SPECIFICATIONS

FOR

CHIPPEWA RIVER RESTORATION PROJECT

CITY OF MT. PLEASANT
401 N. Main
Mt. Pleasant, Michigan 48858

March 25, 2002

Prepared by:

WILCOX PROFESSIONAL SERVICES, LLC
One Madison Avenue
Cadillac, Michigan 49601

Wilcox

CHIPPEWA RIVER RESTORATION PROJECT
CITY OF MT. PLEASANT

TABLE OF CONTENTS

SECTION	DIVISION I - BIDDING DOCUMENTS	PAGES
00030	Advertisement for Bids	1-2
00120	Instructions to Bidders	1-3
00300	Proposal Forms (colored paper)	1-3
00400	Statement of Bidders' Qualifications	1-3
00410	Legal Status of Bidder	1-3
00420	Equal Employment Opportunity Statement	1
00430	Contractor's CheckList	1
00450	Insurance, Bond Specifications, and Forms	1-10
00500	Contract Forms	1-2
00510	Notice of Award	1
00520	Notice to Proceed	1
00530	Contractor Change Order Form	1-2
00540	Contractor's Declaration	1
00550	Contractor's Affidavit	1
00560	Request and Certification for Payment	1-3
00700	General Conditions - Standard	1-44
00705	General Conditions - Supplemental	1-16

SECTION	DIVISION II - TECHNICAL SPECIFICATIONS	PAGES
00800	General Specifications	1-8
01025	Measurement and Payment	1-7
02200	Earthwork for Paving	1-6
02230	Site Clearing	1-5
02231	Aggregate Base and Surface Course	1-4
02511	Bituminous Paving	1-4
02930	Topsoil, Seeding, Fertilizer and Mulch	1-6
03300	Cast-In-Place Concrete	1-8
04100	Pedestrian Bridge	1-22
04200	East Dam Repair	1
04300	Repair Mortar	1-4
04400	Riprap and Filter Fabric	1-2
04500	Testing Notification	1
04600	Project Signs	1

DIVISION I – BIDDING DOCUMENTS

Wilcox

SECTION 00030

ADVERTISEMENT FOR BIDS

CHIPPEWA RIVER RESTORATION PROJECT
CITY OF MT. PLEASANT

Sealed proposals for the **Chippewa River Restoration Project**, as noted herein and on the Contract Drawings and Specifications are invited and will be received until 2:00 p.m. on _____, 2002, by a representative of the Department of Parks and Recreation of the City of Mt. Pleasant in the City Office at 401 N. Main, Mt. Pleasant, Michigan 48858. Immediately thereafter, all proposals received will be publicly opened and read aloud.

To be eligible to bid this project, Contractors shall have MDOT Prequalification Level 70E or 70Fa at a minimum. Contractor shall submit evidence of MDOT Prequalification Status and MDOT Form 1300 to the City prior to award of the Contract.

A mandatory pre-bid meeting will be held on _____, 2002 at 1:00 p.m. at the City Department of Parks and Recreation Office.

Bidders shall review and comply with the Instructions to Bidders, which are incorporated by reference, and carefully review all Contract Documents, as defined in the Instructions to Bidders. Bids submitted after the exact time specified for receipt will not be considered.

The approximate major quantities of work involved are as follows:

Items	Quantity	Unit
Mobilization	1	L.S.
Site Preparation	1	L.S.
Silt Fence	950	LFT
Safety Fencing, Barricades, Signage	1	L.S.
Temporary Sheet Piling Cofferdam	1	L.S.
Dewatering	1	L.S.
Demolition	1	L.S.
Clearing and Grubbing	1	L.S.
Excavation	1	L.S.
MDOT Class II Fill	6030	CYD
Sheet Piling (Permanent)	6095	SFT
Filter Fabric-Below Rock Weirs & Riprap	2500	SYD
Field Stone- Rock Weirs	1425	TON
Marker Boulders	20	EA
Field Stone Riprap	1220	TON
6AA or 6AAA Stone	55	TON
50/50 Mix 4AA and 6AA Stone	176	TON
Top Soil over Riprap	300	CYD

Abutment Concrete	20	CYD
Abutment Rebar	2200	LBS
Abutment Piles, 12" CIP	136	VFT
Abutment Anchor Bolts/Railings	1	L.S.
Assemble & Set Pre-Fabricated Bridge	1	L.S.
Bituminous Trail Removal	290	SYD
Temporary Haul Road	1	L.S.
6" MDOT 22A Aggregate Base-Trails	1300	SYD
2" Hot Mix Asphalt, MDOT 13A	1065	SYD
Pea Stone- Canoe Landings	24	CYD
Place Concrete Slabs- Canoe Landings	3	EA
Erosion Control Blanket- Type 1	3040	SYD
Erosion Control Blanket- Type 2	2965	SYD
Restoration	1	L.S.
Pedestrian Bridge	1	L.S.

Plans and Specifications are on file and are available on _____, 2002, at the office of the Department of Parks and Recreation, City of Mt. Pleasant, 401 North Main, Mt. Pleasant, Michigan 48858. A deposit of Fifty dollars ($50.00), non-refundable, will be charged for each set of plans and contract documents. Persons desiring that the plans be mailed overnight should contact the City at (989) 779-5333, and should submit an additional Twenty dollars ($20.00) to cover handling and postage. Contract documents will be sent via United Parcel Service.

Each bid proposal shall be submitted on the proposal forms provided. A certified check, cashiers check or an acceptable bid bond, payable to the City of Mt. Pleasant, for a sum no less than five percent (5%) of the amount of the proposal will be required with each submittal. The Proposal Guarantee shall provide assurance that the bidder will, upon acceptance of the bid, execute the necessary Contract with the City of Mt. Pleasant.

The Owner reserves the right to accept any proposal, to reject any proposal and to waive irregularities in proposals. The successful bidder will be required to furnish satisfactory performance, labor and materials bonds, insurance policies, and to comply with City Charter regarding contracts.

No bid may be withdrawn for a period of sixty (60) calendar days after the scheduled time for the receipt of the proposals.

No interpretations of the meaning of the drawings, specifications, or other Contract Documents will be made to any bidder orally. Every request for such interpretation shall be made in writing addressed to Wilcox Professional Services, LLC, One Madison Avenue, Cadillac, Michigan 49601. In order to be given such consideration, requests must be received at least six (6) days prior to the date fixed for the formal opening of the proposal.

SECTION 00120

INSTRUCTIONS TO BIDDERS

1. PROPOSALS

a) Proposals must be completed legibly in ink or by typewriter and shall include a signature and must be dated.

b) Proposals shall be enclosed in sealed envelopes marked with name of the project and bidder and shall be delivered to the owner as specified in the Advertisement for Bids.

c) Proposals shall be made in full conformity with all the conditions set forth in the drawings and in these specifications. Bids are firm and cannot be withdrawn for a period of sixty (60) days after opening of the bids.

2. INSPECTION OF SITE

a) Before submitting a proposal, each bidder shall personally inspect the site of the proposed work to arrive at a clear understanding of the conditions under which the work is to be done.

b) He/she shall be held to have compared the premises with the drawings and specifications and to have satisfied himself/herself as to conditions of the premises, the existing construction and any other conditions affecting the carrying out of the work, before delivery of his proposal.

c) No allowance or extra consideration on behalf of the Contractor will subsequently be allowed by reason of error or oversight on the part of the Contractor or on account of interference by the Owner's or other Contractor's activities.

3. SOIL CONDITIONS

Each bidder shall personally make his/her own determination as to soil conditions and subsoil conditions along the line of the proposed work. Each bidder shall be held to have determined to his/her own satisfaction the conditions he will encounter in construction of the work, including subsoil conditions, and he shall complete the work in whatever material and under whatever conditions he may encounter or create without extra cost to the Owner.

On request, the Owner will provide each Bidder access to the site or conduct such investigations and tests as each Bidder deems necessary for submission of his/her Bid.

4. TIME OF COMPLETION

This project shall have a calendar completion date. The project shall be completed, including restoration by August 14, 2002. This date assumes that the date of award is on or before MAY 31, 2002. The bidder agrees to pay as liquidated damages the sum of $500 for each consecutive calendar day beyond the required completion date, until the contract has been fulfilled by the Contractor to the satisfaction of the Owner.

5. NAME AND STATUS OF BIDDER

a) The name and legal status of bidder, that is, as a corporation, partnership or individual, shall be stated in the proposal.

b) Any one signing a proposal as an agent of another or others must submit with the proposal legal evidence of his authority to do so.

c) The place of residence of each Bidder, or the office address in the case of a firm or company, with county and state, must be given after his/her signature.

6. SUBCONTRACTORS

Bidder shall perform a minimum of 40% of the contract with the Bidder's own organization. Bidder shall submit to the Owner a list of all major Subcontractors and other persons and organizations (including those who are to furnish principal items of material and equipment) proposed for those portions of work as to which such identification is so required. If requested by Owner, the apparent successful Bidder and any other bidder so requested, will within ten days after the day of Bid opening submit an experience statement with pertinent information as to similar projects and other evidence of qualification for each Subcontractor, person and organization if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, the Owner / Engineer may request the apparent successful Bidder to submit an acceptable substitute without an increase in Bid price. If the apparent successful Bidder declines to make any such substitutions, the Contract shall not be awarded to such Bidder, but his/her declining to make any such substitution will not constitute grounds for sacrificing his/her Bid Security. Any Subcontractor, other person or organization so listed and to whom the Owner or Engineer does not make written objection prior to signing of the Contract will be deemed acceptable to the Owner and Engineer.

7. BONDS

Contractor will be required to furnish performance and payment bonds equal to 100% of the Contract they are awarded. The bonds shall be the Owner's guarantee of the faithful performance and payment of all the Contractor's obligations under the Contract Documents. These bonds shall remain in effect at least until one (1) year after the date of final payment, except as otherwise provided by law.

8. AWARD OF CONTRACT

The Owner reserves the right to accept any Bid, to reject any or all bids, to waive defects or irregularities in any Bid, or to accept or eliminate any portion of any bid.

PRE-CONSTRUCTION MEETING

9. A Pre-Construction Meeting will be held at the City office within seven (7) days after notice to proceed has been issued.

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SECTION 00300

PROPOSAL FOR CONSTRUCTION OF
CHIPPEWA RIVER RESTORATION PROJECT
CITY OF MT. PLEASANT

The undersigned, as bidder, declares that he/she has familiarized himself/herself with the location of the proposed work and the conditions under which it must be performed, and agrees that he/she will contract with the Owner to furnish, at and for the following prices, all materials, labor, equipment and all things necessary to complete the entire work in accordance with the plans, specifications and related documents, which he/she understands and accepts as adequate:

	Items	Quantity	Unit	Unit Cost	Total Cost
1.1	Mobilization	1	L.S.		
1.2	Site Preparation	1	L.S.		
1.3	Silt Fence	950	LFT		
1.4	Safety Fencing, Barricades, Signage	1	L.S.		
1.5	Temporary Sheet Piling Cofferdam	1	L.S.		
1.6	Dewatering	1	L.S.		
1.7	Demolition	1	L.S.		
1.8	Clearing and Grubbing	1	L.S.		
1.9	Excavation	1	L.S.		
1.10	MDOT Class II Fill	6030	CYD		
1.11	Sheet Piling (Permanent)	6095	SFT		
1.12	Filter Fabric-Below Rock Weirs & Riprap	2500	SYD		
1.13	Field Stone- Rock Weirs	1425	TON		
1.14	Marker Boulders	20	EA		
1.15	Field Stone Riprap	1220	TON		
1.16	MDOT 6AA Stone	55	TON		
1.17	50/50 Mix MDOT 4AA & 6AA Stone	176	TON		
1.18	Top Soil over Riprap	300	CYD		
1.19	Abutment Concrete	20	CYD		
1.20	Abutment Rebar	2200	LBS		
1.21	Abutment Piles, 12" CIP	136	VFT		
1.22	Abutment Anchor Bolts/Railings	1	L.S.		
1.23	Assemble & Set Pre-Fabricated Bridge	1	L.S.		
1.24	Bituminous Trail Removal	290	SYD		
1.25	Temporary Haul Road	1	L.S.		
1.26	6" MDOT 22A Aggregate Base-Trails	1300	SYD		
1.27	2" Hot Mix Asphalt, MDOT 13A	1065	SYD		
1.28	Pea Stone- Canoe Landings	31	TON		
1.29	Place Concrete Slabs- Canoe Landings	3	EA		

1.30	Erosion Control Blanket- Type 1	3040	SYD		
1.31	Erosion Control Blanket- Type 2	2965	SYD		
1.32	Restoration	1	L.S.		
1.33	Pedestrian Bridge	1	L.S.		
	Total Bid				

Note: Quantities are not guaranteed. Final payment will be based on actual quantities constructed. Contractor shall notify the City and receive approval in writing prior to incorporating quantities greater than those provided in this bid form.

ATTACHMENTS: The following documents are attached to and made a condition of this Bid:

1. Bid Security in the form of Bid Bond, Certified Check or Cashier's Check (cross out two) in the sum of five (5%) percent of amount bid.
2. Listing of Subcontractors and other persons and organizations required to be identified in the Proposal.
3. Statement of Qualification
4. Name, Address, Legal Status (Section 00400), and Signature of Bidder (Section 00410)

ADDENDUM: Bidder acknowledges receipt of the following addendum:

No._____ Date:_____
No._____ Date:_____
No._____ Date:_____

The bidder hereby declares that he/she has inspected the site of the work and further declares that no charges in addition to the unit prices shall be made on account of it.

If this Proposal is accepted by the Owner, and the undersigned shall fail to contract as aforesaid and to furnish the required surety bonds within fourteen (14) days after being notified of acceptance of his/her bid, then the undersigned shall be considered to have abandoned the contract, and the Certified Check, Cashier's Check or Bid Bond accompanying this Proposal shall be considered due and payable to the Owner.

The undersigned agrees, if awarded the contract, to deliver the executed contract and bonds and furnish evidence of insurance within fourteen (14) days after date of award, to begin work within ten (10) days after written notification of acceptance of executed documents unless otherwise directed by the Engineer. The undersigned agrees, if awarded the contract, that he/she will complete the work including all testing, final cleanup and restoration on or before August 14, 2002.

The Bidder agrees to pay as liquidated damages the sum of $500.00 for each consecutive calendar day beyond the required completion date as herein after provided in the Supplemental Conditions and Specifications.

It is anticipated that the formal notice of contract award will be made on or before May 31, 2002, with the Notice to Proceed to be made on or before June 1,2002. The Notice to Proceed date shall be subject to the Contractor's expeditious handling and return of all contract documents. If there is any delay by the Owner in returning contract documents to Contractor, causing a delay in the formal award date, the above contract completion dates will be extended an equal number of days to compensate for any delay in formal award after May 31, 2002.

If the undersigned enters into the contract in accordance with this Proposal or if their proposal is rejected, then the accompanying bid guarantee shall be returned to the undersigned.

Contractor shall be held responsible for all applicable taxes, including but not limited to sales taxes, use taxes, and City income taxes.

In submitting this bid, it is understood that the right is reserved by the Owner to reject any or all bids, to waive irregularities and/or formalities and, in general, to make award in any manner deemed by it, in its sole discretion, to be in the best interest of the Owner.

SIGNED AND SEALED THIS _____ DAY OF _____, 20_____.

_____
Firm Name

MAILING ADDRESS:

_____
Name

_____

_____
Authorized Signature

_____

_____
Title

TELEPHONE NO._____

TELECOPIER NO._____

SECTION 00400

STATEMENT OF QUALIFICATIONS

Bidder must answer all questions. If more space is needed to complete a question, attach a separate sheet. Bidder may submit any additional information.

Company
Name:_____

Address:_____Phone:_____

_____

_____

Number of years operating under your present name:_____

Bonding Capacity:_____

Bonding
Company:_____Phone:_____

General nature of work performed by your company _____

_____

_____

Background and experience of the principal members of your organization including officers.

_____

_____

_____

_____

_____

_____

Major equipment available for this contract _____

_____

_____

_____

_____

_____

Current Projects:

	Project	Project	Project
Name:	_____	_____	_____
Owner:	_____	_____	_____
Contact Person:	_____	_____	_____
Phone:	_____	_____	_____
Contract Amount:	_____	_____	_____
Completion Date:	_____	_____	_____
% Complete:	_____	_____	_____

Similar Completed Projects:

	Project	Project	Project
Name:	_____	_____	_____
Owner:	_____	_____	_____
Contact Person:	_____	_____	_____
Phone:	_____	_____	_____
Contract Amount:	_____	_____	_____
Date Completed:	_____	_____	_____

Additional information that may be pertinent to demonstrate your ability to complete this project.

_____

_____

_____

_____

_____

Has your company defaulted on a contract? _____

If yes, where and why? _____

_____

_____

_____

_____

_____

I hereby certify that the above answers are correct and true.

By:_____
Name

_____
Signature

_____
Title

Number of additional sheets attached:_____

SECTION 00410

NAME, ADDRESS, LEGAL STATUS AND SIGNATURE OF BIDDER

This proposal is submitted in the name of:

The undersigned hereby designates below his/her business to which all notices, directions or other communications may be served or mailed:

Street _____
City _____
State _____ Zip Code _____

The undersigned hereby declares that he has the legal status checked below:

( ) INDIVIDUAL

( ) INDIVIDUAL DOING BUSINESS UNDER AS ASSUMED NAME

( ) CO-PARTNERSHIP

( ) The Assumed Name of the Co-partnership is registered in the County of , Michigan

( ) CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF _____. The Corporation is

( ) LICENSED TO DO BUSINESS IN MICHIGAN

( ) NOT NOW LICENSED TO DO BUSINESS IN MICHIGAN

The name, titles and home addresses of all persons who are Officers of Partners in the organization are as follows:

NAME AND TITLE	HOME ADDRESS

SIGNED AND SEALED This _____ day of

_____

BY (Signature) PRINTED NAME OF SIGNER

_____

TITLE TELEPHONE NUMBER

LEGAL STATUS OF BIDDER

A Corporation duly organized and doing business under the laws of the State of Michigan, for whom

_____ whose signature is affixed to this Proposal, is duly authorized

to execute contracts.

A Partnership, all members of which, with addresses, are:

_____ _____

_____ _____

_____ _____

_____ _____

An Individual, whose signature is affixed to this Proposal:

_____ _____

SECTION 00420

EQUAL EMPLOYMENT OPPORTUNITY STATEMENT

CITY OF MT. PLEASANT
401 North Main
Mt. Pleasant, MI 48858

Contractor hereby agrees to abide by the following requirements for affirmative action with respect to the work to be performed under this Contract.

