D. Removal of utilities, facilities, and controls.

1.2 RELATED SECTIONS

A. Section 01 70 00 - Execution and Closeout Requirements

B. Section 31 22 13 - Rough Grading

C. Section 32 93 10 - Tree and Plant Protection

1.3 COMPLIANCE

A. Comply with OSHA laws, rules, and regulations

1.4 REFERENCES

A. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction (Standard Specifications)

1.5 TEMPORARY ELECTRICITY (CONTRACTOR'S OPTION)

A. Provide:

1. Power centers for miscellaneous tools and equipment used in construction work.
    a. Locate so that power is available at any desired point with no more than 100-foot extension.
    b. Provide weatherproof distribution box with minimum of four 20-amp, 120-volt grounded outlets.
    c. Provide circuit protection for each outlet.
    d. Provide equipment grounding continuity for entire system.
    e. Provide ground fault protection in accordance with OSHA requirements.

f. Users shall provide grounded UL listed extension cords and other accessories from power center(s) to point of operation.

2. Power for construction.
3. Power for temporary lighting.
4. Power for pumping.
5. Power for testing and checking equipment.
6. Power for welding units and for other equipment having special power requirement.
7. Capacity:

a. Adequate electrical service for construction use by all trades during construction period.
b. Notify power company if unusually heavy loads, such as welding, and other equipment with special power requirements, will be connected.

1) Provide special circuits for heavy load requirements.

2) Do not overload any circuit.

B. Power Source:

1. Supplier: Commonwealth Edison.
2. Provide minimum 110-220-volt, 100 amp., single phase, 60 cycle power service.
3. Contractor may provide temporary generator(s) in lieu of connecting to power company if he determines that the supply will be adequate.

C. Maintain strict supervision of use of temporary services.

1. Enforce conformance with applicable standards.
2. Enforce safe practices.
3. Prevent abuse of services.

D. Cost of installation and operation:

1. Pay all costs of temporary electricity, including costs of installation, maintenance and removal of temporary services.
2. Pay costs of temporary electrical power used.
3. Pay costs of power used from permanent wiring until final acceptance of project.
4. Should Owner occupy part of facility during construction, power costs will be shared proportionately.
5. Provide meter for temporary electrical power used to maintain Owner's occupancy.

E. Requirements of Regulatory Agencies:

1. Obtain and pay for permits as required by governing authorities.
2. Obtain and pay for temporary easements required across property, other than that of Owner.
3. Comply with applicable codes:

a. National Electrical Code. (NASI C1)
b. National Electrical Safety Code.
c. National Fire Protection Association Pamphlet.
d. Federal, State and local codes and utility company regulations.

F. Use of permanent system:

1. Secure Owner's written permission for connection and use of system, indicating conditions for use.
2. Modify and extend system as necessary to meet temporary electricity requirements.

G. Upon completion of work, restore permanent system to specified condition.

1.6 TEMPORARY WATER SERVICE

A. Drinking water:

1. Provide adequate drinking water in portable containers for all employees.

B. Dust Control:

1. Supply water required for dust control, irrigation and for other construction needs
2. Supply all hoses, connectors and miscellaneous appurtenances necessary.
3. Make arrangements with the local authority for meters, permits, fees.

C. Landscape Plantings:

1. The Contractor will be responsible for supplying all hoses, connectors and miscellaneous appurtenances necessary to water seed/sod areas or landscape plantings. The Contractor must make arrangements with the Owner for water usage.

1.7 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

B. Pay costs of temporary sanitary facilities, including costs of installation, maintenance and removal.

C. Pay service charges for use of portable units.

D. Maintain strict supervision of facilities:

1. Enforce conformance with applicable codes and standards.
2. Maintain, service and clean facilities.
3. Enforce proper use of sanitary facilities.

E. Location shall be approved in advance by Owner.

1.8 VEHICULAR ACCESS

A. Construct temporary access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.

B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.

D. Locate as indicated on Drawings.

E. Provide unimpeded access for emergency vehicles. Maintain 20-foot-wide driveways with turning space between and around combustible materials.

F. Provide and maintain access to fire hydrants free of obstructions.

G. Provide means of removing mud from vehicle wheels before entering streets.

H. Use designated existing on-Site roads for construction traffic.

1.9 PARKING

A. Arrange for temporary surface parking areas to accommodate construction personnel.

B. Locate as approved by Owner.

C. If Site space is not adequate, provide additional off-Site parking.

D. Use of designated areas of existing on-Site streets and driveways used for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.

E. Use of designated areas of existing parking facilities used by construction personnel is permitted.

F. Do not allow heavy vehicles or construction equipment in parking areas.

G. Do not allow vehicle parking on existing pavement except in designated areas.

H. Designate one parking space for Landscape Architect.

I. Permanent Pavements and Parking Facilities:

1. Before Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
2. Avoid traffic loading beyond paving design capacity. Tracked vehicles are not allowed.
3. Use of permanent parking structures is not permitted.

J. Maintenance:

1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.

K. Removal, Repair:

1. Remove temporary materials and construction when permanent paving is usable.
2. Remove underground Work and compacted materials to depth of 2 feet; fill and grade Site as indicated.
3. Repair existing permanent facilities damaged by use, to original condition.

L. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.10 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

C. Broom and vacuum clean interior areas before starting surface finishing and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from Site weekly and dispose of off-Site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.11 PROJECT IDENTIFICATION

A. Project Identification Sign:

1. One painted signs of construction, design, and content shown on Drawings, location designated.
2. Content:
    a. Project number, title, logo, and name of Owner.
    b. Names and titles of authorities.
    c. Names and titles of Planning Resources Inc. and Consultants.
    d. Name of General Contractor.
    e. Graphic Design, Colors, and Style of Lettering: Designated by Landscape Architect.

B. Design sign and structure to withstand 60-mph wind velocity.

C. Sign Painter: Experienced as professional sign painter for minimum of three years.

D. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

E. Show content, layout, lettering, color, foundation, structure, sizes, and grades of members.

F. Sign Materials:

1. Structure and Framing: New or Used wood, structurally adequate.
2. Sign Surfaces: Exterior grade plywood with medium-density overlay, minimum of 3/4 inches thick, standard large sizes to minimize joints.

3. Rough Hardware: Galvanized aluminum or brass.
4. Paint and Primers: Exterior quality, one coat; sign background of white color as selected.
5. Lettering: Exterior quality paint, contrasting colors as selected.

G. Installation:

1. Install Project identification sign within 30 days after date established by Notice to Proceed.
2. Erect at designated location.
3. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
4. Install sign surface plumb and level, with butt joints. Anchor securely.
5. Paint exposed surfaces of sign, supports, and framing.

H. Maintenance: Maintain clean signs and supports; repair deterioration and damage.

I. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.12 TRAFFIC REGULATION

A. Signs, Signals, and Devices:

1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
2. Traffic Control Signals: As approved by local jurisdictions.
3. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
4. Flag Person Equipment: As required by authorities having jurisdiction.

B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D. Haul Routes:

1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
2. Confine construction traffic to designated haul routes acceptable to local authorities.
3. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.

E. Traffic Signs and Signals:

1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
2. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
3. Relocate signs and signals as Work progresses, to maintain effective traffic control.

F. Removal:

1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation.
3. Remove post settings to depth of 2 feet.

1.13 BARRIERS

A. Provide and maintain adequate barriers, fences, or other structures necessary to protect the public from accidental injury resulting from actions of the Contractor or condition of the work site.

B. Place solid physical barricades around all holes or trenches which remain open overnight.

C. Any unsafe areas discovered by the Owner to have been left by the Contractor without appropriate barricades may be corrected by the Owner at the cost of $100 per person hour, back charged to the Contractor.

1. This right of the Owner shall not create any obligation by, or liability of the Owner to discover and correct such deficiencies.
2. It being understood that the obligation to provide appropriate barricades shall always remain the sole obligation of the Contractor.

D. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

E. The Contractor shall confine his equipment, the storage of materials, and the equipment and the operation of all personnel to limits indicated by the Landscape Architect.

F. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.

1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
2. Provide 4-foot-high barriers around drip line, with access for maintenance.
3. Comply with Orange Safety Fence requirements of this Section or per municipality ordinance.
4. Comply with Section 32 93 10 - Tree and Plant Protection
5. Replace trees and plants damaged by construction operations.

G. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.14 ENCLOSURES AND FENCING

A. Construction: Commercial-grade chain-link fence Plastic Construction Netting or Portable Temporary Panels (see plans).

B. Security fence:

1. Provide and maintain 6-foot-high fence around construction Site as shown on Drawings; equip with vehicular gates with locks.
2. Include all posts, caps, couplings, rails, braces, bottom reinforcing wire, stretcher bars, clips, ties, wire fabric, finish hardware, grounding and necessary accessories.
3. Contractor’s option to use acceptable drive anchor posts in lieu of posts with a concrete footings or temporary fence panels.
4. Provide vehicular and pedestrian gates as shown on the Drawings.
5. Remove all security fencing at completion of Work or when directed by Owner.

C. Standards

1. All fencing material shall meet or exceed the requirements of the Chain Link Fence Manufacturer's Institute (CLFMI).

D. Product Handling

1. Do not damage fabric, posts, or rails.

E. Environmental Conditions

1. Concrete footings can be installed only if air temperature is above 40 degrees F.
2. Do not install fencing when site or weather conditions exist, that vehicles, equipment and materials will cause damage to the site or people.

1.15 SECURITY

A. Security Program:

1. Protect Work on existing premises from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner’s existing security system at Project mobilization.
3. Maintain program throughout construction period until Owner occupancy directed by Landscape Architect.

B. Entry Control:

1. Restrict entrance of persons and vehicles to Project Site.
2. Allow entrance only to authorized persons with proper identification.

1.16 WATER CONTROL

A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.

B. Protect Site from puddles or running water.

1.17 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere.

1.18 EROSION AND SEDIMENT CONTROL

A. Comply with NPDES Permit Requirements.

B. Comply with sediment and erosion control plan indicated on Drawings (if over one acre in size).

C. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.

D. Minimize surface area of bare soil exposed at one time.

E. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow as necessary or as shown on Drawings.

F. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.

G. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.

1.19 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

C. Comply with sediment and erosion control plan indicated on Drawings.

1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.

B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.

C. Clean and repair damage caused by installation or use of temporary Work.

D. Restore existing and permanent facilities used during construction to original condition.

E. Restore permanent facilities used during construction to specified condition.

1.21 SUBMITTALS

A. Comply with Section 01 33 00 – Submittals.

1.22 MEASUREMENT AND PAYMENT

A. Security Fencing:

1. If more or less than the lineal feet indicated in the plans are required for job security as required by the Owner, the agreed UNIT PRICE stated in the Unit Price Schedule will apply.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-link Fencing:

1. General:
   a. All fencing material shall be new and shall bear a registered "QUALITY SEAL" of the Chain Link Fence Manufacturer's Institute (CLFMI) guaranteeing that the fence meets or exceeds the requirements of the National Standard for Quality chain link fence.
   b. Hot dip galvanize all posts, rails, braces, tension bars and other appurtenances with a minimum zinc coating of 2 ounces per square foot of surface.
   c. Manufacturer's standard items shall be furnished insofar as to the type of fence specified. In general, material shall conform to the applicable requirements of the following standard specifications; and as approved by the chain link fence institute.
   d. All ferrous metals used in the construction of the fence, including the fabric, shall be galvanized.
   e. Fence-Posts, Gates and Accessories - Fed. Spec. RR-F-183.
   f. Fencing, Wire and Post, Metal and Gates, Chain-Link Fabric Accessories Fencing, Wire - Fed. Spec. RR-F-00191.
   g. Fence Posts and Accessories - Fed. Spec. RR-F-221.
2. Security fence:
   a. 6-Foot high or as indicated on the plans.
   b. Consist of fabric panels and frame work of standard steel galvanized pipe or H-column posts equal in strength and of standard steel galvanized pipe gate and terminal posts and rails.
3. Posts:
   a. Corner posts and end posts:
      1) 2½-inch standard steel galvanized pipe
      2) 2.875" O.D. at 5.79 # per foot
      3) Length as required
   b. Intermediate posts:
      1) 2-inch standard steel galvanized pipe
      2) 2.375" O.D. at 3.65 # per foot
      3) Length as required.
4. Fabric:
   a. Galvanized chain link type, 2-inch mesh of 9-gauge wire or as indicated on the plans; top and bottom edges of the fabric, shall have knuckle top and bottom; the top edge of fabric shall project above top rail of the fence frame.
5. Provide post with bracing rails on each side of gate openings, at all corners, angles and changes in direction; space intermediate line posts not more than 10 feet on center.
6. Top rail:
   a. Provide continuously between all posts.
   b. 1¼-inch standard steel galvanized pipe, 1.66" O.D at 2.27 # per foot.
7. Bottom:
   a. Provide reinforcing wire continuously along the bottom of the fence fabric for all fencing.
8. Gates:
   a. Swing type, with frame of tubular members with diagonal truss rods and turn buckle.

b. Provide complete with heavy duty hinges, and acceptable type locking device adaptable for padlocking and accessible from both sides of the gate
c. Provide stops, keepers and all accessories.

9. Gate posts:

a. 2½-inch standard steel galvanized pipe, 2.875" O.D. at 5.79 # per foot set in an 18" diameter x 48" deep concrete footing.

B. Orange Safety Fence (Snow Fence):

1. General:

a. All fencing materials shall be new.
b. Manufacturer's standard items shall be furnished insofar as to the type of fence specified.

2. Snow fence (orange safety fence):

a. Resinet SF50 Square Mesh Barrier Heavy Duty Snow Fence or equal as supplied by Discount Fence Supply, Inc. (Telephone # 1.800.878.7829).
b. Orange in color, 4"-0" high x 100'-0" long rolls, and meet the following:
c. Material:

1) High density polyethylene
2) Ultraviolet Resistance: Fully stabilized
3) Temperature Range: - 60 degrees F, to 180 degrees F
4) Tensile Yield: 3,200 psi
5) Tensile Strength: 370 lbs. per foot
6) Elongation at Break: 150%
7) Nominal Mesh Opening: 1¼" x 1¼"
8) Size: 48" x 100'-0"

d. Posts shall be painted steel T-Posts being a minimum of 72 inches long and having a minimum weight of 7 pounds.
e. Snow fence fabric ties shall be plastic zip ties as recommended by the fence manufacturer.

C. Chain Link Portable Temporary Panels:

1. Furnish and install 6’ high x 10’-12’ wide portable temporary chain link security fence panels with two gates in the construction area.
2. Length and location as shown on Drawings.
3. All materials meet or exceed requirements of the Chain Link Fence Manufacturer's Institute (CLFMI).
4. Portable Temporary Panel Fencing Material:

a. May be previously used material.
b. Without damage to functional or structural integrity.
c. Used materials must meet or exceed the requirements of the National Standard for Quality chain link fence.
d. Furnish manufacturer's standard items as to type of fence specified.
e. Material to conform with Standard Specifications; and as approved by the chain link fence institute.
f. All ferrous metals used in the construction of the fence, including the fabric, shall be galvanized.
g. Fence-Posts, Gates and Accessories - Fed. Spec. RR-F-183.
h. Fencing, Wire and Post, Metal and Gates, Chain-Link Fabric Accessories Fencing, Wire - Fed. Spec. RR-F-00191.
i. Fence Posts and Accessories - Fed. Spec. RR-F-221.

5. Portable Chain-Link Fencing Panel:

a. Minimum 2-inch 9-gauge, galvanized steel, chain-link fabric fencing;
b. Minimum 6 feet high with galvanized steel pipe posts;

c. Minimum 2-3/8-inch - OD line posts and 2-7/8-inch - OD corner and pull posts, with 1-5/8-inch - OD top and bottom rails. Provide galvanized steel bases for supporting posts.

6. Stands shall be hot dipped galvanized steel pipe.
7. Stabilizers:
   a. One (1) Peg End Stabilizer brackets at the ends of the fence.
   b. Two (2) Peg Line Stabilizer brackets to adjoin two (2) temporary fence panels in a continuous line.
8. Gates:
   a. Swing type, with frame of tubular members with diagonal truss rods and turn buckles.
   b. Provide complete with heavy duty hinges, and acceptable type locking device adaptable for padlocking and accessible from both sides of the gate
   c. Provide stops, keepers and all accessories.
9. One gate with an overall width of 20'-0" (two leaves) including all posts, couplings, braces, stretcher bars, clips, ties, wire fabric, finish hardware, grounding and all necessary accessories and incidental work.

2.2 MIXES AND PORTIONS

A. Concrete for gate post installation IDOT Class X 6 bag mix 3500 pounds per square inch.

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to start of this work, all lines and grades for fence construction must be acceptable to the Landscape Architect.

B. Prior to start of this work, flag or field paint the fence location for the approved by the Landscape Architect

3.2 INSTALLATION

A. General:
   1. Construct in accordance with all the plans and as specified herein, with new materials.
   2. Install plumb, taut, true to line and ground contour, and complete in every detail.

B. Chain Link Posts:
   1. Set plumb at not more than 10 feet on center or as shown on the Drawings.
   2. Allow concrete to cure minimum seven (7) days prior to erecting fence fabric.
   3. Space not more than 10 feet apart, or as shown on the plans, and set in concrete footings or using approved drive anchors.
   4. Concrete footings:
      a. Bell shaped, 8 inches at the top and 12 inches at the bottom and 36 inches below the ground surface.
   5. Gate posts:
      a. Set in concrete footings 18 inches in diameter and 48 inches deep.
      b. Crown top of the footing to shed water.

C. Chain Link Rails:
   1. Install as specified herein following standard practices.
   2. Run top rail continuously, join with outside sleeve type couplings at least 7 inches long, with expansion couplings at not less than 100-foot intervals.

D. Chain Link Braces:
   1. Installed at corner and end posts.

E. Chain Link Fabric:

1. Tie to the top rail not more than 24 inches on center
2. Tie to line posts not more than 14 inches on center
3. Terminate fabric in same manner as started, using tension bars and bands.

F. Chain Link Gates:

1. Install with fittings and hardware as herein specified,
2. Securely fasten and adjust in perfect working order.

G. Chain Link Grounding:

1. Ground all fencing at ends or corners.
2. Make connections to the ground to the fence fabric bottom selvage.
3. Ground gates to the gateposts by means of jumpers.
4. Make all connections by means of solderless, non-ferrous connectors.
5. Install top of ground rods at least 6 inches below finish ground surface and make cable connections at least 6 inches below top of ground rod.
6. Use No. 8 bare stranded soft drawn cable for all connections between gate, fence, and ground rods.
7. Install ground rods where required
8. Ground rods to be copper or copper-clad steel, not less than 3/4-inch diameter and length or number of rods shall have a resistance to ground not to exceed 25 ohms.
9. Install ground rods vertically.

H. Orange Safety Fence (Snow Fence):

1. General:

   a. Construct in accordance with all the plans and as specified herein, with new materials. The finished fence shall be plumb, taut, true to line and ground contour, and complete in every detail

2. Posts Orange Safety Fence:

   a. Set plumb and spaced not more than 10 feet apart, or as shown on the plans.
   b. Driven minimum 18 inches below grade with a fence post driver to avoid damage.
   c. Add additional post at the end of all overlap sections.
   d. Use minimum three fabric ties.

3. Fabric Orange Safety Fence:

   a. As specified in this Section.

I. Chain Link Portable Temporary Panels:

1. Construct fencing in accordance with all details on the Drawings and as specified herein
2. Install panels plumb, taut, true to line and ground contour, and complete in every detail.
3. Rails:

   a. Not required.

4. Stands/Stabilizer Brackets.
5. Shall be installed at the end posts and for adjoining two panels as previously described under Materials - 2.01.
6. Fabric.
7. Ties on line posts shall be not be more than 12 inches on center. The fabric shall terminate in the same manner as it was started, using tension bars and bands.
8. Gates.
9. The gates shall be installed with fittings and hardware as herein specified, securely fastened and properly adjusted in perfect working order

J. Removing Security Fence:

1. After completion of all construction work and when directed, remove all security fence in such a way that it will not damage the improvements.
2. Demolish and remove from site all concrete footings

3. Dispose of in lawful manner
4. Backfill resulting voids with acceptable fill and compact to match adjacent soil.
5. Top with minimum 6 inches acceptable topsoil and seed as required is Section 32 92 19 - Seeding.

END OF SECTION 01 50 00

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.0 RELATED SECTIONS

A. The Agreement - Time of Final Payment

B. General Conditions - Completion; Waiver of Claims

C. Bid Form

D. Section 01 01 00 - Summary of Work

E. Respective Specification Sections - Close-out Submittals Required.

1.1 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

1. Submit maintenance manuals, Project record documents, and other similar final record data in compliance with this Section.
2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
6. Make final change-over of locks eliminating construction master-key system and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
8. Perform final cleaning according to this Section.

B. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:

    a. Contract Documents have been reviewed.
    b. Work has been examined for compliance with Contract Documents.
    c. Work has been completed according to Contract Documents.
    d. Work is completed and ready for final inspection.

2. Submittals: Submit following:

    a. Final punch list indicating all items have been completed or corrected.
    b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
    c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
    d. Accounting statement for final changes to Contract Sum.
    e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.

f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.
g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.
h. Perform final cleaning for Contractor-soiled areas according to this Section

1.3 SUBSTANTIAL COMPLETION

A. Contractor:

1. Submit written certification to the Landscape Architect that the project, or designated portion of project, is substantially complete.
2. Submit list of major items to be completed or corrected.

B. Landscape Architect will make an inspection within seven days after receipt of certification, together with Owner's Representative.

C. Should Landscape Architect consider that work is substantially complete:

1. Landscape Architect shall prepare a punch list of items to be completed or corrected, as determined by the inspection.
2. Landscape Architect will prepare and issue a Certificate of Substantial Completion, containing:

a. Date of Substantial Completion.
b. Punch list of items to be completed or corrected.
c. The time within which Contractor shall complete or correct work of listed items.
d. Date and time Owner will assume possession of Work or designated portion thereof.
e. Responsibilities of Owner and Contractor for:

1) Insurance
2) Utilities
3) Operation of mechanical, electrical and other systems
4) Maintenance and cleaning
5) Security

f. Signatures of:

1) Landscape Architect
2) Contractor
3) Owner's Representative

D. Final Completion Inspection:

1. Within seven days after receipt of request for final inspection, Landscape Architect will make inspection to determine whether Work or designated portion is complete.
2. Should Landscape Architect consider Work to be incomplete or defective:

a. Landscape Architect will promptly notify Contractor in writing, listing incomplete or defective Work.
b. Contractor shall remedy stated deficiencies and send second written request to Landscape Architect that Work is complete.
c. Landscape Architect will re-inspect Work.
d. Redo and Inspection of Deficient Work: Repeated until Work passes Landscape Architect's inspection.

1.4 FINAL INSPECTION

A. Contractor shall submit written certification that:

1. Contract documents have been reviewed.
2. Project has been inspected for compliance with Contract.
3. Work has been completed in accord with Contract.
4. Project is completed, ready for final inspection.

B. Landscape Architect will make final inspection within seven days after receipt of certification.

C. Should Landscape Architect consider that work is finally complete in accord with Contract Document requirements, he shall request Contractor to make project close-out submittals.

D. Should Landscape Architect consider that work is not finally complete:

1. He shall notify Contractor, in writing, stating reasons.
2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to Landscape Architect certifying that work is complete.
3. Landscape Architect will re-inspect work.

1.5 STARTING OF SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.

B. Notify Landscape Architect/Owner seven days prior to startup of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.

1.6 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.

B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at designated location.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

1.7 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Field Test Records
6. As-built or as changed indications
7. Reviewed Shop Drawings, product data, and Samples.
8. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates used.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
2. Include locations of concealed elements of the Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured depths of foundations in relation to finish [first] [main] floor datum.
7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
9. Field changes of dimension and detail.
10. Details not on original Drawings.

G. Store Documents in approved location apart from documents used for construction.

H. Provide files and racks for document storage.

I. File documents in accord with project filing format of CSI uniform construction index.

J. Maintain documents in clean, dry, legible condition.

K. Do not use record documents for construction purposes.

L. Make documents available at all times for inspection by Landscape Architect and Owner.

M. At completion of project, deliver Record Documents to Landscape Architect.

N. Accompany submittal with transmittal letter, in duplicate, containing:

1. Date
2. Project title and number
3. Contractor's name and address
4. Title and number of each Record Document
5. Certification that each document, as submitted, is complete and accurate
6. Signature of Contractor, or his authorized representative

O. Submit marked-up paper copy documents to Landscape Architect with claim for final Application for Payment.

P. Submit PDF electronic files of marked-up documents to Landscape Architect with claim for final Application for Payment.

1.8 EVIDENCE OF PAYMENTS, RELEASE OF LIENS

A. Contractor's Affidavit of Payment of Debts and Claims

B. Contractor's Affidavit of Release of Liens:

1. Consent of Surety to Final Payment
2. Contractor's release or waiver of liens

3. Separate releases of waiver of liens for subcontractors, suppliers and others with lien rights against property of Owner together with list of those parties.

C. Duly execute all submittals before delivery to Landscape Architect.

1.9 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit final statement of accounting to Landscape Architect.

B. Statement shall reflect all adjustments:

1. Original Contract sum
2. Additions and deductions resulting from:

   a. Previous change orders
   b. Cash allowances
   c. Unit prices
   d. Other adjustments
   e. Deductions for uncorrected work
   f. Deductions for re-inspection payments

3. Total Contract sum, as adjusted
4. Previous payments
5 Sum remaining due

C. Landscape Architect will prepare final change order, reflecting approved adjustments to Contract sum not previously made by change orders.

1.10 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit final application in accord with requirements of Conditions of Contract.

1.11 FINAL CERTIFICATION FOR PAYMENT

A. Landscape Architect will issue final certificate in accord with provisions of Conditions of Contract.

B. Should final completion be materially delayed through no fault of Contractor, Landscape Architect may issue a Semi-Final Certificate of Payment, in accord with provisions of Conditions of Contract.

1.12 OPERATION AND MAINTENANCE DATA

A. Submit in PDF composite electronic indexed file.

B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.

C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.

D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Landscape Architect, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:

   a. Significant design criteria.
   b. List of equipment.
   c. Parts list for each component.

d. Operating instructions.
e. Maintenance instructions for equipment and systems.
f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
g. Safety precautions to be taken when operating and maintaining or working near equipment.

3. Part 3: Project documents and certificates, including the following:

a. Shop Drawings and product data.
b. Air and water balance reports.
c. Certificates.
d. Originals of warranties and bonds.

1.13 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Landscape Architect will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy will be reviewed and returned after Substantial Completion, with Landscape Architect comments. Revise content of document sets as required prior to final submission.

D. Submit two sets of revised final volumes within ten days after final inspection.

E. Submit in PDF composite electronic indexed file of final manual within ten days after final inspection.

F. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

G. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed or by label machine.

H. Include color-coded wiring diagrams as installed.

I. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

J. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

K. Include servicing and lubrication schedule and list of lubricants required.

L. Include manufacturer's printed operation and maintenance instructions.

M. Include sequence of operation by controls manufacturer.

N. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

O. Include control diagrams by controls manufacturer as installed.

P. Include Contractor's coordination drawings with color-coded piping diagrams as installed.

Q. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

R. Include list of original manufacturer's spare parts, current prices, and recommended quantities to

be maintained in storage.

S. Include test and balancing reports as specified in Section 01 40 00 - Quality Requirements.

T. Additional Requirements: As specified in individual product Specification Sections.

U. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.14 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

B. Deliver to Project Site; obtain receipt prior to final payment.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual Specification Sections.

D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Landscape Architect before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Landscape Architect for final decision.

E. Allow for expansion of materials and building movement.

F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.

1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.

G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.

1. Refer questionable mounting heights choices to Landscape Architect for final decision.
2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.

H. Adjust operating products and equipment to ensure smooth and unhindered operation.

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

3.5 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment.

1. Employ experienced personnel or professional cleaning firm.

B. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.

C. Clean debris from roofs, gutters, downspouts, and drainage systems.

D. Clean Site, sweep paved areas, and rake clean landscaped surfaces.

E. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION 01 70 00

SECTION 03 10 00 - CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SCOPE

A. The work under this section consists of providing all work, materials, labor equipment, and supervision necessary to provide concrete formwork as required in these specifications and the drawings. Requirements of this section do not apply to structural concrete for buildings or bridges. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- References
- Submittals

PART 2 - MATERIALS
- Forms Materials
- Form Ties
- Form Release Agents
- Expansion Joint Material
- Other Imbedded Forming Items

PART 3 - EXECUTION
- General
- Layout and Construction
- Tolerances
- Preparing Form Surfaces
- Embedded Items
- Removing Forms

1.2 RELATED WORK

A. Applicable provisions of Division 1 shall govern all work under this section.

B. All work shall be in accordance with applicable manufacturer's and supplier's instructions.

1.3 REFERENCES

A. Applicable provisions of Division 1 shall govern all work under this section.

B. American Concrete Institute (ACI):

117	Specifications for Tolerances for Concrete Construction and Materials
301	Specifications for Structural Concrete for Buildings
347	Recommended Practice for Concrete Formwork

C. American Society for Testing and Materials (ASTM):

D994-98 (2003)	Standard Specifications for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
D1751-04 (2008)	Standard Specifications for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)

D1752-04a (2008) Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

D. Contractor is responsible for adhering to most current versions of ASTMs.

1.4 SUBMITTALS

A. Provide manufacturer's product information (cut sheets) for the following forming materials:

1. Form Ties
2. Expansion Joint Material
3. Formwork Release Agent
4. Formliners

PART 2 - MATERIALS

2.1 FORMS MATERIAL

A. Forms for Exposed Finish Concrete
Forms for exposed finish concrete shall produce a smooth, uniform texture on the surface of the concrete. Use plywood, hardboard, metal, plastic, or other approved material. Do not use damaged materials with raised grain, dents, or other defects.

B. Forms for Unexposed Finish Concrete
Plywood, hardboard, metal, plastic or other material which will provide a relatively uniform surface that is free of honeycomb, voids or rock pockets. Excavation sidewalls shall not be used as forms.

2.2 FORM TIES

A. Factory-fabricated, adjustable length, removable or snap-off metal ties designed to support forms and prevent deflection. Provide form ties with integral waterstops when required.

B. For snap ties, provide a minimum of 1 inch of breakback. Form ties shall be designed to prevent spalling of concrete upon removal. Cone holes on the surface of the concrete shall be limited to 1-inch diameter.

C. Field-fabricated wire form ties are not acceptable.

2.3 FORM RELEASE AGENTS

A. Commercially manufactured form release agents that will prevent formwork absorption of moisture, prevent bonding with the concrete and will not stain the concrete surface. Formwork release agents shall be compatible with subsequent concrete surface treatments required by the drawings or specifications.

2.4 EXPANSION JOINT MATERIAL

A. Commercially manufactured expansion joint material; asphalt/bituminous, fiber, sponge rubber/cork or closed cell polyethylene. Expansion joint material shall meet the applicable ASTM requirements. Provide expansion joint material of the type and width as shown on the drawings.

2.5 OTHER IMBEDDED FORMING ITEMS

A. Commercially or field fabricated chamfers, rustication strips and other imbedded form materials shall be suitable for intended use. Provided materials shall be smooth, straight, have a uniform cross-section and are free of defects.

PART 3 - EXECUTION

3.1 GENERAL

A. Design and Engineering of formwork shall be the responsibility of the Contractor. Formwork shall be designed and selected to withstand the forces resulting from placement and vibration of concrete, while maintaining required tolerances.

3.2 LAYOUT AND CONSTRUCTION

A. Locate concrete forms as required to provide flatwork and other features as required by the drawings.

B. Forms shall be of the size, shape, and alignment necessary to construct features as required by the drawings. Provide openings for sleeves, keyways, and chamfers as required.

C. To the extent possible, locate forms so as not to interfere with other trades' work.

D. Fabricate forms to allow easy removal that does not require pounding or prying against concrete surfaces.

E. Utilize form ties to secure forms and provide construction within specified tolerances; camber forms when necessary.

F. Form butt joints solidly and securely, and provide backing material as necessary to prevent leakage and fins.

G. Locate construction and expansion joints as shown on the drawings. Submit a written request for deviations from the jointing plan shown on the drawings to the Architect/Engineer (A/E) for approval prior to implementation.

H. If construction joints are not shown, locate and form construction joints that least impairs the strength and appearance of the structure or slab. For exposed finishes on vertical concrete surfaces, provide rustication strips at construction joints. Locate and install all joints so that they are either parallel or perpendicular to finished surfaces, as applicable.

3.3 TOLERANCES

A. Provide formwork that will provide finished slabs and structures meeting the following tolerances:

1. Variation from Plumb in Lines and Surfaces: 1/4 inch per 10 feet, but not more than 1 inch total
2. Variation from Level or From Grade Indicated: 1/4 inch per 20 feet
3. Variation in Thickness of Slabs or Walls: Minus (-) 1/4 inch or Plus (+) 1/2 inch

3.4 PREPARING FORM SURFACES

A. Cover surfaces of formwork with form release agent. Used forms shall be scraped clean and have all fasteners removed.

1. Apply formwork release agent in accordance with manufacturer's recommendations. Do not allow formwork release agent to puddle in the forms.
2. Do not allow formwork release agent to contact reinforcing steel, water stops, or existing concrete surfaces requiring a bond.
3. Reference EPA and OSHA regulations for formwork release a gents or at least require EPA and OSHA compliance.

3.5 EMBEDDED ITEMS

A. All inserts, dovetails, sleeves, dowels, anchor bolts and other required fastening devices or embedded items shall be furnished, accurately installed and secured in-place. Contractor shall take all necessary precautions to ensure that subsequent concreting operations do not disturb positioning of embedded items.

3.6 REMOVING FORMS

A. Forms may be removed at the Contractor's discretion, but subject to the requirements of this section. Forms shall not be disturbed until concrete has adequately hardened. Length of time that forms shall remain in place will be dependent upon temperatures and curing conditions to which concrete has been subjected.

B. When removing forms, utilize tools and methods that will prevent damage to concrete surfaces. Do not pry against, or pound on concrete surfaces to complete removal. Tie-rod clamps that are to be removed entirely shall be loosened 24 hours after concrete is placed and form-ties may be removed at that time, except for sufficient number to hold forms in place.

C. Wall forms shall remain in place two days, minimum. This requirement shall apply to daily mean temperature above 50 degrees F (50°F). For lower daily mean temperatures, waiting time shall be increased 50%. In addition to above requirements, concrete shall have acquired 80% of its specified strength.

D. Maintain curing and protection operations after removal of formwork.

E. Forms for Flatwork: Forms for flatwork may be removed as soon as concrete is sufficiently hard to not be damaged during removal operations, but no sooner than 24 hours after final placement of concrete.

END OF SECTION 03 10 00

SECTION 03 20 00 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Reinforcing bars.

B. Welded wire fabric.

C. Reinforcement accessories.

1.2 RELATED SECTIONS:

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)

B. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 318 - Building Code Requirements for Structural Concrete.
3. ACI 530.1 - Specifications for Masonry Structures.
4. ACI SP-66 - ACI Detailing Manual.

C. ASTM International:

1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
3. A185/A185M-07 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
4. ASTM A496/A496M - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
5. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
7. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
8. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
9. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
10. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
11. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.

12. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
13. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.

D. American Welding Society:

1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

E. Concrete Reinforcing Steel Institute:

1. CRSI - Manual of Standard Practice.
2. CRSI - Placing Reinforcing Bars.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, and supporting and spacing devices.

C. Certificates: Submit AWS qualification certificate for welders employed on the Work.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI - Manual of Standard Practice.

B. Prepare shop drawings in accordance with ACI SP-66.

C. Perform Work in accordance with Standard Specifications.

1.6 QUALIFICATIONS

A. Welders: AWS qualified within previous 12 months.

1.7 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 - PRODUCTS

2.1 REINFORCEMENT

A. Deformed Reinforcement: ASTM A706/A706M; 60 ksi yield strength, steel bars, unfinished.

B. Plain Wire: ASTM A82/A82M; unfinished.

C. Welded Plain Wire Fabric: ASTM A185/A185M; in coiled rolls; unfinished.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gauge annealed type

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.3 FABRICATION

A. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice.

2.4 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.

1. Do not weld crossing reinforcement bars for assembly.

B. Do not displace or damage vapor retarder.

C. Accommodate placement of formed openings.

D. Space reinforcement bars with minimum clear spacing in accordance with ACI 318.

1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

E. Maintain concrete cover around reinforcement as follows:

Reinforcement Location		Minimum Concrete Cover
Footings and Concrete Formed Against Earth		3 inches (75 mm)
Concrete exposed to earth or weather	No. 6 (19) bars and larger	2 inches (50 mm)
	No. 5 (16) bars and smaller	1-1/2 inches (38 mm)
Supported Slabs, Walls, and Joists	No. 14 (43) bars and larger	1-1/2 inches (38 mm)
	No. 11 (36) bars and smaller	3/4 inches (19 mm)
Beams and Columns		1-1/2 inches (38 mm)
Shell and Folded Plate Members	No. 6 (19) bars and larger	3/4 inches (19 mm)
	No. 5 (16) bars and smaller	1/2 inches (13 mm)

3.2 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches (200 mm)	plus or minus 3/8 inch (10 mm)	minus 3/8 inch (10 mm)
Less than 8 inches (200 mm)	plus or minus 1/2 inch (13 mm)	minus 1/2 inch (13 mm)

C. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.

3.3 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Perform field inspection and testing in accordance with ACI 318.

C. Provide free access to Work and cooperate with appointed firm.

D. Reinforcement Inspection:

1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.
2. Welding: Inspect welds in accordance with AWS D1.1.
3. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.
4. Weldability Inspection: Inspect for reinforcement weldability when formed from steel other than ASTM A706/A706M.
5. Periodic Weld Inspection: Other welded connections.

END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Work under this item includes, but is not limited to:

1. Furnishing, mixing, forming, placing, finishing and curing all concrete required for construction of curbs and gutters, sidewalks, concrete paving, and walls.
2. Furnishing and installing all required reinforcing steel

1.2 SECTION INCLUDES

A. Cast-in-place concrete for the following:

1. Slabs on grade.
2. Concrete walks
3. Control, expansion and contraction joint devices.
4. Equipment pads.

1.3 RELATED SECTIONS

A. Section 03 10 00 - Concrete Forming and Accessories: Formwork and accessories.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 31 22 13 - Rough Grading

D. Section 31 23 23 - Fill: Sand layer over vapor retarder.

1.4 DESCRIPTION

A. Published specifications, standards, tests or recommended methods for trade, industry or governmental organizations apply to work of this section, where cited by abbreviation noted.

B. American Society for Testing Materials, Current Edition (ASTM).

C. American Concrete Institute (ACI).

D. State Highway Specifications means the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," current edition including all supplements (Standard Specifications).

E. All work required under this section shall conform to the State Highway Specification applicable.

1.5 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications).

B. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 305 - Hot Weather Concreting.
3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
4. ACI 308.1 - Standard Specification for Curing Concrete.
5. ACI 318 - Building Code Requirements for Structural Concrete.

C. ASTM International:

1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

2. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
3. ASTM C33 - Standard Specification for Concrete Aggregates.
4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
5. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
6. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
7. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
8. ASTM C150 - Standard Specification for Portland Cement.
9. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
10. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
11. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
13. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
14. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
15. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
16. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
17. ASTM C685/C685M - Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing.
18. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
19. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
20. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
21. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
22. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
23. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
24. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
25. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
26. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
27. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
28. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
29. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
30. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
31. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
32. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
33. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
34. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.6 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on joint devices, attachment accessories, and admixtures.

C. Design Data:

1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:

   a. Hot and cold weather concrete work.
   b. Air entrained concrete work.

2. Identify mix ingredients and proportions, including admixtures.

3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

D. Samples: Submit two x ten inch long samples of expansion/contraction joint and control joint.

E. Manufacturer's Installation Instructions: Submit installation procedures and interface required with adjacent Work.

1.7 CLOSEOUT SUBMITTALS

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

B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.8 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Conform to ACI 305 when concreting during hot weather.

C. Conform to ACI 306.1 when concreting during cold weather.

D. Acquire cement and aggregate from one source for Work.

E. Perform Work in accordance with Standard Specifications

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Concrete shall not be placed when air temperature is 45 degrees and falling. Placement will be permitted if air temperature is 40 degrees and rising.

C. Maintain concrete temperature after installation at minimum 50 degrees F (10 degrees C) for minimum 7 days.

1.10 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement Concrete

1. Class X, 6 bag mix, concrete in accordance with State Highway Specifications.

2. Compressive strength of 4,000 pounds per square inch after 28 days when tested in accordance with ASTM C39 for curb and gutters, walks, walls, and concrete foundations.
3. Provide a slump between 3 to 4 inches max when tested in accordance with ASTM C143.
4. Mix all materials for not less than one (1) minute in controlled time mixers.
5. Redi-mix concrete must be discharged from mixer within one (1) hour after all ingredients are in mixer.
6. No water shall be added to the concrete after it has been transported to the construction site.

B. Expansion Joints

1. Expansion joints shall be 1/2-inch bituminous saturated felt or preformed, non-absorbent closed cell polystyrene or butyl foam as recommended by manufacturer of joint sealant.

C. Joint Sealant:

1. Joint sealant shall be polyurethane based elastomeric sealing compound material of the cold applied type in a gray color (or to match color of concrete) equal to rubber caulk #230 manufactured by PRC. Dynoseal W-5-7-G. Manufactured by Williams Products Inc., and TC/900 manufactured by Trenco.
2. The sealing materials shall be delivered to the job site in unbroken original packages bearing the manufacturer's name and brand designation.

D. Cement: ASTM C150, Type I - Normal Portland type

E. Normal Weight Aggregates: ASTM C33.

1. Coarse Aggregate Maximum Size: In accordance with ACI 318.

2.2 ADMIXTURES

A. Air Entrainment: ASTM C260.

2.3 ACCESSORIES

A. Concrete Reinforcing Fibers: ASTM C1116, high strength industrial-grade fibers specifically engineered for secondary reinforcement of concrete. Tensile strength -130 ksi; toughness 15 ksi; 3/4-inch long fibers, 34 million/lb. fiber count.

B. Detectable warning panels for accessible routes.

1. Manufacturer:

a. EJ USA 301 Spring Street East Jordan, MI, or approved equal

2. Natural finish

2.4 JOINT DEVICES AND FILLER MATERIALS

A. Joint Filler: Asphalt impregnated fiberboard or felt, 1/4 inch thick; tongue and groove profile;

B. Construction Joint Devices: Integral extruded plastic; formed to tongue and groove profile, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge;

2.5 CONCRETE MIX

A. Provide concrete to the following criteria:

1. Comply with Section 1020.11 of the Standard Specifications.

B. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Landscape Architect.

1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.

2. Do not use calcium chloride nor admixtures containing calcium chloride.
3. Use set retarding admixtures during hot weather.
4. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing.
5. For concrete exposed to deicing chemicals, limit fly ash, pozzolans, silica fume, and slag content as required by applicable code.
6. Average Compressive Strength Reduction: Permitted in accordance with ACI 318.
7. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.
8. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

2.6 EQUIPMENT

A. All equipment used to perform this work must conform to the IDOT Specification Section 800.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify requirements for concrete cover over reinforcement.

C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 INSPECTION

A. Prior to starting work in this section, all subgrades and subsequently prepared base courses must be inspected and approved by the Landscape Architect.

3.3 PREPARATION

A. Install compacted thickness of aggregate bedding prior to installation of all concrete. Base should be properly wetted prior to concrete placement.

B. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

C. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

D. Remove debris and ice from formwork, reinforcement, and concrete substrates.

E. Remove water from areas receiving concrete before concrete is placed.

3.4 INSTALLATION

A. Build forms to line and grade with mortar tight joints using good lumber or metal forms properly braced and staked. Oil forms before concrete is poured. Forms may be removed 24 hours after pouring.

B. Place reinforcing steel as indicated in the details on plan.

C. Expansion joints shall be placed against existing concrete and stationary structures. Install 1/2-inch expansion joints in walks 30 feet on center every 30 feet using 3/4-inch expansion material with standard expansion caps and smooth dowels through each joint (See Curb and Gutter Detail).

D. Notify Landscape Architect 48 hours before the intended pour.

E. Place concrete immediately after mixing and thoroughly puddle or vibrate to consolidate and bring mortar to surface.

F. Finish curb and gutters smooth by floating, troweling, and edging before brushing surface to secure final surface. Use standard 10-foot straight-edge test and correct irregularities over 1/4 inch.

G. Finish walks and flatwork by floating, steel troweling, scoring, edging, and broom finishing or exposing aggregate by washing where applicable. All walks shall be free from surface defects, leaf fossils imprints of any type. All defects should be replaced at no additional expense to the owner.

H. Construct straight, well-defined score lines (control joints) 5 feet on center in all work at right angles to walk, extending to 1½ inches depth of the concrete and 1/8 to 1/4 inch wide. See Concrete Details for special scoring requirements.

1. Score Lines/Control Joints:

   a. Weakened plane control joints for curb and sidewalk shall be constructed at right angles to curb line, with spacing in 5-foot multiples, not to exceed 5 feet for sidewalk and 10 feet for curb.
   b. Control joints may be hand formed with joint depth to be a minimum of 1/4 inch the total depth of the section. No sawed joints will be permitted.

2. Expansion Joints – provide in the following locations:

   a. Wherever walks abut vertical surfaces.
   b. Curb. Expansions joints shall be constructed at right angles to the curb line with spacing in multiples of 10 feet not to exceed 30 feet. Expansion joints shall also be placed at interface at straight curb and short radius curved sections, interface of new curb with old curb, and both sides of driveway cuts.

3. Walks:

   a. Expansion joints shall be constructed at right angles to the curb line with spacing not to exceed 30 feet.
   b. Expansion joints shall also be placed at interface with straight walk and short radius curved sections, interface of new walk with old walk and both sides of driveway approaches.
   c. Locations as indicated or necessary to prevent shrinkage from cracking concrete.

I. Remove forms carefully to avoid damaging corners and edges of exposed concrete within 24 hours after the concrete has been placed.

J. Broom finish surfaces carefully stra ight continuous strokes at right angles to direction of traffic, while the concrete is still green. The edges shall be rounded with approved finishing tools having the radii shown on the drawings.

K. Ramp Texture: Wheel chair ramps, where shown, shall be finished with heavier brooming transverse to slope of ramp. Texture must conform to Americans With Disabilities Act guidelines

3.5 PLACING CONCRETE

A. Place concrete in accordance with ACI 301.

B. Notify testing laboratory and Landscape Architect minimum 24 hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.

D. Separate slabs on grade from vertical surfaces with 3/4-inch thick joint filler.

E. Extend joint filler from bottom of slab to within 1/4 inch of finished slab surface.

F. Install construction joint devices in coordination with pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.

G. Deposit concrete at final position. Prevent segregation of mix.

H. Place concrete in continuous operation for each panel or section determined by predetermined joints.

I. Consolidate concrete.

J. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

K. Place concrete continuously between predetermined expansion, control, and construction joints.

L. Do not interrupt successive placement; do not permit cold joints to occur.

M. Saw cut joints within 12 hours after placing. Use 3/16-inch thick blade, cut into 1/4 depth of slab thickness.

N. Screed slabs on grade level, maintaining surface flatness of maximum 1/8 inch in 10 feet.

3.6 CONCRETE FINISHING

A. Finish curb and gutters smooth by floating, troweling, and edging before brushing surface to secure final surface. Use standard 10-foot straight-edge test and correct irregularities over 1/4 inch.

B. Finish walks and flatwork by floating, steel troweling, scoring, edging, and broom finishing or exposing aggregate by washing where applicable. All walks shall be free from surface defects, leaf fossils imprints of any type. Replace all defects at no additional expense to the Owner.

C. Construct straight, well-defined score lines (control joints) 5 feet on center in all work at right angles to walk, extending to 1½-inch depth of the concrete and 1/8 to 1/4 inch wide. See Concrete Details for special scoring requirements.

1. Score Lines/Control Joints:

   a. Weakened plane control joints for curb and sidewalk shall be constructed at right angles to curb line, with spacing in 5 foot multiples, not to exceed 5 foot for sidewalk and 10 foot for curb.
   b. Control joints may be hand formed with joint depth to be a minimum of ¼" the total depth of the section. No sawed joints will be permitted.

2. Expansion Joints – provide in the following locations:

   a. Wherever walks abut vertical surfaces.
   b. Curb. Expansions joints shall be constructed at right angles to the curb line with spacing in multiples of 10 feet not to exceed 30 feet. Expansion joints shall also be placed at interface at straight curb and short radius curved sections, interface of new curb with old curb, and both sides of driveway cuts.

3. Walks:

   a. Expansion joints shall be constructed at right angles to the curb line with spacing not to exceed 30 feet.
   b. Expansion joints shall also be placed at interface with straight walk and short radius curved sections, interface of new walk with old walk and both sides of driveway approaches.
   c. Locations as indicated or necessary to prevent shrinkage from cracking concrete.

D. Remove forms carefully to avoid damaging corners and edges of exposed concrete within 24 hours after the concrete has been placed.

E. Broom finish surfaces carefully straight continuous strokes at right angles to direction of traffic, while the concrete is still green. The edges shall be rounded with approved finishing tools having the radii shown on the drawings.

F. Ramp Texture: Wheel chair ramps, where shown, shall be finished with heavier brooming transverse to slope of ramp. Texture must conform to Americans with Disabilities Act guidelines.

3.7 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

1. Protect concrete footings from freezing for minimum five (5) days.

B. Cure all concrete for not less than seven (7) days after placement.

C. Protect all concrete surfaces from sun with water-saturated coverings, white polyethylene sheets or approved membrane curing compounds sprayed on the surface.

D. Concrete pours shall be protected by the Contractor from graffiti or vandalism. Each day's pour shall be guarded until the concrete has obtained sufficient hardness to prohibit malicious damage.

E. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

F. Cure concrete in accordance with ACI 308.1

3.8 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318.

C. Provide free access to Work and cooperate with appointed firm.

D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.

E. Concrete Inspections:

1. Continuous Placement Inspection: Inspect for proper installation procedures.
2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

F. Strength Test Samples:

1. The Contractor shall provide empty test cylinders for this project.
2. A total of two (2) test cylinders shall be drawn from the same truck load for every 50 cubic yards of concrete, or two (2) cylinders per each day's pour if less than 50 cubic yards.
3. Test cylinders shall be clearly marked with a date and load ticket number. The Contractor shall protect cylinders and store safely until picked up by testing laboratory.
4. Testing expenses shall be paid for by the Owner.

G. Sampling Procedures:

1. Comply with ASTM C172.
2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
3. Sample concrete and make one set of two cylinders for every 50 CY or less of each class of concrete placed each day and for every 5,000 SF of surface area for slabs and walls.
4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than five (5) batches are used.

5. Make one additional cylinder during cold weather concreting, and field cure.

H. Field Testing:

1. Slump Test Method: ASTM C143/C143M.
2. Air Content Test Method: ASTM C173/C173M.
3. Temperature Test Method: ASTM C1064/C1064M.
4. Measure slump and temperature for each compressive strength concrete sample.
5. Measure air content in air entrained concrete for each compressive strength concrete sample.

I. Cylinder Compressive Strength Testing:

1. Test Method: ASTM C39/C39M.
2. Test Acceptance: In accordance with ACI 318.
3. Test one cylinder at 7 days.
4. Test one cylinder at 28 days.
5. Dispose remaining cylinders when testing is not required.