1. Contractor shall not discriminate against any employee of applicant for employment because of race, religion, creed, color, national origin or sex and will take affirmative action to prevent such discrimination. Such action shall include but not be limited to the following: employment, up-grading, demotion, transfer, recruitment advertising, layoff, termination, rates of pay or other forms of compensation and selection for training, including apprenticeship.

2. In soliciting or advertising for employees placed by or on behalf of the Contractor, Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, creed, color, national origin or sex. For this purpose it shall suffice to place the words "An Equal Opportunity Employer" in a predominant place at the office of said Contractor.

3. Contractor shall send notice of the City's policy regarding affirmative action to each labor union or representative of workers with which Contractor has any agreement, contract or other understanding.

4. Contractor shall furnish information and reports as requested by the City in accordance with this policy. Contractor shall provide access to his/her employment books, records and accounts to any duly authorized representative of the City in order to allow such representative to ascertain whether of not this policy is being complied with by the Contractor.

The undersigned has examined the requirements herein and is prepared to perform all work in strict accordance with the stipulations contained in the EQUAL EMPLOYMENT OPPORTUNITY STATEMENT.

NAME OF COMPANY _____
ADDRESS _____
CITY, STATE, ZIP _____
TELEPHONE NUMBER _____
AUTHORIZED SIGNATURE _____
TITLE _____
DATE _____

SECTION 00430

CONTRACTOR'S CHECK LIST

This checklist shall be completed by potential contractors. Please check the appropriate response as to whether or not you are familiar with and/or implement the following safety and health programs.

	YES	NO	N/A
1. Familiar with MIOSHA Requirements	[ ]	[ ]	[ ]
2. Are Safety Standards Used Daily	[ ]	[ ]	[ ]
3. Written Safety Program	[ ]	[ ]	[ ]
4. Safety Coordinator	[ ]	[ ]	]
Name _____ Title _____			
5. Michigan Right-to-Know Program	[ ]	[ ]	[ ]
6. Permit Required Confined Space Entry Program	[ ]	[ ]	[ ]
7. Proper Lock Out/Tag Out Program	[ ]	[ ]	[ ]
8. First Aid Personnel on Site	[ ]	[ ]	[ ]
9. Emergency Preparedness Plan	[ ]	[ ]	[ ]
10. Fire Safety and Suppression Plan	[ ]	[ ]	[ ]
11. Personal Protective Equipment Used	[ ]	[ ]	[ ]
12. Auto Safety			
a. MVR Checks	[ ]	[ ]	[ ]
b. CDL Certification	[ ]	[ ]	[ ]
13. Proper MDOT Roadway Procedures	[ ]	[ ]	[ ]
14. Proper Trenching/Excavation Standards	[ ]	[ ]	[ ]
15. Preventive Maintenance Program	[ ]	[ ]	[ ]
16. Process Safety Management of Highly Hazardous Chemicals (when applicable)	[ ]	[ ]	[ ]

I attest that the above responses are true to the best of my knowledge.

Witness _____

_____
Contractor or Representative

Date _____

_____
Title

_____
Dated

_____
State Contractor License Number

SECTION 00450

INSURANCE SPECIFICATIONS

1. LIABILITY OF CONTRACTOR

The Contractor shall take all responsibility for the work and shall provide barricades, watchmen and lights, and take all precautions for preventing injuries to persons and property on or about the work; shall bear all losses resulting to him/her on account of the amount or character of the work or because of the nature of the ground in which the work is done is different from what was estimated or expected, or on account of weather, floods, elements or other cause; and shall assume defense of, indemnify and save harmless the party of the first part and its individual officers and agents from all claims relating to labor, equipment and materials furnished for the work, inventions, patents and patent rights used in doing the work, also to injuries to any person or property received or sustained by or from the Contractor, his/her agents or employees.

The mention of any specific duty or liability of the Contractor in any part of the specifications shall not be construed as a limitation of restriction upon any general liability or duty imposed upon the Contractor by the specifications.

INDEMNIFICATION - HOLD HARMLESS AGREEMENT

"The Contractor agrees to indemnify, defend, and save harmless the Owner and Engineer, their consultants, agents, and employees, from and against all loss or expense (including costs and attorney's fees) by reason of liability imposed by law upon the Owner and Engineer, their consultants, agents, and employees for damages to property and for damages because of bodily injury, including death at any time resulting therefrom, arising out of or in consequence of the performance of this work, whether such injuries to persons or damage to property is due, or claimed to be due, to the negligence of the Contractor, his/her Subcontractors, the Owner, the Engineer, and their consultants, agents, and employees <u>except</u> only such injury or damage as shall have been occasioned by the sole negligence of the Owner, the Engineer, and their agents and/or consultants."

COMPOSITION OF THE CONTRACTOR

If the Contractor hereunder is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

2. INSURANCE

2.1 Insurance Required of the Contractor

Prior to commencement of the work, the Contractor shall purchase and maintain during the term of the project such insurance as will protect him, the Owner(s) and Wilcox Associates, Inc., from claims arising out of the work described in this contract

and performed by the Contractor, Subcontractor(s) or Sub-subcontractor(s) consisting of:

2.1.1 Workers' Compensation Insurance including Employer's Liability to cover employee injuries or disease compensable under the Workers' Compensation Statutes of the states in which the work is conducted under this contract; disability benefit laws, if any; or Federal compensation acts such as U.S. Longshoremen or Harbor Workers', Maritime Employment, or Railroad Compensation Act(s), if applicable. Self-insurance plans approved by the regulatory authorities in the state in which work on this project is performed are acceptable.

2.1.2 A Comprehensive General Liability policy to cover bodily injury to persons other than employees and for damage to tangible property including loss of use thereof, including the following exposures.

a. All premises and operations.

b. Explosion, collapse and underground damage.

c. Contractor's Protective coverage for independent contractors or subcontractors employed by him/her.

d. Contractual Liability for the obligation assumed in the Indemnification or Hold Harmless agreement found under Part I of this Section.

e. The usual Personal Injury Liability endorsement with no exclusions pertaining to employment.

f. Products and Completed Operations coverage. This coverage shall extend through the contract guarantee period.

2.1.3 A Comprehensive Automobile Liability policy to cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned and hired vehicles. In light of standard policy provisions concerning (a) loading and unloading, and (b) definitions pertaining to motor vehicles licensed for road use vs. unlicensed or self-propelled construction equipment, it is strongly recommended that the Comprehensive General Liability and the Comprehensive Auto Liability be written by the same insurance carrier, though not necessarily in one policy.

2.1.4 The Contractor will purchase for the Owner an Owner's Protective Liability policy to protect the Owner; the Engineer (Wilcox Associates, Inc.); their consultants, agents, employees and such public corporations in whose jurisdiction the work is located for their contingent liability for work

performed by the Contractor, the Subcontractor(s) or the Sub-subcontractor(s) under this contract.

2.1.5 The contractor shall purchase a Builder's Risk-Installation Floater in a form acceptable to the Owner covering property of the project for the full cost of replacement as of the time of any loss which shall include, as named insured, (a) the Contractor, (b) all Subcontractors, (c) all Sub-subcontractors, (d) the Owner, and (e) Wilcox Associates, Inc., Consulting Engineers, as their respective interests may prove to be at the time of loss, covering insurable property which is the subject of this contract, whether in place, stored at the job site, stored elsewhere, or in transit at the risk of the insured(s). Coverage shall be effected on an "All Risk" form, including but not limited to the perils of fire, wind, collapse, vandalism, theft and earthquake, with exclusions normal to the cover. The Contractor may arrange for such deductibles as he deems to be within his/her ability to self-assume, but he will be held solely responsible for the amount of such deductible and for any co-insurance penalties. Any insured loss shall be adjusted with the Owner and Contractor and paid to the Owner and Contractor as Trustee for the other insured.

2.1.6 Umbrella or Excess Liability

The Owner or its representative may, for certain projects, require limits higher than those stated in Paragraph 2.2 which follows. The Contractor is granted the option of arranging coverage under a single policy for the full limit required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy equal to the total limit(s) requested. Umbrella or Excess policy wording shall be at least as broad as the primary or underlying policy(ies) and shall apply both to the Contractor's general liability and to his/her automobile liability insurance.

2.1.7 Railroad Protective Liability

Where such an exposure exists, the Contractor will provide coverage in the name of each railroad company having jurisdiction over rights-of-way across which work under the contract is to be performed. The form of policy and the limits of liability shall be determined by the railroad company(ies) involved.

2.2 Limits of Liability

The required limits of liability for insurance coverage requested in Section 2.1 shall be <u>not less than</u> the following:

2.2.1 Worker's Compensation

Coverage A - Compensation	Statutory
Coverage B - Employer's Liability	$ 100,000

2.2.2 Comprehensive General Liability

Bodily Injury - Each Occurrence	$ 500,000
Bodily Injury - Aggregate (Completed Operations)	$ 500,000
Property Damage - Each Occurrence	$ 100,000
Property Damage - Aggregate	$ 500,000
or combined single limit	$1,000,000

2.2.3 Comprehensive Automobile Liability

Bodily Injury	$ 500,000
Property Damage	$ 200,000
or combined single limit	$1,000,000

2.2.4 Owner's Protective

Bodily Injury - Each Occurrence	$1,000,000
Property Damage - Each Occurrence	$ 250,000
Property Damage - Aggregate	$ 500,000
or combined single limit	$1,500,000

2.2.5 Builder's Risk-Installation Floater	Cost to replace at time of loss
2.2.6 Umbrella or Excess Liability	$2,000,000

2.3 Insurance - Other Requirements

2.3.1 Notice of Cancellation or Intent Not to Renew

Policies will be endorsed to provide that at least 30 days written notice shall be given to the Owner and the Engineer of cancellation or of intent not to renew.

2.3.2 Evidence of Coverage

Prior to commencement of the work, the Contractor shall furnish to the Owner, Certificates of Insurance in force on the Owner's Form of Certificate provided. Other forms of certificate are acceptable only if (1) they include all the items prescribed in the Owner's Form of Certificate, including agreement to cancellation provisions outlined in Paragraph 2.3.1 above, and (2) they have the written approval of the Owner and Engineer. The Owner reserves the right to request complete copies of the policies if deemed necessary to ascertain details of coverage not provided by the certificates. Such policy copies shall be "Originally Signed Copies", and so designated.

A. Insurance Required for the Contractor

1. Workers' Compensation and Employers' Liability Comprehensive General Liability, including:

   a. All premises and operations.

   b. Explosion, collapse, and underground damage.

   c. Contractors' Protective.

   d. Contractual Liability for obligations assumed in the Indemnification-Hold Harmless agreement of this contract.

   e. Personal Injury Liability.

   f. Products and Completed Operations.

2. Comprehensive Automobile Liability, including owned, non-owned, and hired vehicles.

3. Umbrella or Excess Liability.

B. Insurance Required for the Owner

Owners' Protective Liability which names as additional insured(s) the Owner; the Engineer, Wilcox Professional Services, LLC; their consultants, agents, employees and such public corporations in whose jurisdiction the work is located.

C. Insurance Required for the Contractor and the Owner Builders Risk-Installation Floater which names as insured(s) the Owner; the Engineer, Wilcox Professional Services, LLC; their consultants, agents and employees; the Contractor and all Subcontractors.

2.3.3 Qualification of Insurers

In order to determine the financial strength and reputation of insurance carriers, all companies providing coverage required shall be licensed or approved by the Insurance Bureau of the State of Michigan and shall have a financial rating not lower than XI and a policyholder's service rating no lower than B+ as listed in A.M. Best's Key Rating Guide, current edition. Companies with ratings lower than B+:XI will be acceptable only upon the written consent of the Owner.

3. BONDS

3.1 CONTRACT SECURITY

The Contractor shall furnish a surety bond (form attached) in an amount at least equal to 100 percent of the contract price as security for faithful performance of this contract. The Contractor shall also furnish separate surety bond (from attached) in an amount at least equal to 100 percent of the contract price as security for payment of all persons performing labor on the project under this contract, and furnishing materials in connection with this contract. The surety on each such bond shall be a duly authorized surety company satisfactory to the Owner.

In case the Owner is a public entity, the two above bond forms shall be executed; but in case the Owner is other than a public entity, a single type bond (form attached) shall be executed.

The Contractor shall furnish a Maintenance and Guarantee Bond (form attached) covering all work under this contract. The guarantee is to cover a period of one (1) year subsequent to the date of final payment unless otherwise specified.

Should any surety upon any bond furnished in connection with this contract become unacceptable to the Owner, or if any such surety shall fail to furnish reports as to his financial condition from time to time as requested by the Engineer, the Contractor must promptly furnish such additional security as may be required from time to time by the Engineer to protect the interests of the Owner or persons supplying labor or materials in the prosecution of the work contemplated by the contract.

MAINTENANCE AND GUARANTEE BOND

KNOW ALL MEN BY THESE PRESENTS, That _____

_____, as Principal, and _____

_____, as Surety, are held firmly bound unto _____

_____($_____) good and lawful money of the

United States of America, to be paid to said _____, its legal representatives and assigns, for which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, and each and every one of them jointly and severally, firmly by these presents.

Sealed with our seals and dated this _____day of _____ A.D., 20____, wherein the said Principal covenanted and agreed as follows, to-wit:

_____

_____

_____

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, That by and under said contract, the above named Principal has agreed with the _____ that for a period of _____ year(s) from date of payment of Final Estimate, to keep in good order and repair any defect in all work done under said contract either by the Principal or his Subcontractors, or his/her material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship or arrangements, and any other work affected in making good such imperfections, shall also be made good all without expense to the Owner, excepting only such parts or part of said work as may have been disturbed without consent or approval of the Principal after final acceptance of the work, and that whenever directed to so do by the _____ by notice served in writing, either personally or by mail, on the Principal at_____OR_____legal representatives, or successors, or on the Surety at_____ WILL PROCEED at once to make such repairs as directed by said_____; and in case of failure so to do within one week from the date of service of such notice, or within reasonable time not less than one week, as shall be fixed in said notice, then the said_____ _____ shall have the right to purchase such materials and employ such labor and equipment as may be necessary for the purpose, and to undertake, do and make such repairs and charge the

expense thereof to, and receive same from said Principal or Surety. If any repair is necessary to be made at once to protect life and property, then and in that case, the said_____ _____ may take immediate steps to repair or barricade such defects without notice to the Contractor. In such accounting the said _____ shall not be held to obtain the lowest figures for the doing of the work or any part thereof, but all sums actually paid therefore shall be charged to the Principal or Surety. In this connection the judgment of the _____ is final and conclusive. If said Principal for a period of _____ year(s) from the date of payment of the Final Estimate shall keep said work so constructed under said contract in good order and repair, excepting only such part or parts of said work which may have been disturbed without the consent or approval of said Principal after the final acceptance of same, and shall whenever notice is given as hereinbefore specified, at once proceed to make repair as in said notice directed, or shall reimburse the said _____ for any expense incurred by making such repairs, should the Principal or Surety fail to do as hereinbefore specified, and shall fully indemnify, defend and save harmless the said Principal and Wilcox Professional Services, LLC, from all suits and actions for damages of every name and description brought or claimed against it for or on account of any injury or damage to person or property received or sustained by any party or parties, by or from any of the acts or omissions or through the negligence of said Principal, servants, agents or employees, in the prosecution of the work included in said contract, and from any and all claims arising under the Workman's Compensation Act, so-called, of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this _____ day of _____, A.D., 20_____.

Signed, Sealed and Delivered
in the Presence of:

_____ _____

_____ _____

Principal

_____ _____

Surety_____

PAYMENT BOND

KNOW ALL MEN/WOMEN BY THESE PRESENTS, That we _____

_____

_____

of the _____, hereinafter called the Principal, and _____

_____

_____,

hereinafter called the Surety, are held and firmly bound unto the People of the State of Michigan in the sum of _____

_____ Dollars ($_____) to the payment whereof, well and truly to be made, we bond ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals, and dated this _____day of _____ A.D. 20_____.

WHEREAS, The above named Principal has entered into a contract with the _____ dated the _____ day of _____, A.D. 20_____, wherein said Principal has covenanted and agreed as follows, to-wit:

To furnish all the labor and material _____

_____

_____

AND WHEREAS, This bond is given in compliance with and subject to the provisions of Act No. 187 of the Public Acts of Michigan for 1905, as amended by Act No. 384 of the Public Acts of Michigan for 1925, and Act No. 167 of the Public Acts of Michigan for 1927, and as may be amended by other Public Acts of Michigan.

NOW, THEREFORE, The condition of this obligation is such that if payment shall be made by Principal to any Subcontractor or by him/her or any Subcontractor as the same may become due and payable of all indebtedness which may arise from him/her to a Subcontractor or party performing labor or furnishing materials or supplies or any

Subcontractor to any person, firm, or corporation on account of any labor performed or materials or supplies furnished in the performance of said contract, then this obligation shall be void; otherwise, the same shall be in full force and effect.

AND PROVIDED, That any alterations which may be made in the terms of said contract, or in the work to be done under it, or the giving by the party of the first part to said contract, of any extension of time for performance of said contract, or any other forbearance on the part of either party to the other, shall not in any way release the Principal and Surety, or either of them, their heirs, executors, administrators, successors or assigns from any liability hereunder, notice to the Surety of any such alteration, extension, or forbearance being hereby waived.

_____

_____

_____

Principal

_____

_____

_____

Surety

Signed, Sealed and Delivered
in the Presence of:

_____

_____

_____

SECTION 00500

CONTRACT

ARTICLES OF AGREEMENT, made and entered into this _____ day of _____, 20____ by and between the City of Mt. Pleasant Party of the first part, and _____ of the City of Mt. Pleasant, County of Isabella and State of Michigan, party of the second part, to-wit:

(1) That all proposals, specifications, plans, bonds, etc., hereto attached or herein referred to, shall be and are hereby made a part of this agreement and contract.

(2) That the party of the second part, under penalty of bond attached, shall furnish all labor, materials, and appliances necessary, and do all the work as set forth in the proposal: **CHIPPEWA RIVER RESTORATION PROJECT.** According to the specifications, plans, etc., which have been made a part of this contract in a manner, time and place, all singular, as herein set forth.

IN CONSIDERATION WHEREOF, said party of the first part, for it and its successors, promises and agrees to pay to said party of the second part, the following sum as provided in the attached proposal:_____ for completion of the above project in accordance with the specifications, plans, etc., all in the time and manner therein provided.