J. Core Compressive Strength Testing:

1. Sampling and Testing Procedures: ASTM C42/C42M.
2. Test Acceptance: In accordance with ACI 318.

K. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.9 PATCHING

A. Allow Landscape Architect to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Landscape Architect upon discovery.

C. Patch imperfections in accordance with ACI 301.

D. Immediately after stripping and before concrete is thoroughly dry, patch minor defects, form-tie holes, honeycombed areas, etc., with patching mortar. Patch shall match finish of adjacent surface unless noted. No patching is allowed on concrete surfaces to be sandblast finished.

3.10 DEFECTIVE CONCRETE

A. Where concrete is under strength, out of line, level, or plumb, or shows objectionable cracks, honeycombing, rock pockets, voids, spalling, exposed reinforcing or is otherwise defective, and in the Landscape Architect's judgment, these defects impair proper strength or appearance of the work, the Landscape Architect will require its removal and replacement at the Contractor's expense.

B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by Landscape Architect.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Landscape Architect for each individual area.

E. Stained or discolored concrete shall be cleaned as directed and approved by the Landscape Architect.

F. Stains or other defects which cannot be removed are subject to correction by removal and replacement at no cost to owner.

END OF SECTION 03 30 00

SECTION 03 60 00 - GROUTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-shrink non-metallic grout.
2. Non-shrink metallic grout.
3. Anchoring cement.
4. Epoxy grout.

B. Related Sections:

1. Section 05 5000, Metal Fabrications - Skatepark: Grout and anchoring cement for metal fabrications.

1.2 SUBMITTALS

A. Product Submittals:

1. Comply with requirements in Comply with requirements in Village of Vernon Hills and State of Illinois Standard Specifications.
2. Submit product data for grout materials.

B. Quality Assurance Submittals:

1. Comply with requirements in Comply with requirements in Village of Vernon Hills and State of Illinois Standard Specifications.
2. Submit building code required compression test reports for structural grout.
3. Submit manufacturer's installation instructions for structural grout.

1.3 SITE CONDITIONS

A. Environmental Requirements:

1. Do not place grout when temperature or humidity will affect the performance or appearance of the grout.
2. Do not place grout on dirty, wet, or frozen substrates.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Substitute Manufacturers:

1. Submit substitution requests prior to Bid Date.

2. Comply with requirements in Comply with requirements in Village of Vernon Hills and State of Illinois Standard Specifications.

2.2 MATERIALS

A. Nonmetallic Nonshrink Grout.

1. Industry Standard: ASTM C 1107.
2. Type: Shrink resistant, nonstaining, noncorrosive.
3. Minimum Compressive Strength: f'c = 5,000 psi in 28 days.
4. Acceptable Grouts: Upcon by Bostik Construction Products, Nonmetallic Grout by Burke, Euco N-S Grout or Euco Dry Pack Grout by Euclid Chemical, Conbextra S by Fosroc Preco, Sealtight 588 by W.R. Meadows, Masterflow 713 by Master Builders, SikaGrout 212 by Sika, Sonogrout and Sonogrout G.P. by Sonneborn, Five Star Grout by U.S. Grout.

B. Anchoring Cement:

1. Type: Premixed, packaged, shrink resistant.
2. Minimum Compressive Strength: f 'c = 4,000 psi in 28 days.
3. Acceptable Anchoring Cements: Burke Stone by Burke, K-Ment by Euclid Chemical, Embeco 153 by Master Builders, Thorogrip by Thoro System Products.

C. Epoxy Grout:

1. Industry Standard: ASTM C 881.
2. Type: Premixed, packaged, two component, epoxy resin.
3. Minimum Compressive Strength: f'c = 6,000 psi in 28 days.
4. Acceptable Grouts to Bond Plastic Concrete to Existing Concrete: Concressive 1001 LPL by Adhesive Engineering, Upcon Epoxy Grout by Bostik Construction Products, Medium Viscosity 881 LPL Patch and Bond Epoxy by Burke, High Strength Grout by Euclid Chemical, Probond 812 medium viscosity by ProKrete Industries, Sikadur 32 Hi-Mod by Sika, Sonobond by Sonneborn, Five Star Epoxy Grout by U.S. Grout.
5. Acceptable Grouts to Bond Concrete to Reinforcing Steel: Concressive 1441 by Adhesive Engineering, 881 LPL Topping and Crack Grouting Epoxy by Burke.

PART 3 EXECUTION

3.1 PERFORMANCE

A. Surface Preparation:

1. Remove loose aggregate and coating materials from substrate surfaces prior to placing grout and anchoring cement.
2. Support bearing plates above cleaned bearing surfaces with double nutted anchor bolts and wedges.
3. Position and plumb supporting steel members then tighten double nutted anchor bolts.
4. Cut off part of wedges and shims which protrude beyond the edge of base and bearing plates.

B. Installation of Cementitious Grout Below Bases and Bearing Plates:

1. Pack space below base and bearing plates supporting structural members and stationary equipment with nonmetallic nonshrink grout until no voids remain.
2. Pack space below bearing plates supporting vibrating equipment with metallic nonshrink non-catalyzed grout until no voids remain.

3. Trowel exposed grout surfaces to smooth finish.
4. Cure grout to comply with manufacturer's printed instructions.

C. Installation of Cementitious Grout in Steel Door and Relite Frames:

1. Install nonshrink nonmetallic grout inside steel door and relite frames in concrete walls.

D. Installation of Anchor Bolts with Anchoring Cement:

1. Set anchor bolts for structural plates with anchor bolts double nutted to CDX plywood or oriented strand board templates.
2. Set anchor bolts for equipment with anchor bolts double nutted to templates furnished by equipment manufacturer.
3. Fill space around anchor bolts in drilled concrete and masonry with anchoring cement as recommended by anchoring cement manufacturer.

E. Installation of Epoxy Grout:

1. Coat existing concrete contact surfaces with epoxy grout at spalled concrete areas prior to filling with plastic cement.
2. Fill space between existing drilled and dowel sleeved concrete and new reinforcing bars and dowels with epoxy grout.

3.2 COMPLETION

A. Grout Testing:

1. When required by the Building Code, Special Inspection Requirements, Owner will employ an independent testing laboratory to evaluate grout supporting structural members.
2. Comply with procedures in Comply with requirements in Illinois Standard Specifications.
3. Test nonmetallic nonshrink grout in accordance with ASTM C 109.
4. Test epoxy grout in accordance with ASTM C 579, Method B.

B. Manufacturer's Field Service:

1. Grout and anchoring cement manufacturer's representative shall provide technical assistance and two project site visits to ensure that grout and anchoring cement work is performed in accordance with manufacturer's instructions.

C. Adjusting and Cleaning:

1. Replace damaged and defective grout and anchoring cement work.
2. Remove excess materials from the site.

D. Physical Barrier Protection:

1. Cover fresh grout and anchoring cement for 24 hours minimum.
2. Cover fresh grout and anchoring cement with plywood or oriented strand board where exposed to public, pedestrian, and animal traffic.

END OF SECTION 03 60 00

SECTION 31 05 13 - SOILS FOR EARTHWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Subsoil materials.

B. Topsoil materials.

1.2 RELATED SECTIONS

A. Section 31 05 16 - Aggregates for Earthwork.

B. Section 31 22 13 - Rough Grading.

C. Section 31 23 17 - Trenching.

D. Section 31 23 23 - Fill.

E. Section 32 91 19 - Landscape Grading.

F. Section 32 93 00 - Plants.

G. Section 33 46 00 - Subdrainage: Filter aggregate.

H. Section 31 25 00 - Erosion and Sedimentation Control

1.3 REFERENCES

A. Illinois Department of Transportation (IDOT) - Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)

B. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.4 SUBMITTALS

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

B. Samples: Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory.

C. Materials Source: Submit name of imported materials source.

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

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Standard Specifications.

PART 2 - PRODUCTS

2.1 SUBSOIL MATERIALS

A. Subsoil:

SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Exterior steel stair handrails and railings.

B. Related sections:

1. Section 03 60 00, Grouting - Skatepark: Anchoring cement for railing standards.
2. Section 05 50 00, Metal Fabrications - Skatepark: Steel structural supports.

1.2 SYSTEM DESCRIPTION

A. Structural requirements:

1. Design handrails and railings to resist design load of 200 pounds in any direction at any point on the railing or 50 pounds per lineal foot whichever is greater without deflection in excess of L/180 and without permanent member deformation.
2. Use AISC Manual of Steel Construction, Eighth Edition for steel railing structural requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Materials:

1. Structural Steel Plates, Shapes, and Bars: ASTM A36.
2. Steel Bars: ASTM A108, Grade 1045.
3. Cold-Formed Steel Tubing: Round, square and rectangular, ASTM A500, Fy=42 KSI, Grade B, Seamless.
4. Hot-Formed Steel Tubing: Round, square and rectangular, ASTM A501, Fy=36 KSI, Seamless.
5. Steel Pipe: ASTM A53, Type E, Electric Resistance Welded, Fy=30 KSI, Grade A. Standard Schedule 40, 1-1/4 inch inside diameter, 1.66 inches outside diameter, except where indicated otherwise on Drawings.

B. Connecting Materials:

1. Standard Bolts: ASTM A307, Grade A.
2. Steel Welding Electrodes: AWS A5.1, E60XX.
3. Aluminum Welding Electrodes: Aluminum alloy as recommended by pipe manufacturer.
4. Concrete Anchors: ICBO approved FS FF-S-325, Group II, Type 4, Class I, Sup-R-Stud by Diamond, Inc., Kwik-Bolt II by Hilti Fastening Systems, Inc., Red Head Wedge Anchors by ITW Ramset, Rawl-Stud by Rawlplug Company, Inc.
5. Masonry Anchors: Sleeve anchor by Hilti, Red Head Sleeve Anchor by Phillips.
6. Epoxy Adhesive for Drilled Anchors: Concresive Epoxy Cartridge by Master Builders, Inc. or HV by Hilti Fastening Systems.
7. Brass Adhesive: Brass Lock.

8. Concealed Fasteners: As furnished by aluminum handrail manufacturer.

C. Finishing Materials:

1. Shop Primer for Painted Exterior Steel: Polyamide epoxy.

D. Fittings for Steel Pipe:

1. Fitting Material: Cast or Malleable iron.
2. Acceptable Fittings: Schedule 40 steel pipe fittings by Braun, Tsco International, or Wagner.

E. Anchoring Cement:

1. Type: Premixed, packaged, shrink resistant.
2. Minimum Compressive Strength: f'c = 4,000 psi in 28 days.
3. Acceptable Anchoring Cements: Burke Stone by Burke, K-Ment by Euclid Chemical, Embeco 153 by Master Builders, Thorogrip by Thoro System Products.

2.2 FABRICATION

A. Fabrication Requirements:

1. Drill and tap railings as required to receive hardware.
2. Finish required anchors for connecting to other work.
3. Install closer plate or hemisphere cap on railing ends.
4. Provide for thermal expansion of exterior handrails and railings.
5. Form exposed connections with flush hairline joints.
6. Preheat ASTMA 108 steel to not less than 400 degrees F prior to welding.
7. Form railing post sleeves from PVC or hot-dip galvanized steel pipe.

B. Shop Finishing:

1. Commercial blast clean railing surfaces to meet SSPC SP-6 requirements.
2. Heat railings to 400 degrees F as recommended by coating manufacturer.
3. Pretreat surfaces with iron phosphate as recommended by coating manufacturer.
4. Apply zincrich gray colored TGIC polyester coat to 3.5 mils thick.
5. Apply TGIC polyester finish coat to 3.5 mils thick as recommended by coating manufacturer.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Substrate Preparation:

1. Perform cutting, drilling, blocking and shimming of substrate as required for installation.
2. Verify location of solid blocking and structural framing to support wall and floor mounted handrails and railings.

B. Installation Procedures:

1. Set handrails and railings accurately in location, alignment, and elevation, measured from established lines and levels.

2. Secure handrails and railings with concealed anchors and set screws except where exposed screws or bolts are indicated on Drawings.
3. Anchor handrails and railings to structural members, solid wood blocking, concrete, and steel plate blocking.

C. Installation of Railing Standards:

1. Set railing standard in concrete opening not less than 1/2-inch diameter greater than outside diameter of railing standard.
2. Set railing standard in anchoring cement.
3. Comply with requirements in Section 03 6000, Grouting - Skatepark.

D. Installation of Handrail Brackets:

1. Drill 1-inch diameter hole in solid grouted masonry or concrete wall.
2. Set 3/8-inch diameter threaded anchor bolt in anchoring cement.
3. Allow anchoring cement to set 2 hours minimum prior to installing handrail bracket.
4. Set 3/8-inch diameter bolt in solid wood blocking or 3/16-inch-thick steel plate blocking or cold rolled 5 channel blocking with thread toward handrail bracket.
6. Anchor brackets as recommended by manufacturer.

E. Installation of Handrail and Railing to Wall Brackets:

1. Drill and tap railing and secure to brackets with two flat head machine screws.

3.2 COMPLETION

A. Adjusting and Cleaning:

1. Replace damaged and defective members and adjust alignment of railings.
2. Remove pits, bumps, and irregular weld grinds from exposed surfaces.
3. Touch up shop primer on exposed steel handrails and railings.
4. Clean field welds, bolted connections and abraded areas, and apply type primer paint as used in shop.
5. Touch up shop finished steel and aluminum with same coating as used in fabricating shop.
6. Remove dirt and oil from handrails and railings prior to Substantial Completion.

END OF SECTION 05 52 13

1. Excavated and re-used material.
2. Graded.
3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.

2.2 TOPSOIL MATERIALS

A. Topsoil:

1. Excavated and reused material.
2. Graded.
3. Free of roots, rocks larger than 1/2-inch, subsoil, debris, large weeds and foreign matter.
    a. Screening: Single screened.

2.2 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services Testing and analysis of soil material.

B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D1557. AASHTO T180.

C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D1557. AASHTO T180.

D. When tests indicate materials do not meet specified requirements, change material and retest.

E. Furnish materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Excavate subsoil and topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.

B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials.

C. Remove excess excavated materials not intended for reuse, from site.

3.2 STOCKPILING

A. Stockpile materials on site at locations indicated.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Stockpile topsoil 16 feet high maximum.

E. Prevent intermixing of soil types or contamination.

F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION 31 05 13

SECTION 31 05 16 - AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Coarse aggregate materials.
2. Fine aggregate materials.

B. Related Sections:

1. Section 31 05 13 - Soils for Earthwork: Fill and grading materials
2. Section 31 22 13 - Rough Grading
3. Section 31 23 17 - Trenching
4. Section 31 23 23 - Fill
5. Section 32 91 19 - Landscape Grading
6. Section 33 11 16 - Site Water Utility Distribution Piping
7. Section 33 31 00 - Sanitary Utility Sewerage Piping
8. Section 33 41 00 - Storm Utility Drainage Piping

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Aggregate:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes supplying aggregate materials, stockpiling, placing, and compacting as required.

1.3 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction (most current edition) – Standard Specifications

B. American Association of State Highway and Transportation Officials:

1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
5. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

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

B. Samples: Submit, in air-tight containers in quantities as required by the testing laboratory.

C. Materials Source: Submit name of imported materials suppliers.

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

1.5 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work in accordance with Standard Specifications.

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

A. Coarse Aggregate Type CA-1: Conforming Standard Specifications.

B. Coarse Aggregate Type CA-6: Conforming Standard Specifications

C. Coarse Aggregate Type CA-7: Conforming Standard Specifications

2.2 FINE AGGREGATE MATERIALS

A. Fine Aggregate Type FA-1 Conforming Standard Specifications.

B. Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, and organic matter; Conforming Standard Specifications

C. Graded in accordance with ASTM C136 within the following limits:

Sieve Size	Percent Passing
No. 4	100
No. 14	10 to 100
No. 50	5 to 90
No. 100	4 to 30
No. 200	0

2.3 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing and inspection services.

B. When tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 EXCAVATION

A. Excavate aggregate materials from on-site locations indicated as specified in Section 31 22 13.

B. Stockpile excavated material meeting requirements for coarse aggregate materials and fine aggregate materials.

C. Remove excess excavated materials not intended for reuse, from site.

D. Remove excavated materials not meeting requirements for coarse aggregate materials and fine aggregate materials from site.

3.2 STOCKPILING

A. Stockpile materials on site at locations designated by Owner's Representative.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.

D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION 31 05 16

SECTION 31 10 10 - DEMOLITION AND REMOVAL

1.1 SUMMARY

A. General: Contract Work under this Section is subject to the requirements of the Documents, including the Supplementary Conditions.

B. Description: Provide all labor, materials and equipment required for all demolition, removal, and disposal of items indicated on the drawings and as specified, including but not limited to the following:

1. Existing foundations, asphalt paving and concrete pads within proposed improvement areas.
2. Abandoned underground sewer pipe, conduits and duct banks interfering with the new construction.
3. Lighting, power poles, wiring, other utilities as shown and directed by Construction Manager.
4. All other demolition work shown or noted on drawings, or as required, to facilities new construction work.
5. Debris.

1.1 SPECIAL REQUIREMENTS

A. The Contractor shall be held responsible to have visited the site and fully determined to his own satisfaction all physical conditions; site characteristics; means of egress and access from and to the site; or any other peculiarities of access from and to the existing site which may influence or affect the cost of this work in any way.

B. The Contractor shall be responsible for and shall protect adjoining properties and existing thoroughfares from damage to his operations. The Contractor shall provide and maintain all barricades, lights, and all other protective devices necessary to fulfill the intent of this work, including requirements of all Federal, State or Municipal laws or ordinances. Barricades, lights and other protective devices shall be relocated as construction work progresses, and removed upon completion and acceptance of the work, or when so directed by the Architect.

C. Utilities and Services:

1. The Contractor shall carefully examine all public records and data available regarding public utilities and services and confer where necessary with the respective departments of the local agencies having jurisdiction. Contractor shall also confer with the respective private service or utility agencies to fully determine the location of all underground utilities and services.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for installation examination.

B. Verify location and requirements of all equipment and features to be removed and reinstalled under this contract.

3.2 GENERAL

A. No demolition shall be commenced until a program of operations schedule has been coordinated with the Construction Manager, except that preparatory work may be started if specifically approved by and coordinated with the Construction Manager.

B. Demolition work shall be done in such manner as to avoid hazards to persons and property and interference with the use of adjacent areas or interruption of free passage to and from such areas. Take care to prevent the spread of dust and flying particles.

C. Demolition and removal work shall be executed in careful and orderly manner. Accumulation of rubbish will not be permitted.

D. After work is started it shall be continued to completion at a rate that will allow the balance of the work to be completed within the time specified. If extra shifts are necessary beyond regular working hours, the work shall proceed with a minimum of nuisance to surrounding properties.

E. Exact extent of demolition to be done may not be fully indicated by the drawings. The Contractor shall determine the nature and extent of demolition that will be necessary by comparing the drawings with the existing field conditions. It is expressly understood that this Contract includes all work of a demolition nature that may be required or necessary for a full and complete execution of the work, whether particularly referred to herein or not.

F. Portions of existing sidewalk which interfere with new construction work, shall be removed as shown on the plans, or as directed by the Architect. In removing sidewalk, provisions shall be made for satisfactory transition between replacement and the portion remaining in place. The Contractor shall saw cut to a minimum depth of 1½” inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out. This work shall be done in such a manner that a straight joint will be ensured.

G. Portions of existing concrete curb, gutter, combination curb and gutter which interfere with new construction work shall be removed as shown on the plans, or as directed by the Construction Manager. In removing concrete curb, gutter, combination curb and gutter, provisions shall be made for satisfactory transition between replacements and the portion remaining in place. The Contractor shall saw cut to a minimum depth of 1 ½" inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out. This work shall be done in a manner that a straight joint will be ensured.

H. Removal of Abandoned Improvements as designated in Paragraph 1.1B.2 above.

3.3 DISPOSAL

A. The Contractor is responsible for off-site disposal in conformance with all applicable regulations unless otherwise provided for in the contract documents.

B. Except as otherwise specified, the Contractor shall be entitled to all salvageable materials resulting from the demolition work.

C. Remove all wrecked materials, debris and rubbish from the site. Under no circumstances shall debris or rubbish be allowed to accumulate on the premises.

3.4 REMOVAL

A. On completion of the demolition and removal, clean the areas affected, including areas outside the limits of the Contractor's work area where permission to work has been granted. Remove surplus construction material or debris resulting from the demolition work and dispose of legally off the site.

B. Access routes to and from the site shall be kept clean of debris resulting from the work.

C. Burning of rubbish or debris on or near the premises will not be permitted.

D. If required, deliver to Owner from the truck and place equipment/material in the area designated by the Owner.

END OF SECTION 31 10 10

SECTION 31 13 16 - TREE PROTECTION

PART 1 - GENERAL

1.1 SCOPE

A. These specifications include the protection and trimming of existing trees that interfere with, or are affected by execution of the Work, whether temporary or permanent construction related sections.

1.2 RELATED WORK

A. Applicable provisions of Division 1 govern work under this Section.

1. Section 02 20 00 – General Sitework Requirements.
2. Section 31 10 00 – Site Clearing.
3. Section 31 20 00 – Earthmoving.
4. Section 31 25 00 – Erosion Control.
5. Section 32 91 19 – Topsoil-Select Fill Materials and Application.

1.3 DEFINITIONS

A. Tree Protection Zone: Area surrounding individual trees or groups of trees to remain during construction, and defined by the area encompassing 1.5 times the tree caliper at 4.5 feet above the ground or the perimeter drip line unless otherwise indicated by arborist.

1.4 REFERENCE STANDARDS

A. *American Standards for Nursery Stock, ANSI Z60.1*, current edition. American Association of Nurserymen, Inc.

B. *Standardized Plant Names, Second Edition* (1942). American Joint Committee on Horticulture Nomenclature, Horace McFarland Company, Harrisburg, PA.

C. *American National Standard for Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance-Standard Practices, ANSI A300*, current edition.

1.5 QUALITY ASSURANCE

A. An experienced tree service firm that has successfully completed tree protection similar to that required for this Project.

B. Pre-installation Conference: Conduct conference at Project site to comply with requirements and to identify boundary of tree protection fencing.

1.6 PLANTING SCHEDULE

A. All plants shall be guaranteed to be in healthy and flourishing condition for one full year after installation and acceptance by the Owner.

B. Plants not thriving shall be replaced at no cost to the Owner. The Contractor may suggest substitutions for replacement plants.

C. Replacement plants shall be guaranteed for one (1) year after installation.

D. At any time during the guarantee period, the Contractor shall remove or replace, without cost to the Owner and within a specified planting period, all plants not in a healthy and flourish conditions as determined by the Owner.

1.7 MAINTENANCE

A. The Contractor shall maintain plantings and lawn for at least a period of thirty (30) days, or until final acceptance from the Owner. The Contactor is responsible for adequately watering plants and lawn during this 30-day period.

B. Fertilizing: Any and all chemical applications are to be performed in accordance with current federal, state, and local laws, through EPA-registered materials and application techniques, and performed under the supervision of a licensed certified applicator. Apply fertilizer to planted areas at the specified rate, and as per manufacturer's recommendations.

C. Watering: All plant materials installed under the contract shall be watered within the first 24 hours of initial planting and not less than twice weekly until final acceptance by Owner. Water used shall be of sufficient quality for irrigation and free of materials harmful to plant growth.

D. Pesticide: Any use of pesticides during the contracted maintenance period, as determined by the Owner, shall utilize the minimum amount of approved pesticide needed to control pests on plant materials installed under the contract. Pesticide applications are to be performed in accordance with current federal, state and local laws, through EPA-registered materials and application techniques, and performed under the supervision of a licensed certified applicator. Apply at the specified rate, and as per manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Mulch: Shredded hardwood bark mulch, free of material detrimental to healthy plant growth. Mulch shall be finely shredded, weed free, and dye-free.

B. Topsoil: Refer to Topsoil-Select Fill Materials and Application section.

PART 3 - EXECUTION

3.1 PREPARATION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect trees identified on plan that have been indicated as existing trees to remain. Temporary fencing shall be installed around dripline as much as possible. Maintain temporary fence and remove when construction is complete.

B. Protect the root systems of existing trees to remain from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.

D. Apply 2-inch average thickness of mulch. Do not place mulch within 6 inches of tree trunks.

E. Do not store construction materials, debris, or excavated material inside protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems. Do not allow fill on trees roots inside the tree protection zone. Note: As little as 2 inches can have deleterious long-term effects on tree health. If fill or grade changes must occur, a serious look at whether or not the tree should be left must occur.

F. Maintain tree protection zones free of weeds and trash.

G. Do not allow fires within tree protection zone.

3.2 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones unless necessary to install stormwater management facilities. If excavation is required, temporary fencing shall be adjusted to the furthest extent of grading away from the trunk.

C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Cut roots in the area to be excavated with a saw to ensure a clean cut. Tom or ripped roots must be trimmed.

D. Redirect roots in backfill areas where possible. Note: If encountering large, main lateral roots, an assessment of future tree stability must be made. Expose roots beyond excavation limits as required to bed and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.

E. Do not allow exposed roots to dry out before placing permanent backfill. Provide a temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

F. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling auger boring, pipe jacking, or digging by hand.

G. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments, do not break or chop.

3.3 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away beyond tree protection zones. Maintain existing grades within tree protection zones.

B. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

C. Minor Fill: Where existing grade is 1 inch or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.4 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

END OF SECTION 31 13 16

SECTION 31 22 13 - ROUGH GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating topsoil.
2. Excavating subsoil.

B. Related Sections:

1. Section 03 30 00 - Cast-In-Place Concrete
2. Section 31 10 00 - Site Clearing: Excavating topsoil.
3. Section 32 91 19 - Landscape Grading: Finish grading with topsoil to contours.
4. Section 33 46 00 - Subdrainage

1.2 STANDARDS

A. State Highway Specifications means the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," current edition including all supplements.