For the faithful performance of all and singular of the stipulations, terms and conditions of this agreement, said parties respectfully bind themselves, their successors, heirs, executors, administrators and assigns.

IN WITNESS WHEREOF, said parties have hereunto set their hand and seals, in duplicate, the day and year first above written.

WITNESS:

City of Mt. Pleasant
Party of the First Part

_____

By: _____
Michael R. Pittsley, Mayor

WITNESS:

_____
Party of the Second Part

_____

By: _____

_____

SECTION 00510

NOTICE OF AWARD

To: _____

_____

_____

Project Description: **CHIPPEWA RIVER RESTORATION PROJECT** The OWNER has considered the BID dated _____, 20___ submitted by you for the above described WORK in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your BID has been accepted for items in the amount of _____.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance within fifteen (15) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS and Insurance Certificates within fifteen (15) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

Three (3) unsigned counterparts of the Agreement with Bond and Insurance Requirements are attached to this Notice.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 2002.

City of Mt. Pleasant
Owner

By: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

_____, this ____ day of _____, 20____.

By: _____ Title:

SECTION 00520

NOTICE TO PROCEED

To: _____ Date: _____

_____

_____

Project: **CHIPPEWA RIVER RESTORATIN PROJECT**

You are hereby notified to commence WORK in accordance with the Agreement dated _____ , 20_____ , on _____, 20_____.

The WORK will be totally completed within _____ consecutive calendar days. The date of total completion is therefore _____.

City of Mt. Pleasant
Owner

By: _____
Greg Baderschneider
Director of Parks, Buildings and Grounds

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by,

_____ this _____ day of _____ , 20__.

By:

Title:

RECOMMENDATION AND AUTHORIZATION FOR:

☐ CHANGES IN CONTRACT ☐ ADJUSTMENT TO CONTRACT
☐ EXTRA TO CONTRACT ☐ EXTENSION OF TIME

SHEET
OF

JOB NO.:	CONTRACTOR:	RECOMMENDATION NO.	DATE
CONTRACT FOR: CHIPPEWA RIVER RESTORATION PROJECT		CLIENT:	

ITEM OF WORK, STATUS OF QUANTITY AND DESCRIPTION - LOCATION - REASON (Insert Extension of Time Date)	UNIT USED	EST. QUANTITIES + Increase - Decrease	UNIT PRICE	AMOUNT INCREASE	AMOUNT DECREASE
SUBCONTRACTORS			TOTALS		
If authorized, the contractor agrees to do the work outlined above under the direction of the Engineer, and accept as payment in full the basis of payment as indicated.			NET		

CONTRACTORS NAME:		PREPARED BY ENGINEER: Wilcox Professional Services, LLC	
CONTRACTORS SIGNATURE	DATE	AUTHORIZATION BY ENGINEER	DATE
You are authorized and instructed as the contractor to do the work described herein in accordance with the terms of your contract.		OWNER: City of Mt. Pleasant	
☐ APPROVED ☐ NOT ELIGIBLE ☐ SEE LETTER DATED		AUTHORIZATION OF OWNER SIGNATURE	DATE

P:\PROJECTS\2001\200\2001-250\SPECIFICATIONS\CHANGEOR.DOC

RECOMMENDATION AND AUTHORIZATION FOR:

☐ CHANGES IN CONTRACT ☐ ADJUSTMENT TO CONTRACT SHEET
☐ EXTRA TO CONTRACT ☐ EXTENSION OF TIME OF

JOB NO.	CONTRACTOR:	RECOMMENDATION NO.	DATE
CONTRACT FOR:CHIPPEWA RIVER RESTORATION PROJECT		CLIENT:	

ITEM OF WORK, STATUS OF QUANTITY AND DESCRIPTION - LOCATION - REASON (Insert Extension of Time Date)	UNIT USED	EST. QUANTITIES + Increase - Decrease	UNIT PRICE	AMOUNT INCREASE	AMOUNT DECREASE

SECTION 00540

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____ to _____, performed any work, furnished any material, sustained and loss, damage or delay for any reason, including soil conditions encountered or created, or otherwise done anything for which I shall ask, demand, sue for or claim compensation from the City of Mt. Pleasant or his/her agents, in addition to the regular items set forth in the Contract and dated _____, 2002 for _____ _____ executed between myself and the Owner, and in the Change Orders for work issued by the Owner in writing as provided thereunder, except as I hereby make claim for additional compensation and/or extension of time, as set forth on the itemized statement attached hereto.

There is / is not and itemized statement attached.

Date: _____

By: _____

Title: _____

SECTION 00550

CONTRACTORS AFFIDAVIT

STATE OF MICHIGAN)
) SS
COUNTY OF ISABELLA)

The undersigned, _____ hereby represents that on _____ he/she (it) was awarded a contract by The City of Mt. Pleasant herein after called the Owner, to complete all items included in the proposal: **CHIPPEWA RIVER RESTORATION PROJECT** in accordance with the terms and conditions of the Contract and the undersigned further represents that the subject work has now been accomplished and the said contract has now been completed.

The undersigned hereby warrants and certifies that all of his/her (its) indebtedness arising by reason of said contract has been fully or satisfactorily secured, and that all claims from subcontractors and others for labor and material used in accomplishing the said project, as well as all other claims arising from performance of said contract, have been fully paid or satisfactorily secured. The undersigned further agrees that if any such claim should hereinafter arise, he/she (it) shall assume responsibility for the same immediately upon request to do so by the Owner.

The undersigned, for a valuable consideration, receipt of which is hereby acknowledged, does further hereby waive, release and relinquish any and all claims or right of lien which the undersigned now has or may hereafter acquire upon the subject premises for labor and material used in accomplishing said project owned by the Owner.

This affidavit is freely and voluntarily given with full knowledge of the facts on this ____day of _____, 20_____. _____
Contractor

By:
Title:

Subscribed and sworn to before me, a Notary Public in and for

County, Michigan, on this _____ day of _____, 20_____.

Notary of Public

My Commission expires:

APPLICATION FOR PAYMENT:

JOB NO.:	CONTRACTOR:	PAYMENT NO.:	DATE:
CONTRACT FOR: CHIPPEWA RIVER RESTORATION PROJECT		OWNER: City of Mt. Pleasant	

ITEM NO.	ITEM OF WORK	PLANNED QUANTITY	TOTAL INSTALLED QUANTITY	UNIT	UNIT PRICE FROM CONTRACT	AMOUNT

ITEM NO.	ITEM OF WORK	PLANNED QUANTITY	TOTAL INSTALLED QUANTITY	UNIT	UNIT PRICE FROM CONTRACT	AMOUNT

Contractor:		Gross Amount Due	
Signature:	Date:	Less _____ % Retainage	
Recommendation Prepared By: Wilcox Professional Services, LLC		Amount Due to Date	
Engineer Recommending Payment:	Date:	Less Previous Payments	
Owner: City of Mt. Pleasant		Amount Due this Application	
Authorized Signature:	Date:		

CONTRACTOR's Certification:

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive; and (2) title to all materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all liens, claims, security interests and encumberances (except such as covered by Bond acceptable to OWNER).

Dated _____, 20____ _____ CONTRACTOR

By

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Dated _____, 20____ _____ ENGINEER

By

SECTION 00700

GENERAL CONDITIONS - STANDARD

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General Contractors of America

Construction Specifications Institute

JCDC No. 1910-8 (1996 Edition)

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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314

American Consulting Engineers Council
1015 15th Street N.W., Washington, DC 20005

American Society of Civil Engineers
345 East 47th Street, New York, NY 10017

TABLE OF CONTENTS

Page

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY 6
1.01 *Defined Terms* 6
1.02 *Terminology* 8

ARTICLE 2 - PRELIMINARY MATTERS 9
2.01 *Delivery of Bonds* 9
2.02 *Copies of Documents* 9
2.03 *Commencement of Contract Times; Notice to Proceed* 9
2.04 *Starting the Work* 9
2.05 *Before Starting Construction* 9
2.06 *Preconstruction Conference* 10
2.07 *Initial Acceptance of Schedules* 10

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE 10
3.01 *Intent* 10
3.02 *Reference Standards* 11
3.03 *Reporting and Resolving Discrepancies* 11
3.04 *Amending and Supplementing Contract Documents* 11
3.05 *Reuse of Documents* 11

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS 12
4.01 *Availability of Lands* 12
4.02 *Subsurface and Physical Conditions* 12
4.03 *Differing Subsurface or Physical Conditions* 12
4.04 *Underground Facilities* 13
4.05 *Reference Points* 14
4.06 *Hazardous Environmental Condition at Site* 14

ARTICLE 5 - BONDS AND INSURANCE 15
5.01 *Performance, Payment, and Other Bonds* 15
5.02 *Licensed Sureties and Insurers* 16
5.03 *Certificates of Insurance* 16
5.04 *CONTRACTOR's Liability Insurance* 16
5.05 *OWNER's Liability Insurance* 17
5.06 *Property Insurance* 17
5.07 *Waiver of Rights* 18
5.08 *Receipt and Application of Insurance Proceeds* 18
5.09 *Acceptance of Bonds and Insurance; Option to Replace* 19
5.10 *Partial Utilization, Acknowledgment of Property Insurer* 19

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES 19
6.01 *Supervision and Superintendence* 19
6.02 *Labor; Working Hours* 19
6.03 *Services, Materials, and Equipment* 20
6.04 *Progress Schedule* 20
6.05 *Substitutes and "Or-Equals"* 20
6.07 *Patent Fees and Royalties* 22

6.08 *Permits* 23
6.09 *Laws and Regulations* 23
6.10 *Taxes* 23
6.11 *Use of Site and Other Areas* 23
6.13 *Safety and Protection* 24
6.14 *Safety Representative* 24
6.15 *Hazard Communication Programs* 24
6.16 *Emergencies* 24
6.17 *Shop Drawings and Samples* 25
6.18 *Continuing the Work* 26
6.19 *CONTRACTOR's General Warranty and Guarantee* 26
6.20 *Indemnification* 26

ARTICLE 7 - OTHER WORK 27
7.01 *Related Work at Site* 27
7.02 *Coordination* 27

ARTICLE 8 - OWNER'S RESPONSIBILITIES 28
8.01 *Communications to Contractor* 28
8.02 *Replacement of ENGINEER* 28
8.03 *Furnish Data* 28
8.04 *Pay Promptly When Due* 28
8.05 *Lands and Easements; Reports and Tests* 28
8.06 *Insurance* 28
8.07 *Change Orders* 28
8.08 *Inspections, Tests, and Approvals* 28
8.09 *Limitations on OWNER's Responsibilities* 28
8.10 *Undisclosed Hazardous Environmental Condition* 28
8.11 *Evidence of Financial Arrangements* 28

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION 28
9.01 *OWNER'S Representative* 28
9.02 *Visits to Site* 29
9.03 *Project Representative* 29
9.04 *Clarifications and Interpretations* 29
9.05 *Authorized Variations in Work* 29
9.06 *Rejecting Defective Work* 29
9.07 *Shop Drawings, Change Orders and Payments* 29
9.09 *Decisions on Requirements of Contract Documents and Acceptability of Work* 30
9.10 *Limitations on ENGINEER's Authority and Responsibilities* 30

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS 30
10.01 *Authorized Changes in the Work* 30
10.02 *Unauthorized Changes in the Work* 31
10.03 *Execution of Change Orders* 31
10.04 *Notification to Surety* 31
10.05 *Claims and Disputes* 31

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK 32
11.01 *Cost of the Work* 32
11.02 *Cash Allowances* 34
11.03 *Unit Price Work* 34

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES 34
12.01 *Change of Contract Price* 34
12.02 *Change of Contract Times* 35
12.03 *Delays Beyond CONTRACTOR's Control* 35
12.04 *Delays Within CONTRACTOR's Control* 35
12.06 *Delay Damages* 36

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK 36
13.01 *Notice of Defects* 36
13.02 *Access to Work* 36
13.03 *Tests and Inspections* 36
13.04 *Uncovering Work* 36
13.05 *OWNER May Stop the Work* 37
13.06 *Correction or Removal of Defective Work* 37
13.07 *Correction Period* 37
13.08 *Acceptance of Defective Work* 38
13.09 *OWNER May Correct Defective Work* 38

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION 38
14.01 *Schedule of Values* 38
14.02 *Progress Payments* 39
14.03 *CONTRACTOR's Warranty of Title* 40
14.04 *Substantial Completion* 40
14.05 *Partial Utilization* 41
14.06 *Final Inspection* 41
14.07 *Final Payment* 41
14.09 *Waiver of Claims* 42

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION 43
15.01 OWNER May Suspend Work 43
15.02 *OWNER May Terminate for Cause* 43
15.03 *OWNER May Terminate For Convenience* 43
15.04 *CONTRACTOR May Stop Work or Terminate* 44

ARTICLE 16 - DISPUTE RESOLUTION 44
16.01 *Methods and Procedures* 44

ARTICLE 17 - MISCELLANEOUS 44
17.01 *Giving Notice* 44
17.02 *Computation of Times* 44
17.03 *Cumulative Remedies* 44
17.04 *Survival of Obligations* 44
17.05 *Controlling Law* 44

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. *Bonds*--Performance and payment bonds and other instruments of security.

9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *ENGINEER*--The individual or entity named as such in the Agreement.

20. *ENGINEER's Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

30. *OWNER*--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated biphenyls.

33. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. *Site*--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

41. *Specifications*--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

42. *Subcontractor*--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

43. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

44. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

45. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

47. *Unit Price Work*--Work to be paid for on the basis of unit prices.

48. *Work*--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. *Work Change Directive*--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. *Written Amendment*--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 *Terminology*

A. *Intent of Certain Terms or Adjectives*

1. Whenever in the Contract Documents the terms "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such

term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. *Day*

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. *Defective*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, "provide" is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds*

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 *Copies of Documents*

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *CONTRACTOR's Review of Contract Documents:* Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby;

however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. *Preliminary Schedules:* Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

C. *Evidence of Insurance:* Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with Article 5.

2.06 *Preconstruction Conference*

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.

2. CONTRACTOR's schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

3.02 *Reference Standards*

A. *Standards, Specifications, Codes, Laws, and Regulations*

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER's Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order; (ii) ENGINEER's approval of a Shop Drawing or Sample; or (iii) ENGINEER's written interpretation or clarification.

3.05 *Reuse of Documents*

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific

written verification or adaption by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection

therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *ENGINEER's Review:* After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price of Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 *Reference Points*

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such

condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.E shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

5.04 *CONTRACTOR's Liability Insurance*

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

5.05 *OWNER's Liability Insurance*

A. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;

5. allow for partial utilization of the Work by OWNER;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will

not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.

D. OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraph 5.06, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the Site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.07 *Waiver of Rights*

A. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

B. OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by OWNER; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.05, after Substantial Completion pursuant to paragraph 14.04, or after final payment pursuant to paragraph 14.07.

C. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, ENGINEER, or ENGINEER's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by paragraph 5.06 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.08.B. OWNER shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on

account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

B. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 *Labor; Working Hours*

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. *"Or-Equal" Items:* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be

accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. *Special Guarantee:* OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

E. *ENGINEER's Cost Reimbursement:* ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

F. *CONTRACTOR's Expense:* CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in

advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 *Patent Fees and Royalties*

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 *Laws and Regulations*

A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

6.10 *Taxes*

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all

property not designated for alteration by the Contract Documents.

D. *Loading Structures:* CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 *Safety and Protection*

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. *ENGINEER's Review*

1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation

from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. *Resubmittal Procedures*

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 *Continuing the Work*

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 *CONTRACTOR's General Warranty and Guarantee*

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or

2. normal wear and tear under normal usage.

B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;

2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;

4. use or occupancy of the Work or any part thereof by OWNER;

5. any acceptance by OWNER or any failure to do so;

6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by OWNER.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for

whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.

B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER's Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

ARTICLE 7 - OTHER WORK

7.01 *Related Work at Site*

A. OWNER may perform other work related to the Project at the Site by OWNER's employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 *Replacement of ENGINEER*

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 *Furnish Data*

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 *Pay Promptly When Due*

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.06 *Insurance*

A. OWNER's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. OWNER's responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 *Limitations on OWNER's Responsibilities*

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *OWNER'S Representative*

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth

in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

9.02 *Visits to Site*

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Clarifications and Interpretations*

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 *Authorized Variations in Work*

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 *Rejecting Defective Work*

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 *Shop Drawings, Change Orders and Payments*

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 *Determinations for Unit Price Work*

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 *Limitations on ENGINEER's Authority and Responsibilities*

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 *Claims and Disputes*

A. *Notice:* Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. *ENGINEER's Decision:* ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or

2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with

respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.

3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

C. *CONTRACTOR's Fee:* When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined

on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.02 *Cash Allowances*

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. *CONTRACTOR's Fee:* The CONTRACTOR's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;

b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03 *Delays Beyond CONTRACTOR's Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 *Delays Within CONTRACTOR's Control*

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 *Delays Beyond OWNER's and CONTRACTOR's Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 *Delay Damages*

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR; or

2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGI-

NEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

13.05 *OWNER May Stop the Work*

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 *OWNER May Correct Defective Work*

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The schedule of values established as provided in paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments*

1. At least 20 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to pro-gress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or

equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

D. *Reduction in Payment*

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

c. there are other items entitling OWNER to a set-off against the amount recommended; or

d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 *CONTRACTOR's Warranty of Title*

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If,

after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. *Review of Application and Acceptance*

1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 *Final Completion Delayed*

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 OWNER May Suspend Work

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 *OWNER May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR's disregard of the authority of ENGINEER; or

4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in paragraph 15.02.A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 *OWNER May Terminate For Convenience*

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *CONTRACTOR May Stop Work or Terminate*

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

SECTION 00705

GENERAL CONDITIONS - SUPPLEMENTAL

1. DEFINITIONS - The following terms as used in this contract respectively defined as follows:

   a) "Subcontractor": A person, firm or corporation supplying labor and materials, or only labor, for work at the site of the project.

   b) "Work On (at) the Project": Work to be performed, including work normally done at the location of the project.

   c) "Contractor": The person, firm or corporation to whom the within contract is awarded by the Owner and who is subject to the terms thereof.

   d) "Owner": The party of the first part of this contract.

   e) "Engineer": Wilcox Associates, Inc.

   f) "Written Notice": Shall be deemed to have been 'duly served' when such notice shall have been given or mailed to the Contractor or his/her superintendent at the site of the work or when such notice shall have been given or mailed to the Owner.

2. CONTRACT DOCUMENTS

   The original and three counterparts of the contract shall be signed by the Owner and the Contractor. The work under this Contract shall consist of the items listed in the Proposal, including all incidentals necessary to fully complete the project in accordance with the Contract Documents. The Contract Documents shall consist of Instructions to Bidders, Special Instructions, Proposal, Specifications, General Conditions, Bonds, Insurance Specifications, Contract and Contract Drawings, as necessary.

3. PRECONSTRUCTION MEETING

   A preconstruction meeting will be held prior to the beginning of any work. The Engineer will schedule the meeting as soon as possible after acceptable executed contract documents are received from the Contractor.

   Notice of the meeting will be made to the Owner, the Contractor, and to the following entities, contingent upon their interest in the project.

   1. Utility Companies
   2. County Road Commission
   3. Other State, Local and County Agencies
   4. Michigan Department of Labor-Safety Division
   5. Railroad Companies

   The purpose of the preconstruction meeting is to discuss particular procedures and potential problem areas. The contractor is given updates on the conditions of the proposed construction and what is expected as to proper notification in the event of damage to existing utilities.

The Contractor shall submit in writing at the preconstruction meeting the following information:

1. Schedule of construction
2. Sources of materials
3. List of subcontractors
4. The designated safety officer on the job
5. Superintendent for the project
6. Foreman in charge on the job site
7. Emergency phone number for contractor

4. CONTRACT DRAWINGS AND SPECIFICATIONS

The work to be done is shown in the accompanying set of original drawings prepared by Wilcox Professional Services, LLC, and is hereby made a part of this contract, it being mutually understood and agreed that when taken together, the plans and contract documents, including the Specifications and General Conditions, are complimentary, and what is called for by any one shall be as binding as if called for by all. The intent of the Contract Documents is to include in the contract price the cost of all labor and material, water, fuel, tools, plant, equipment, light, transportation and all other expenses that may be necessary for the proper execution and completion of the work.

These original drawings may be supplemented by other drawings furnished by the Contractor and approved by the Engineer or supplied to the Contractor by the Engineer during progress of the work as he/she may deem to be necessary or expedient. All such supplementary contract drawings or instructions are intended to be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom. Therefore, no extra charge will be allowed on a claim that particular supplemental contract drawings or instructions differed from the Contract Documents, incurring extra work, unless Contractor has first brought the matter, in writing, to the Engineer's attention for proper adjustment before starting on the work covered by such, and has received from the Engineer an order, in writing, to so proceed. These original and supplemental drawings constitute the drawings according to which the work is to be done. The Contractor shall keep at the site of the work an approved or confirmed copy of all drawings and specifications, and shall at all times give the Engineer or Owner access thereto.

In case any inconsistency, omission or conflict shall be discovered in either specifications or drawings, or if in any place the meaning of either or both shall be obscure, or uncertain, or in dispute, the Engineer shall decide as to the intent of the documents.

Information regarding site of the work given in drawings and specifications has been obtained by the Engineer and is believed to be reasonably correct, but the Owner does not warrant either the completeness or accuracy of such information, and it is the Contractor's responsibility to verify all such information.

5. ENGINEERING DURING CONSTRUCTION

This work shall be subject to the approval of the Engineer, who shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials to be furnished hereunder, and who shall decide all questions which may arise as to measurements of quantities and fulfillment of the requirements of the specifications.

6. AUTHORITY AND DUTIES OF INSPECTORS

Inspectors may be appointed and directed to inspect all materials used and all work done. The inspection may extend to all parts of the work and to the preparation or manufacture of the materials for use in the work. Inspectors will not be authorized to revoke, alter, enlarge, or relax any of the provisions of these specifications, nor to change the plans in any particular. The Inspector will call to the attention of the Contractor any failure to follow the plans and specifications that he may observe. In case of any dispute arising between the Contractor and Inspector as to materials furnished or the manner of performing the work, the Inspector shall have the authority to reject materials or suspend work until the question at issue can be referred to and be decided by the Engineer. In no instance shall any action or omission on the part of the Inspector relieve the Contractor of the responsibility of completing the work in accordance with the plans and specifications.

7. COMPOSITION OF THE CONTRACTOR

If the Contractor hereunder is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

8. ASSIGNMENT OF CONTRACT

The Contractor shall not sublet, assign or transfer this contract or any portion thereof or any payments due him/her thereunder, without the written consent of the party of the first part.

Assignment or subletting the whole or any portion of this contract shall not operate to release the Contractor or his/her bondsmen hereunder from any of the contract obligations.

The Contractor agrees that he/she is fully responsible to the Owner for the acts and omissions of his/her subcontractors and of persons either directly or indirectly employed by him/her.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

No officer, agent or employee of the Owner, including the Engineer, shall have any power or authority whatsoever to bind the Owner or to incur obligation in his/her behalf to any subcontractor, material supplier or other persons in any manner whatsoever.

9. AGENTS

Work shall be carried on under personal supervision of the Contractor or his/her properly authorized representative, who shall be on the grounds at all times during the construction, and who shall have full and responsible charge of the work with power to receive orders and carry out instructions.

10. GENERAL REQUIREMENTS OF MATERIALS AND WORKMANSHIP

In the specifications where a particular material or piece of equipment is specified by reference to some particular make or type, or equal, it is not the intent to limit competition but to set up by such reference a standard of quality most easily understood and defined. If materials or equipment of other make or type other than that specified by name are offered by Contractor they will be given full consideration by the Engineer, and the Engineer's decision will be final as to whether the materials or equipment offered are equal to those specified.

Unless otherwise stipulated in the specifications, all equipment, materials and articles incorporated in the work covered by this contract are to be new and of the best grade of their respective kinds for the purpose. The Contractor shall, if required, furnish such evidence as to kind and quality of materials as the Engineer may require.

The Contractor shall furnish suitable tools and building appliances and employ competent labor to perform the work to be done, and any labor, tools or appliances that shall not, in the judgment of the Engineer, be suitable or competent to produce this result may be ordered from the work by him/her, and such labor, tools or appliances shall be substituted therefore by the Contractor as will meet with the approval of the Engineer.

If not otherwise provided, material or work called for in this contract shall be furnished and performed in accordance with well-known established practice and standards recognized by Architects, Engineers and the trade.

11. PROTECTION OF WORK AND PROPERTY

Contractor shall continuously maintain adequate protection of all his/her work from damage and shall protect all public property and private abutting property from injury or loss arising in connection with this contract. He/She shall, without delay, make good any such damage, injury or loss and shall defend and save the Owner harmless from all such damages or injuries occurring because of his/her work. He/She shall furnish and maintain all passageways, barricades, guard fences, lights and danger signals, and provide watchmen and other facilities for protection required by public authority or by local condition, all at no cost to the Owner.

In an emergency affecting the safety of life or of the work or of the adjoining property, the Contractor, without special instruction or authorization from the Owner, shall take such action as may be necessary to prevent such threatened damage, injury or loss.

Contractor shall assume full responsibility of loss or damage to the work during the entire construction period resulting from caving earth and from storms, floods, frosts, and other adverse weather conditions, and from all other causes whatsoever not directly due to the

acts or neglect of the Owner, including fire, vandalism and malicious mischief, and shall turn the finished work over to the Owner in good condition and repair at the time of the final estimate.

12. LINES AND GRADES

Principal reference lines or points and bench marks shall be given by the Engineer at such time as he/she may deem necessary; or, if the Contractor shall be in need of such reference lines or bench marks, he/she shall notify the Engineer forty-eight (48) hours in advance.

The Engineer will set suitable stakes and marks showing locations and elevations of the various parts of the work, and will furnish the Contractor with "cut sheets" referred to the reference points. No work shall be undertaken until such stakes and marks shall have been set by the Engineer.

The Contractor shall preserve all construction stakes, benchmarks, witnesses, and control points as required by the Engineer to properly inspect and document all related contract pay items for which the above staking requirements apply. If the stakes or benchmarks are lost or destroyed, they will be replaced by the Contractor and verified by the Engineer. No payment for any related contract pay item will be made until the above lost or destroyed stakes are replaced by the Contractor. No claims for damages during this time period will be allowed.

For the purpose of this specification, a plan error shall be defined as any omission, miscalculation, or inaccurate dimension which occurs on the plans that cannot be corrected to fit the existing conditions or the proposed project with prudent and judicious use of applied engineering knowledge by an experienced staking crew in the normal performance of its duties. The contractor shall document the efforts made and the steps taken to correct any plan discrepancy when it occurs. This documentation shall be submitted to the Engineer when requested.

13. TESTING AND SAMPLING

a) Where called for in the specifications, samples of materials in the quantity named shall be submitted to the Engineer for approval. Where tests are required, they shall be made at the expense of the Contractor, except as otherwise called for in the specifications. For materials covered by ASTM of Federal Specifications, or with the specifications of well known or recognized technical and/or trade organizations, unless otherwise stipulated, required tests are to be made by the manufacturer, and his/her certificate therefore submitted to the Engineer.

b) The Engineer and/or Owner shall determine which materials are required by the specifications to be factory inspected or to have chemical or physical analysis or other inspection or test. The Contractor shall furnish to the Engineer and/or Owner two copies of orders for all materials requiring such inspection or test as soon as placed. Such orders shall contain complete information, including that as to the quantity, quality, dimensions, sizes, capacities and types, shall contain proper reference to the applicable specifications by title, number and paragraph, and shall show the name and address of the producing factory but need not contain prices or contractual terms.

c) All materials and workmanship (if not otherwise designated by the specifications) shall be subject to inspection, examination and test by the Engineer and/or Owner at any and all times during manufacture or construction, and at any and all places where such manufacture or construction is carried on. The Engineer and/or Owner shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected, and rejected material shall be satisfactorily replaced with proper material without charge therefore, and the Contractor shall promptly segregate and remove rejected material from the premises. If the Contractor fails to proceed at once with replacement of rejected material and correction of defective workmanship, the Owner may, by contract or otherwise, replace such material and correct such workmanship and charge the cost thereof to the Contractor, or may immediately terminate the contract.

d) Contractor shall furnish promptly, without additional charge, all reasonable facilities, labor and materials necessary for the safe and convenient conduct of all inspections and tests that may be required by the Engineer. All inspections and tests by the Engineer and/or Owner shall be performed in such a manner as not to delay the work unnecessarily. Special, full size, and performance tests shall be as described in the specifications. Contractor shall be charged with any additional cost of inspection when material or workmanship is not ready at the time inspection is requested by the Contractor.

e) Should it be considered necessary or advisable by the Engineer and/or Owner any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall on request promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his/her subcontractor, Contractor shall defray all the expenses of such examination and of satisfactory reconstruction, and be responsible for any resulting delay. If, however, such work is found to meet the requirements of the contract, the actual cost involved in the examination and replacement shall be allowed the Contractor and he shall in addition, if completion of the work has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

f) Inspection of material and finished articles to be incorporated in the work at the site shall be made at place of production, manufacture or shipment stated in the specifications; and such inspections and acceptance, unless otherwise stated in the specifications, shall be final, except as regards latent defects, departures from specific requirements of the contract and the specifications and drawings made a part thereof, damage or loss in transit, fraud or such gross mistakes as amount to fraud. Subject to requirements contained in the preceding sentence, inspection of material and workmanship for final acceptance as a whole or in part shall be made at the site.

14. CONTRACTOR'S SUPERVISION AND ORIGINATION

The work under this Contract shall be under the direct supervision and direction of the Contractor. The Contractor shall give efficient superintendence to the work, using his/her

best skill and attention. The Contractor shall, at all times, keep on the site of the work during its progress a competent superintendent and any and all necessary foremen and assistants. The superintendent shall represent and have full authority to act for the Contractor in the latter's absence, and all directions given to him/her shall be as binding as if given to the Contractor. On written request in each case, all such directions will be confirmed in writing to the Contractor.

The Contractor shall employ only competent, efficient workmen and shall not use on the work any unfit person or one not skilled in the work assigned to him/her, and he shall at all times enforce strict discipline and good order among his/her employees. Whenever the Engineer shall notify the Contractor, in writing, that any man on the work is, in the opinion of the Engineer, careless, incompetent, disorderly, or otherwise unsatisfactory, such man shall be discharged from the work and shall not again be employed on it except with the written consent of the Engineer.

The Contractor shall establish and maintain an office on the site of the work, or at some convenient point adjacent thereto, during the continuance of this contract and shall have at all times during working hours, a representative authorized to receive and execute any and all orders, when given by the Engineer' and such order, when given out and received by said representative shall be deemed to have been given to and received by the Contractor. Copies of the drawings and specifications shall at all times be kept on file by the Contractor at readily accessible points near the work.

15. SHOP DRAWINGS AND SPECIAL DRAWINGS

Where called for in the specifications, Contractor shall submit to the Engineer for approval in not less than five copies, details, specifications, cuts and drawings of such equipment and structural work as may be required. Contractor shall make any changes or alterations required by the Engineer and resubmit same without delay. Approval of the Engineer shall not relieve the Contractor of responsibility for errors in the drawings, as the Engineer's checking is intended to cover compliance with the drawings and specifications and not to enter into every detail of the shop work. No work shall be undertaken until the Engineer has approved the shop drawings.

When the work of the Contractor is of a nature originating with it, full general and detail drawings shall be furnished to the Engineer on 24" x 36" size sheets of polyester film base which shall, upon approval, become the property of the Owner.

It is understood that approval by the Engineer of Contractor's drawings, whether general or detailed, is a general approval relating only to their sufficiency and compliance with waiver of errors, discrepancies or omissions.

16. ERRORS AND CORRECTIONS IN DRAWINGS AND SPECIFICATIONS

The Contractor shall examine and check all drawings and specifications furnished by Owner for dimensions, quantities, and coordination with other parts of the work on this or related contracts and shall notify the Engineer, in writing, of any and all errors, omissions or discrepancies he may discover by examining and checking of same. Contractor shall not be allowed to take advantage of any such error, omission or discrepancy, as full instructions will be furnished by the Engineer, and the Contractor shall carry out such

instructions as if originally specified. In no case shall Contractor proceed with the work in uncertainty, and any work done by Contractor after discovery of any error, omission or discrepancy, until authorized, will be at the Contractor's risk and responsibility. The work is to be made complete and to the satisfaction of the Engineer, notwithstanding any minor omissions in the specifications or plans.

17. RESPONSIBILITY FOR ADJOINING STRUCTURES

The Contractor shall assume full responsibility for the protection of all pavements, curbs, bridges, railroads, poles and any other surface structures, and all water mains, sewers, telephone, gas mains and other underground services and structures along and near the work which may be affected by his/her operations, and shall indemnify, defend and save harmless the Owner against all damages or alleged damages to any such structures arising out of his/her work. Contractor shall bear the cost of repair or replacement of any such structure damaged as a result of his/her operations.

18. CHANGES IN WORK

The Owner shall have the right to require, by written order, changes in, additions to, or deductions from the work required by the Contract Documents; provided that, if changes, additions or deductions are made, the general character of the work as a hole is not changed thereby. Adjustments in the contract price, if any, because of any change, addition or deduction in the work shall be determined as herein after provided, and any claim for extension of time for completion shall be adjusted at the time of ordering the change, addition or deduction. No claim for the change, addition or deduction, or adjustment of price, or extension of time for completion thereof, shall be made or allowed unless done in pursuance of a written order from the Owner specifically authorizing such change, addition or deduction. Drawings without a written order shall not be considered such authority. Written notice of such claims shall be made to the Engineer before commencement of the work. Where the written order diminished the quantity of work to be done, this shall not constitute a basis for a claim for damages or anticipated profits on the work that may be dispensed with.

Under the circumstances which, in the judgment of the Engineer, so necessitate, the Engineer shall have authority to require, by written order, changes in, additions to, or deductions from the work. Such written order by the Engineer shall be subject to later confirmation by the Owner when the extent and costs have been established.

It is understood and agreed that in case any change in, addition to, or deduction from the work is required, said change shall in no way invalidate the contract and shall not affect or discharge the bonds furnished by the Contractor.

The Contractor, without extra charge, shall make slight alterations as may be necessary to made adjustable parts fit to fixed parts, leaving all complete and in proper shape when done.

19. BASIS FOR DETERMINING COST OF CHANGES IN THE WORK

Adjustments, if any, in contract price by reason of change in the work shall be limited to the amount specified in the written order authorizing the change in the work.

Adjustments shall be determined by one or more of the following methods, the Owner reserving the right to select the method or methods at the time the written order is issued:

a) An acceptable lump sum proposal: To facilitate checking and acceptance, the proposal shall be itemized with quantities and prices given for various items.

b) Unit prices: The unit prices may be the "Unit Price" set in the Agreement, or fixed by subsequent agreement between the Owner and the Contractor.

c) On a cost-plus-limited-basis, not to exceed a specified maximum limit of cost:

"COST" as herein used shall be the actual and necessary costs incurred by the Contractor by reasons of the change in the work for:

(1) labor
(2) materials
(3) equipment rental
(4) insurance premiums

1. Labor costs shall be the amount shown on the Contractor's payrolls with payroll taxes added when such taxes can be shown to have been incurred. In no case shall the rates charged for labor exceed the rates paid by the Contractor for the same class of labor employed by him/her to perform the work under the regular items of the Contract.

2. Material costs shall be the net price paid for material delivered to the site of the work. If any material previously required is omitted by written order of the Owner after it has been delivered to or partially worked on by the Contractor and consequently will not retain its full value for other uses, the Contractor shall be allowed the actual cost of the omitted material less a fair market value of the material as determined by the Owner.

3. Equipment rental shall be the actual additional costs incurred for necessary equipment. Costs shall not be allowed in excess of usual rentals charged in the area for similar equipment of like size and condition, including the costs of necessary supplies and repairs for operating the equipment. No costs, however, shall be allowed for the use of the equipment on the site in connection with other work unless its use incurs actual and additional costs to the Contractor. If equipment not on the site is required for the change in the work only, the cost of transporting such equipment to and from the site shall be allowed.

4. Insurance premiums shall be limited to those based on labor payroll and to the types of insurance required by the contract. The amount allowed shall be limited to the net costs incurred as determined from the labor payroll covering the work. The Contractor shall, upon request of the Owner, submit verification of the applicable insurance rates and premium computations.

"PLUS" as herein used is defined as a percentage to be added to the items of "Cost" to cover superintendence, use of ordinary tools, bonds, overhead expense and profit. The percentage shall not exceed 15 percent on work done entirely by the Contractor and shall not exceed an aggregate total of 20 percent on work done by a subcontractor.