B. All work required under this section shall conform to the State Highway Specifications whenever applicable.

1.3 REFERENCES

A. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, current edition.

B. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.4 PROTECTION

A. During grading operations, drainage of the work under construction and adjacent areas affected by the work shall be protected and maintained continuously. If during the execution of the work

it is necessary to interrupt existing storm drainage, temporary drainage facilities shall be provided until the permanent drainage work has been completed. Such temporary drainage facilities shall be at the Contractor's expense.

B. Protect existing above and below grade utilities that remain.

C. Protect bench marks, survey control points, existing structures/fences, walks, paving and curbs from grading equipment and vehicular traffic

D. Protect all work in progress from damage due to extremes of cold, moisture, or drying, or mechanical damage from equipment traffic or foot traffic. Alert the Landscape Architect to the presence of conditions that may adversely affect the quality of the work, the physical structure of soils, or transport of site soils off-site.

1.5 ADJUSTMENTS

A. The Owner reserves the right to make minor adjustments in lines and grades as the work progresses whenever such changes are considered necessary to better accomplish the true intent of the plans, or to obtain a closer balance between cuts and fills.

1.6 SUBMITTALS

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

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with Illinois Department of Transportation standard.

PART 2 - PRODUCTS

2.1 MATERIALS

A. On-Site Soils:

1. All approved soils from cut areas shall be used as fill to fulfill the plan intent.
2. Unsuitable materials (except topsoil) and excess cut when directed in the Bid Proposal and/or Special Conditions shall be removed from the site by the Contractor.

B. Topsoil: Type S3 as specified in Section 31 05 13.

2.2 EQUIPMENT

A. Provide and maintain on the job sufficient equipment of the types needed to complete all work in accordance with the requirements of these specifications. Earth moving equipment capable of accomplishing the specified required results may be used.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify site conditions.

C. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Protect utilities indicated to remain from damage.

D. Protect plant life, lawns, and other features remaining as portion of final landscaping.

E. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

F. Stake and flag locations of known utilities.

G. Remove all topsoil from within the building areas

H. Excavate under pavement areas to accommodate improvement and proof-roll prior to additional topsoil excavation.

I. In fill areas less than 1-foot not under buildings or pavement, topsoil may remain undisturbed.

J. Stockpile all topsoil where indicated on plan for future use as herein directed, or for disposal by the Owner.

K. All vegetation encountered during the grading operations shall be considered incidental to grading. Remove all such materials from the site.

3.3 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Do not use unstable of unsuitable excavated material for fill without written authorization from Owner.

C. All fill materials shall be spread over the entire area whenever practicable. Each layer shall be spread uniformly, be kept leveled by means of approved equipment and thoroughly compacted so that it will be uniform in cross section and meet the compaction requirements before the next layer is started

D. Place fill material on prepared areas in continuous layers and compact in accordance with schedule at end of this section.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.

G. Make grade changes gradual. Blend slope into level areas.

H. Repair or replace items indicated to remain damaged by excavation or filling.

3.4 COMPACTION

A. Each layer of fill material shall be disked or mechanically pulverized sufficiently to break down over-sized clods and thoroughly mix the different materials to secure uniform moisture content and insure uniform density and proper compaction. After each layer has been spread disked, it shall be compacted with approved mechanical equipment.

B. Fill under all pavement and building areas shall be construction to obtain 95% compaction.

C. Fill under all turf and planting areas shall be constructed to obtain 85% to 90% compaction.

D. The percentage of compaction to be achieved, as stated above, will conform to the maximum obtainable at optimum moisture as specified by ASTM. D-1557.

E. All fill material shall contain the proper moisture content to achieve the required compaction. When fill material requires moisture to be added, it shall be done with approved equipment

3.5 TOPSOIL PLACEMENT

A. On all proposed turf and planting areas where clay soil unsuitable for turf culture or nursery

stock is either added as "fill" or exposed as "cut," a clay sub-grade shall be established 0.5-feet below finished grade elevation.

B. Coordinate grading operations within the work limits. Scarify subgrades to a depth of three (3) inches prior to placement of topsoil to ensure bonding of subsoil and topsoil.

C. Handle topsoil to prevent excessive consolidation.

3.6 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Top Surface of Subgrade: Plus, or minus 1/10 foot from required elevation.

C. Allow for compaction and settlement in fill areas and placement of topsoil in both cut and fill areas.

3.7 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements,

B. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

END OF SECTION 31 22 13

SECTION 31 23 16 - EXCAVATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. General: Work under this Section is subject to the requirements of the Contract Documents, including the Supplementary Conditions.

B. Furnish and Install: all excavation indicated on the drawings and specified, including but not limited to the following:

C. The work under this section includes the furnishing of all labor, materials, equipment, tools, transportation and services, to perform all the excavation, including all general machine or hand excavating and backfilling; compacting and rough grading; stone fill under sidewalks, platforms and concrete slabs on grade and related items as required for and incidental to the completion of the work, as indicated on the drawings and specified herein.

D. Excavating, filling and backfilling shall include but is not necessarily limited to the following:

1. Excavating for footings and foundation walls, platforms, and stock piling of excavated material that may be approved for use as backfill and rough grading.
2. Remove and dispose of all unsuitable material encountered within the limits of the excavation for the proposed footings, foundations, walkways, and pavements.
3. Place engineered backfill and compact to achieve minimum bearing capacity as specified.
4. Provide, place and compact to required grade approved backfill material obtained from excavation or from off-site (borrow excavated material).
5. Top of compacted sub-grade shall allow for the placement of paving, plus the compacted stone base or other type granular, base as shown or specified.
6. Removing all subsurface obstructions as required to perform all excavating, backfilling and grading work, except utilities which will be removed or relocated as hereinafter specified.

1.2 SECTION INCLUDES

A. Soil densification.

B. Excavating for paving, roads, and parking areas.

C. Excavating for slabs-on-grade.

D. Excavating for site structures.

E. Excavating for landscaping.

1.3 RELATED SECTIONS:

A. Section 31 05 13 - Soils for Earthwork: Stockpiling excavated materials.

B. Section 31 05 16 - Aggregates for Earthwork: Stockpiling excavated materials.

C. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.

D. Section 31 23 17 - Trenching: Excavating for utility trenches.

E. Section 31 23 23 - Fill.

F. Section 31 25 00 - Erosion and Sedimentation Control:

1.4 REFERENCES

A. Local utility standards when working within 24 inches of utility lines.

B. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)

C. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

D. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)

1.5 SUBMITTALS

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

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with Standard Specifications.

1.7 INSPECTIONS AND TESTS

A. All earthwork inspection and tests specified herein or deemed required by the Construction Manager or Landscape Architect, will be conducted by a testing laboratory employed by the Owner. These tests shall include analysis and determination of the quality of the earth strata at required excavation elevations, sub-grade compaction, backfilling and compaction operations, and such as indicated or required.

B. The Contractor shall give notice, to the Construction Manager and the Landscape Architect of each operation at least two (2) working days in advance to allow ample time for the testing laboratory, Construction Manager, or Landscape Architect to witness inspections.

C. Maximum density and optimum moisture content of soils and aggregates shall be determined in accordance with ASTM D1557

D. Testing required because of changes in materials, methods, faulty workmanship or work which fails to meet the contract requirements, shall be at the Contractor's expense.

1.8 SPECIAL REQUIREMENT

A. Job Conditions:

1. Site Conditions: The Contractor will be held to have visited the site before bidding and shall examine to his satisfaction the soil, its condition and characteristics, traffic and means of access and any other features which may affect or influence the cost of the work.
2. Benchmarks: The Contractor shall use established bench marks and other reference points and replace same if they are destroyed or disturbed in any manner, due to his operation.
3. Utilities: The Contractor shall make all necessary arrangements and provide all services required to protect existing utility lines scheduled to remain in the way of new work and all other items of this character. He shall assume all responsibility for coordinating his work with the utilities involved.
4. The storage of equipment when not in use, shall be located in areas and in such a manner which will not interfere with normal conduct of construction on the site. Locations selected for collection of debris and/or storage of equipment or material shall be subject to approval of the Owner.

5. The Contractor shall be responsible for and shall protect existing buildings and structures on the site when applicable, and adjoining properties and public thoroughfares from damage due to his operations. The Contractor shall provide all temporary barricades, lights and other protective devices necessary to fulfill the intent of the Work, including requirements of all Federal, State, or Municipal laws or ordinances, and maintain same for the full period of this operation, removing same when directed or no longer required. Excavations shall be protected at all times and maintained in good order until backfill is in place.

PART 2 - PRODUCTS

2.1 FILLING AND BACKFILLING MATERIALS

A. Materials, other than approved excavated material, for filling and backfilling shall conform to the following:

1. Crushed Stone; shall be CA-6 complying with Section 1004 of the Standard Specifications.
2. Stabilization Stone: CA-1 complying with Section 1004 of the Standard Specifications.
3. Sand: FA-1, FA-2, FA-6 or FA-21 complying with Section 1003 of the Standard Specifications.
4. Approved Backfill Material: shall be either excavated material specifically approved for the backfill or approved off site borrowed earth fill containing no sod, frozen material, organic material or any material which, by decay or otherwise, might cause settlement; also no rock, stones, or broken concrete more than 3 inches in the largest dimension will be permitted.
5. All materials: shall be subject to approval by the testing laboratory.

PART 3 - EXECUTION

3.1 PREPARATION

A. Call Local Utility Line Information service at 800-892-0123 not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Protect utilities indicated to remain from damage.

D. Protect plant life, lawns, and other features remaining as portion of final landscaping.

E. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.2 EXCAVATION

A. Underpin adjacent structures which may be damaged by excavation work.

B. Excavate subsoil to accommodate improvements, slabs-on-grade paving and site structures, and construction operations.

C. Excavate for shelter foundations and footings, light pole and signage foundations, slabs on grade and paved areas, removing all fill material down to the elevations indicated on the drawings or to suitable soil bearing strata. In all cases the work shall rest on soil or approved fill which is capable of supporting the required loads. To this end the Contractor shall consult the Landscape Architect and obtain approval before removing equipment.

D. Excavation shall provide sufficient space to permit erection of forms, placing of work, removal of forms, etc., and shall be left open until concrete, and any other work has been inspected and approved by the Landscape Architect.

E. The bottom of all excavations shall be properly leveled off. All loose materials shall be removed from excavations. All wood, timber and organic materials, that are exposed at the bottoms of all excavations shall be removed and the local depression backfilled and compacted.

F. Material that is to be excavated is assumed to be earth and other materials that can be removed with a power shovel. If rock is encountered within the limits of excavation, the Contractor shall immediately notify the Landscape Architect and shall not proceed further until instructions are given and measurements made for the purpose of establishing volume of rock excavations. Rock is defined as any stone or boulder ½ cubic yards or larger in size and/or ledge rock that cannot be removed by power shovel or without the use of continuous drilling or by pneumatic hammers.

G. Any excess or unauthorized excavations shall be backfilled with crushed stone and/or approved material compacted, at no additional cost to the Owner.

H. The drawings indicate the Required Subgrade Level for footings, sidewalks and pavements. If suitable bearing is not encountered at these levels, the Contractor shall remove all unsuitable soil to the depth specified by the Landscape Architect and place compacted engineered fill to obtain the bearing capacity required. The cost for additional excavation and backfill shall be paid for by the cubic yard. This price shall include excavating, hauling, and disposal of unsuitable material and placement and compaction of engineered backfill.

I. Operations shall be done in such manner as to avoid hazards to persons and property and interference with the use of adjacent areas or interruption of free passage to and from such areas. Care shall be taken to prevent the spread of dust and flying particles.

J. Excavation and removal work shall be executed in a careful and orderly manner. Accumulation of rubbish will not be permitted.

K. After work is started it shall be continued to completion at a rate that will allow the balance of the work to be completed within the time specified. If extra shifts are necessary beyond regular working hours the work shall proceed with a minimum of nuisance to surrounding properties.

L. Use of dynamite or blasting on the site is not permitted.

M. Metal track or cleat equipment shall not be operated over existing drives, sidewalks, curbs, and other facilities on the premises. Damage to such facilities, caused by the Contractor's equipment, shall be repaired to the satisfaction of the Owner and at the Contractor's expense.

N. Exact extent of excavation work to be done is not fully indicated by accompanying drawings. Determine the nature and extent of excavations that will be necessary by comparing the drawings with the existing conditions at the site. It is expressly understood that this contract includes all work of an excavation nature, except for utilities as herein before noted, that may be required or necessary to a full and complete execution of excavating whether particularly referred to herein or not.

O. Legally dispose of all excess excavated material and unacceptable backfill material. Also, remove and dispose of all wood and organic filled exposed at required excavation elevations. All debris and rubbish shall be removed, and the site left in an acceptably clean condition.

P. Excavate to working elevation for piling work.

Q. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23 and Section 31 23 17.

R. Slope banks with machine to angle of repose or less until shored.

S. Do not interfere with 45 degree bearing splay of foundations.

T. Grade top perimeter of excavation to prevent surface water from draining into excavation.

U. Trim excavation. Remove loose matter.

V. Notify Owner's Representative of unexpected subsurface conditions.

W. Correct areas over excavated with structural fill specified in Section 31 23 23 as directed by Owner's Representative.

X. Stockpile subsoil in area designated on site to depth not exceeding 16 feet and protect from erosion.

Y. Repair or replace items indicated to remain damaged by excavation.

3.3 DRAINAGE

A. The Contractor shall provide and maintain all required bilge pumps, suction and discharge lines, et., and power for running same in sufficient number and capacity to keep all excavations, free from standing water at all times, including such times as concreting operations are in progress. Above equipment shall be maintained in good condition and operation, when so required, until excavations are backfilled.

B. Any pumping discharge into Village or City sewer system shall be either by way of an approved settling basin system or through adequate screening and filtering media prior to discharge into the sewer.

3.4 BACKFILLING

A. Place approved fill and backfill material and compact in lifts to the proper elevations, as a part of this work.

B. No fill, backfill or sub-base shall be placed in standing water, on frozen ground or on surfaces which have not been tested and/or approved by the Owner.

C. Suspend compaction operations, when, in the opinion of the Owner satisfactory results cannot be obtained because of rain or other unsatisfactory conditions.

D. A uniform moisture content will be required throughout the layers of fill material. Wetting or drying manipulation shall be performed as required to accomplish uniformity. Suspend compaction operations when, in the Owner's opinion, satisfactory results cannot be obtained because of rain or other unsatisfactory conditions.

E. Backfilling for all areas outside of walls, except in paved areas shall be approved material. Backfill shall be compacted to 95% maximum density in accordance with ASTM D 1557 in maximum lifts of 6 inches.

F. Backfill, fill and base under footings, pavements and sidewalks shall be Crushed Stone Fill, or Stabilization Stone as shown on the drawings or ordered by the Landscape Architect. This backfill, fill or base shall be placed and spread in layers or lifts having loose thickness not to exceed twelve inches (12") as indicated and compacted to 95% maximum density as determined by ASTM D 1557. The surface shall then be accurately graded and finished to the proper grades

3.5 PROOF ROLLING

A. Any exterior slabs on grade and pavement areas, shall be inspected and approved by the Landscape Architect and then proof-rolled with a twenty-five (25) ton or heavier, steel or pneumatic tired roller making at least 4 passes over the entire area in alternate (perpendicular) directions. Any continuously yielding or unstable areas shall be locally excavated and backfilled with crushed Stone (twelve) inch thick layers with each layer and the entire sub-grade areas compacted to 95% of maximum density as determined by ASTM D 1557.

3.6 ROUGH GRADING

A. Rough grade areas below finished grades and compact, including all areas of aggregate beds. Leave surfaces prepared for base and surface finishing or required thicknesses as indicated.

B. The limits of area to be graded shall be as necessary to produce new established grade levels, with easy slopes away from shelter buildings (when applicable) and walks.

3.7 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Request inspection of excavation and controlled fill operations in accordance with applicable code.

C. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

3.8 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

3.9 CLEAN UP

A. On completion of the work and before acceptance by the Landscape Architect, thoroughly clean the areas affected, including areas outside the limits of the Contractor's work area where permission to work has been granted. Remove surplus construction material or debris resulting from the work and dispose of legally off the site.

B. Access routes to and from the site will be designated by the Landscape Architect and shall be kept clean of earth debris and material of any sort.

C. Burning of rubbish or debris on or near the premises will not be permitted.

END OF SECTION 31 23 16

SECTION 31 23 16.13 - TRENCHING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Excavation of trenches, pipe bedding, backfilling, and compaction for storm sewer, culverts, and water service.

1.2 RELATED SECTIONS

A. Section 01 40 00 – Quality Requirements

B. Section 33 41 00 – Storm Utility Drainage Piping

1.3 REFERENCES

A. ASTM C33-586 - Specification for Concrete Aggregate

B. ASTM C136-84a - Method for Sieve Analysis of Fine and Coarse Aggregate

C. ASTM D698-78 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in. (304.8 mm) Drop

D. ASTM D1557-78 - Test Methods for Moisture-Density Relations of Soil-Aggregate Mixtures Using 10-lb. (4.54- kg) Rammer and 18-in. (457-mm) Drop

E. ASTM D2487-85 - Classification of Soils for Engineering Purposes

F. ASTM D2922-81 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

G. ASTM D3017-78 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

H. Where reference is made to the “Construction Specifications”, it shall be construed to mean the pertinent section of the Village of Mount Prospect Standard Construction Specifications, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

I. Where reference is made to the “Standard Specifications”, it shall be construed to mean the pertinent section of the Standard Specifications for Sewer and Water Construction in Illinois, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

J. Where reference is made to the “State Specifications”, it shall be construed to mean the pertinent section of the IDOT Standard Specifications for Highway and Structure Construction, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

K. Where reference is made to the “Geotechnical Report”, it shall be construed to mean the geotechnical report in Section 02 32 00.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 00 00.

B. Field Testing Reports:

1. Density and Moisture Tests: Submit within fourteen (14) days of test date.

PART 2 - PRODUCTS

2.1 GENERAL

A. Conform to requirements of Standard Specifications.

1. Where conflicts between this specification, the Standard Specifications and the Construction Specifications exist, the most stringent requirements shall apply.

2.2 BASE MATERIAL

A. Crushed Stone: Hard, durable particles of crushed stone or gravel substantially free from shale or lumps of clay or loam. When crushed stone base is required under sewer, water main or structures gradation shall meet the requirements of Type 1. When crushed stone base is required to affect soil stability or drainage, it shall meet the gradation requirements of Type 2.

Type 1: 1½-Inch Crushed Stone

Sieve Size	Percent Passing by Weight
2 Inch	100
1½ Inch	90-100
1 Inch	20-55
3/4 Inch	0-15
1/2 Inch	0-5

Type 2: 2-Inch Crushed Stone

Sieve Size	Percent Passing by Weight
2½ Inch	100
2 Inch	90-100
1½ Inch	35-70
1 Inch	0-15
1/2 Inch	0-5

2.3 BACKFILL

A. Granular Backfill: Durable particles ranging from fine to coarse in a substantially uniform combination. Sufficient fine material shall be present to fill all the voids of the coarse material. Some fine clay or loam particles are desirable, but clay or loam lumps shall not be present. Conform to the following gradation.

Granular Backfill

Sieve Size	Percent Passing by Weight
3 Inch	100
2 Inch	95-100
No. 4	35-60
Finer than No. 200	5-15

B. Excavated Material: Natural soils classified in ASTM D2487 as Gravels (GW, GP GM and GC), Sands (SW, SP, SM and SC) and Silts and Clays (ML and CL). Silts and Clays classified as OL, MH, CH, OH, and PT are not acceptable unless specifically allowed by Engineer. Soil material shall be free from vegetable or other organic matter, trash, debris, stones larger than three inches and frozen material.

C. Use of excavated material for backfill of public utilities shall be subject to approval of the Village's geotechnical consultant prior to its use.

PART 3 - EXECUTION

3.1 GENERAL

A. Conform to requirements of Standard Specifications.

1. Where conflicts between this specification, the Standard Specifications and the Construction Specifications exist, the most stringent requirements shall apply.

3.2 EXAMINATION

A. Verify fill materials to be used are acceptable.

3.3 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Maintain and protect existing utilities remaining, which pass through work area.

C. Protect plant life, lawns, and other features remaining as a portion of the final landscaping.

D. Protect bench marks, existing structures, shore protection structures and base materials, sidewalks, paving and curbs from excavation equipment and vehicular traffic.

E. Protect above and below grade utilities which are to remain.

F. Strip topsoil and stockpile on-site for re-use.

G. When excavating across or within existing pavement, saw cut in neat straight lines.

3.4 DEWATERING

A. Do not allow water to accumulate in the trench.

B. Provide all dewatering equipment needed to accomplish the Work. Unless indicated otherwise, no additional compensation will be made for dewatering.

C. No additional compensation will be made for crushed stone used for trench drainage.

D. Dispose of water in a suitable manner without damage to property.

E. Install, operate and abandon dewatering equipment in accordance with applicable state and local codes.

3.5 EXCAVATION

A. Excavate subsoil to required depth and grade.

B. Cut trenches sufficiently wide to enable installation of the utilities and allow inspection. Normal trench width below the top of the pipe shall be the nominal pipe diameter plus 24 inches. Do not undercut trench walls.

C. Trench walls above the top of the pipe shall be as dictated by soil type and safety requirements. Provide shoring and bracing as required to maintain safe working conditions.

D. Stockpile excavated material in area designated on-site.

3.6 BEDDING

A. Place bedding in trench before installing pipe.

B. Support pipe during placement and compaction of bedding.

C. Provide a minimum of 4 inches of bedding material under the pipe barrel and under the bell.

D. Lightly consolidate the material so that it fills and supports the haunch area and encases the pipe to the limits shown on the Drawings.

E. If excavation is carried deeper than 6 inches below the pipe barrel, backfill the excess depth with 1½-inch crushed stone meeting the requirements of paragraph 2.3, A. of this section.

F. After the pipe has been laid and jointed, place bedding materials by hand or equally careful means around the sides of the pipe and up to a level 12 inches above the pipe. Lightly consolidate the material.

3.7 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen materials.

B. Do not backfill over wet, frozen or spongy subgrade surfaces.

C. Granular Backfill: Place and compact materials in continuous layers not exceeding 12 inches compacted depth.

D. Natural Soil Backfill: Place and compact material in continuous layers not exceeding 8 inches compacted depth.

E. Maintain optimum moisture content of backfill materials to attain required compaction density.

F. Utilize surplus backfill materials on project or remove surplus backfill material from site.

G. Leave fill material stockpile areas completely free of excess fill materials.

H. At all manholes, 3/4-inch crusher run stone shall be installed from the top of the cone to the top of the casting.

3.8 TOLERANCES

A. Top Surface of Backfilling: Under Paved Areas

B. Plus or minus 0.1 feet from required elevations

C. Top Surface of General Backfilling: Plus or minus 0.2 feet from required elevation

3.9 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01 00 00 by either the Village or Owner's testing agency.

B. Density/moisture relationship will be determined in accordance with ASTM D1557 (Modified Proctor).

C. Compaction testing will be performed by Village or Owner's testing agency and will be in accordance with ASTM D2922 and ASTM D3017.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

E. Frequency of Tests:

1. For trenches under paved areas - one test per 100 lineal feet of trench.
2. For trenches under unpaved areas - one test per 200 lineal feet of trench.

3.10 COMPACTION SCHEDULE

A. For paved areas compact to at least 95 percent (95%) of optimum density in accordance with ASTM D1557.

B. For unpaved areas compact to at least 92 percent (92%) of optimum density in accordance with ASTM D1557

END OF SECTION 31 23 16.13

SECTION 31 23 23 - FILL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Backfilling site structures to subgrade elevations.

B. Fill under slabs-on-grade.

C. Fill under paving.

D. Fill for over-excavation.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete.

B. Section 31 05 13 - Soils for Earthwork

C. Section 31 05 16 - Aggregates for Earthwork

D. Section 31 22 13 - Rough Grading: Site filling.

E. Section 31 23 16 - Excavation.

F. Section 31 23 17 - Trenching

G. Section 32 91 19 - Landscape Grading:

H. Section 33 46 00 - Subdrainage

I. Document: Geotechnical report; borehole locations and findings of subsurface materials.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Structural Fill:

1. Basis of Payment: Includes supplying fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

1.4 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction – current edition (Standard Specifications).

B. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.5 SUBMITTALS

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

B. Product Data: Submit data for geotextile fabric indicating fabric and construction.

C. Samples: Submit, in air-tight containers, 10 lb. sample of each type of Type fill to testing laboratory.

D. Materials Source: Submit name of imported fill materials suppliers.

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

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with Standard Specifications.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Subsoil Fill: As specified in Section 31 05 13.

B. Granular Fill: As specified in Section 31 05 16.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify subdrainage, damp-proofing, or waterproofing installation has been inspected.

C. Verify structural ability of unsupported walls to support loads imposed by fill.

3.2 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with granular fill and compact to density equal to or greater than requirements for subsequent fill material.

C. Scarify subgrade surface to depth of 3 inches.

D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place material in continuous layers as follows:

1. Subsoil Fill: Maximum 8 inches compacted depth.
2. Structural Fill: Maximum 6 inches compacted depth.
3. Granular Fill: Maximum 6 inches compacted depth.

D. Employ placement method that does not disturb or damage other work.

E. Maintain optimum moisture content of backfill materials to attain required compaction density.

F. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

G. Slope grade away from building minimum 2 percent slope for minimum distance of 10 feet, unless noted otherwise.

H. Make gradual grade changes. Blend slope into level areas.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

C. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

D. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Perform laboratory material tests in accordance with ASTM D1557.

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

E. Proof roll compacted fill surfaces under slabs-on-grade, pavers, and paving.

3.6 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.