"SPECIFIED MAXIMUM LIMIT OF COST" is amount stated in the written order of the Owner authorizing the change in work. The amount to be allowed the Contractor shall be the "cost" and "plus" the percentage or specified maximum, whichever is the lesser amount.

The Contractor shall keep complete, accurate, daily record of the net actual cost of changes in the work and shall present such information in such form and at such times as the Owner may direct.

20. CONTRACTOR'S RIGHT TO STOP WORK

If the work should be stopped under an order of any court, or other public authority for a period of three months, through no act or fault of the Contractor or of anyone employed by him/her, or if the Owner should fail to pay to the Contractor within sixty days of its maturity and presentation any sum certified by the Engineer, provided no appeal is taken, the Contractor may, upon seven days' written notice to the Owner and the Engineer, stop work or terminate this contract, and shall receive from the Owner payment in full for all work executed, as determined from the prices contained in the approved detailed estimate as computed by the Engineer, but no claim for extra compensation or damages shall be made or allowed because of such termination of the contract.

21. PAYMENTS WITHHELD

The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate of progress payment to such extent as may be necessary to protect itself from loss on account of:

a) Defective work not remedied;

b) Claims filed or reasonable evidence indicating probable filing of claims;

c) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

d) A reasonable doubt that the contract be completed for the balance then unpaid;

e) Damage to another contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

22. ESTIMATED QUANTITIES

The quantities of various classes of work to be done and materials to be furnished under this contract, which have been estimated as state elsewhere herein, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for work under this contract; and neither the Owner nor his/her agents is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the work; and the Contractor shall make no claim for anticipated profit, nor for loss of profit, because of a difference between the quantities of the various classes of work actually done or materials actually delivered, and the estimated quantities as herein stated.

23. ESTIMATES AND PAYMENTS

The Owner shall pay and the Contractor receive the prices bid in the proposal, or agreed upon, less any deduction for any uncompleted portion, based upon measurements made by the Engineer or as otherwise herein stipulated, and such measurements shall be final and conclusive.

Contractor shall submit to Owner an application for each payment and shall submit a Contractor's Declaration declaring that he has not performed any work, furnished any material, sustained any loss, damage or delay for any reasons, including soil conditions encountered or created, or otherwise done anything for which he will ask, demand, sue for, or claim compensation from the Owner other than as indicated on the Contractor's Declaration and shall, if required, submit receipts or other vouchers showing his/her payments for materials and labor, including payments to subcontractors.

Payments, based on progress estimates, will be made on or about the twentieth (20th) of each month on work completed during the preceding month, for 90% of work completed until 50% of the work required under the contract is completed. All such payments shall be subject to any deductions or reservation which may be made in accordance with the terms of this contract. After 50% of the work is complete, Contractor will be paid for 100% of the balance of the work completed. No allowance will be made for materials furnished unless incorporated in the finished work, unless otherwise stated. Retained monies shall be administered by the Owner in accordance with Public Act #524.

The Owner may withhold payment of any estimate or portion of estimate until the Contractor shall have furnished satisfactory evidence that he has paid all claims of every nature. The Contractor shall submit to the Owner with each application for payment a "Sworn Statement" attesting to all payments made and balances due to all subcontractors and to all supplies of materials, fuel, and equipment for the project work completed. He shall also attest to all payments made for labor furnished for the work completed. The "Sworn Statement" shall be in a form acceptable to the Owner and all suppliers and subcontractors shall be listed along with payments made and balances owed to each.

No payment shall be considered as acceptance of the work or any portion thereof prior to final completion of the work, and payment of final estimate.

The Contractor's request for final payment shall be accompanied by the following documents:

1. Contractor's Declaration
2. Contractor's Affidavit
3. Waivers, as required, from major suppliers and subcontractors
4. Release of Surety
5. Release from other public agencies for which permits have been obtained under this contract.

Within thirty (30) days after completion of the work under this contract to the satisfaction of the Owner and Engineer, in accordance with all singular terms and stipulations herein contained, the Owner shall make final payment, from a final estimate made by the Engineer. Before final payment is made, the Contractor shall, as directed by the Owner, make a Contractor's Affidavit that he has paid all claims of every nature, or secured a release from the surety or sureties approving payment of the final estimate by the Owner. Final payment, when made, shall be considered as final approval and acceptance of the completed work herein specified.

The acceptance by the Contractor of final payment aforesaid shall operate as, and shall be, a release to the Owner and his/her agents, from all claim and liability to the Contractor for anything done or furnished for, relating to, or affecting the work.

24. PAYMENT NOT TO BE STOPPED

Owner shall not, nor shall any officer thereof, be precluded or estopped by any return or certificate made or given by the Engineer, or other officer, agent or appointee, under the provision of this agreement, at any time (either before or after final completion and acceptance of the work and payment made therefore pursuant to any such return or certificates showing the true and correct amount of money due therefore, notwithstanding any such return or certificate, or any payment made in accordance therewith) from demanding and receiving from the Contractor or his/her sureties, separately or collectively, such sums as may have been improperly paid said Contractor by reason of any such return or certificate which has been untruly or incorrectly compiled.

25. EXTENSION OF TIME

All days in which work is suspended by order of the Engineer, or in accordance with these specifications, shall automatically extend the time for completion an equal number of days.

In the event work is suspended because the Contractor does not perform, no extension will be allowed for this period of time.

The Contractor shall immediately request as extension of time when it becomes apparent that a legitimate extension is justified and necessary.

26. AUTHORITY

No agent of the Owner shall have power to revoke, alter, enlarge, or relax the stipulations or requirements of these specifications, except insofar as such authority may be specifically conferred by the specifications themselves, without formal authorization to do

so, conferred by the contract of which the specifications are a part, or by ordinance, resolution or other usual official action by the Owner.

27. USE OF COMPLETE PORTIONS OF THE WORK

The Owner may, at any time during the progress of the work, after written notice to Contractor, take over and place in service any completed portions of the work which are ready for service, although the entire work of the Contract is not fully completed, and notwithstanding the time for completion of the entire work or such portions may not have expired. In such event, the Contractor will be relieved of further work on, or maintenance of, said portion except as covered by his/her guarantee of same.

28. STORAGE OF MATERIALS

Materials and equipment distributed, stored and placed upon or near the site of work shall at all times be so disposed as not to interfere with work being prosecuted by other contractors in the employ of the Owner, or with street drainage, or with fire hydrants or with access thereto, and not to hinder any more than may be necessary the ordinary traffic of the street.

29. CLEANING UP

The Contractor shall, as directed by the Engineer, remove at his/her own expense from the Owner's property and from all public and private property all temporary structures, rubbish and waste materials resulting from his/her operations. This requirement shall not apply to property used for permanent disposal of rubbish or waste materials in accordance with permission of such disposal granted to the Contractor by the Owner thereof.

30. WEEKEND AND NIGHT WORK

The Contractor is required to prosecute work done under this contract during the hours of 7am to 7pm, Monday through Friday, and no work will be permitted at night or on weekends, except to save property or life, or as specifically authorized or directed by the Engineer.

31. NO WAIVER OF CONTRACT

Neither acceptance of the whole or any part of the work by the Owner or his/her Engineer, or any of its agents, nor any order, measurements or certificate by the Engineer, nor any order by Owner for payment of money, nor any payment for the whole or any part of the work by Owner, nor any extension of time, nor any possession taken by the Owner or its agents, shall operate as a waiver for any portion of the contract or any power therein provided; nor shall any waiver of any breach of contract be held to be a waiver of any other or subsequent breach.

32. PROGRESS OF WORK

The work shall be prosecuted regularly and uninterruptedly, unless the Engineer shall otherwise specifically direct, with such force and at such points as to insure its full completion within the time stated herein.

If, in the opinion of the Engineer, it is necessary or advisable that certain portions of the work be done immediately, the Contractor, upon written order shall proceed with such work without delay. Should he fail to so proceed, the Engineer may do or cause to be done, such work, and the cost of same will be deducted from any money due or to become due the Contractor under this contract.

33. TIME IS ESSENCE OF CONTRACT

It is distinctly understood and agreed to by the parties hereto that the time specified for completion of the work is the essence of this contract, and Contractor shall not be entitled to claim performance of this agreement unless the work is satisfactorily completed, in every respect, within the time herein specified.

34. SANITARY REGULATIONS

Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained in sanitary condition by the Contractor and their use shall be strictly enforced.

35. PERMITS AND REGULATIONS

The Contractor shall secure, at no cost to the Owner, all permits and licenses necessary for the prosecution of the work. The Contractor shall keep himself/herself fully informed of all laws, ordinances, and regulations in any manner affecting those engaged or employed in the work or materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

The Contractor shall obtain any necessary construction permits required of contractors for work within public streets, highways, roads or alleys. He shall pay for same at his/her own expense as well as for any inspection fees required in connection with such permits, and shall conduct his/her operations in accordance with the provisions of such permits, including tunneling of pavements where required. He shall also furnish any required bonds and pay the cost of same.

He shall at all times observe and comply with, and shall cause all his/her agents and employees to observe and comply with all existing and future laws, ordinances, regulations, orders and decrees; provided, that if the drawings and specifications are at variance therewith, the Contractor shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in the Contract Documents.

All work shall be executed and inspected in accordance with all local and state rules and regulations and all established codes applicable thereto and shall conform in all respects to the requirements of all competent authorities having jurisdiction thereover.

Should any change in plans and specifications be required to comply with local regulations, Contractor shall notify the Owner at the time of submitting his/her bid. After entering into contract, Contractor will be held to complete the work necessary to meet local requirements without extra expense to the Owner.

Where the work required by the drawings and specifications is above the standard required, it shall be done as shown or specified.

36. GUARANTEE

The Contractor, as a condition precedent to final payment, shall execute a guarantee to the Owner warranting for a period of one (1) year from date of final payment to keep in good order and repair any defect in all the work done under the contract, either by the Contractor, his/her subcontractors, or material supplies, that may develop during said period due to improper materials, defective equipment, improper materials workmanship, or arrangements, and any other work affected in making good such imperfections shall also be made good, all without expense to the Owner, and Contractor shall execute, in favor of the Owner the attached Maintenance and Guarantee Bond. When specifications call for a guarantee period greater than one year, Contractor shall provide such longer guarantee period.

37. PATENTS

Contractor shall pay all royalties and license fees and shall hold and save the Owner and his/her agents harmless from all liability of any nature or kind, including cost and expense for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents. In this respect the Contractor shall defend all suits or claims for infringement of any patent or license right.

In the event that any claim, suit or action at law or inequity of any kind whatsoever is brought against the Owner, involving any such patents or license rights, then the Owner shall have the right to, and may retain, from any money due or to become due to the Contractor, such sufficient sum as is considered necessary to protect said Owner against loss, and such sum may be retained by the Owner until such claim or suit shall have been settled and satisfactory evidence to that effect shall have been furnished the Owner.

38. INFORMATION BY THE CONTRACTOR

The Contractor shall submit to the Engineer full information as to the materials, equipment and arrangements which the Contractor proposes to furnish. This information shall be complete to the extent that the Engineer may intelligently judge if the proposed materials, equipment and arrangements will meet with the contract requirements.

Prior to approval of the materials, equipment and arrangements by the Engineer based on the information submitted by the Contractor, any work done by the Contractor shall be at his/her own risk.

Approval of information covering materials, equipment and arrangements by the Engineer shall in no way release Contractor from his/her responsibility for the proper design, installation and performance of any material, equipment or arrangement, or from his/her liability to replace same should it prove defective.

39. FORFEITURE OF CONTRACT

If work to be done under the contract shall be abandoned by Contractor or if, at any time in the judgment of the Owner, Contractor shall fail to prosecute the work at a reasonable rate of progress, or to comply with all or any of the terms and requirements herein set forth, then the Owner shall have the right to take possession of the work, including Contractor's plant, supplies and materials, at any time after having notified the Contractor, in writing, to discontinue work under this contract for said cause or causes, and such action shall not affect the right of the Owner to recover damages resulting from such failure. Upon receiving such notice the Contractor shall and will, upon demand, immediately give the Owner safe and peaceable possession of the work, including the plant, and shall then cease to have control over any portion thereof or the men employed thereon.

The Owner may then proceed to complete the work herein specified, by contract or otherwise; and the entire cost of same shall be charged to the Contractor and deducted from any sum or sums due or to become due under the contract; the excess cost, if any, to be paid by Contractor or his/her sureties to said Owner.

40. RELATION TO OTHER CONTRACTORS

Contractor shall so conduct his/her operations as not to interfere with or injure the work of other contractors or workmen employed on adjoining or related work, and he shall promptly make good any injury or damage which may be done to such work by him/her or his/her employees or agents. Should a contract for adjoining work be awarded to another contractor, and should the work of one of these contracts interfere with that of the other, the Owner shall decide which contractor shall cease work for the time being and which shall continue, or whether work in both contracts shall continue at the same time and in what manner.

DIVISION II – TECHNICAL SPECIFICATIONS

Wilcox

SECTION 00800
GENERAL SPECIFICATIONS

1. USE OF STREETS OR PUBLIC PROPERTY

The Contractor's operations in public streets or alleys shall be confined to as small a space as practicable, so as not to cause undue inconvenience to the public or abutting properties, and shall be subject to the approval of the Engineer.

Should the Contractor require space other than the above, he/she shall obtain same in private property at no cost to the Owner, by private agreement, a copy of which shall be given the Owner.

2. MAINTENANCE OF SERVICE

Drainage through existing sewers and drains shall be maintained at all times during construction, and all nearby gutters shall be kept open for drainage. Where existing sewers are encountered in the line of work which interfere with construction, the flow in the sewers, including both dry weather flow and storm flow, shall be maintained.

Safety precautions shall be followed at all street openings; substantial barricades shall be erected as deemed necessary to prevent accidents to vehicular or pedestrian traffic, and red flags by day and red lights by night shall be diligently posted by Contractor at all points of possible danger. In case detours or other traffic instructions are necessary, suitable warning or direction signs shall be erected and maintained by the Contractor.

In the event of Contractor's failure to comply with these provisions, the Owner may, with or without notice, cause the same to be done and will deduct the cost of such work from any money due or to become due the Contractor under this contract, but performance of such work by the Owner, or at his/her instance, shall serve in no way to release the Contractor from his/her general or particular liability for the safety of the public or the work.

3. CLEANLINESS OF THE WORK

Contractor shall keep the work and all property occupied by him in a neat and orderly condition at all times. Waste material, rubbish and debris shall not be allowed to accumulate. Contractor's equipment, temporary buildings and excess materials shall be promptly removed from public property as they become no longer needed for the progress of the work. At completion of the work, the premises shall be left rake clean. Newly constructed sewers, concrete chambers, flumes and manholes shall be cleared of all scaffolding, centering, and debris of all sorts.

4. STREET CLEANLINESS

Contractor shall clean and keep clean the streets, the work, and the public and private property occupied by him, from waste materials or refuse resulting from his/her operations. Trucks hauling excavated material, cement, sand, stone or other loose materials from or to the site shall be tight so that no spillage will occur on adjacent streets. Before trucks start away from the site, their loads shall be trimmed. Should Contractor be negligent of his/her duties in maintaining proper street cleanliness, the Owner will take necessary steps to perform such cleaning and shall charge the Contractor for all the costs therefore.

5. PROTECTION OF PUBLIC AND PRIVATE UTILITIES AND FENCES

a) In General - Where any utility, water, sewer, gas, telephone, or any other public or private utilities or fences are encountered, the Contractor must provide adequate protection from them, and he/she will be held responsible for any damages to such utilities and fences arising from his/her operations.

When it is apparent that construction operations may endanger the foundation of any utility, conduit, or support of any structure, the Contractor shall notify the utility owner of this possibility, and he/she shall take steps as may be required to provide temporary bracing or support of conduits or structures.

In all cases where permits or inspection fees are required by utilities in connection with changes to or temporary support of their conduits, the Contractor shall secure permits and pay all inspection fees.

When it is necessary in order to carry out the work, that a pole, telephone or electric, be moved to a new location or moved and replaced after construction, Contractor shall arrange for moving such pole or poles and the lines thereof, and shall pay any charges therefore.

Where it is the policy of any utility owner to make his/her own repairs to damaged conduit or other structures, Contractor shall cooperate to the fullest extent with the utility owner and shall see that his/her operations interfere as little as possible with those operations.

b) Existing Sewer Facilities - In instances, existing sewer or drains will be encountered along the line of work. In all such cases, Contractor shall perform his/her operations in such a manner that sewer service will not be interrupted; and shall, at his/her own expense, make all temporary provisions to maintain sewer service.

Unless otherwise indicated on the plans, Contractor shall replace, at his/her own expense, any disturbed sewer or drain, or relay same at a new grade to be established by the Engineer such that sufficient clearance for the sewer will be provided.

c) Existing Water Facilities - Where existing water mains are encountered in the work, they shall be maintained in operation. They shall be relayed if necessary using the class of pipe and fittings standard to the municipality. Contractor shall receive no extra compensation for relaying and/or lowering or raising of water mains.

d) Existing Gas Facilities - Where existing as mains are encountered, Contractor immediately shall notify the Engineer. Contractor shall then arrange with the gas company for any necessary relocation. The Contractor will receive no extra compensation on account of delays incurred in conjunction with such relocations.

e) Existing Fences - Where existing fences are encountered in the work and it is necessary that they be removed in order to carry out the work, Contractor shall restore, at his/her own expense, such fences or otherwise compensate the Owner by private agreement, a copy of which shall be submitted to the Engineer before the Contractor may be released from responsibility.

6. DISPOSAL OF EXCAVATED MATERIAL

With the exception of an amount of excavated material sufficient for backfilling, construction of fills as called for in the plans and hauling by citizens of the municipality for filling areas adjacent to the excavation without interference with the Contractor's operations, all broken concrete, stone and excess excavated materials shall be disposed of by the Contractor. Disposal first shall be made to public sites in need of fill as directed by the Engineer for which the Contractor shall receive no additional compensation. Contractor shall be required to obtain his/her own disposal ground and will receive no extra compensation for disposing of any of the balance of excess materials.

7. OWNERSHIP OF SALVAGE MATERIALS

All old paving, brick, curbing, crosswalks, gutter, culverts, sewer pipe, iron pipe and castings, and similar materials removed during the construction work shall become the property of the Contractor.

8. MAINTENANCE AND RESTORATION OF PAVEMENTS, ROAD SURFACES AND STRUCTURES

All structures, including curbing, walks, paving gravel or street road surfaces, etc. that may be damaged or destroyed by the Contractor's operations, shall be repaired and replaced by him at his/her own expense, in accordance with all requirements of the local governing authority, before the Contractor shall be released from responsibility.