B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION 31 23 23

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Silt Fence

B. Stabilized Construction Entrance

C. Dust Control

D. Temporary Seed

E. Erosion Control Blanket

F. Turf Reinforcement Mat (TRM)

G. Turf Reinforcement Mat (Heavy Duty)(TRM)

H. Temporary Erosion Control - Polyacrylamide (PAM)

I. Ditch Check

J. Inlet Filters

K. Diversion Channels.

L. Rock Energy Dissipator.

M. Paved Energy Dissipator.

N. Rock Basin.

O. Rock Barriers.

P. Sediment Ponds.

Q. Sediment Traps.

1.2 RELATED SECTIONS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 30 00 - Cast-In-Place Concrete.

D. Section 31 05 13 - Soils for Earthwork.

E. Section 31 05 16 - Aggregates for Earthwork.

F. Section 31 10 00 - Site Clearing.

G. Section 31 10 10 - Demolition and Removal

H. Section 31 23 16 - Excavation.

I. Section 31 23 17 – Trenching

J. Section 31 23 23 - Fill.

K. Section 32 13 13 - Concrete Paving.

L. Section 32 91 19 - Landscape Grading.

1.3 DESCRIPTION

A. Scope: Furnish all materials, labor, equipment and services necessary for and reasonably incidental to the proper execution of the project as shown on drawings and/or specified and/or

directed. Contractor is responsible for all soil erosion/sedimentation control measures identified on the Plans.

B. Description: Erosion control for this work includes but is not limited to earthwork and grading operations for installation of soil erosion and sedimentation control measures and includes regular maintenance as required by the NPDES permit minimally weekly or within 24 hours of any rain or precipitation event greater than 1/2 inch.

1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Diversion Channel:

1. Basis of Payment: Includes excavating, windrowing, compacting, seeding, and mulching.

B. Rock Energy Dissipator:

1. Basis of Payment: Includes cleaning, excavating, backfilling, placing embankment, placing geotextile fabric, placing rock, and required grouting.

C. Rock Basin:

1. Basis of Payment: Includes excavating, removing unsuitable material, backfilling, placing embankment, clearing, placing rock, and grouting.

D. Rock Filter:

1. Basis of Payment: Includes placing rock, and coarse aggregate filter blanket.

E. Sediment Pond:

1. Basis of Payment: Includes clearing, excavating, piping, placing riser footing, constructing embankment and trench and rock basin, seeding and mulching.

F. Sediment Trap:

1. Basis of Payment: Includes clearing, excavating, forming embankment, placing aggregate or rock and geotextile fabric, seeding, and mulching.

G. Cleaning Sedimentation Structures:

1. Includes removal, hauling and disposal of sediment and other debris in system.

1.5 REFERENCES

A. Codes and Standards: In addition to complying with all pertinent local codes and regulations, all work shall be in accordance with:

B. Illinois Department of Transportation "Standard Specifications for Road and Bridge Construction," Latest Edition:

C. USDA Natural Resources Conservation Service - Illinois Environmental Protection Agency "Illinois Urban Manual", Latest Edition.

D. American Association of State Highway and Transportation Officials:

1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.
2. AASHTO M288-00 – Standard Specification for Geotextile Specification for Highway Applications.
3. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

E. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ASTM International:
3. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.

4. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
5. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
6. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
7. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

F. Precast/Prestressed Concrete Institute:

1. PCI MNL-116S - Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.

1.6 JOB CONDITIONS

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

1.7 CONTROL REQUIREMENTS

A. All earth changes shall be made in such a manner as to minimize:

1. The area disturbed land exposed and unprotected against the erosive action of wind, ice, precipitation, and the flow of water; and
2. The duration of such exposure.
3. Sediment caused by accelerated soil erosion shall be restricted to a non-polluting minimum, before it leaves the site of the earth-change.

B. Sediment caused by accelerated soil erosion shall not be permitted to enter the storm water structures of wetland located on or near the site. Temporary control measures shall be created and maintained until the completion of the project.

1.8 SEQUENCING AND SCHEDULING

A. All temporary erosion control measures to be installed prior to any soil movement.

B. Install other erosion control measures when appropriate to the stage of construction.

1.9 SUBMITTALS

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

B. Product Data: Product Data: Submit data on geotextile.

C. Samples:

D. Submit two samples or rock, minimum 50 pounds each. Construction site sample may be incorporated into the Work. Samples will be used as reference for judging size, and graduation of rock supplied and placed.

E. Test Reports: Indicate certified tests results for precast concrete at manufacturing facility, cast-in-place concrete in field, and granular backfill.

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

1.10 CLOSEOUT SUBMITTALS

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

1.11 QUALITY ASSURANCE

A. Perform Work in accordance with requirements of Section 31 23 16, Section 33 42 13, Section 03 20 00, Section 03 30 00,

B. Perform Work in accordance with State Illinois Standard Specifications for Road and Bridge Construction current edition.

C. Qualifications of Workers: At least one person who is thoroughly familiar with the types of materials and equipment being utilized shall be present at all times during the operations to direct the work where required.

1.12 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.13 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on-site.

B. Do not place grout when air temperature is below freezing.

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.1 SILT FENCE

A. Furnish materials in accordance with Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition). Section 280 - Temporary Erosion Control and AASHTO Standard Specification M288-00.

2.2 TEMPORARY CONSTRUCTION ENTRANCE

A. Rock Construction Entrance:

1. 3-inch size (minimum) washed stone.
2. Stone shall meet one of the following IDOT coarse aggregate gradations: CA-1, CA-2, CA-3, or CA-4.
3. Geotextile: Conform to material specification 592 GEOTEXTILE, Table 1 or 2, Class I, II or IV from the Illinois Urban Manual.

2.3 CONSTRUCTION FENCE

A. Furnish materials as indicated in Drawings and specified in Section 01 50 00.

2.4 DUST CONTROL

A. Water to be clear and free from suspended fine sediment

2.5 TEMPORARY SEED

A. Furnish materials in accordance with Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction (Latest Edition) Section 250 – Seeding

2.6 EROSION CONTROL BLANKET (EROSION BLANKET)

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.10

1. Erosion Control Blanket -Type 1.
2. ConWed:
    a. Futerra Environet® Blanket Natural
    b. Futerra F4 Netless Blanket
3. Single Net Erosion Control Blanket - Type 2.

4. North American Green:

    a. DS75 - Single Net Straw Blanket
    b. S75 - Single Net Straw Blanket
    c. S75BN - Single Net Straw Blanket

5. Double Net Erosion Control Blanket -Type 3.

    a. North American Green:

        1) DS150 - Double Net Straw Blanket
        2) S150 - Double Net Straw Blanket
        3) S150BN - Double Net Straw-Coconut Blanket
        4) C125BN - Double Net Coconut Blanket

2.7 TURF REINFORCEMENT MAT (TRM)

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.10 (c)

1. Long-Term Turf Reinforcement Mat -Type 4:

    a. North American Green:

        1) C125
        2) P300

2. Permanent Turf Reinforcement - Type 5:

    a. North American Green:

        1) SC250
        2) C350

2.8 TEMPORARY EROSION CONTROL – POLYACRYLAMIDE (PAM)

A. Polyacrylamide (PAM):

1. Anionic type
2. Acrylamide monomer 0.05%
3. Specifically tailored for soil type and water chemistry
4. Granular form
5. Charge density 10 - 55% by weight
6. Conform to all federal, state and local laws, rules, and regulations.
7. Manufacturers:

    a. Applied Polymer Systems, Inc. Model E-Z-PAM™ or acceptable equal

2.9 DITCH CHECK

A. Geotextile triangular dike acceptable to the Landscape Architect.

2.10 SEDIMENT STOP

A. Shall consist of minimum 70% straw fiber 30% coconut fiber with splash aprons.

B. As manufactured by North American Green or approved equal.

2.11 INLET FILTERS

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.15 (h).

2.12 SOURCE QUALITY CONTROL (AND TESTS)

A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

B. Perform tests on cement, aggregates, and mixes to ensure conformance with specified

requirements.

C. Test samples in accordance with ACI 301.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify compacted subgrade and granular base is acceptable and ready to support devices and imposed loads.

C. Verify gradients and elevations of base or foundation for other work are correct.

3.2 EROSION CONTROL INSPECTIONS

A. Comply with erosion control inspections and NPDES requirements.

3.3 SITE STABILIZATION

A. Minimize the amount of disturbed land that is susceptible to erosion.

B. Incorporate erosion control devices indicated as indicated on the Plans at the earliest practicable time.

C. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.

D. Stockpile and waste pile heights shall not exceed 16 feet. Slope stockpile sides at 2:1 (H:V) or flatter.

E. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than seven (7) days.

F. During non-germinating periods, apply mulch at recommended rates.

G. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with permanent seeding specifications

3.4 DIVERSION CHANNELS

A. Windrow excavated material on low side of channel.

B. Compact to 95 percent maximum density.

C. On entire channel area, apply soil supplements and sow seed as specified in Section 32 92 19.

D. Mulch seeded areas with hay as specified in Section 32 92 19.

3.5 ROCK ENERGY DISSIPATOR

A. Excavate to indicated depth of rock lining or nominal placement thickness as follows. Remove loose, unsuitable material below bottom of rock lining, then replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.

NCSA Class	Nominal Placement Thickness inches (mm)
R8	48 (1220)
R7	36 (915)
R6	30 (760)
R5	24 (610)
R4	18 (460)
R3	12 (300)

B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope. Provide a minimum overlap of 3 feet. Offset adjacent roll ends a minimum of 5 feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than four (4) weeks.

C. Carefully place rock on geotextile fabric to produce an even distribution of pieces, with minimum of voids and without tearing geotextile.

D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

3.6 ROCK BASIN

A. Construct generally in accordance with rock energy dissipator requirements to indicated shape and depth. Rock courses may be placed in several operations but minimum depth of initial course must be 3 feet or greater.

3.7 ROCK BARRIER

A. Determine length required for ditch or depression slope and excavate, compact and foundation area to firm, even surface.

B. Produce an even distribution of rock pieces, with minimum voids to the indicated shape, height and slope.

C. Construct coarse aggregate filter blanket against upstream face of rock barrier to the indicated thickness.

3.8 SEDIMENTATION POND

A. Clear and grub storage area and embankment foundation area site as specified in Section 31 10 00.

B. Excavate key trench for full length of dam. Excavate emergency spillway in natural ground.

C. Install pipe spillway, with anti-seep collar attached, at location indicated.

D. Place forms and reinforcing for concrete footing at bottom of riser pipe with trash rack and anti-vortex device, as specified in Section 03 10 00, and Section 03 20 00. Construction of embankment and trench prior to placing pipe is not required.

E. Mix, place, finish, and cure concrete, as specified in Section 03 30 00.

F. Do not use coarse aggregate as backfill material around pipe. Backfill pipe with suitable embankment material to prevent dam leakage along pipe.

G. Construct rock basin at outlet end of pipe, as specified in this Section. Place embankment material, as specified in Section 31 23 23. When required, obtain borrow excavation for formation of embankment, as specified in Section 31 23 23.

H. On entire sedimentation pond area, apply soil supplements and sow seed as specified in Section 32 92 19.

I. Mulch seeded areas with hay as specified in Section 32 92 19.

3.9 SEDIMENT TRAPS

A. Clear site, as specified in Section 31 10 00.

B. Construct trap by excavating and forming embankments as specified in Section 31 23 16, and Section 31 23 23.

C. Place coarse aggregate or rock at outlet as indicated on Drawings.

D. Place geotextile fabric, as specified for rock energy dissipator.

E. When required, obtain borrow excavation for formation of embankment, as specified in Section 31 23 16.

F. On entire sediment trap area, apply soil supplements and sow seed as specified in Section 32 92 19.

G. Mulch seeded areas with straw as specified in Section 32 92 19.

H. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.

I. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.

J. Stockpile and waste pile heights shall not exceed 35 feet (10.7 m). Slope stockpile sides at 2: 1 or flatter.

K. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than seven (7) days.

L. During non-germinating periods, apply mulch at recommended rates.

M. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.10 INSTALLATION

A. Silt Fence: Conform to Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition) - Section 280:

1. Install silt fence in the locations shown on the Plans, using the machine sliced installation method.
2. Post spacing of 5 feet maximum.
3. If necessary, splices will be made at an opposing fence post and according to the manufacturer's specifications.
4. Install following AASHTO Standard Specification M288-00.

B. Temporary Construction Entrance (TCE):

1. Install Temporary Construction Entrance in locations as indicated in Drawings.
2. Construct TCE before grading begins on the Project Site.
3. Inspect TCE and surrounding roadways daily for mud accumulation.

C. Erosion Control Blanket:

1. Comply with manufacturer's requirements.
2. Comply with Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition) Section 251.04.

D. Temporary Erosion Control - Polyacrylamide (PAM):

1. Apply to moist soil.
2. Application rate:

    a. 20-pounds per acre or as recommended by the manufacturer whichever is greater.

3. Apply in accordance with all OSHA requirements and manufacturer's recommendations for the specific use.
4. Apply with broadcast spreader operated and maintained to provide uniform application rates as required.
5. Do not apply directly to water, pond, or stream surfaces.

E. Hydromulch:

1. Comply with Standard Specifications Section 251.04 Method (3).

F. Ditch Check:

1. Comply with manufacturer's installation recommendations

G. Sediment Stop:

1. Comply with manufacturer’s installation recommendations.

3.11 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality RequirementsField inspecting, testing, adjusting, and balancing.

B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.12 CLEANING

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

B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.

C. Do not damage structure or device during cleaning operations.

D. Do not permit sediment to erode into construction or site areas or natural waterways.

E. Clean channels when depth of sediment reaches approximately one half channel depth.

3.13 PROTECTION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Contractor is responsible for inspection, maintenance, and repair of any washouts or accumulations of sediment that occur as a result of the grading or construction. Restoration consists of grade repair, turf re-establishment, and street sweeping of mud and debris tracked from the Project Site.

C. Contractor shall comply with the National Pollutant Discharge Elimination System (NPDES) Phase 2 Storm Water Regulations.

D. Maintain Temporary Construction Entrance in a condition that prevents tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately. Regular street sweeping/cleaning will be required. Provide inspection and perform periodic maintenance after each rain.

E. Damages caused by construction traffic or other activity must be repaired before the end of each working day.

F. If an erosion control device has been reduced in capacity by 1/3 or more, the Contractor shall restore such features to their original condition.

G. Control dust blowing and movement on Project Site and roads as directed by Engineer to prevent exposure of soil surfaces, to reduce on and offsite damage, to prevent health hazards, and to improve traffic safety.

H. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.

I. Do not permit construction traffic over paving for seven (7) days minimum after finishing.

J. Protect paving from elements, flowing water, or other disturbance until curing is completed.

END OF SECTION 31 25 13

SECTION 32 13 13 - CONCRETE PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Aggregate subbase base course.

B. Concrete paving for:

1. Concrete sidewalks.
2. Concrete integral curbs and gutters.

1.2 RELATED SECTIONS

A. Section 31 22 13 - Rough Grading: Preparation of site for paving and base.

B. Section 31 23 23 - Fill: Compacted subbase for paving.

C. Section 32 12 16 - Asphalt Paving: Asphalt wearing course.

D. Section 32 91 19 - Landscape Grading: Preparation of subsoil at pavement perimeter.

E. Section 33 05 13 - Manholes and Structures: Manholes including frames.

F. Section 32 14 13 – Precast Concrete Unit Paving: Unit pavers.

1.3 PRICE AND PAYMENT PROCEDURES

A. Section 01 20 00 - Price and Payment Procedures Contract Sum/Price

B. Aggregate Base Course:

1. Basis of Payment: Includes supplying fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

C. Concrete Paving:

1. Basis of Payment: Includes forms, reinforcing, concrete, accessories, placing, finishing, curing, and testing.

1.4 REFERENCE STANDARDS

A. State Highway Specifications means the “ILLINOIS DEPARTMENT OF TRANSPORTATION, 1.5 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION,” current edition including all supplements.

B. American Association of State Highway and Transportation Officials:

1. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

C. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

D. ASTM International:

1. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
2. ASTM A185/A185M - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
3. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.

4. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
5. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
6. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
7. ASTM A775/A775M - S Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
8. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
9. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
10. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
11. ASTM C33 - Standard Specification for Concrete Aggregates.
12. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
13. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
14. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
15. ASTM C150 - Standard Specification for Portland Cement.
16. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
17. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
18. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
19. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
20. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
21. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
22. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
23. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
24. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
25. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
26. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
27. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
28. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
29. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
30. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
31. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
32. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
33. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
34. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
35. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
36. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.

37. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
38. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.5 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.6 SUBMITTALS

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

B. Product Data:

1. Submit data on concrete materials, joint filler admixtures curing compounds.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and Section 03 10 00, Section 03 20 00, and Section 03 30 00.

B. Obtain cementitious materials from same source throughout.

C. Perform Work in accordance with Standard Specifications

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

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

1.9 AMBIENT CONDITIONS

A. Section 01 50 00 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.

B. Concrete shall not be placed when air temperature is 45 degrees and falling. Placement will be permitted if air temperature is 40 degrees and rising.

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

1.10 PROTECTION

A. Cure all concrete for not less than seven (7) days after placement.

B. Protect all concrete surfaces from sun with water-saturated coverings, white polyethylene sheets or approved membrane curing compounds sprayed on the surface.

C. Concrete pours shall be protected by the Contractor from graffiti or vandalism. Each day's pour shall be guarded until the concrete has obtained sufficient hardness to prohibit malicious damage.

1.11 CONCRETE TESTING

A. The Contractor shall provide empty test cylinders for this project.

B. A total of two (2) test cylinders shall be drawn from the same truck load for every 50 cubic yards of concrete, or two (2) cylinders per each day's pour if less than 50 cubic yards.

C. Test cylinders shall be clearly marked with a date and load ticket number. The Contractor shall protect cylinders and store safely until picked up by testing laboratory.

D. Testing expenses shall be paid for by the Owner.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE

A. Aggregate Base Course: As specified in Section 32 11 23

B. Comply with Standard Specifications Section 1004.

2.2 PORTLAND CEMENT CONCRETE

A. Class X, 6 bag mix, concrete in accordance with State Highway Specifications.

B. Compressive strength of 4000 pounds per square inch after 28 days when tested in accordance with ASTM C39 for curb and gutters, walks, walls, and concrete foundations.

C. Provide a slump between three (3) to four (4) inches max when tested in accordance with ASTM C143.

D. Mix all materials for not less than one (1) minute in controlled time mixers.

E. Redi-mix concrete must be discharged from mixer within one (1) hour after all ingredients are in mixer.

F. No water shall be added to the concrete after it has been transported to the construction site.

2.3 EXPANSION JOINTS

A. Expansion joints shall be ½" bituminous saturated felt or preformed, non-absorbent closed cell polystyrene or butyl foam as recommended by manufacturer of joint sealant.

2.4 JOINT SEALANT

A. Joint sealant shall be polyurethane based elastomeric sealing compound material of the cold applied type in a gray color (or to match color of concrete) equal to rubber caulk #230 manufactured by PRC. Dynoseal W-5-7-G. Manufactured by Williams Products Inc., and TC/900 manufactured by Trenco.

B. The sealing materials shall be delivered to the job site in unbroken original packages bearing the manufacturer's name and brand designation.

2.5 EQUIPMENT

A. All equipment used to perform this work must conform to the IDOT Specification Section 1020.

2.6 CONCRETE PAVING

A. Performance / Design Criteria:

1. Paving: Design for parking light duty commercial vehicles.

B. Form Materials:

1. Form Materials: Conform to ACI 301. As specified in Section 03 10 00.
2. Joint Filler: ASTM D1751; Asphalt impregnated fiberboard or felt,
3. Joint Filler: Pre-molded compressible type;

C. Reinforcement:

1. Reinforcing Steel and Wire Fabric: Type specified in Section 03 20 00.
2. Deformed Reinforcing: Steel: ASTM A615/A615M, uncoated finish.
3. Welded Plain Wire Fabric: ASTM A185/A185M; in coiled rolls; unfinished.
4. Dowels: ASTM A615/A615M; 40 ksi yield strength, plain steel bars; cut to length indicated on Drawings, square ends with burrs removed; unfinished.
5. Tie Wire: Minimum 16 gage annealed type
6. Epoxy Coating Patching Material: Type as recommended by coating manufacturer.

D. Concrete Materials:

1. Concrete Materials: As specified in Section 03 30 00.
2. Provide in accordance with Standard Specifications.

E. Concrete Reinforcing Fibers: ASTM C1116, high strength industrial-grade fibers specifically engineered for secondary reinforcement of concrete. Tensile strength 130 ksi; toughness 15 ksi; 3/4-inch-long fibers, 34 million/lb. fiber count.

F. Water: ASTM C94/C94M; potable.

G. Air Entrainment: ASTM C260:

1. Chemical Admixture: ASTM C494/C494M.

2.7 FABRICATION

A. Fabricate reinforcing in accordance with Standard Specifications.

2.8 ACCESSORIES

A. Curing Compound: Comply with Standard Specifications Article 1020.13.

2.9 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services:

B. Comply with Standard Specifications Section 1020

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Verify compacted subgrade, subbase, and granular base is dry and ready to support paving and imposed loads.

C. Proof roll subbase with loaded 6-wheel dump truck in minimum two perpendicular passes to identify soft spots.

D. Remove soft subbase and replace with compacted fill as specified in Section 31 23 23.

E. Verify gradients and elevations of base are correct.

3.2 PREPARATION

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

B. Moisten substrate to minimize absorption of water from fresh concrete.

C. Coat surfaces of manholes, catch basins, frames and grates with oil to prevent bond with concrete paving.

D. Notify Construction Manager a minimum 24 hours prior to commencement of concreting operations.

3.3 INSTALLATION

A. Base Course:

1. Aggregate Base Course: Install as specified in Section 32 11 23.
2. Prepare base course in accordance with Standard Specifications

B. Forms:

1. Build forms to line and grade with mortar tight joints using good lumber or metal forms properly braced and staked. Oil forms before concrete is poured. Forms may be removed 24 hours after pouring.
2. Place and secure forms and screeds to correct location, dimension, profile, and gradient.
3. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Reinforcement:

1. Place reinforcing as indicated on Drawings.
2. Interrupt reinforcing at expansion joints.
3. Place dowels to achieve paving and curb alignment as detailed.
4. Provide doweled joints at 12-inch spacing at transverse joints with one end of dowel set in capped sleeve to allow longitudinal movement.

D. Placing Concrete:

1. Place concrete in accordance with Standard Specifications.
2. Ensure reinforcing, inserts, embedded parts, and formed joints are not disturbed during concrete placement.
3. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
4. Place concrete to pattern indicated.

E. Joints:

1. Place expansion joints against existing concrete and stationary structures.
2. Install ½ inch expansion joints in walks 30 feet on center every 30 feet using ¾ inch expansion material with standard expansion caps and smooth dowels through each joint
3. Place expansion joints at 30-foot intervals.
4. Align curb, gutter, and sidewalk joints.
5. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/4 inch for sealant installation.
6. Provide scored joints at 5 feet intervals between sidewalks and curbs and between curbs and paving.
7. Tool control joints [3/16] inch wide at an optimum time after finishing. Minimum of ¼-inch total depth NO SAWED JOINTS WILL BE PERMITTED

F. Finishing:

1. Finish curb and gutters smooth by floating, troweling, and edging before brushing surface to secure final surface. Use standard ten (10) foot straight-edge test and correct irregularities over ¼ of an inch.
2. Finish walks and flatwork by floating, steel troweling, scoring, edging, and broom finishing or exposing aggregate by washing where applicable. All walks shall be free from surface defects, leaf fossils imprints of any type. All defects should be replaced at no additional expense to the owner.
3. Construct straight, well-defined score lines (control joints) five (5) feet on center in all work at right angles to walk, extending to 1½ inches depth of the concrete and 1/8 to ¼ of an inch wide. See Concrete Details for special scoring requirements.
4. Score Lines/Control Joints:

    a. Weakened plane control joints for curb and sidewalk shall be constructed at right angles to curb line, with spacing in 5-foot multiples, not to exceed 5 foot for sidewalk and 10 foot for curb.
    b. Control joints may be hand formed with joint depth to be a minimum of ¼” the total depth of the section. No sawed joints will be permitted.

5. Expansion Joints – provide in the following locations

    a. Wherever walks abut vertical surfaces
    b. Curb. Expansions joints shall be constructed at right angles to the curb line with spacing in multiples of 10 feet not to exceed 30 feet. Expansion joints shall also be placed at interface at straight curb and short radius curved sections, interface of new curb with old curb, and both sides of driveway cuts.

6. Walks:

    a. Expansion joints shall be constructed at right angles to the curb line with spacing not to exceed 30 feet.
    b. Expansion joints shall also be placed at interface with straight walk and short radius curved sections, interface of new walk with old walk and both sides of driveway approaches.
    c. Locations as indicated or necessary to prevent shrinkage from cracking concrete.

7. Remove forms carefully to avoid damaging corners and edges of exposed concrete within 24 hours after the concrete has been placed.
8. Broom finish surfaces carefully straight continuous strokes at right angles to direction of traffic, while the concrete is still green. The edges shall be rounded with approved finishing tools having the radii shown on the drawings.
9. Ramp Texture: Wheel chair ramps, where shown, shall be finished with heavier brooming transverse to slope of ramp. Texture must conform to Americans With Disabilities Act guidelines Curing and Protection

G. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

H. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

C. Maximum Variation From True Position: 1/4 inch.

3.5 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

B. Perform field inspection and testing in accordance with Standard Specifications.

C. Inspect reinforcing placement for size, spacing, location, support.

D. Testing firm will take cylinders and perform slump tests in accordance with ACI 301.

E. Strength Test Samples:

1. Sampling Procedures: ASTM C172.
2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
3. Sample concrete and make one set of three cylinders for every 50 cu yds or less of each class of concrete placed each day and for every 5,000 sf (465 sq m) of surface area paving.
4. Make one additional cylinder during cold weather concreting, and field cure.

F. Field Testing:

1. Slump Test Method: ASTM C143/C143M.
2. Temperature Test Method: ASTM C1064/C1064M.
3. Measure slump and temperature for each compressive strength concrete sample.

G. Cylinder Compressive Strength Testing:

1. Test Method: ASTM C39/C39M.
2. Test Acceptance: in accordance with Standard Specifications.
3. Test one cylinder at 7 days.
4. Test one cylinder at 28 days.
5. Dispose remaining cylinders when testing is not required.

H. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.6 CLEANING, PATCHING, AND DEFECTIVE WORK

A. Where concrete is under strength, out of line, level, or plumb, or shows objectionable cracks, honeycombing, rock pockets, voids, spalling, exposed reinforcing or is otherwise defective, and in the Landscape Architects judgment, these defects impair proper strength or appearance of the work, the Landscape Architect will require its removal and replacement at the Contractor's expense.

B. Immediately after stripping and before concrete is thoroughly dry, patch minor defects, form-tie holes, honeycombed areas, etc., with patching mortar. Patch shall match finish of adjacent surface unless noted. No patching is allowed on concrete surfaces to be sandblast finished.

C. Stained or discolored concrete shall be cleaned as directed and approved by the Landscape Architect.

D. Stains or other defects which cannot be removed are subject to correction by removal and replacement at no cost to owner.

3.7 PROTECTION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.

C. Do not permit pedestrian or vehicular traffic over paving for 7 days minimum after finishing.

END OF SECTION 32 13 13

SECTION 32 91 19 - LANDSCAPE GRADING

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Final grade topsoil for finish landscaping.

1.2 RELATED SECTIONS:

A. Section 32 93 00 - Plants: Topsoil fill for trees, plants and ground cover.

1.3 STANDARDS

A. State Highway Specifications means the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," current edition including all supplements.

B. Comply with State Highway Specifications except as noted in this Section.

1.4 REFERENCES

A. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, current edition.

B. American Association of State Highway and Transportation Officials:

C. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures

B. Samples: Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory.

C. Materials Source: Submit name of imported materials source.

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

1.6 QUALITY ASSURANCE

A. Qualifications of Workers: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the types of materials procedures and equipment being used and who shall direct all work performed under this section.

B. Furnish each topsoil material from single source throughout the Work.

C. Perform Work in accordance with Standard Specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil for planting beds and seed turf areas within the construction area created by the site excavation. Subsurface clay material will not be allowed for topsoil use.

B. On-Site Soils

C. All approved soils from cut areas shall be used as fill to fulfill the plan intent.

D. Unsuitable materials (except topsoil) and excess cut when directed in the Bid Proposal and/or Special Conditions shall be removed from the site by the Contractor

2.2 EQUIPMENT

A. Provide and maintain on the job sufficient equipment of the types needed to complete all work in accordance with the requirements of these specifications. Earth moving equipment capable of accomplishing the specified required results may be used

PART 3 - EXECUTION

3.2 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify building and trench backfilling have been inspected.

C. Verify substrate base has been contoured and compacted.

3.3 PREPARATION

A. Protect landscaping and other features remaining as final Work.

B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

3.4 SUBSTRATE PREPARATION

A. Eliminate uneven areas and low spots.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove contaminated subsoil.

C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.5 PLACING TOPSOIL

A. Place topsoil in areas where seeding, sodding, planting, is required to thickness as scheduled. Place topsoil during dry weather.

B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.

C. Remove roots, weeds, rocks, and foreign material while spreading.

D. Manually spread topsoil close to plant material, building, and pavement to prevent damage.

E. Lightly compact placed topsoil.

F. Remove surplus subsoil and topsoil from site.

G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.6 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Top of Topsoil: Plus or minus 1/2 inch.

3.7 PROTECTION OF INSTALLED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Prohibit construction traffic over topsoil.

3.8 SCHEDULES

A. Compacted topsoil thicknesses:
   1. Seeded Grass: 6 inches.
   2. Sod: 4 inches.

3. Shrub Beds: 12 inches.
4. Planter Boxes: To within 3 inches of box rim.

END OF SECTION 32 91 19

SECTION 32 91 19 - TOPSOIL-SELECT FILL MATERIALS AND APPLICATION

PART 1 - GENERAL

1.3 SCOPE

A. The work under this section shall consist of providing all topsoil, labor, material and equipment required to complete the work described herein in strict accordance with the drawings and/or terms of the contract.

B. All work shall be in accordance with applicable manufacturer's instructions.

1.2 RELATED WORK AND PROVISIONS

A. Applicable provisions of Division 1 shall govern all work.

1. Section 31 20 00 – Earthmoving
2. Section 31 25 00 – Erosion Control
3. Section 32 92 19 – Seeding and Sodding

1.3 REFERENCES

A. Where reference is made to the "Construction Specifications", it shall be construed to mean the pertinent section of the Village of Mount Prospect Standard Construction Specifications, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

B. Where reference is made to the "Standard Specifications", it shall be construed to mean the pertinent section of the Standard Specifications for Sewer and Water Construction in Illinois, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

C. Where reference is made to the "State Specifications", it shall be construed to mean the pertinent section of the IDOT Standard Specifications for Highway and Structure Construction, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

1.4 QUALITY ASSURANCE

A. Pre-Work Meeting: Convene a pre-work meeting minimum 30 days prior to commencing work on this Section. Review conditions of operations, procedures and coordination with related work. The pre-work meeting shall be set up as a conference call with the Landscape Architect.

1. Review planting schedule and maintenance.
2. Review required inspections, schedule of topsoil testing, and environmental procedures.

B. Soil-Testing Laboratory Qualifications:

1. Multi-residue Herbicide/Pesticide Screen: A NELAC (National Environmental Laboratory Accreditation Conference) certified independent soil testing laboratory with the experience and capability to conduct the testing indicated based on local conditions.
2. Topsoil Analysis: Independent soil testing laboratory employing a landscape or soil agronomist familiar with the final use of the material and construction practices for large earthwork sites.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Select fill shall be a loamy sand, sandy loam, clay loam, loam, silt loam, sandy clay loam or other soil approved by the owner/architect. It shall not have a mixture of subsoil and shall contain no slag, cinders, stones, lumps of soil, sticks, roots, trash or other extraneous materials larger than 1.5 inches in diameter. Select fill must also be free of viable plants or plant parts of common Bermuda grass, quack grass, Johnson grass, nutsedge, poison ivy, Canada thistle, or others as may be specified. All select fill shall be tested by a reputable laboratory for pH and soluble salts. If needed, pH correction material shall be applied at a rate sufficient to correct the pH to a range of 6.0 to 7.0. Soluble salts shall not be higher than 500 parts per million.

B. No turfgrass sod shall be placed on soil which has been chemically treated until sufficient time has elapsed to permit dissipation of all toxic materials. The general contractor shall assume full responsibility for any loss or damage to turfgrass sod arising from improper use of chemicals or due to his failure to allow sufficient time to permit dissipation of toxic residues, whether or not such materials are specified herein.

C. Topsoil on the existing site may often be used; however, it should meet the same standards as set forth in these specifications.

PART 3 - EXECUTION

3.1 GRADING

A. The select fill shall be uniformly distributed on the designated area(s) and it shall be a minimum of 3 inches deep after firming.

B. No grading shall be done beyond the limits specified within the Grading and Erosion Control Plan.

C. Spreading shall be performed in such a manner that sod installation can proceed with a minimum of additional soil preparation and tillage.

D. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

E. Select fill shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed for seeding.

3.2 CLEAN UP

A. After the select fill has been spread and the final grade approved, it shall be cleared of all grade stakes, surface trash or other objects that would hinder seeding and other plantings.

B. Paved areas over which hauling operations are conducted shall be kept clean and any soil which may be brought upon the surfacing shall be promptly removed.

C. The wheels of all vehicles shall be kept clean to avoid tracking soil on the surfacing of roads, walks or other paved areas.

3.3 ACCEPTANCE

A. Acceptance will be given by the Owner, engineer, or their agent, upon satisfactory completion of each section or area(s), as indicated on the drawings or as otherwise specified.

END OF SECTION 32 91 19

SECTION 32 92 19 - SEEDING LAWNS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fertilizing

B. Seeding

C. Hydroseeding

D. Mulching

E. Maintenance

1.2 RELATED SECTIONS

A. Section 31 22 13 - Rough Grading: Rough grading of site

B. Section 31 23 17 - Trenching: Rough grading over cut

C. Section 32 05 13 - Soils for Exterior Improvements: Topsoil material

D. Section 32 84 00 - Planting Irrigation

E. Section 32 91 13 - Soil Preparation

F. Section 32 91 19 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section

G. Section 32 92 23 - Sodding

H. Section 32 93 00 - Plants

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:

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

1.11 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.

1.12 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 Owner's Representative at no additional cost to the Owner.

1.14 GUARANTEE

A. Guarantee this portion of the through the maintenance period and until final acceptance (see Paragraph 0 of 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.

1.15 MAINTENANCE SERVICE

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

B. Maintain seeded areas for six weeks following seeding or until grass is well established and exhibits vigorous growing condition for two cuttings.

PART 2 - PRODUCTS

2.1 WATER

A. Owner will make water available to the Contractor from existing facilities such as hose bibs and street washers.

B. Contractor to furnish all hose and connections necessary to irrigate the seeded areas.

C. The Owner will assist in acquiring any required Water Meter where larger quantities of water are necessary for hydro-mulching or hydro-seeding where no existing water facilities exist.

D. The cost of water shall be borne by the Owner.

2.2 TOPSOIL

A. Topsoil installed on grade shall attempt to match existing soil texture except for situations where a clay subsoil exists. Where a clay subsoil exists, use loam or silt loam topsoil.

B. Topsoil shall be:

1. Free of stones, lumps, plants, roots and other debris over 1½ inches
2. Free of plants or plant parts of Bermuda grass, quack grass, Johnson grass, mugwort, nut sedge, poison ivy, Canada thistle, or others as specified.
3. Free of any toxic substances harmful to seed germination or plant growth (i.e. pesticide residues).

2.3 FERTILIZER

A. All fertilizers shall be uniform in composition, free flowing and suitable for application with approved equipment.

B. All fertilizer shall be a commercial fertilizer. Fertilizers shall be delivered to the site fully labeled according to applicable State fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer;

C. Fertilizer:

1. General: All fertilizer shall be a commercial balanced 1:2:1 ratio fertilizer delivered to the site in bags labeled with the manufacturer's guaranteed analysis;

a. LEB Country Club 13-25-12 Homogeneous,
b. LEB Pro 15 - 24 - 19 Blend,
c. PAR x 10 - 8 - 22 Blend, or
d. Approved equal.

2.4 LIME

A. Lime material:

1. Ground, pulverized, granular or palletized limestone containing minimum 50% total oxides (i.e., calcium oxide plus magnesium oxide).
2. Minimum of 50% will pass a 100 mesh sieve 98%-100% will pass a 20-mesh sieve

2.3 SEED MIXTURE - TURF GRASS

A. Suppliers:

National Seed
630-417-9056

B. Substitutions: Section 01 60 00 - Product Requirements.

C. Furnish materials in accordance with Standard Specifications.

D. Seed Mixture:

Grass Seed	Percent in Mix	Germ	Orig
Keystone II Perennial Ryegrass	29.82%	94%	CAN
Gator III Perennial Ryegrass	29.56%	94%	CAN
Freedom III Kentucky Bluegrass	19.95%	88%	WA
Rockstar Kentucky Bluegrass	19.88%	88%	WA
Inert Matter	0.79%		

Crop Seed	0.00%		
Weed Seed	0.00%		

2.6 ACCESSORIES

A. Mulching Material:

PennMulch® Seed Accelerator®
Acceptable Manufacturer
Lebanon Seaboard Corporation
1600 East Cumberland Street
Lebanon, PA 17042
www.LebanonTurf.com

B. Water: Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of grass.

2.7 EROSION CONTROL BLANKET

A. A dyed green Aspen wood fiber mat constructed from curled excelsior, of which 80% is 6 inches or longer in length. It shall have a uniform color and consistent thickness, and fibers evenly distributed over the entire blanket. Each blanket shall be covered with a photodegradable, extruded plastic mesh and shall not contain any chemical additives.

1. Weight 1.06 pounds per square yard.
2. North American Green S75, or approved equal.

2.8 EQUIPMENT

A. Seeding equipment to comply with Standard Specifications Section 1101.08 (d) cultipacker for turfgrass seed as specified in Paragraph 0 above.

2.9 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing, inspection, and analysis requirements.

B. Analyze existing topsoil to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

3.2 FERTILIZING

A. Apply fertilizer at application rate recommended by supplier.

B. Apply after smooth raking of topsoil.

C. Do not apply fertilizer at same time or with same machine used to apply seed.

D. Mix fertilizer thoroughly into upper 1 inch of topsoil.

E. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.3 SEEDING

A. Apply seed at rate of 6.8 pounds per 1,000 square feet evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Planting season:

1. Irrigated areas:

a. April 15 to October 1

2. Non-irrigated areas:

a. April 15 to June 15
b. August 1 to October 1.

D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

E. Immediately following seeding apply PennMulch Seed Accelerator at rate of 55 bags per acre. Maintain clear of shrubs and trees.

F. Apply water with fine spray immediately after each area has been mulched. Saturate to 1/2 inch of soil.

3.4 HYDROSEEDING

A. Hydroseeding is not acceptable.

3.5 SEED PROTECTION

A. Cover seeded areas with PennMulch Seed Accelerator at 55 bags per acre.

3.6 MAINTENANCE

A. Mow grass at regular intervals to maintain at maximum height of 2½ inches. DO NOT cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40% higher than desired height.

B. Neatly trim edges and hand clip where necessary.

C. Immediately remove clippings after mowing and trimming. DO NOT let clippings lay in clumps.

D. Water to prevent grass and soil from drying out.

E. Control growth of weeds. Spot treat herbicide applications on an as directed by Owner basis. DO NOT broadcast herbicide applications.

F. Remedy damage resulting from improper use of herbicides.

G. Immediately reseed areas showing bare spots.

H. Repair washouts or gullies.

I. Protect seeded areas with warning signs during maintenance period.

END OF SECTION 32 92 19

SECTION 32 93 00 - PLANTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The landscape contractor shall provide all materials, labor and equipment to complete all landscape work as shown on the plans and specifications.

B. Total number of plants shall be drawn on the landscape plan. The Landscape Contractor shall state the total number of each plant with the contract price. The plant list submitted with the bid will automatically become part of the contract documents. NOTE: If the Contractor bids according to the plant list, he/she should thoroughly check the plant list quantities with the symbols drawn on the plan, to be sure there are no discrepancies

C. Landscaping as defined for this work shall consist of, but not be limited to:
   1. Planting: To consist of digging and preparing plant holes, and of furnishing, transporting, and planting of trees, shrubs and other plant materials.
   2. Other: Work shall also include all incidental operations such as mulching, bracing required, wrapping, care of living plants and replacement of unsatisfactory plants.

1.2 SECTION INCLUDES:

A. Preparation of subsoil and topsoil.

B. Topsoil bedding.

C. Trees, plants, and ground cover.

D. Mulch.

E. Fertilizer.

F. Pruning.

G. Maintenance.

1.3 RELATED SECTIONS:

A. Section 31 23 17 - Trenching: Rough grading over trench cut.

B. Section 31 23 23 - Fill: Rough grading of site.

C. Section 32 05 13 - Soils for Exterior Improvements: Topsoil material.

D. Section 32 91 19 - Landscape Grading

E. Section 32 92 19 - Seeding.

1.4 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction – current edition (Standard Specifications)

B. American National Standards Institute:

   a. ANSI A300 - Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices.
   b. ANSI Z60.1 - Nursery Stock.

C. Forest Stewardship Council:
   a. FSC Guidelines - Forest Stewardship Council Guidelines.

1.5 DEFINITIONS

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

B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.6 SUBMITTALS

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

B. Product Data: Submit list of plant material sources, data for fertilizer and other accessories.

C. Samples and Analysis: When required under “Special Conditions,” samples and certified analysis by a recognized laboratory shall be submitted by the Contractor, at his/her own expense, for approval by the Landscape Architect for topsoil, humus, fertilizer, fungicide, insecticide, tree paint, and anti-desiccant before delivery to the project. Manufacturer’s analysis for standard products will be acceptable to the Landscape Architect.

D. Approval of samples shall not be construed as final acceptance. The Landscape Architect reserves the right to take samples of the materials delivered to the site and analyze them for comparison with the specification. The cost of these tests shall be borne by the Contractor.

E. Planting Schedule: Submit three copies of proposed planting schedule, indicating dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.

1.7 CLOSEOUT SUBMITTALS

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

B. Operation and Maintenance Data: Include pruning objectives, types and methods; types, application frequency, and recommended coverage of fertilizer.

C. Closeout Submittals: Submit maintenance instructions and schedules according to Section 01700 – Contract Closeout.

1.8 QUALITY ASSURANCE

A. Tree Pruning: ANSI A300 Pruning Standards for Woody Plants.

B. Perform Work in accordance with Standard Specifications

C. Qualification of workmen: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the best methods for their installation and who shall direct all work performed under this section.

D. Codes and Reference Standards: All materials shall conform to the standards adopted by and published by the American Nursery & Landscape Association (ANLA).

E. All material shall be balled and burlapped.

F. Standards:
   1. When required herein or as specified under Special Conditions, provide analysis and tests of topsoil, fertilizer and humus in accordance with the requirements of the Association of Official Agriculture chemists.
   2. Plant names used in the plant list are in accordance with “Standardized Plant Names,” published by the American Joint Committee of Horticulture Nomenclature (current edition).
   3. Size and grading standards of plant materials shall be in accordance with the latest edition of “U.S.A. Standard for Nursery Stock” and The American Nursery & Landscape Association.

G. Source Quality Control:
   1. Ship landscape materials with certificates of inspection and analysis. Comply with all regulatory requirements for landscape materials, fertilizer, herbicide and pesticide composition and application.

H. Labeling Requirements:
   1. Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.
   2. Fertilizer shall be labeled with content and manufacturer.
   3. Anti-desiccant shall have original label from manufacturer intact and legible.
   4. Pesticide shall have original label from manufacturer intact and legible.

I. Uniformity:
   1. Where formal arrangements or consecutive order of trees or shrubs are shown, select stock for uniform height and spread.

J. Inspection:
   1. The Landscape Architect may inspect trees and shrubs either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size, and quality. The Landscape Architect retains right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plants immediately from project site.

1.9 SUBSTITUTIONS: PRE-BID

A. It is the Landscape Contractor's responsibility to make every reasonable effort to find the material specified by the Landscape Architect. The Landscape Contractor is responsible for qualifying his/her proposal to document any plant suitability or availability problems. The Landscape Contractor may offer substitutions to the Landscape Architect for his/her consideration. The Landscape Contractor will notify the Landscape Architect if there are known diseases or insect resistant species that can be substituted for a selected pest-prone plant. The Contractor shall submit in a base bid as per plan plus price clarifications for all recommended substitutions.

1.10 SUBSTITUTIONS: POST-BID

A. It is the intent to eliminate post-bid substitutions. However, in the event that the contract material has become unavailable, submit proof of non-availability to the Landscape Architect together with proposal for use of equivalent material. An appropriate substitution must be approved by the owner's representative and the Landscape Architect.

1.11 UTILITIES AND UNDERGROUND FEATURES

A. The Landscape Contractor shall notify J.U.L.I.E. and/or the general contractor in advance of construction to locate utilities.

B. Street lighting and other private utilities, including cable TV, communication lines, etc. shall be located by the owner or general contractor.

C. If there is a conflict with the utilities and the planting, the Landscape Architect shall be responsible for relocating plants prior to the planting process.

D. Underground features including – but not limited to – existing irrigation, septic systems, drain systems, invisible pet fencing, landscape lighting, underground natural gas and security systems shall be located by the owner or general contractor

1.12 CONCEALED CONTINGENCIES

A. The correction of undisclosed subsurface conditions including but not limited to rock, roots, stumps, water, clay pan, soils contaminated with toxic substances or other obstacles encountered in excavation work, which are not apparent at the time of estimating, will result in additional costs to the owner, Upon discovery of undisclosed conditions, the Landscape Contractor shall notify the Landscape Architect in writing regarding any additional costs, before corrective measures are taken. No work shall commence without authorization to proceed.

1.13 DRAINAGE

A. If plants are to be installed in areas that show obvious poor drainage, and the plants are inappropriate for that condition, the Landscape Contractor shall notify the Landscape Architect. If deemed necessary, the plants shall be relocated; the contract shall be adjusted to allow for drainage correction at a negotiated cost, or the plant selection modified by the Landscape Architect to accommodate the poor drainage situation.

1.14 WORKMANSHIP

A. During delivery and installation, the Landscape Contractor shall perform in a professional manner; coordinating his/her activities so as not to interfere unduly with the work of other trades and leaving his/her work area(s) clean of litter and debris at the close of each work day.

B. During planting, all areas shall be kept neat and clean, and precautions shall be taken to avoid damage to existing plants, large trees, turf and structures. Where existing trees are to be preserved, additional precautions should be taken to avoid unnecessary accumulation of excavated materials, soil compaction or root damage.

C. Upon completion, all debris and waste material resulting from planting operations shall be removed from the project and the area cleaned up.

D. Any damaged areas caused by the Landscape Contractor shall be restored to their original condition.

1.15 QUALIFICATIONS

A. Nursery: Company specializing in growing and cultivating plants with three years' experience.

B. Installer: Company specializing in installing and planting plants with five years' experience.

C. Tree Pruner: Company specializing in performing work of this section with minimum three years' experience.

D. Maintenance Services: Performed by installer

1.16 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Transportation:

1. The Contractor shall exercise care to prevent injury and drying out of the plant material.
2. Delivery and Storage:
    a. Deliver all items to the site in their original containers with all labels intact and legible at time of the Landscape Architect's inspection.
    b. Use all means necessary to protect all items before, during, and after installation, and to protect the installed work and materials of all other trades. Deliver plants after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set plants in shade, protect from weather and mechanical damage, keep roots moist by covering with mulch, burlap or other acceptable means of retaining moisture.
    c. Balled and burlapped or container-grown plants may remain on the site only 72 hours prior to being planted or put in storage.
    d. Plants shall be kept moist and protected from freezing. Do not remove from containers until planting time.
    e. Pesticides: Deliver pesticide materials to the site in original unopened containers with legible label indicating Environmental Protection Agency (EPA) pesticides or anti-desiccants with other landscape materials.
    f. Plants: Provide container grown or boxed plants. Do not prune prior to delivery unless otherwise approved by Landscape Architect. Deliver branched plants with branches tied. Do not bend or bind-tie trees or shrubs in such manner as to

damage bark, break branches, or destroy natural shape. Provide protective covering with material that allows air circulation during delivery.

3. Replacements: In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the Landscape Architect and at no additional cost to the owner.
4. Storage of Materials: Fertilizer, humus, and spray materials shall be stored in weatherproof storage areas and in such a manner that their effectiveness will not be impaired.
5. Inspections:
   a. All plants shall be subject to inspection and approval by the Landscape Architect. Plants required for the work may be inspected and tagged at the place of growth before being dug. Inspection and tagging at the place of growth shall not affect the Landscape Architect's right to reject such plants on or after delivery thereof to the site as well as in place.
   b. Prior to the inspection of plant materials by the Landscape Architect, the Contractor shall select and tag with identification numbers, all tree specimen plants, and three (3) or more samples typical to each kind and size of all other plant materials proposed for use in accordance with types and designations as shown on the drawings.
   c. Inspection of plants by the Landscape Architect at the place of growth or upon delivery will be for quality and size. Variety, color, and all other requirements shall be the responsibility of the Contractor. Inspection for size of ball or roots, latent defects and for other requirements will be made at the site during progress of the work by the Landscape Architect.
   d. Tagged samples of plant materials shall be delivered to the site and planted in locations as shown on the drawings, or as designated by the Landscape Architect. These tagged samples shall be maintained, protected, and used as standards for comparison with the plants furnished for the work.
   e. The Contractor shall make a written request to the Landscape Architect five- (5) working days in advance for all inspections at the various nurseries and collecting grounds. This request shall state the location of the nursery or collecting grounds and shall list the particular plants which are to be inspected, as well as the size of such plants.
   f. If the plants and materials, which are required to be inspected by the Landscape Architect, are located outside a radius of fifty (50) miles from the project site, the entire cost of the inspectors will borne and paid for the Contractor.
   g. The Contractor or the Landscape Architect's authorized representative shall be present during all required inspections as specified or as may be required by the Landscape Architect.

6. Digging and Handling of Plant Material:
   a. Plants marked "B&B" on the list shall be balled and burlapped with ball diameters as specified in the USA Standard for Nursery Stock. Container grown nursery stock will be accepted as approved by the Landscape Architect.
   b. NO plant will be accepted when the ball has been cracked or broken in moving, or during the process of planting, or when the burlap and ropes have been removed. All balled and burlapped plants that cannot be planted immediately on delivery shall be set on the ground and the balls well covered with soil or other acceptable mulch material and shall be kept moist until planted.
   c. Plants marked "POT" shall be pot grown with a well-established root system. Diameter spread determines standard inside diameter or pot in which they shall be grown for at least three (3) months prior to delivery.
   d. All plants shall be handled so that the roots are adequately protected at all times. During shipment, all plants shall be properly protected by a tarpaulin or other suitable covering. No plant shall be so bound with rope or wire at any time as to damage the bark, break branches, or destroy its natural shape.

e. Plants shall be properly marked for identification and for checking as designated on the plant list. Each bundle of plants and all separate plants shall have legible waterproof labels securely attached thereto before delivery to the site.

7. Rejection:
   a. All plant material shall be inspected and should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, the Landscape Architect may reject the injured materials.
   b. Plant material damaged as a result of delivery, storage or handling will be rejected.