9. SOIL CONDITIONS

Where the Owner has caused soil borings to be made to aid the Engineer in design of the work, these boring logs are provided herein for the prospective bidder to examine.

This information is given to bidders as an aid in determining the character of the soil. The Owner does not guarantee, however, that the ground encountered during construction will conform with the borings, and bidders should secure such other information as they consider necessary to check and supplement the above data.

Contractor shall assume all risk and responsibility and shall complete the work in whatever materials, and under whatever conditions he/she may encounter or create without extra cost to the Owner.

10. ORDINANCES AND CODES

All work shall be executed and inspected in accordance with all local and state rules and regulations and all established codes applicable thereto and shall conform in all respects to requirements of all competent authorities having jurisdiction thereover.

Should any change in plans and specifications be required or comply with local regulations, Contractor shall notify the Owner at the time of submitting his/her bid. After entering into contract, Contractor will be held to complete the work necessary to meet local requirements without extra expense to the Owner.

Where the work required by the drawings and specifications is above the standard required, it shall be done as shown or specified.

11. MATERIALS

Materials used in the work shall each be of a type, grade and design suited to the service to which its use is contemplated, in accordance with the various established Rules, Regulations, Codes and/or Specifications applicable hereto, as hereinbefore provided for.

Special brands or grades of material or devices specified or shown on the drawings are named for the purpose of establishing a standard of quality and character desired. Other materials of equal quality and adaptability for the purpose for which they are intended may be substituted only upon the written approval of the Engineer. Any material not called for by a trade name shall be approved by the Engineer before Contractor shall order or install same. Where a specified make or kind of apparatus is called for and furnished by the Contractor, the furnishing of such apparatus does not relieve the Contractor of liability until he/she shall make such apparatus or appliance operative so that it will perform satisfactorily the function for which it was intended.

12. PROTECTION OF MATERIALS AND EQUIPMENT

All materials and equipment stored on site shall be properly protected from damage by weather and other causes, and kept in clean condition.

13. HEAT

Contractor shall furnish, at his/her own expense, all heat necessary during the life of this contract or until such time as the Owner takes over the work. This shall include temporary heat of such means as the Engineer may approve.

14. POWER AND LIGHT

Contractor shall furnish, at his/her own expense, all the electric power necessary during the life of this contract or until such time as the Owner takes over the work.

15. WATER

Contractor shall furnish, at his/her own expense, all the water necessary during the life of this contract or until such time as the Owner takes over the work, and shall make proper arrangements with the authorities concerned.

16. WORKING SPACE

In his/her operations the Contractor shall interfere as little as possible with traffic, and in all cases shall confine his/her operations to the minimum space possible.

Stockpiling of the construction material and equipment will be permitted as necessary, but in no case shall traveled ways, driveways or entrances be unduly obstructed.

Should Contractor desire space on private property, he/she may obtain such space on privately owned property at his/her own expense, by agreement with the Owner thereof.

17. PUMPING, BAILING AND DRAINING

Contractor shall provide and maintain adequate pumping and draining facilities for removal and disposal of water from trenches or other excavations.

Where the work is in ground containing an excessive amount of water, the Contractor shall provide, install, maintain and operate suitable well points, connecting manholes and reliable pumping equipment to operate same to insure proper construction of the work.

Drainage or discharge lines shall be connected to adjacent public storm water drains or extended to nearby water courses wherever possible. In any event, all pumping and drainage shall be done without damage to any highway or other property, public or private, without interference with the rights of public or private property owners.

18. SHEETING, SHORING AND BRACING

Where necessary in order to construct the work called for by the contract to insure the safety of the men or to protect other things of value, Contractor shall use and, if necessary, leave in place such sheeting, shoring and bracing as needed to carry out the work or to adequately insure the stability of such work, or to insure the safety of the men and/or to protect adjoining things of value. Contractor will receive no extra compensation for sheeting, shoring or bracing whether removed or left in place.

19. REPLACEMENT OF SHRUBBERY

The Contractor shall protect and/or replace all shrubbery damaged or destroyed by operations under this contract.

20. EASEMENTS

The Owner has acquired permanent easements and construction easements for the Contractor's use in constructing the sewer. Contractor shall confine his/her operations to these easements except as noted under "Working Space".

21. SURVEY MONUMENTS

The Contractor shall protect and preserve all land survey monuments or property corners along the line of his/her work. Where monuments or irons are disturbed or removed due to operations under this contract, the Contractor, at his/her own expense, shall employ the services of a registered land surveyor to establish, reset or replace such monuments or irons.

22. LOCATING WORK

The Contractor shall accurately locate the work from reference points established by the Engineer along the surface of the ground and line work. Reference points shall be protected and preserved by the Contractor.

23. BARRICADES AND PROTECTION

Contractor shall provide and maintain in good repair, all barricades, guard railings, etc., as required for the protection of his/her workmen and the Owner's employees in strict compliance with state and local requirements, particularly as set forth in the "Michigan Manual of Uniform Traffic Control Devices". All exposed material shall be smoothly dressed.

At dangerous points throughout the work, provide and maintain guard rails and colored lights, also flags. All possible precautions shall be taken to protect the workmen from injury.

24. SPECIAL BACKFILL REQUIREMENTS

Where called for herein or on the plans, the Contractor shall backfill trenches and/or other excavation with the excavated material (not including gray or blue clay) replaced into the trench or excavation in 9-inch layers, loose measure, with each layer compacted to not less than 95% of maximum unit weight as determined at the existing moisture content during backfill before the succeeding layer is placed. Compaction shall be provided by suitable mechanical compaction equipment.

If moisture content of cohesive backfill material exceeds the optimum moisture content for maximum density by more than 3%, Contractor shall dry the material to meet the foregoing moisture content limitation or provide, at his/her own expense, MDOT Granular Material, Class II. No sloppy or wet backfill will be allowed.

Maximum unit weight will be determined by current methods of Test for Compaction and Density of Soil, A.A.S.H.T.O. Designation T-180 or by the Cone Density Method developed by the Michigan Department of Transportation, as the material may require.

Contractor shall, at his/her own expense, provide additional fill material required to complete the filling and compaction of trenches. Additional fill material shall be Michigan Department of Transportation Specification Granular Material, Class II, or material approved by the Engineer.

The cost of providing for and meeting "Special Backfill Requirements" shall be included in unit price bid for sewer, water main and/or structures.

25. GUARANTEE

As a condition precedent to final payment, the Contractor shall execute a guarantee to Owner warranting for a period of one year from the date of final payment to keep in good order and repair any defect in all work done under the contract, either by the Contractor or his/her subcontractors or material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship or arrangements, and any other work affected in making good such imperfections shall also be made good, all without expense to the Owner, and the Contractor shall execute, in favor of the Owner, a Maintenance and Guarantee Bond.

26. STANDARD SPECIFICATIONS

Where work is specified to be in conformity with Standard Specifications of the American Society for Testing Materials, or with Federal Specifications, or with the specifications of well known or recognized technical and/or trade organizations, but no tests are specifically stipulated in connection herewith, the Contractor shall, upon request, furnish and pay for any test and/or certifications required by the Engineer to show that the proposed materials meet with the applicable specifications.

27. WEATHER PROTECTION AND HEATING

Contractor shall provide and maintain weather protection and heating to property protect the work under construction from damage, if weather conditions require. This work shall include all windbreaks, insulating cover, and other necessary measures required to provide protection from freezing.

28. WATCHMEN

Contractor shall employ a sufficient number of men to guard and protect the work at all times until completed work is turned over to the Owner.

29. COMPLIANCE WITH MIOSHA

All of the Contractors and subcontractors operations and construction equipment shall comply with requirements of the Michigan Occupational Safety and Health Act insofar as they apply to the work to be performed under this contract.

30. MONUMENTS

During the progress of the work, the Contractor may encounter street intersection, section line and fractional section line monuments. Insofar as known, such monuments have been indicated on the drawings. Contractor shall not remove any such monument until the Engineer shall have set four iron pipe stakes, each 2 feet long, as reference points for resetting of such monuments. Reference stakes shall be located in such positions that they will not be disturbed by any construction operations. The Contractor shall furnish the necessary iron pipe stakes, necessary labor and other assistance required by the Engineer for his/her work in setting the reference stakes. After referencing has been done and suitable permanent sketches prepared, the Engineer will give permission to the Contractor for removal of the monument. Monuments will be reset by Owner after all backfilling has fully settled.

SECTION 01025

MEASUREMENT AND PAYMENT

1.0 GENERAL

1.01 Scope

This section describes the method of measurement and basis for payment for all items of work included in the contract and specified in the Proposal. The Contractor shall provide all labor, materials, tools, equipment and services required to complete the work specified herein and indicated on the Plans. All items that are required for completion of the work as shown on the plans and not included in the proposal shall be considered to be included in the line items of the bid proposal.

Quantities are not guaranteed. Final payment will be based on actual quantities constructed. ***Contractor shall notify the City and receive approval in writing prior to incorporating quantities greater than those provided in the bid form.***

1.02 Items of the Proposal

Item 1 - Mobilization

This work shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; establishment of the Contractor's offices, buildings, and other facilities on or near the job site; project signs; expenses incurred prior to beginning work on the various contract items on the project site; and for other work or expenses, exclusive of bidding costs, incurred which are necessary direct costs to the project and not paid for separately in other contract items.

Mobilization will be paid in accordance with the following schedule:

<u>Partial Payment Schedule</u>

Percentage of Original Contract Amount Earned	Percentage of Bid Price for Mobilization Allowed
5%.....	20%
25%.....	60%
75%.....	100%

The total of all payments for this item shall not exceed the original contract amount bid for mobilization, regardless of the fact that the Contractor may have, for any reason, shut down his work on the project, moved equipment away from the project and then back again, or for additional quantities or items of work added to the contract.

Item 2 – Site Preparation
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for repair of the East Mill Pond Dam Spillway as per the specifications and preparation for diversion of the flow through the East Mill Pond Dam Spillway. Item shall include, but is not limited to sandbagging, cleaning, surface preparation, patching spalled areas including forming, anchors, repair mortar or concrete, and covering all surfaces with cement based waterproofing and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete repair of the East Mill Pond Dam Spillway as per the specifications and preparation for diversion of the flow through the East Mill Pond Dam Spillway whether or not specifically mentioned or implied.

Item 3 – Silt Fence
Will be measured and paid for at the Contract Unit Price per linear feet of installed fence. Price paid shall be payment in full for silt fencing. Item shall include, but is not limited to silt fence installation, maintenance and removal and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the silt fence whether or not specifically mentioned or implied.

Item 4 – Safety Fencing, Barricades, Signage
Safety Fencing, Barricades, Signage will be paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for devices required to prevent public access to the work area as indicated on the plans and to protect the work, and the work force while the contract is in force, and shall be as directed by the Engineer or by the City. Item shall include, but is not limited to, materials, devices, installation, maintenance, necessary work force, barricades, paint, cones, flashers, signs, inspection and testing of equipment, controls, switches, power supply, flashers and lights, and all other items necessary to complete the job whether specifically mentioned or implied.

Item 5 – Temporary Sheet Piling Cofferdam
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for the cofferdam in the location shown on the plans. Item shall include, but is not limited to design, installation and removal of the cofferdam and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the cofferdam whether or not specifically mentioned or implied.

Item 6 – Dewatering
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for dewatering as required for the project. Item shall include, but is not limited to well points, pumps, piping, filter bags and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete dewatering whether or not specifically mentioned or implied.

Item 7 – Demolition
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for demolition of the existing spillway/bridge structure. Item shall include, but is not limited to removal of the existing spillway, bridge and abutments down to the elevation indicated on the plans, re-use of concrete rubble including preparation and

placement as indicated on the plans, salvaging bridge railing and delivery to the City, hauling away and disposing of all waste materials from the demolition and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete demolition of the existing spillway/bridge structure whether or not specifically mentioned or implied.

Item 8 – Clearing and Grubbing
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for Clearing and Grubbing as required for the project. Item shall include, but is not limited to clearing and grubbing as required for all project excavation, access haul roads and drives, marking and removing from the site and disposing of trees and brush including roots, removing topsoil from areas to be excavated and stockpiling and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete Clearing and Grubbing whether or not specifically mentioned or implied.

Item 9 – Excavation
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for all excavation as required for the project. Item shall include, but is not limited to rough grading including borrow, hauling, placing and compacting fill, fine grading, removal and hauling excess or deleterious material from the site including disposal and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete all excavation as required whether or not specifically mentioned or implied.

Item 10 – MDOT Class II Fill
Will be measured and paid for at the Contract Unit Price per cubic yard. Price paid shall be payment in full for MDOT Class II Fill as required. Item shall include, but is not limited to providing, placing and compacting MDOT Class II Fill and all other costs for equipment, hauling, materials, tools, labor, supervision, and other items necessary to Fill whether or not specifically mentioned or implied.

Item 11 – Sheet Piling (Permanent)
Will be measured and paid for at the Contract Unit Price per square foot of installed sheet piling. Price paid shall be payment in full for construction of the sheet piling cutoff walls. Item shall include, but is not limited to sheet piling as per the plans and specifications including special sheets as required for changes in alignment, installation, cutting the top of the sheet piling to the indicated elevation, removing burrs and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the sheet piling cutoff walls whether or not specifically mentioned or implied.

Item 12 – Filter Fabric- Below Rock Weirs & Riprap
Will be measured and paid for at the Contract Unit Price per installed square yard. Price paid shall be payment in full for placing filter fabric below the rock weirs and riprap in locations indicated on the plans. Item shall include, but is not limited to surface preparation, filter fabric, installation, anchors and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the filter fabric whether or not specifically mentioned or implied.

Item 13 – Field Stone- Rock Weirs
Will be measured and paid for at the Contract Unit Price per ton. Price paid shall be payment in full for constructing the rock weirs as indicated in the plans and specifications. Item shall include, but is not limited to layout, grading and providing stone, hauling, placing and re-arranging as necessary and all other costs for equipment, shipping, weighing, materials, tools, labor, supervision, and other items necessary to complete construction of the rock weirs whether or not specifically mentioned or implied.

Item 14 – Marker Boulders
Will be measured and paid for at the Contract Unit Price each. Price paid shall be payment in full for marker boulders as indicated on the plans. Item shall include, but is not limited to providing, hauling, placing and re-arranging marker boulders and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the marker boulders whether or not specifically mentioned or implied.

Item 15 – Field Stone Riprap
Will be measured and paid for at the Contract Unit Price per ton. Price paid shall be payment in full for constructing riprap as indicated in the plans and specifications. Item shall include, but is not limited to layout, grading and providing stone, hauling, placing and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the riprap whether or not specifically mentioned or implied.

Item 16 – MDOT 6AA Stone
Will be measured and paid for at the Contract Unit Price per ton. Price paid shall be payment in full for MDOT 6AA stone as indicated in the plans. Item shall include, but is not limited to grading and providing stone, hauling, placing and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the MDOT 6AA stone whether or not specifically mentioned or implied.

Item 17 – 50/50 Mix MDOT 4AA and 6AA Stone
Will be measured and paid for at the Contract Unit Price per ton. Price paid shall be payment in full for 50/50 Mix of MDOT 4AA and MDOT 6AA Stone as indicated in the plans. Item shall include, but is not limited to grading and providing stone, hauling, placing and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the 50/50 Mix of MDOT 4AA and MDOT 6AA Stone whether or not specifically mentioned or implied.

Item 18 – Top Soil over Riprap
Will be measured and paid for at the Contract Unit Price per cubic yard. Price paid shall be payment in full for topsoil over riprap in locations indicated on the plans. Item shall include, but is not limited to screening, providing, hauling, placing, grading and compacting topsoil over riprap and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the topsoil over riprap whether or not specifically mentioned or implied.

Item 19 – Abutment Concrete
Will be measured and paid for at the Contract Unit Price per cubic yard of placed concrete. Price paid shall be payment in full for abutment concrete. Item shall include, but is not limited

to forming, providing and pouring concrete, finishing, curing and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the abutment concrete whether or not specifically mentioned or implied.

Item 20 – Abutment Rebar
Will be measured and paid for at the Contract Unit Price per pound of placed rebar. Price paid shall be payment in full for abutment rebar. Item shall include, but is not limited to providing and placing rebar and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the abutment rebar whether or not specifically mentioned or implied.

Item 21 – Abutment Piles, 12 inch CIP
Will be measured and paid for at the Contract Unit Price per vertical foot. Price paid shall be payment in full for abutment piles as indicated in the plans and specifications. Item shall include, but is not limited to providing and driving piles, concrete and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the abutment piles whether or not specifically mentioned or implied.

Item 22- Abutment Anchor Bolts and Railings
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for abutment anchor bolts and railings and other appurtenances. Item shall include, but is not limited to anchor bolts, bearing plates, fabrication, installation and painting of railings and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the anchor bolts, railings and other appurtenances whether or not specifically mentioned or implied.

Item 23 – Assemble and Set Pre-Fabricated Bridge
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for assembling and placing pre-fabricated bridge. Item shall include, but is not limited to unloading, assembly of bridge, preparation of crane path, moving and setting the pre-fabricated bridge and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary for assembling and placing pre-fabricated bridge whether or not specifically mentioned or implied.

Item 24 – Bituminous Trail Removal
Will be measured and paid for at the Contract Unit Price per square yard. Price paid shall be payment in full for removal of the bituminous trail within the limits shown on the plans. Item shall include, but is not limited to removal, hauling and disposal of existing bituminous trail material and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete removal of the bituminous trail whether or not specifically mentioned or implied.

Item 25 – Temporary Haul Road
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for temporary haul roads and drives as necessary to provide access to the work and deliver materials. Item shall include, but is not limited to fill, gravel, excavation, grading, temporary culverts, maintenance, and removal of imported materials at end of construction and all other costs for equipment, shipping, materials, tools, labor, supervision,

and other items necessary to complete construction of the temporary haul roads and drives whether or not specifically mentioned or implied.

Item 26 – 6 inch MDOT 22A Aggregate Base- Trails
Will be measured and paid for at the Contract Unit Price per square yard. Price paid shall be payment in full for construction of six inches of MDOT 22A Aggregate Base for the Trails. Item shall include but is not limited to providing, constructing, grading (scarifying, if necessary), shaping, and compacted the aggregate grade to insure positive drainage, remove all irregularities, and allow construction of the proposed trail components as shown on the Typical Cross-Sections. The surface shall then be finished to within a tolerance of ± ½ inch and compacted in place. The compacted depth shall not exceed 6 inches in thickness and be compacted to not less than 98 percent of the maximum unit weight. The Aggregate Base shall consist of aggregate that meets the Michigan Department of Transportation (MDOT) specifications for 22A. The frequency of testing shall be as directed by the engineer. Locations and limits of Aggregate Base shall be as shown on the plans and as directed by the engineer.