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

D. Protect and maintain plant life until planted.

E. Deliver plant materials immediately prior to placement. Keep plants moist.

1.17 PROTECTION

A. Protect all planted areas and plants from trespassing by individuals and from damage of any kind until completion of all contract work. If any plants are injured, they shall be treated or replaced as required by the Landscape Architect. No work shall be executed in or over prepared plant areas, or adjacent planting, without proper safeguards and protection.

1.18 WARRANTY

A. The Contractor shall further guarantee that during the period of the guarantee he will make good any defects to the work and all damage caused to the owner's property by such defects or by the work required to remedy such defects.

B. Within this period of the guarantee, replacements of plants or other materials or work shall be made as approved by the Landscape Architect and guaranteed for one (1) year thereafter, excluding bulbs, sod and annuals, commencing on the date of install acceptance. All plants shall be alive and in satisfactory growth at the end of the guarantee period.

C. At any time within the period of the guarantee, the Contractor shall replace any plant which has died or is in a dying condition, or which has failed to flourish in such a manner or is such a degree that its usefulness or appearance has impaired due to inferior or defective materials or workmanship, or unfavorable weather conditions. The decision of the Landscape Architect for making replacements shall be conclusive and binding upon the Contractor. The Contractor shall also make good damage to persons or property caused by defective workmanship or materials.
   1. Any trees, shrubs, or vines found to be unacceptable as described above shall be removed from the site and replaced during the next planting season.
   2. Plant replacements shall be of the same kind and size as specified in the itemized plant list. All plant replacements shall be inspected, furnished, planted and mulched as specified at the Contractor's expense. All sidewalks and other paved areas shall be kept clean at all times.
   3. Where trees are replaced, the Contractor shall be responsible for repairing any damage caused by this replacement to lawns or pavements.

D. During the guarantee period, the Contractor shall, from time to time, inspect the watering, cultivation, and other maintenance operations carried on by the owner, or its agents with respect to such work, and promptly report to the owner any methods, practices or operations which he considers unsatisfactory, and not in accord with the Landscape Architect's interests or good horticultural practices. The failure of the Contractor to so inspect or report shall be construed as an acceptance by him of the owner's maintenance operations, and he shall not thereafter claim or assert that any defects which may later develop are the results of such methods or practices or operations. The Contractor shall have the opportunity, together with the owner, to establish the maintenance program to be followed.

E. Any material that is 25% dead or more shall be considered dead and must be replaced at no

charge. A tree shall be considered dead when the main leader has died back, or 25% of the crown is dead.

F. Perennials shall be guaranteed for one year after initial acceptance.

G. Warranty may be void if proper care, by owner or owner's maintenance contractor, is not maintained.

H. The Landscape Contractor shall be responsible for a one-time replacement only.

I. The Landscape Contractor will not be responsible for plant material that has been damaged by vandalism, fire, removal, relocation, wildlife, theft or other activities beyond the Landscape Contractor's control. Plant losses due to abnormal weather conditions such as floods, excessive wind damage, drought, severe freezing or abnormal rains will in no way be the responsibility of the Landscape Contractor.

J. Existing plant material transplanted shall not be guaranteed unless otherwise stated by the Landscape Contractor

1.19 SITE CONDITIONS

A. Environmental Requirements:
   1. Do not install plants when the ambient temperatures may drop to below 35° degrees F or increase above 90° degrees F.
   2. Do not install plants when wind velocity exceeds 30 mph.

1.20 SEQUENCING AND SCHEDULING

A. Requirements: Coordinate the work of this Section with other site work including installation of underground irrigation system, utilities, piping and watering heads when required.
   1. Landscape Mulch: Shall not be placed until the required water distribution systems and planting operations have been completed within the area.
   2. Planting: Install plants during the normal planting season.

1.21 MAINTENANCE

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

B. Instructions: Submit instructions for continuing maintenance under provisions of Section 01 70 00 – Contract Closeout.

C. Schedule: Begin maintenance immediately after installation of plants and continue maintenance until final acceptance by the Landscape Architect.

D. Maintain plant life for six months after Date of Substantial Completion.

E. Maintain plant life immediately after placement until plants are well established and exhibit vigorous growing condition. Continue maintenance until termination of warranty period.

F. Maintenance includes:
   1. Cultivation and weeding plant beds and tree pits.
   2. Applying herbicides for weed control. Remedy damage resulting from use of herbicides.
   3. Remedy damage from use of insecticides.
   4. Irrigating sufficient to saturate root system.
   5. Pruning, including removal of dead or broken branches.
   6. Disease control.
   7. Maintaining wrapping, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.
   8. Replacement of mulch.

1.22 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.23 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Install plant life after and coordinate with installation of underground irrigation system piping and watering heads specified in Section 32 84 00.

PART 2 - PRODUCTS

2.1 TREES, PLANTS, AND GROUND COVER

A. Plant Species: Provide trees, shrubs, ornamental grasses and ground cover of the size, genus, species, and variety shown on the drawing's tree plant schedule. Plants shall have been grown under climatic conditions similar to those in which they will be installed under this contract.
   1. Furnish nursery-grown plants with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully-branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions and disfigurement.
   2. Plants of a larger size may be used if acceptable to the Landscape Architect with a proportionate increase in size of roots or balls.
   3. Shade trees shall be single-stem trees with straight trunk, well-balanced crown, and intact leader, of size indicated. Branching height shall be ½ of tree height, minimum.
   4. Ornamental trees shall be small upright or spreading type multi-stem trees branched or pruned naturally according to species and type, and with appropriate relationship of caliper, height, and branching.
   5. Deciduous shrubs shall have not less than the minimum number of canes appropriate for the type, shape, and height of shrub.
   6. Broadleaf evergreens shall be normal-quality, well-balanced, of type, height, spread, and shape required.
   7. Groundcovers shall be established and well rooted in removable containers or integral peat pots and with the appropriate number and length of runners for the pot size indicated.

2.2 WATER

A. Water will be furnished to the Contractor by the owner from existing facilities. The Contractor shall furnish all hose and connections necessary for watering plants.

B. The owner will furnish a water meter to the Contractor where larger quantities of water are necessary or where no existing water facilities exist; however the Contractor must obtain the meter from the Owner. The cost of water shall be borne by the owner.

2.3 HUMUS

A. Peat moss of partially decomposed fibrous or cellular stems and leaves of any of several species of sphagnum mosses shall be used, conforming to the following requirements:
   1. Texture and Composition: Texture may vary from porous fibrous to spongy fibrous, and crumbly or compact, but fairly elastic and substantially homogeneous. It shall be free from decomposed colloidal residue, excessive woody materials (roots and stems) and mineral matter such as iron and sulfur. It should be dark brown in color with shredded particles not exceeding ¼ inch in size.
   2. Acidity: pH value not less than 3.2 and not greater than 5.5 at approximately 25 degrees C.
   3. Ash: Based on oven dry weight, the ash content shall not exceed 5%.
   4. Water Holding Capacity: Shall not be less than 800% by weight, on an oven dry basis. When delivered to the site, the moisture content shall be between 35% and 50%.

2.4 FERTILIZER

A. All fertilizer shall be a commercial type fertilizer with the following approximate analysis:

1. Nitrogen…….. 6%
2. Phosphoric Acid……. 24%
3. Potash…… 24%

2.5 SHREDDED HARDWOOD BARK MULCH

A. Shredded bark similar to product called “Pay-Gro,” manufactured by Pay-Gro Division, Mead Corporation, Dayton, Ohio.

B. Shredded hardwood bark mulch shall be free of harmful chemicals, diseases, and insects. Mulch shall have a min. 1/8-inch dimension and a maximum length of 2-1/2”.

2.6 TREE WRAP

A. Burlap for Wrapping: Material for wrapping tree trunks shall be of burlap, first quality, at least eight (8) ounces in weight and six (6) inches in width.

B. Tree wrap for wrapping the trunks shall be either burlap strips, or first quality, 4-inch wide bituminous impregnated tape, corrugated or crepe paper, specifically manufactured for tree wrapping and having qualities to resist insect infestation.

2.7 TREE STAKING AND GUYING (when applicable)

A. Hose: Hose for tree guys shall be new black two-ply fiber-bearing garden hose, not less than ½ inch inside diameter.

B. Wire: Wire for tree guys shall be pliable #10 gauge twisted galvanized annealed steel wire.

C. Stakes: For guying trees shall be 2 inch by 4 inch construction grade lumber, 18 inches long and sharpened at one end.

2.8 TREE PAINT

A. Waterproof, adhesive, and elastic, free from kerosene, coal, tar, creosote, or any other materials injurious to the life of the tree. Tree paint shall contain an antiseptic.

2.9 TREE WATERING BAG

A. Deciduous Trees
   1. Treegator® Original or approved equal
      a. for all deciduous trees up to 8-inch caliper

B. Evergreen Trees
   1. Treegator® Jr. Pro or approved equal
   2. for all evergreen trees with branches more than 6-inches above the ground

2.10 ANTI-DESICCANT

A. An emulsion equal to “Wilt-Pruf,” which will provide a protective film over plant surfaces, permeable enough to permit transpiration. Anti-desiccant shall be delivered in the sealed containers of the manufacturer and shall be mixed and applied according to manufacturer’s instruction.

2.11 INSECTICIDE

A. An all-purpose spray equal to “Malathion” and shall be effective against all types of pests and insects. The spray should be delivered in the manufacturer’s containers and shall be mixed and sprayed according to manufacturer’s instructions.

2.12 FUNGICIDE

A. Fungicide: A dry powder form equal to mixture of 50% “Fermate” and 50% “Ferbem.” Fungicide shall be delivered in manufacturer’s containers and shall be mixed and applied according to the manufacturer’s instructions.

2.13 HERBICIDE

A. Shrub Beds: A granular form herbicide equal to “Ronstar G” as manufactured by Chipco. Apply only as recommended by manufacturer.

B. Groundcover Beds: A granular form herbicide equal to “Treflan” as manufactured by Elanco Products Co., a division of Eli Lilly and Co. Apply only as recommended by manufacturer.

2.14 MUSHROOM COMPOST

A. A 3-inch deep layer of approved mushroom compost will be added to the entire surface area of all mass planting beds. The mushroom compost will be from approved supplier. Contractor will supply product information regarding material properties. Submit sample.

2.15 TOPSOIL

A. All additional topsoil required for planting operations shall be furnished by the Contractor. The topsoil used shall be of the consistency and quality as approved by the Landscape Architect. Topsoil shall be new, fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, bugs, roots, weeds, and stones larger than 2” diameter, stalks, debris, extraneous or toxic matter harmful to plant growth. All such undesirable material shall be disposed of by this Contractor off the premises or as directed by the Landscape Architect.

2.16 PLANTING MIXTURE

A. Soil for planting shall consist of seven (7) parts approved topsoil to one (1) humus with one (1) pound of fertilizer thoroughly mixed into each cubic yard of planting mixture.

2.17 WEED CONTROL

A. Non-Selective, pre-emergent weed control.

2.18 PLANT MATERIALS

A. Planting Stock:
   1. Species: In accordance with Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.
   2. Identification: Label individual plants or each bundle of plants when tied in bundles.
   3. Plants: No. 1 Grade conforming to “American Standard for Nursery Stock” of American Association of Nurserymen (AAN); well-branched, vigorous and balanced root and top growth; free from disease, injurious insects, mechanical wounds, broken branches, decay and other defects.
   4. Trees: Furnish with reasonably straight trunks, well balanced tops, and single leader.
   5. Deciduous plants: Furnish in dormant state, except those specified as container grown.

B. Trees Plants and Ground Cover: Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify prepared subsoil and planters are ready to receive work.

C. Saturate soil with water to test drainage.

D. Verify required underground utilities are available, in proper location, and ready for use.

E. The Contractor shall stake out all plant material locations as per the plans and specifications and gain the Landscape Architects approval of all layout work prior to any excavation for plant holes.

F. Locate all utilities prior to layout work.

G. Any conflicts between plant locations and existing utilities or other site elements shall be called to the attention of the Landscape Architect who will determine alternate locations.

H. Excavation:
   1. Perform all necessary excavations as required for planting operations. Contract prices shall include rock, broken concrete and similar excavations as may be required to fulfill the intent of the plans and specifications.
   2. All excess excavated materials shall be disposed of by the Contractor as desired.

3.2 INSTALLATION

A. Planting Seasons:
   1. Deciduous Plants:
      a. April 1st to June 15th.
      b. October 1st to December 15th.
   2. Evergreen Plants:
      a. April 1st to May 15th.
      b. September 1st to October 1st.

B. The actual planting, however, shall be done during good weather within these time periods to obtain acceptable results. If good weather is present outside the time frame, planting can occur with the approval of the Landscape Architect and Owner.

C. The planting periods designated above may be extended for container grown plants or as weather conditions allow as determined by the Landscape Architect.

D. Pruning, Painting and Spraying:
   1. Each tree and shrub shall be pruned to preserve the natural character of the plant and in a manner appropriate to its particular requirement in the landscape design. In general, at least 1/3 of the wood shall be removed by the thinning or shortening branches, but no leaders shall be cut. Pruning shall be heavier on collected plants and on nursery grown plants. Any sucker growth and broken or badly bruised branches shall be removed with clean cuts.
   2. Prune with sharp tools only. Make all cuts flush and clean; especially where lower branches have been removed from collected trees. Paint all pruning cuts over ¾ inches in diameter with tree paint.
   3. The Landscape Architect must be present to approve any exceptional pruning plants to fulfill a definite purpose. All pruning shall be completed on the site after delivery.
   4. Spraying will be required only as directed when conditions warrant additional protection.

E. Mulching and Herbicide Applications:
   1. All shade trees, ornamental trees, singularly planted shrubs and hedge plantings shall be mulched. The mulch as herein specified shall cover the entire planting pit or trench with a minimum of two (2) inches and not more than three (3) inches in depth.
   2. All massed or bedded plantings will be mulched as specified above Item 1. The entire bed shall be mulched under the plants. In addition, the Contractor shall be responsible for the application of a herbicide as herein specified. Application must follow the manufacturer's directions exactly.
   3. No mulching will be required in groundcover areas or trees planted within pavement areas. No herbicides shall be used on newly established groundcover beds. Once the beds are established, a pre-emergent granular herbicide, Treflan, or equal may be used according to manufacturer's directions on groundcovers that do not die back in winter. NO herbicides may be used on groundcovers that do die back each winter.

F. Wrapping:
   1. All tree trunks of 2-1/2" diameter or larger shall be wrapped with burlap. Wrapping shall start at the base of the tree and extend up the entire trunk to the height of the first branches. Burlap shall overlap the preceding wrap by 3- inches and shall be tied at the top and bottom and at 2- feet intervals with suitable twine.

G. Staking and Guying (where applicable):
   1. All guying and staking shall be done immediately after wrapping. Plants shall stand plumb after staking.
   2. All evergreen trees shall be staked and guyed. Deciduous trees 4- inches and over shall be staked and guyed.
   3. Other trees shall be staked as required by the Landscape Architect in special locations due to the unusual site conditions.
   4. Staking shall be done to conform to the standard landscape construction methods, using a three-point guying procedure with galvanized wires, hosed loops around tree trunks, turn buckles and wooden stakes driven eighteen (18) inches into the ground. Staking of trees in planters shall conform to detail on plan.

H. Watering Bags
   1. Install Treegator® watering bags on all deciduous trees up to 8-inch caliper and all evergreen trees 4-ft high and greater.
   2. Maintain water levels in all watering bags for first growing season.

3.3 SCOPE OF WORK

A. The Landscape Contractor shall be responsible for furnishing and installing all plant material shown on the drawings and plant list, as submitted with the contract. The Landscape Contractor shall have investigated the sources of supply and satisfied himself/herself that he/she can supply all the plants specified on the drawings in the size, variety and quality noted before submitting the bid. Failure to take this precaution will not relieve the successful bidder from the responsibility for furnishing and installing all the plant material in strict accordance with the contract requirements.

3.4 STANDARDS

A. Plants will be in accordance with the current ANLA's standards and conform in general to representative species.
B. Bare Root
   1. Bare-rooted shrubs shall be dug with adequate roots and shall have minimum root spreads as follows:

      Height of Plant:
      18in. 2 ft. 3 ft. 4 ft. 5 ft. 6 ft.

      Minimum Root Spread:
      10 in. 11in 14 in. 16 in. 18 in. 20 in.
   2. Roots shall be protected during handling and planting to guard against drying out and damage.

C. Balled and Burlapped (B&B)
   1. Balled and burlapped plants shall be dug with firm root balls free of noxious weeds. There should be no excess soil on top of the root ball or around the trunk.
   2. Ball sizes shall be in accordance with ANLA Standards.
   3. Caliper and Height Measurement: In size grading B&B single-trunk trees, caliper shall take precedence over height. Caliper of the trunk shall be taken 6" above the ground level (up to and including 4" caliper size) and 12" above the ground level for larger trees. For multiple-trunk trees, height measurement shall take precedence over caliper.

D. Container-Grown Stock
   1. The size of container-grown shrubs is measured by height and width of plant. Container-grown trees are measured by the same standards listed in section 3.02, C.3 above. Herbaceous perennials shall be measured by pot size, not top growth. The root system of container-grown plants shall be well-developed and well-distributed throughout the container.
   2. All container-grown trees and shrubs that have circling and matted roots shall be treated in the following manner prior to planting: using a knife or sharp blade, make 4-5 cuts, 1"

deep, the length of the root ball, to cut all circling roots.

3. All container-grown plants should be grouped and watered daily until they are planted in the landscape. To properly acclimate to new conditions after being planted in the landscape, container material must have ample soil moisture. Until roots penetrate the soil, soil must remain moist. Water twice weekly or at four-day intervals until the equivalent of one inch of rainfall or supplemental irrigation is received.

E. Root control bags – trees and shrubs: Plants grown in root control bags may be slightly larger than root ball sizes identified by ANLA standards. Before transplanting these into the landscape, the geotextile bag must be completely removed from around the root ball, and the tree properly staked. Adequate irrigation is essential to root control bag trees and shrubs.

F. Trees shall be nursery-grown unless otherwise specified. Pruning shall be done before planting or during the planting operations.

G. All plant material in transit shall be covered to keep material from drying out. The covering shall comply with state and local laws pertaining to the transport of materials.

3.5 PLANT MATERIAL INSPECTION

A. Plants may be subject to inspection and approval by the Landscape Architect or owner at the place of growth or holding yard for conformity to specification requirements as to quality, size and variety. It is the Landscape Contractor's responsibility to know his/her sources. The Landscape Contractor shall select plants ahead of inspection visits to prevent rejection of materials delivered to the site. Cost of the inspection visits shall be borne by each individual party.

B. Plants damaged in handling or transportation can be rejected by the Landscape Architect or the owner.

C. Any plant material inspected at the place of growth, accepted and tagged by the Landscape Architect or owner that has not been damaged during transportation, cannot be rejected at the site as long as the tag remains attached to the plant.

D. State nursery inspection certificates shall be furnished to the Landscape Architect upon request.

3.6 PLANT MATERIALS

A. Plant Materials: Nursery grown plants shall mean plants which are healthy, vigorous plants lined out in rows in a nursery and which are annually cultivated, sprayed, pruned and fertilized all in accordance with good horticultural practice as approved by the Landscape Architect. All plants shall be nursery grown unless specified to be collected. All plants shall have grown under climatic conditions similar to those in the locality of the project or have been acclimated to the conditions of the locality for at least two (2) years.

B. All plants shall be freshly dug or container grown. Neither heeled-in plants nor plants from cold storage will be accepted. All nursery grown plants shall have been transplanted or root pruned at least once in the past three- (3) years. Balled and burlapped plants must come from soil which will hold a firm ball.

C. All plants shall be typical of their species or variety, shall have a normal habit of growth, and shall be first quality, sound, healthy vigorous, well branched and densely foliated. They shall be free of disease, insect pests, eggs or larvae.

D. All plants shall conform to the measurements specified in the plant list and shall conform to the U.S.A. Standards for Nursery Stock.

E. All plants and all tree trunks shall be measured when the branches are in their normal position. Dimensions for height and spread as contained herein refer to the main body of the plant and not from branch-tip to branch-tip. The heights of tree trunks need not be as specified if the required height can be obtained by pruning the lower branches without leaving unsightly scars or otherwise damaging the trunk. No pruning of branches to obtain the required height, however, shall be done before the plants are delivered to the site unless so approved in writing

by the Landscape Architect.

F. All trees must have straight trunks with a single leader intact. There shall be no abrasion of the bark, and no fresh cuts of limbs over 1-1/4 inch, which have not completely callused over.

G. Specimen Plants: Whenever specimen plants are called for in the plant list, it shall denote plants of the specified size, symmetrical and full branched on all sides, exceptionally heavy and of uniform size.

H. No substitutions shall be made from the plants specified unless written request is received from the Contractor and permission is granted in writing by the owner.

3.7 PLANTING PROCEDURE FOR TREES

A. PREPARING TREE PIT
1. Walls of tree pit shall be dug so that they are vertical, or sloping outward in heavy soils, and scarified and the bottoms horizontal.
2. The tree pit must be a minimum of 9”-12” larger on every side than the ball of the tree. (Ball diameter plus 24”)
3. The tree pit shall be deep enough to accommodate the ball depth to allow 1/8 of the ball to be above the existing grade. Plants shall rest on undisturbed existing soil or well-compacted backfill.
4. Pits for bare-rooted trees shall only be broad enough to accommodate the roots fully extended and only deep enough so that the uppermost roots will be just below the original grade.
5. If poor drainage is suspected, a percolation test may be required. A twelve-inch wide by eighteen-inch deep hole must be filled with water and eight hours later, the hole should be empty. Sub-drainage may be needed if the hole does not drain properly in eight hours.

3.8 PLACING TREE IN PIT

A. Place the tree in the pit carrying the ball and then lowering it into the pit. Never lift the tree by the trunk or branches.

B. Set the tree straight and in the center of the pit with the most desirable side facing toward the prominent view.

C. For bare-rooted trees, set the tree in the pit so that all roots, when fully extended, will not touch walls of the planting pit and the uppermost root is just below the original grade.

D. All bare rootstock shall be planted in holes large enough to accommodate the full spread of the roots without crowding. Backfill the plant material (approximately ¾ of the hole) with the planting soil mixture and thoroughly water in place. Set all plants plumb and in straight lines when required. All bare root material shall be planted 1-1/2 inches lower than originally planted in the nursery. All material shall be root pruned to remove undesirable root growth and to improve characteristics.

E. Remove containers from all container-grown trees. Slash the edges of the root balls from top to bottom, at least 1” deep. The slashing of roots may not be required for containers pre-treated with copper coating or plants grown in a Cellugro system or in root containment bags.

3.9 BACKFILLING TREE PIT

A. Each site is unique. Soil tests should be used to identify special conditions. Backfill mixture for trees and shrubs shall be ¾ existing soil mixed with ¼ organic material, plus granular fertilizer. If compost is used, omit the granular fertilizer.

B. If any other additives are found to be needed at the time of planting, it shall be with the approval of the Landscape Contractor, Landscape Architect and owner or owner’s representative at an additional negotiated cost.

C. Backfill tree pit with a soil mixture stated in the specifications, except where existing soil is suitable according to soil test results.

D. If trees are to be staked or guyed at the time of installation, you must cut and remove rope or wire off the top 50% of rootball and pull burlap back to the edge of the ball. Remove as much burlap, woven products and twine as possible. All plastic or synthetic film or twine must be removed from the rootball. Cut all twine away from trunk. If trees are not staked at the time of installation, the owner must be notified in writing to remove all rope and burlap from the top of the rootball one year from installation date.

E. The tree must remain straight during backfilling procedure.

F. Thoroughly mix soil amendments, if needed, either prior to filling pit or as pit is being filled.

G. Backfill sides of tree pit halfway with soil mixture and tamp as pit is being filled. Do not over compact top 2/3 of planting mixture.

H. Finish backfilling sides of tree pit and tamp firmly.

I. Never cover top of rootball with soil.

J. Form a saucer above existing grade, around the outer rim of the tree pit, especially on slopes and in heavy soils.

K. Mulch top of root ball and saucer to a minimum depth of 3", not to exceed 3". Do not place mulch against the trunk.

L. Water thoroughly on the interior of the tree saucer until it is filled, even if it is raining. A second watering may be necessary to insure saturation of the root ball and elimination of air pockets. An alternative watering method is to backfill half of the pit, flood the pit and completely backfill afterwards. Slow release watering devices or automatic drip irrigation systems will improve survival.

M. Remove all tags, labels, strings and wire from the tree, unless otherwise directed.

3.10 PLANTING PROCEDURES FOR SHRUBS

A. PLANTING SHRUBS

1. For a single shrub, the pit shall be dug 18 inches wider than the rootball diameter and deep enough to allow 1/8 of the rootball to set above existing grade.
2. For a shrub mass planting, the entire bed area shall be tilled 4-6" deep. Tilling should only be done in moist soil to avoid compaction. If the soil is in clay or silt or loam, organic material should be added. Each shrub pit shall be excavated for the proper setting of the rootball.
3. Place the shrub in the pit by lifting and carrying it by the rootball or container. Remove containers from all container-grown shrubs; slash the edges of the rootball from top to bottom 1: deep. The slashing of roots may not be required for containers pre-treated with copper coating or plants grown in a Cellugro system or in root containment bags.
4. Set the shrub straight and in the center of the pit with the most desirable side facing toward the prominent view.
5. For individual shrub planting, use a backfill mixture except when existing soil is suitable as determined by soil test.
6. The shrub must remain straight during backfilling procedure.
7. Backfill sides of the pit halfway up with soil mixture and tamp as the pit is being filled. Enough planting soil mixture shall be used to bring the surface when settled to the required grade.
8. Cut and remove rope or wire off the top of the rootball and pull burlap back to the edge of the ball. Remove as much burlap, woven products and twine as possible. All plastic or synthetic film or twine must be removed from the rootball. Cut all twine away from trunk.
9. Finish backfilling the sides of the shrub pit and tamp firmly.
10. The grading of the shrub pot shall form a saucer at least 4 inches in depth above the existing grade and completely around the planting pit.
11. Mulch tops of rootball and saucer a maximum depth of 2-inches.
12. Water shrub or shrub mass thoroughly even if it is raining. A second watering may be

necessary to insure saturation of the rootball and elimination of air pockets. An alternative watering method is to backfill half of the pit, flood the pit and completely backfill afterwards. Slow release watering devices or automatic drip irrigation systems will improve survival.

13. Prune out any dead or broken branches. Prune hedge as directed by Landscape Architect.
14. Remove all tags, labels, strings, wire, etc. from the plant unless otherwise directed.

3.11 PLANTING PROCEDURES FOR ALL CONTAINER GROWN TREES & SHRUBS

A. CONTAINER REMOVAL

1. Remove the plant either by cutting or inverting the container.
2. For untreated plastic container-grown plants with circling roots, use a sharp knife to make 4-5 1" cuts the length of the rootball.
3. Plant shrub or tree a minimum of 1/8 of the height of the rootball above existing grade.
4. Apply a 2 to 3" thick layer of approved mulch.
5. Plants grown in root containment bags must have the bags removed during the planting operation. No additional slashing of the rootball is necessary.

3.12 PLANTING PROCEDURES FOR GROUND COVER, PERENNIALS & ANNUALS

A. PREPARING GROUND COVER, PERENNIAL & ANNUAL BEDS

1. The planting bed shall be loosened when the soil is moist prior to planting by tilling. Soil shall be loosened to a depth of 4 to 6-inches.
    a. Organic matter shall be spread over the bed to a depth of 2" for peat moss or 1" deep for compost, i.e., not to exceed 4 cubic yards of compost/1000 square feet, after the soil has been loosened. The organic matter shall then be worked into the bed by tilling
    b. Fertilizer shall be top dressed over bed area (except when compost is applied) based on soil test results. In the establishment stage, liquid fertilizer may be applied to annuals as directed by owner or Landscape Architect.
    c. Mulch entire bed to a minimum depth of 1", 2"maximum, with approved mulch, such as pine fines, pine needles or unscreened compost.

3.13 PLANTING GROUND COVER, PERENNIALS & ANNUALS BEDS

A. Before planting, biodegradable pots shall be split, and non-biodegradable pots shall be removed. Root systems of all potted plants shall be split or crumbled.

B. Excavate all groundcover areas to a depth of 9- inches and replace with 6- inches of topsoil and 3- inches of mushroom manure or well rotted manure thoroughly worked into the total depth of topsoil.

C. The plants, either potted or bare root, shall be installed so that the roots are by soil below the mulch. Potted plants shall be set so that the top of the pot is even with the existing grade. The roots of bare root plants shall be covered to the crown. (Ground cover and perennial excavation shall be minimally the depth of the container plus 8 inches)

D. Spacing of plants shall be installed as noted on the landscape plan or contract.

E. The entire planting bed shall be thoroughly watered.

F. Treat the mulched and planted bed with a pre-emergent, soil-applied herbicide if directed by the owner or Landscape Architect. Apply the pre-emergent herbicide only when all foliage is dry to prevent foliar burn.

3.14 PLANTING PROCEDURES FOR BULBS

A. The planting bed shall be loosened when the soil is moist prior to planting by tilling. Depth of loosening depends on bulb species.

B. Spread Organic matter over the bed to a depth of 2-inches for peat moss or 1-inch deep for compost, i.e., not to exceed 4 cubic yards of compost/1,000 square feet, after the soil has been

loosened. Work organic matter into the bed by tilling.

C. Incorporate fertilizer into the soil, except when compost is used, to the planting depth of perennials and bulbs. The fertilizer rate will be based on the results of the soil test.

D. Do not fertilize annual bulbs.

E. Mulch entire bed to a minimum depth of 2-inches with approved mulch.

3.15 PLANTING BULBS

A. Install bulbs by one of the following methods:
   1. When planting small quantities of bulbs or in crowded areas among other plants:
      a. Dig the bulb planting hole through the mulch with a hand trowel, bulb planter or power auger.
   2. When planting large quantities of bulbs in one area:
      a. Excavate to the recommended planting depth. Set out the bulbs and then cover the bulbs with soil.
   3. Bulbs used as a single season display may be planted at a lesser depth.

B. Plant bulbs so that the basal plate faces down in the planting hole.

C. Space bulbs as noted on the landscape plan or contract.

D. Treat mulched and planted bed with a pre-emergent approved for bulbs.

3.16 OTHER MATERIALS

A. All other materials not specifically described but required for complete and proper completion of the work of this section, shall be as selected by the Contractor subject to the approval of the Landscape Architect.

B. Method:
   1. Prune in such a manner as to preserve the natural growth habit of each plant.
   2. Procedure and percentage of growth to be removed shall be subject to the approval of the Landscape Architect.
   3. All wound surfaces larger than one inch in diameter shall be treated with a commercial pruning compound.

C. Deciduous Trees:
   1. Pruning shall consist of thinning the twigs or branches as indicated by the habit of growth of the species.
   2. Leader and terminal buds shall not be cut unless directed by the Landscape Architect.

D. Deciduous Shrubs:
   1. Cut back rapid growing or suckering shrubs 1/3.
   2. Prune slow-growing shrubs the same manner as deciduous trees.

E. Evergreens
   1. Do not prune evergreens except to remove broken branches.

3.17 MAINTENANCE, CLEAN UP AND ACCEPTANCE

A. Maintenance of Trees, Shrubs, and Groundcovers:
   1. Maintenance shall begin immediately upon completion of all planting and shall continue for sixty (60) days during the period of May 1st to November 1st, weather depending. If subsequent months prove to be warm dry months, the contractor shall continue to water the plant material to ensure proper establishment. Maintenance periods that are incomplete on November 1st shall be completed the following maintenance year unless approved by the Landscape Architect – weather permitting.
   2. During the maintenance period, the Contractor shall water, cultivate, weed, reset, upright, and straighten all plants as required for healthy growth.
   3. The Contractor shall water the plants to receive a 1 (one) inch of water per week. A rain gauge should be placed in the planting to catch both rainfall and irrigation water to verify

the amount of application. Provide sufficient water to saturate root system.

4. The Contractor shall maintain the planting area free from competing weeds. Apply herbicides in accordance with manufactures instructions. Replace plants damaged from use of herbicides.
5. The Contractor shall regularly inspect the planting for insects and diseases, notifying the Landscape Architect of any noted occurrences. Apply pesticides in accordance with manufacturer instructions. Replace plants damaged from lack of pesticides.
6. Trimming and pruning of dead or broken branches, treatment of pruned areas or other wounds, and removal of all debris.
7. After the acceptance of the planting, the Contractor is responsible for settling of the planting beds.
8. Furnish and apply all sprays necessary to correct and protect against disease and insect infestation.
9. Protect all plantings against trespassing, damage, and theft.
10. Protect landscaping from damage due to landscape operations, by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.
11. Maintain by pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and rest plants to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.
12. Maintain all plants until final acceptance following the warranty period.
13. The owner will be responsible for all maintenance requirements for new plantings after this required sixty (60) day period and preliminary acceptance by the owner.

B. Clean Up:

1. Remove from the site, all debris resulting from the work herein specified.
2. All pavements and walks shall be left broom clean.

C. Preliminary Acceptance:

1. There should be a verification of performance for work by contract documents to be conducted by the Landscape Architect or owner's representative on-site and in the presence of the Landscape Contractor, for the purpose of acceptance.
2. Preliminary acceptance shall be given with regard to the completed planting operations for the purpose of the owner assuming the responsibility for maintenance of the project. This preliminary acceptance will be given only after the Contractor has completed all of the requirements as herein specified but will not release the Contractor of his/her responsibilities.
3. The Contractor shall make his/her written notification request for an inspection to determine preliminary acceptance to the Landscape Architect five (5) days in advance.
4. During inspection for initial acceptance, the Landscape Contractor shall have an acceptance form to be signed by the owner or owner's representative.
5. Initial Acceptance: There should be an approval of the work inspected. Acceptance can be on partially completed work under the contract, if approved by the Landscape Architect or owner. If, for reasons beyond the Landscape Contractor's control, work has stopped, inspection shall be made on partially completed work Warranty shall begin after landscape inspection and acceptance. Maintenance after initial inspection and acceptance shall be the responsibility of the owner, unless an optional maintenance contract has been specified.

D. Final Inspection and Acceptance:

1. Upon completion of the guarantee period and all necessary replacement plantings, the Contractor will make their request for final inspection in writing giving a minimum of ten (10) days' notice.
2. Upon completion of the final inspection and the Landscape Architect's approval of the findings, the Landscape Architect will certify to the owner that the project should receive Final Acceptance.

SECTION 33 05 13 - MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Modular precast concrete manhole and structures with tongue-and-groove joints covers, anchorage, and accessories.

B. Bedding and cover materials.

1.2 RELATED SECTIONS:

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 30 00 - Cast-In-Place Concrete: Concrete type for manhole and structures base pad construction.

D. Section 31 05 13 - Soils for Earthwork: Soil for backfill in trenches.

E. Section 31 05 16 - Aggregates for Earthwork: Aggregate for backfill in trenches.

F. Section 31 23 16 - Excavation: Excavating for manholes and structures.

G. Section 31 23 23 - Fill: Backfilling after manhole and structure installation.

1.3 REFERENCES

A. Standard Specifications shall mean the “ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION” current edition including all supplements.

B. American Concrete Institute:
1. ACI 318 - Building Code Requirements for Structural Concrete.
2. ACI 530/530.1 - Building Code Requirements for Masonry Structures and Specifications for Masonry Structures.

C. ASTM International:
1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM C55 - Standard Specification for Concrete Brick.
4. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
5. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
6. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
7. ASTM C497M - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile (Metric).
8. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
9. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
10. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells.

1.4 SUBMITTALS

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

B. Product Data: Submit cover and frame construction, features, configuration, and dimensions.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Standard Specifications.

1.6 QUALIFICATIONS

B. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

1.7 DELIVERY, STORAGE AND HANDLING

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

B. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast manholes and structures.

C. Store precast concrete manholes and structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.

D. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

PART 2 - PRODUCTS

2.1 MANHOLES AND STRUCTURES

A. Manhole and Structure Sections: Reinforced precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C923.

B. Manhole and Structure Sections and Integral Steps:

2.2 FRAMES AND COVERS

A. Product Description: ASTM A48/A48M, Class 30B Cast iron construction, machined flat bearing surface, removable lid.

2.3 COMPONENTS

A. Manhole and Structure Steps: Formed cast iron rungs; as shown on Drawings. Formed integral with manhole and structure sections.

B. Base Pad: Cast-in-place concrete of type specified in Section 03 30 00 or precast leveled top surface.

2.4 CONFIGURATION

A. Shaft Construction: Concentric with concentric or eccentric cone top section; lipped male/female joints.

B. Shape: Cylindrical.

C. Clear Inside Dimensions: As indicated on Drawings.

D. Design Depth: As indicated on Drawings.

E. Clear Cover Opening: As indicated on Drawings.

F. Pipe Entry: Furnish openings as indicated on Drawings.

G. Steps: inches wide, 16 inches on center vertically, set into manhole and structure wall. As indicated on Drawings.

2.5 BEDDING AND COVER MATERIALS

A. Bedding: Fill Type as specified in Section 31 05 16.

B. Cover: Fill Type, as specified in Section 31 05 16.

C. Soil Backfill from Above Pipe to Finish Grade: Soil Type, as specified in Section 31 05 13. Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify items provided by other sections of Work are properly sized and located.

C. Verify built-in items are in proper location, and ready for roughing into Work.

D. Verify correct size of manhole and structure excavation.

3.2 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.

C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

A. Excavation and Backfill:
   1. Excavate for manholes and structures in accordance with Section 31 23 16 in location and to depth shown. Provide clearance around sidewalls of structure for construction operations.
   2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes and structures in dry trench.
   3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.

B. Place base pad, trowel top surface level.

C. Install manholes and structures supported at proper grade and alignment on crushed stone bedding as shown on Drawings.

D. Backfill excavations for manholes and structures in accordance with Section 31 23 16.

E. Form and place manhole and structures cylinder plumb and level, to correct dimensions and elevations.

F. Cut and fit for pipe.

G. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel.

H. Set cover frames and covers level without tipping, to correct elevations.

I. Coordinate with other sections of Work to provide correct size, shape, and location.

3.4 PRECAST CONCRETE MANHOLE AND STRUCTURE INSTALLATION

A. Lift precast components at lifting points designated by manufacturer.

B. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.

C. Set precast structures bearing firmly and fully on crushed stone bedding, compacted in accordance with provisions of Section 31 23 16 or on other support system shown on Drawings.

D. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.

E. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.

Maintain alignment between sections by using guide devices affixed to lower section.

F. Joint sealing materials may be installed on site or at manufacturer's plant.

G. Verify manholes and structures installed satisfy required alignment and grade.

H. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.

I. Cut pipe to finish flush with interior of structure.

J. Shape inverts through manhole and structures as shown on Drawings.

3.5 FRAME AND COVER INSTALLATION

A. Set frames using mortar and masonry. Install radially laid concrete brick with 1/4 inch thick vertical joints at inside perimeter. Lay concrete brick in full bed of mortar and completely fill joints. Where more than one course of concrete brick is required, stagger vertical joints.

B. Set frame and cover at finished grade for manholes and structures with covers located within unpaved areas to allow area to be graded to open grate.

3.6 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Test concrete manhole and structure sections in accordance with ASTM C497.

C. Test cast-in-place concrete in accordance with Section 03 30 00.

D. Vertical Adjustment of Existing Manholes and Structures:

1. Where required, adjust top elevation of existing manholes and structures to finished grades shown on Drawings.
2. Reset existing frames, grates and covers, carefully removed, cleaned of mortar fragments, to required elevation in accordance with requirements specified for installation of castings.
3. Remove concrete without damaging existing vertical reinforcing bars when removal of existing concrete wall is required. Clean vertical bars of concrete and bend into new concrete top slab or splice to required vertical reinforcement, as indicated Drawings.
4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete in accordance with Section 03 30 00.

END OF SECTION 33 05 13

SECTION 33 41 00 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.4 SECTION INCLUDES:

A. Storm drainage piping.

B. Accessories.

C. Underground pipe markers.

D. Catch basins.

E. Cleanouts.

F. Bedding and cover materials.

1.2 RELATED SECTIONS:

A. Section 03 30 00 - Cast-In-Place Concrete: Concrete type for [catch basin] [cleanout] base pad construction.

B. Section 31 05 13 - Soils for Earthwork: Soils for backfill in trenches.

C. Section 31 05 16 - Aggregates for Earthwork: Aggregate for backfill in trenches.

D. Section 31 23 16 - Excavation: Product and execution requirements for excavation and backfill required by this section.

E. Section 31 23 17 - Trenching: Execution requirements for trenching required by this section.

F. Section 31 23 23 - Fill: Requirements for backfill to be placed by this section.

G. Section 33 05 13 - Manholes and Structures.

H. Section 33 46 00 - Subdrainage: Termination of subdrainage tile system for connection to Work of this Section.

1.3 REFERENCES

A. Standard Specifications shall mean the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" current edition including all supplements. (IDOT)

B. All work required under this section shall conform to the applicable requirements of the Standard Specifications for Road and Bridge Construction (IDOT) Standard Specifications.

C. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

D. ASTM International:
   1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
   2. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
   3. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
   4. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
   5. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
   6. ASTM C924 - Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method.
   7. ASTM C969 - Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.
   8. ASTM C1103 - Standard Practice for Joint Acceptance Testing of Installed Precast

Concrete Pipe Sewer Lines.

9. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
10. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
11. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
12. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
13. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
14. ASTM D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
15. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
16. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
17. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
18. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
19. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
20. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.4 SUBMITTALS

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

B. Product Data: Submit data indicating pipe, pipe accessories.

C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

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

1.5 CLOSEOUT SUBMITTALS

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

B. Project Record Documents:
1. Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with Standard Specifications.

1.7 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.8 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate the Work with termination of storm sewer connection outside building, trenching.

1.9 PROTECTION

A. During grading operations, drainage of the area under construction and adjacent areas affected

by the work shall be maintained continuously. If during the course of the construction prosecution is necessary to interrupt existing storm drainage, temporary drainage facilities shall be provided until the permanent drainage work has been completed. Such temporary drainage facilities shall be incidental to the Contract.

PART 2 - PRODUCTS

2.1 STORM DRAINAGE PIPING

A. Comply with Sections 542, 601, 1040, and 1042 of the Standard Specifications.

B. Reinforced Concrete Pipe:
   1. Comply with MWRDGC requirements
      a. C-14 – Joint Spec C-443
      b. RCP C-76 Joint Spec C-443
      c. ACP C-428 Joint Spec. D1869
      d. Inside nominal diameter as shown on Drawings inches bell and spigot ends.
   2. Fittings: Reinforced concrete.
   3. Joints: ASTM C443 rubber compression gasket.

C. Plastic Pipe:
   1. Comply with MWRDGC requirements and as shown on Drawings
   2. ASTM D3034, SDR 26, Poly (Vinyl Chloride) (PVC) material; inside nominal diameter as shown on Drawings. Bell and spigot style rubber ring sealed gasket joint.
   3. 6-inch to 15-inch Dia. SDR 26
   4. Fittings: PVC.
   5. Joints: ASTM D-3034, D-3212 or D-2855.

D. Flexible Pipe
   1. Manufacturers:
      a. Advanced Drainage Systems.
      b. Hancor.
      c. Conwed.
      d. Substitutions: Section 01 60 00 - Product Requirements.

E. Polyvinyl Chloride Pipe: ASTM D2729; SDR 26, diameter as shown on Drawings; with required fittings.

F. High Density Polyethylene (HDPE):
   1. Comply with MWRDGC requirements and as shown on Drawings
   2. ASTM D1248; Type III, Class B (or better) Category 5, Grade P34.
   3. Double wall type; water tight joints diameter as shown on Drawings, with required water tight fittings.

G. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Storm Sewer" in large letters.

H. Storm Sewer Pipe and Drainage Structures: As indicated on the plans and of the type, class, and quality required by the Standard Specifications.
   1. Concrete for Cast in Place Drainage Structures: Shall conform to Section 504 of the IDOT Specification.
   2. Mastic Joint Sealer: Shall conform to IDOT Specification Section 1055.
   3. Trench Backfill: Fine aggregate conforming to Section 208 of the IDOT Specification.

2.2 ACCESSORIES

A. Filter Fabric: Non-biodegradable, non-woven; complying with Standard Specifications Section 282 and 1080.03.

B. Grout: Specified in Section 03 30 00.

C. Mastic Joint Sealer: Shall conform to IDOT Specification Section 1055.

2.3 CATCH BASINS AND DRAINAGE STRUCTURES

A. Drainage Casting: Gray iron or ductile iron castings as required by IDOT Specification Section 1006.15.

B. Catch Basin Lid and Frame:
   1. Construction: Cast iron construction.
   2. Frame Design:
      a. Neenah Foundry R1774 or approved equal
   3. Lid Design:
      a. Neenah Foundry Type D Flat Open Lid or approved equal.

C. Base Pad:
   1. Cast-in-place concrete of type specified in Section 03 30 00.
   2. Precast concrete of type specified in Section 1020 IDOT Standard Specifications

2.4 BEDDING AND COVER MATERIALS

A. Trench Backfill: Fine aggregate conforming to Section 208 and 1003.04 of the Standard Specification.

B. Soil Backfill from Above Pipe to Finish Grade: Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

2.5 EQUIPMENT

A. Shall be in sufficient size and condition in order to readily perform the required work in this section

PART 3 - EXECUTION

1.8 3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

C. Visit site to determine all existing conditions with regard to underground utilities indicated on the plans which may effect the required work.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.

B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 31 23 17 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches compacted depth.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with Standard Specifications Section 601. Seal joints watertight.

B. Excavation:
   1. For Pipe: At locations and to depths indicated. To a minimum of four (4) inches below bottom of the pipe and eighteen (18) inches wider than the external pipe diameter when

depths are five (5) feet or less and 36 inches wider than external pipe diameter when greater than five (5) feet in depth.

2. For Drainage Structures: At locations and to the depth indicated. To a minimum of six (6) inches greater than the external dimension of the structure.
3. Remove all soft and yielding areas encountered within pipe and drainage structure excavations and replace with trench backfill.
4. All excavations cut deeper than required by the plans shall be brought to proper grades with trench backfill at the Contractor's expense.
5. Place pipe on minimum 4 inch deep bed of trench backfill meeting requirements of Standard Specifications Section 208 compacted in accordance with Article 550.07.

C. Lay pipe
1. Commence laying sewer lines at lower end and proceed upgrade.
2. Use laser equipment to control gradient.
3. Give full support to lower 1/3 of each pipe so no pipe bells support the pipe.
4. No pipe joints shall be made under water.
5. Use mastic joint sealer or preformed flexible gaskets in accordance with manufacturer's recommendations.
6. To slope gradients noted on drawings with maximum variation from indicated slope of 1/8 inch in 10 feet.
7. Install aggregate at sides and over top of pipe. Install top cover to minimum compacted thickness of 12 inches, compact to 95% Modified Proctor density.

D. Drainage Structure
1. Install in accordance with the details shown on plan.
2. Masonry units used shall be properly wetted before laying in horizontal courses with broken vertical joints and laid in full mortar joints.
3. Precast reinforced concrete units shall be constructed in horizontal courses with full mortar joints.
4. All concrete for drainage structures shall be placed on compacted subgrades.

E. Backfilling
1. Pipe Trenches
    a. Outside of paved areas can be backfilled with the same materials excavated from the trench.
    b. Within four (4) feet of paved areas or structures shall be backfilled with trench backfill (See Materials).
    c. Initial backfill within twelve (12) inches above tope of pipe shall be placed as soon as conditions will permit. Place in layers not exceeding six (6) inches prior to compaction. Compact around entire pipe by hand or mechanical tampers.
    d. Material above initial backfill shall be placed in twelve (12) inch layers and compacted properly before additional layers are installed.
2. Drainage Structures
    a. Backfill only after masonry work has cured for 48 hours.
    b. Backfill in layers to insure proper compaction.
    c. Give proper support to all inlet and outlet pipes at structures.
    d. All structures within four (4) feet of paved areas shall be backfilled with trench backfill.

F. Refer to Section 31 23 23 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.

G. Refer to Section 33 05 13 for manhole requirements.

H. Install trace wire continuous over top of pipe. above pipe line; coordinate with Section 31 23 17.

I. Connect to subdrainage tile system piping. Refer to Section 33 46 00.

J. Install Work in accordance with Standard Specifications.

3.5 INSTALLATION - CATCH BASINS AND CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place Cast-In-Place Concrete base pad, with provision for storm sewer pipe end sections.

C. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated on Drawings.

E. Install Work in accordance with Standard Specifications

3.6 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

C. Compaction Testing: In accordance with ASTM D1557.

D. When tests indicate work does not meet specified requirements, remove work, replace and retest.

E. Frequency of Compaction Tests: Not less than 1 test every 500 lineal feet of pipe installation.

3.7 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
   1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
   2. Repair or replace pipe that is damaged or displaced from construction operations.

3.8 CLEANING

A. Cleaning drainage structures of construction debris and silt accumulations shall be required prior to final inspection of the work.

END OF SECTION 33 41 00

SECTION 33 46 00 - SUBDRAINAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Retaining wall drainage system.

B. Slab-on-grade drainage system.

C. Filter aggregate and fabric.

D. Bedding.

1.2 RELATED SECTIONS:

A. Section 31 05 13 - Soils for Earthwork.

B. Section 31 05 16 - Aggregates for Earthwork.

C. Section 31 23 16 - Excavation: Excavating for site subdrainage system piping and surrounding filter aggregate.

D. Section 31 23 23 - Fill: Backfilling over filter aggregate.

E. Section 33 41 00 - Storm Utility Drainage Piping: Connection to Storm Sewer system.

1.3 REFERENCES

A. Standard Specifications shall mean the “ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION” current edition including all supplements.

B. ASTM International:
   1. ASTM C412 - Standard Specification for Concrete Drain Tile.
   2. ASTM D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

1.4 SUBMITTALS

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

B. Product Data: Submit data on pipe drainage products and pipe accessories.

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

1.5 CLOSEOUT SUBMITTALS

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

B. Project Record Documents: Record location of pipe runs, connections, cleanouts and principal invert elevations.

C. Operation and Maintenance Data: Procedures for submittals.

1.6 QUALITY ASSURANCE

D. Perform Work in accordance with Standard Specifications.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. Furnish materials in accordance with Standard Specifications Polyvinyl Chloride Pipe: ASTM

D2729; plain end, size as shown on Drawings.

2.2 AGGREGATE AND BEDDING

A. Filter Aggregate and Bedding Materials: Fill Type as specified in Section 31 05 16.

2.3 ACCESSORIES

A. Pipe Coupling: Solid plastic.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with Trench Backfill.

B. Remove large stones or other hard matter which could damage drainage piping or impede consistent backfilling or compaction.

3.3 INSTALLATION

A. Place drainage pipe on clean cut subsoil.

B. Lay pipe to slope gradients noted on Drawings; with maximum variation from indicated slope of 1/8 inch in 10 feet.

C. Place pipe with perforations facing down.

D. Install pipe couplings.

E. Install Trench Backfill at sides, over joints and top of pipe. Install top cover compacted thickness of 12 inches.

F. Place filter fabric over leveled top surface of aggregate cover prior to subsequent backfilling operations.

G. Place aggregate in maximum 8-inch lifts, consolidating each lift.

H. Refer to Section 31 23 23 for compaction requirements. Do not displace or damage pipe when compacting.

I. Connect to storm sewer system with unperforated pipe.

J. Coordinate the Work with connection to municipal sewer utility service, and trenching.

3.4 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION 33 46 00