Item 27 – 2 inch Hot Mix Asphalt, MDOT 13A
Hot Mix Asphalt Pavement, of the type and thickness specified, will be paid for at the Contract Unit Price on a square yard basis. Price paid shall be payment in full for the bituminous mixture and shall include all materials, protection of existing improvements, the furnishing, placing, rolling and compacting the various lifts or courses, the furnishing and applying of bond coats, for barricading and traffic control and for all items and labor necessary to complete the job, whether specifically mentioned or implied.

Item 28 – Pea Stone- Canoe Landings
Will be measured and paid for at the Contract Unit Price per ton. Price paid shall be payment in full for Pea Stone under the canoe landing slabs. Item shall include, but is not limited to furnishing, hauling and placing pea stone and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the Pea Stone whether or not specifically mentioned or implied.

Item 29 – Place Concrete Slabs- Canoe Landings
Will be measured and paid for at the Contract Unit Price each. Price paid shall be payment in full for constructing the Canoe Landings as per plan. Item shall include, but is not limited to preparing slab bed, placing slab and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the Canoe Landings whether or not specifically mentioned or implied.

Item 30 – Erosion Control Blanket, Type 1
Will be measured and paid for at the Contract Unit Price per square yard of area covered. Price paid shall be payment in full for Type 1 erosion blankets as indicated in the plans. Item shall include, but is not limited to erosion blankets, staples, installation and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the Type 1 erosion blankets whether or not specifically mentioned or implied.

Item 31 – Erosion Control Blanket, Type 2
Will be measured and paid for at the Contract Unit Price per square yard of area covered. Price paid shall be payment in full for Type 2 erosion blankets as indicated in the plans. Item shall include, but is not limited to erosion blankets, staples, installation and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete construction of the Type 2 erosion blankets whether or not specifically mentioned or implied.

Item 32 – Restoration
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for restoring the site and all areas affect by the construction. Item shall include, but is not limited to restoring all disturbed areas, cleaning streets and storm sewers as necessary throughout the project, hauling and spreading stockpiled topsoil, providing and placing additional topsoil as required, providing and placing fertilizer, seed and mulch as indicated in the plans and specifications to all disturbed areas, repairing any damages caused during construction and all other costs for equipment, shipping, materials, tools, labor, supervision, and other items necessary to complete restoration of the entire area affected by the project as directed by the City whether or not specifically mentioned or implied.

Item 33 – Pedestrian Bridge
Will be measured and paid for at the Contract Unit Price on a lump sum basis. Price paid shall be payment in full for pre-fabricated pedestrian bridge as per the plans and specifications. Item shall include, but is not limited to design, fabrication, shipping and all other costs for equipment, materials, tools, labor, supervision, and other items necessary to complete construction of the pedestrian bridge whether or not specifically mentioned or implied.

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SECTION 02200

EARTHWORK FOR PAVING

1.0 GENERAL

1.01 DESCRIPTION

A. Scope

This Section includes Earthwork for Paving complete with excavation; subgrade undercut and backfill, embankments; subbase; ditching; restoration; complete with materials, field quality control and appurtenances.

B. Related Work Specified Elsewhere

1. Measurement and Payment: Section 1025

1.02 QUALITY ASSURANCE

A. Reference Standards

Unless otherwise specified, the Work for this Section shall conform to the applicable portions of the following Standard Specifications:
ASTM - American Society of Testing and Materials

AASHTO - American Association of State Highways and Transportation Officials

MDOT - Michigan Department of Transportation, 2003 Interim Standard Specification for Construction, Section 301

B. Allowable Tolerances

The finish subgrade surface shall not vary more than one-inch in ten (10) feet.

1.03 SUBMITTALS

A. Test Reports

1. Sieve Analysis

   The testing lab shall provide the ENGINEER with two (2) certified copies of the sieve analysis of the backfill material. The testing of the material and the certification of the test results shall be performed by a testing laboratory approved by the ENGINEER.

2. Compaction and Moisture Testing

The testing lab shall provide the ENGINEER with two (2) certified copies of the compaction and moisture tests of the backfill and subgrade materials. The testing of the materials and the certification of the test results shall be performed by a testing laboratory approved by the ENGINEER.

2.0 PRODUCTS

2.01 MATERIALS

A. Granular Materials

The granular material gradation shall conform to the grading requirements for granular material Class II as specified in the MDOT 2003 Interim Standard Specification for Construction, Section 902.

3.0 EXECUTION

3.01 CONTRACTOR'S VERIFICATION

A. Existing Improvements

The CONTRACTOR shall expose existing sewers and structures to which the new Work is to be connected and notify the ENGINEER of same. The ENGINEER will verify the vertical and horizontal locations of the existing system and shall inform the CONTRACTOR as to the necessary adjustments required to align the new Work with the existing system.

3.02 PERFORMANCE

A. General

1. CONTRACTOR shall rough grade as close as possible to finished subgrade leaving a minimum to be removed in fine grading.

2. During the excavation operation, including the placing of the subbase, the Work area shall be kept free of water. A dewatering system shall be provided and maintained by the CONTRACTOR at his/her expense. The dewatering system shall remain in operation as directed by the ENGINEER.

B. Pavement Excavation

Pavement excavation shall consist of all Work required to construct the earth grade and its appurtenances true to the lines, grades, and cross sections called for on the Plans and in accordance with these Specification. Excavation shall consist of the following items, any or all of which may be included or incidental to it; removing

trees, stumps, hedges, roots, culverts, sewers, miscellaneous structures, roadway excavation, backfilling, compaction, removing of all asphalt or concrete pavements, curbs, curb and gutters, sidewalks, end headers, removing aggregate surfaces, salvaging and stockpiling topsoil, subgrade undercut, excavation for structures, trimming and finishing earth grade, fine grading, right-of-way ditching and restoration, and the disposal of all unsuitable material.

All large stones, trees, stumps, bush, shrubs, logs, matted roots, other vegetation and debris occurring between lines three (3) feet outside the grading limits shall be completely removed and properly disposed of as specified in Section, Clearing and Grubbing.

All earth and other existing materials shall be excavated for the full depth and width of the cross section as shown on the Plans. Material shall be excavated sufficiently for setting of forms or slip-form equipment.

Excess excavated material shall be removed from the project by the CONTRACTOR along approved routes to disposal sites approved by the OWNER. Disposal of excess excavation and maintenance of the dump sites shall be considered included in the price paid for excavation.

The broken down structure and void shall be backfilled with a granular material, compacted in place, and shall meet with the approval of the ENGINEER.

C. Preparing Trail Subgrade

All muck, peat and other unsuitable material within the Trail Alignment shall be removed, displaced or otherwise treated as shown on the Plans or as directed by the ENGINEER. All deposits of frost heave material within lines two (2) feet outside the proposed trail shall be removed to a depth of three (3) feet below the surface of the earth grade, unless otherwise shown on the Plans or directed by the ENGINEER. All ice and snow shall be removed from the surface of the ground before the embankment is placed thereon.

All muck, peat frost heave material and other unsuitable material shall be disposed of outside the project limits or shall be spread uniformly in low places when so directed by the ENGINEER.

Oil road surfacing or gravel, crushed stone, or other nonrigid type, occurring within the area of the trail and underlying proposed embankment less than 1-foot in depth, and which is not to be salvaged and incorporated in the new Work, shall be plowed or scarified full depth, spread and compacted to form a uniform foundation, before any new embankment is placed thereon.

Old pavement and other rigid structures, occurring within the area of the trail and underlying the proposed embankment less than 1-foot in depth and which are not to be incorporated into the new Work, shall be broken up and removed.

D. Unsuitable Subgrade Excavation

Unsuitable subgrade excavation shall be the operation of removing unsuitable soils below the level of the ground after topsoil has been stripped in fill areas where the embankment is to be five (5) feet or less in height to plan grade, and the removal of unsuitable soils, below the subgrade elevation, as determined by the ENGINEER in cut areas after the subgrade has been established.

The ENGINEER will inspect the embankment area to certify the adequacy of the native soils and to determine the extent of any additional excavation of unsuitable soils prior to placing the first lift of the embankment.

In cut areas after the subgrade elevation has been established by the mass grading operation, the ENGINEER will inspect the subgrade to determine the extent of any additional excavation of unsuitable soils.

The areas excavated of unsuitable material shall be backfilled with nonfrost heaving material similar to the adjacent soil, except that when directed by the ENGINEER for areas where free water due to seepage is present, the excavation shall be backfilled with Granular Material, Class II, and drainage shall be provided. The backfill shall be compacted in not more than 8 inch lifts to not less than 95% of the maximum unit weight, unless otherwise specified.

E. Subgrade

The area to be paved shall be excavated and smooth to the line, grade and cross section as indicated on the Plans.

The subgrade between lines two (2) feet on either side of the proposed edge of pavement or curb shall be compacted to 95% of the maximum unit weight for a depth of seven (7) inches, by rolling with a roller weighing not less than ten (10) tons.

The subgrade shall be completed ahead of placing forms a distance equal to the distance of one day's average paving operation. Prior to the paving operation, the subgrade shall be shaped and compacted to the Plan cross section by approved mechanical means.

F. Subbase

Subbase material shall be evenly spread and compacted as specified in MDOT 2003 Interim Standard Specifications for Construction, Section 301.

The thickness of each layer placed shall be determined by the required density obtained but shall not exceed 15 inches in depth, loose measure.

The subbase shall be constructed to the alignment, grade and cross section shown on the Plans. Should the subgrade at any time prior or during the placing of the subbase become soft or unstable so that rutting occurs in the subgrade, or it the subgrade material is forced up into the subbase material, the operation shall immediately cease and the mixed material shall be removed and disposed of. The subgrade shall be corrected and new subbase material placed and compacted, and shall be considered incidental to the construction of the Project.

G. Trail Corridor

The trail corridor shall be restored in accordance with the type and location specified on the Plans. The trail corridor may be shaped by "Machine Grading" or another method approved by the ENGINEER to achieve the cross section, line and grade shown on the Plans.

The excess material from the trail corridor restoration operation shall be disposed of by the CONTRACTOR at his/her expense, as specified in Section, General Earthwork.

The trail corridor shall be graded to receive either topsoil and seed or topsoil and sod. The topsoil, see, sod, fertilizer and mulch shall conform to the requirements specified on the Plans and in Section, Seeding or Sodding.

The CONTRACTOR, at his/her expense, shall furnish, place, and compact any additional fill, meeting the approval of the ENGINEER, needed to construct the right-of-way to the cross sections called for on the Plans.

H. Trimming and Finishing Earth Grade

After the earth grade has been constructed to the required grade, all stones and rocks more than three (3) inches in diameter, appearing on the surface of the subgrade shall be removed.

The earth grade and the subgrade shall be trimmed to the grade called for on the Plans. The subgrade, where a subbase is required, shall be trimmed to the established grade within 0.1 foot. Where a subbase is not required, the subgrade shall be trimmed to the established grade within : inch.

The earth grade outside the subgrade shall be trimmed all irregularities made smooth and the entire site or roadway completed to the required lines, grades, and cross sections.

3.03 FIELD QUALITY CONTROL

A. Testing

During the course of the Work, the ENGINEER may require testing for compaction and moisture of the backfill and subgrade materials and sieve analysis of the backfill and subgrade materials. The taking of samples and the testing required shall be performed by a testing laboratory approved by the ENGINEER. The ENGINEER shall determine the location and number of samples to be made. The testing laboratory shall furnish the ENGINEER with two (2) certified copies of the results of all tests. Testing procedures shall conform to current MDOT Standards for Construction. The cost for testing and sampling shall be at the expense of the OWNER.

B. Defective Work

Any portion of the backfill or subgrade which is deficient in the specified density shall be corrected by methods meeting the approval of the ENGINEER.

Any extra testing or sampling required by the ENGINEER, because of deficiencies, shall be at the CONTRACTOR'S expense.

SECTION 02231

AGGREGATE BASE AND SURFACE COURSES

1.0 GENERAL

1.01 DESCRIPTION

A. Scope

This section includes aggregate base and surface courses complete with aggregate materials, aggregate base courses, aggregate surfaces, aggregate shoulders, and aggregate approaches.

B. Related Work Specifies Elsewhere

Measurement and Payment: Section 1025
Bituminous Paving: Section 2511

1.02 QUALITY ASSURANCE

A. Reference Standards

Unless otherwise specified, the Work for this section shall conform to the applicable portions of the following Standard Specifications:

ASTM – American Society of Testing and Materials

MDOT – Michigan Department of Transportation, 2003 Interim Standard Specifications for Construction, Section 302.

B. Allowable Tolerances

The finished surface shall be shaped to conform to within a tolerance of ±½ inch.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

Aggregate shall be deposited in stockpiles in such a manner that the material may be removed from the stockpile by methods which will provide aggregate having a uniform gradation.

2.0 PRODUCTS

2.01 MATERIALS

A. Dense Graded Aggregates

The dense graded aggregate gradation shall conform to ASTM D693 and to dense graded aggregate, Series 22 and 23 as specified in MDOT 2003 Interim Standard Specifications for Construction, Section 902.

B. Calcium Chloride Additives

The calcium chloride additives shall conform to ASTM D98 and as specified in MDOT, Section 810.

C. Water

Water used for compaction and dust control shall be reasonably clean and free from substances injurious to the finished product. Water from sources approved by the MDEQ as potable may be used.

3.0 EXECUTION

3.01 CONTRACTOR'S VERIFICATION

A. Subgrade Conditions

Prior to placing of any aggregate material, examine the subgrade to ascertain that it is adequate to receive the aggregate to be placed. Ascertain that the subgrade is adequately compacted to receive the new work. Correct all deficiencies before proceeding with the work.

3.02 PREPARATION

A. Subgrade

The subgrade shall be fine graded to the cross section indicated on the Plans and shall be thoroughly compacted prior to placing the aggregate material.

3.03 INSTALLATION

A. General

The width, thickness, and type of aggregate materials shall be as indicated on the Plans or as directed by the Engineer. No aggregate material shall be placed until the subgrade, subbase, or existing aggregate surface has been approved by the Engineer.

B. Aggregate Base Course

The aggregate base course shall be placed by a mechanical spreader or other approved means, in uniform layers to such a depth that when compacted, the course will have the thickness shown on the Plans.

The aggregate shall be compacted to at least 98% of the maximum unit weight by the use of a pneumatic tired compaction equipment or vibratory compactors. The optimum moisture content shall be maintained until the prescribed unit weight is obtained and each layer shall be compacted until the maximum unit weight is obtained before placing the succeeding layer. When approved by the Engineer additional water may be applied by an approved means, to the aggregate to aid in the compaction and shaping of the material.

Motor graders or other approved equipment shall be used to shape the aggregate base course and maintain it until the surface course is placed.

When hauling material over the base course or subgrade, the Contractor shall limit the weight and speed of his/her equipment to avoid damage to the subgrade or aggregate base course. If the subgrade or aggregate base course becomes rutted due to the Contractor's operation, the subgrade or base course shall be removed and replaced, acceptable to the Engineer, at the Contractor's expense.

C. Aggregate Surface Course

Where the base for the new aggregate surface course is an existing aggregate surface, the existing surfacing shall be either graded or scarified and graded to remove surface irregularities and to provide a bond between the old and the new surfaces.

The aggregate surface course shall be placed by a mechanical spreader or other approved means, in uniform layers to such a depth that when compacted, the course will have the thickness shown on the Plans.

The aggregate shall be of a uniform mixture when placed on the prepared base. It shall be uniformly spread and then floated with a road grader or other approved means until the surface is free from waves and irregularities. The floating shall be alternated by rolling with a pneumatic tired or tamping type roller. The entire operation shall continue until the surface course is compacted to 98% of the maximum unit weight.

D. Temperature Limitations

Aggregate materials shall not be placed when there are indications that the materials may become frozen before the specified unit weight is obtained. In no case shall the aggregate be placed on a frozen subgrade or base course.

3.04 FIELD QUALITY CONTROL

A. Testing

During the course of the work the Engineer may require testing for compaction and for thickness of the material. The testing shall be performed by a testing laboratory approved by the Engineer. The cost for such testing shall be at the expense of the Owner.

B. Defective Work

Measurements of aggregate base and surface course thickness will be made to the nearest 1/4 inch. Depths may be 1/2 inch less than the thickness indicated on the Plans provided that the average thickness of all measurements taken at regular intervals shall be equal to or greater than the specified thickness. In determining the average thickness, measurements which are more than 1/2 inch in excess of the thickness indicated on the Plans will be considered as the specified thickness plus 1/2 inch.

Locations of depth measurement will be as directed by the Engineer. Sections found to be deficient in depth shall be corrected by the Contractor using methods approved by the Engineer.

SECTION 02511

BITUMINOUS PAVING

1.00 GENERAL

1.01 DESCRIPTION

A. Scope

This Section includes bituminous paving complete with bituminous materials; bituminous mixtures; installation of bituminous courses and construction of bituminous pavement.

B. Related Work Specified Elsewhere

1. Method of Payment: Section 1025
2. Earthwork for Paving: Section 2200

1.02 QUALITY ASSURANCE

A. Reference Standards

Unless otherwise specified, the Work for this section shall conform to the applicable portions of the following Standard Specifications:

ASTM	American Society of Testing & Materials
AASHTO	American Association of State Highway and Transportation Officials
MDOT	Michigan Department of Transportation, 2003 Interim Standard Specifications for Construction

B. Allowable Tolerances

The finished surface shall be shaped to conform to the cross section and grades called for on the Plans to within a tolerance of:

1/2 inch in 10 feet for Aggregate Base
1/8 inch in 10 feet for Bituminous Concrete Pavement

1.03 SUBMITTALS

A. Reports

1. At the request of the Engineer, the Contractor shall provide the Engineer with certification that the materials to be used conform to the ASTM and MDOT Standards referred to in the Specifications.

2. The Contractor shall provide the Engineer, or his authorized representative with the certified batch plant delivery tickets prior to the placing of materials

B. Test Reports

A testing laboratory approved by the Engineer shall provide two certified copies of all reports.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Stockpiling Aggregate

Aggregate shall be deposited in stockpiles in such a manner that the material may be removed from the stockpile by methods which will provide aggregate having a uniform gradation.

2.00 PRODUCTS

2.01 MATERIALS

A. Bituminous Concrete Mixtures

1. General

   The bituminous mixtures used shall be as called out on the plans.

2. Bituminous Mixtures

   The Contractor shall furnish the Engineer with a copy of the mix design satisfying the applicable MDOT specifications for the designated bituminous mixture. The mixtures must also be produced by a certified bituminous mixture plant approved by the Engineer.

3. Asphalt Cement

   The PG grade used must meet or exceed the specifications as illustrated in 2003 Interim Standard Specifications for Construction Section 904 - ASPHALTIC MATERIALS. The Specified Grade for lower Michigan is: PG 58-28.

4. Wearing and Leveling Surfaces

   The prepared foundations shall be treated by an application of a bond coat of SS-1h or MS-2a (2003 Interim Standard Specifications for Construction Section 904 - ASPHALTIC MATERIALS). The wearing course shall be applied over the areas as shown on the Plans. When the application rates for a bituminous mixture exceeds 100 lb/ sq. yd. the mixture shall be constructed in two or more lifts.

3.00 EXECUTION

3.01 CONTRACTOR'S VERIFICATION

Prior to placement of any bituminous concrete pavement, examine the existing aggregate base for grade and condition. Ascertain that the base is adequate to receive the bituminous concrete pavement.

Correct all defects and deficiencies before proceeding with the Work.

3.02 INSTALLATION

A. General

1. The width, thickness and type of bituminous paving shall be specified on the Plans, indicated in the Proposals or as directed by the Engineer.

2. Driveway approaches shall be provided as specified in locations called for on the Plans or as directed by the Engineer.

B. Equipment Requirements

The Contractor shall furnish sufficient equipment for the placing of the bituminous paving material. The equipment shall be on the job site ready for normal operation before the placing of material is started. All equipment shall be in good working order. The equipment shall conform to the requirements as specified in MDOT , Section 502.

C. Weather and Seasonal Limitations

Bituminous mixtures shall not be placed nor the bond coat applied when rain is threatening or when moisture on the existing surface would prevent satisfactory bonding.

The temperature and seasonal requirements shall be in accordance as specified by 2003 Interim MDOT Specifications, Section 502.

3.03 FIELD QUALITY CONTROL

A. Testing

During the course of the Work, the Engineer may require testing for compaction or density and for thickness of material. The testing and coring required shall be performed by a testing laboratory approved by the Engineer. The cost for testing shall be at the expense of the Owner.

Testing procedures shall conform to current MDOT Standards for Construction.

SECTION 02930

TOPSOIL, SEEDING, FERTILIZER AND MULCH

1.0 GENERAL

1.01 DESCRIPTION

A. Scope

This section includes preparing foundation, topsoil, seed, sod, mulching material, chemical fertilizer nutrients, and watering as necessary to ensure healthy materials.

Friable is defined as a soil which is easily crumbled or pulverized. A soil in friable condition is defined as a surface which is in a crumbled, pulverized, worked-up, loosened, or cultivated state; free of lumps and clods detrimental to seeding and sodding operations.

B. Related Work Specified Elsewhere

General Conditions

1.02 QUALITY ASSURANCE

A. Reference Standards

Unless otherwise specified, the work for this section shall conform to the applicable portions of the following Standard Specifications:

ASTM - American Society for Testing and Materials

MDOT - Michigan Department of Transportation

1.03 SUBMITTALS

A. Testing

Visual inspection or other basis of acceptance of landscaping material will be as specified in this section or in the Materials Sampling Guide.

B. Reports

Each container of fertilizer shall be plainly marked by the manufacturer and shall include the analysis of the contents showing minimum percentages of total nitrogen, available phosphoric acid and soluble potash.

Seeding mixtures shall meet the requirements for purity and germination as specified in the Proceedings of the Association of Official Seed Analysis, Rules for Testing Seeds. Deficiencies below the percentage specified for purity and germination will be evaluated by the Owner prior to placing mix.

Seeds shall be furnished in durable bags with the mixture, name of seed combination, lot number, net weight of contents, purity and germination marked on each bag.

Manufacturer or supplier of turf mulch blankets shall submit specifications to the Owner for approval, to ensure compliance with the specifications.

2.0 PRODUCTS

2.01 MATERIALS

The materials shall meet the requirements of 2003 MDOT Interim Specifications, Section 816, Turf Establishment.

A. Topsoil

Topsoil shall consist of dark, organic, natural surface soil encountered on the project, exclusive of any peat or muck. Topsoil furnished from outside the grading limits shall be of equal or greater value than native surface soils and shall be approved by the Owner prior to placement. All topsoil shall be screened using a sieve with a maximum of one (1) inch openings.

As an alternate to using screened topsoil the Contractor may use material approved by the Owner but shall perform operations such as raking, disking, or harrowing to remove all foreign matter and to ensure no clumps, stones or other debris greater than one inch in the topsoil will be placed.

B. Seed Mixtures

Seeding mixtures shall be composed of certified seed of the purity, germination, and proportions, and weight as specified in the following table:

SEEDING MIXTURE - CLASS I

Seed Type	Minimum Purity	Minimum Germination	Mixture Proportions
Perennial Rye	99%	90%	30%
Kentucky Blue	90%	80%	30%
Creeping Red Fescue	95%	90%	40%

Where Contractor disturbed areas of landscaping, or lawns, Contractor shall be responsible for determining the correct seed mixture to blend in with adjacent growth. A commercially available lawn seed mixture shall be used in all cases. When a match can not be obtained, or when other mixture is not specified, contract shall use Class 1 mixture.

SEEDING MIXTURE - CLASS 2

Seed Type	Minimum Purity	Minimum Germination	Mixture Proportions
Perennial Rye	99%	90%	40%
Alsike	98%	90%	20%
Creeping Red Fescue	95%	90%	40%

Seeding classification will be based on the kind and rate of application of seeding mixtures as specified in the following table:

Classification	Intended Use	Sowing Rate lbs/acre
Class 1	Lawns, Landscaped Areas	200
Class 2	Drain Side Slopes, Watercourse Grade Outs, Culvert Slopes, Spoil Areas	100

C. Mulching Materials for Seeding

Loose mulch and mulching material shall consist of any straw or marsh hay in an air-dried condition. Hay in an air-dried condition will not be permitted. Mulch materials shall be undamaged, rot free, clean, substantially free of weed seed and other objectionable matter.

D. Chemical Fertilizer

Fertilizer intended for use in connection with seeding, sodding or other planting should be standard, commercial, packaged or bulk products in granular or liquid form. Each container of packaged fertilizer shall be plainly marked my the manufacturer and shall include the analysis of the contents showing minimum percentages of total nitrogen, available Phosphoric Acid and total available potash mixed with not less than 40 percent by weight of filler. Unless otherwise specified Class A fertilizer shall be used.

Component	Class A	Class B	Class C
Nitrogen: 60% Soluble, 40 % insoluble	1 part	2 part	
Phosphoric Acid	1 part		
Potash	1 part	1 part	
Nitrogen: 50% Soluble, 50 % Insoluble			1 part

3.0 EXECUTION

3.01 TOPSOILING

A. Preparation of Earth Bed

When topsoil is required by the Owner, or included with the Plans and Specifications, the earth bed upon which the topsoil is to be placed shall be at the required grade and properly trimmed. Prior to placing the topsoil, the earth bed shall be in a friable condition for a depth of 2 inches, including areas previously mulched or seeded for erosion control. Earth beds not in a friable condition just prior to placing the topsoil shall be harrowed with a disk, a spring tooth drag, a spike tooth drag, or other means meeting the approval of the Owner.

B. Placing Topsoil

Topsoil shall be spread on the prepared areas to a depth of 3 inches with a tolerance of plus or minus 1 inch, unless otherwise shown on the plans or as authorized by the Owner. After spreading, any large clods and lumps shall be broken with a pulverize or by other effective means, and all stones and rocks over 2 inches in diameter, roots, litter or any foreign matter considered objectionable by the Owner shall be removed

prior to fertilization, seeding, or sodding. After the spreading is complete, the topsoil shall be in a friable condition. The prepared topsoil shall be in reasonably close conformity to the lines, grades and cross sections shown on the plans.

Surplus excavated topsoil or salvaged topsoil shall be stockpiled within the right of way as directed by the Engineer.

3.02 CHEMICAL FERTILIZER

A. Placing Fertilizer

Areas to be seeded and sodded shall be uniformly fertilized. Granular fertilizer shall be free from clumps, and shall be incorporated into the upper 2" by light disking or harrowing. Granular fertilizer shall not be used by the hydro-method.

Fertilizer manufactured to be applied by the hydro-method shall be constantly agitated while being applied and will not require disking and harrowing after being placed. Water soluble fertilizer shall be applied within two hours after seed has been added to the mixture.

B. Application Rate

Unless otherwise specified Class A fertilizer shall be assumed for areas requiring fertilizer. Application shall be on the prepared topsoil surface at a rate which will provide 300 lbs per acre of chemical nutrients. Class B fertilizer shall be applied at a rate of 120 and Class C at 80.

3.03 SEEDING

A. Sowing

The seed shall be sown following or in conjunction with the fertilizer while the seed bed is in a friable condition. Harrowing shall be done horizontally across the face of the slope to minimize the effects of erosion. Unless hydro-applied, the seed shall be lightly raked into the surface and rolled once with a light hand roller. The seeded areas shall be thoroughly watered in such a manner to not disturb or wash away the fertilizer or seed. Contractor shall make a reasonable effort to water the seed as necessary until the grass is well established. Raking or rolling shall be completed with care taken to maintain an even distribution of seed and fertilizer.

When mulch is required, or turf mulch blankets, seed shall be placed directly on the topsoil and the mulch applied separately.

B. Temporary Seeding

Temporary seeding shall be placed at the locations determined by the Owner, or Soil Erosion Permitting Agency. Seeding of this nature shall be done in such a manner to

stabilize open areas and stage construction activities, or stockpiles. Temporary seeding shall be placed in accordance to MDOT 2003 Interim Standard Specifications Section 816.03.

C. Seasonal Limitations

Seeding of the type specified shall be completed within the limitations established in the MDOT Standard Specifications, Section 816.

D. Inspection

The Owner shall inspect the seeded turf to insure that the end product is well established, weed free, free from debris, and to the correct grade and fertilizer to ensure an even distribution and amount of growth. Areas that fail the inspection shall require additional seed, fertilizer, or mulch shall placed at no additional cost to the Owner.

3.04 MULCHING

A. Straw Mulching

Straw mulch shall be placed on a given area within one day after the seeding has been placed.

Mulching operations shall not be performed during periods of excessively high winds which would prevent the proper placing of the mulch and anchoring mulch.

The placed mulch shall be loose or open enough to allow some sunlight to penetrate and the air to slowly circulate, but thick enough to shade the ground, conserve soil moisture, and prevent or reduce water or wind erosion.

The Contractor shall maintain the mulched areas and shall repair all areas damaged by erosion, traffic, fire or other causes prior to final or partial acceptance of work under the contract. Mulch which has become displaced shall be replaced at the Contractor's expense.

B. Turf Mulch Blankets

The mulch blankets shall be placed on a given area within one day after the seeding has been placed. Blankets shall be laid with a six inch overlap in accordance with manufacturer's recommendations.

Net anchors shall be placed according to the staple pattern recommended by the manufacturer for the specific blanket selected and the field conditions. Staples or pins shall be supplied from the turf mulch blanket manufacturer.

Blankets installed shall be placed in accordance with the plans.

SECTION 03300

CAST-IN-PLACE CONCRETE

1.0 GENERAL

1.01 DESCRIPTION

A. Scope

This Section includes all monolithic cast-in-place concrete work complete with materials, mixes, installation and testing.

B. Related Work Specified Elsewhere

1. Measurement and Payment: Section 1025

1.02 QUALITY ASSURANCE

A. Reference Standards

Unless otherwise specified, the Work of this Section shall conform to the applicable portions of the following Standard Specifications:

ACI - American Concrete Institute

ASTM - American Society for Testing and Materials

MDOT - Michigan Department of Transportation, 2003 Interim Standard Specification for Construction

B. Reference Specifications

The latest or current ACI Standards and Code Requirements for "Concrete and Reinforced Concrete" shall govern all concrete Work except where otherwise specified herein.

C. Testing Agency

All inspections and tests required by this Section shall be performed by organizations acceptable to the ENGINEER.

D. Design Criteria

1. Concrete Mix

   Mixes shall be designed and tested for each size and gradation of aggregates and for each consistency intended for use. Design quantities and test results of each mix shall be submitted for review.

E. Source Quality Control

Furnish tests of cement and aggregates. Material sampling shall conform to the following ASTM Standards: Cement C183, Aggregates D75. Testing shall be in accordance with applicable ASTM Standards to assure compliance with Specifications.

1.03 SUBMITTALS

A. Shop Drawings

Submit Shop Drawings showing the location of joints. Included shall be a schedule of the concrete pouring. The location of joints and pouring schedule shall be subject to approval by the ENGINEER.

B. Test Reports

The CONTRACTOR shall submit test reports for cement and aggregates to assure compliance with the Specifications.

C. Mix Design

Concrete mixture designs and test data shall be submitted for review by the ENGINEER with a written request for approval. No concrete shall be place until the CONTRACTOR has received such approval in writing.

Each mixture report shall include:

Slump on which design is based.

Total gallons of water per cubic year.

Brand, type, composition, and quantity of cement.

Ratio of fine to total aggregates.

Weight (surface dry) of each aggregate per cubic yard.

Brand, type, ASTM designation, active chemical ingredients, and quantity of each admixture.

Air content.

Compressive strength based on 7-day and 28-day compression tests.

Time of initial set.

D. Concrete Delivery Ticket

Submit a sample concrete delivery ticket for review by the ENGINEER.

E. Field Reports

1. Concrete Delivery Ticket

   Submit tickets collected at the site of concrete placement accompanying each load of concrete. A printout system for producing these tickets in connection with automatic batching will be permitted.

   Each ticket shall be serially numbered, show the charging time, quantity and grade of concrete, location of delivery and the signatures of inspectors at the plant and site. Transit mixed concrete tickets shall also include revolution counter reading at charging and mixing completion.

2. Testing at Placement

   Submit reports of the sampling and testing of slump, air content and strength performed.

3. Testing Concrete In Place

   Submit reports of nondestructive, core and/or liquid retention testing required for acceptance of concrete in place.

1.04 MATERIAL STORAGE AND HANDLING

Materials shall be stored and handled in accordance with ACI 304 and as specified below.

A. Cement

Cement sacks shall be thoroughly shaken when emptying sacks into the batch. Cement salvaged by the CONTRACTOR by cleaning sacks mechanically or otherwise, or from discarded sacks of cement, shall not be used in the Work. The use of a fractional sack of cement will not be permitted unless the fractional part is measured by weight. At the time of its use in the Work, the cement shall be free from lumps.

B. Aggregates

1. Storage

   No aggregates which have become intermixed prior to proportioning shall be used. Sufficient aggregate shall be available at the site to preclude the possibility of damaging delays while placing the concrete.

2. Handling

   Cars used for shipping aggregates shall be clean and in good repair. The use of straw, marsh, hay or other similar materials for closing cracks or holes in cars will not be tolerated.

C. Curing Compound

Store and handle in a manner to prevent contamination.

2.0 PRODUCTS

2.01 MATERIALS

The materials shall meet the requirements of ACI 301, ACI 350R-77, and 2003 MDOT Interim Specification, Sections 901-903 and 911.

A. General

Concrete materials shall be tested and inspected as the Work progresses. The review and/or check-test of the proposed materials, securing of production samples of materials at plant stockpiles and/or review of the manufacturer's reports for compliance will be performed at no cost to the CONTRACTOR.

Testing and inspection required due to substitution or change of materials requested by the CONTRACTOR, shall be at the CONTRACTOR'S expense.

B. Cement, Aggregates, and Admixtures

1. Shall meet requirements from 2003 MDOT Interim Specification 1996 MDOT Specifications, Section 901-903.

C. Water

1. Shall meet the requirements of 2003 MDOT Interim Specifications, Section 911.

D. Curing Compound

Shall be adequate to prevent checking, cracking and loss of moisture, conforming to ASTM C309.

2.02 MIXES

Concrete shall consist of a mixture of air-entraining Portland cement, coarse and fine aggregate, and water with admixtures if required. Admixtures shall not be used without the ENGINEER's review. The mixture, combined in proportions, shall meet the requirements of 2003 MDOT Interim Specification 601, and ACI 211.1.

A. General

Concrete shall be classified and proportioned on the basis of minimum compressive strength at 28 days when cured in a moist room at a temperature within the range of 65 degrees to 75 degrees F. The desired strength of the concrete shall be shown on either the Plans or in the Specifications.

B. Temperature Limits of Mixture

The temperature of the concrete, at the time of delivery to the mixer, shall be between 7□C and 32 □C. It may be required that it be stored at the CONTRACTOR's expense until cooled to that temperature.

C. Change of Mixture

If the CONTRACTOR requests a change or substitution of approved batch proportioning, mixing, or delivery operations additional testing and/or inspection shall be at the CONTRACTOR's expense.

3.0 EXECUTION

3.01 CONTRACTOR'S VERIFICATION

A. Formwork, Reinforcing, and Subgrades

The CONTRACTOR shall inspect formwork, reinforcement and subgrades to confirm compliance with the related Work Specified elsewhere.

3.02 PREPARATION

A. Notification

The CONTRACTOR shall notify the ENGINEER two (1) working day prior to placement of concrete.

B. Dewatering

No concrete shall be deposited in any unit until the area has been completely dewatered and not until after the CONTRACTOR has made satisfactory provisions to eliminate all possibility of water entering or flowing through the concrete while it is being poured or is taking it set. No concrete shall be placed under or on water.

3.03 INSTALLATION

A. Placing

1. General

   All concrete shall be compacted by continuous vibrating, tamping, spreading or slicing. Care shall be taken to eliminate all voids and to provide full bond reinforcing steel, and embedded fixtures.

   No concrete shall be placed in contact with frozen ground. Time between charging and placement of concrete shall not exceed 12 hours.

2. Vibrating

   Concrete shall be compacted by continuous vibrating, tamping, spading or slicing. Care shall be taken to eliminate all voids and to provide full bond on reinforcing steel and embedded fixtures. Mechanical vibration shall be employed.

B. Concrete Curing

All concrete shall be cured for a period not less than seven (7) consecutive days. The CONTRACTOR shall have adequate equipment and curing material on the job site before concrete placement begins, and it shall be adequate to prevent checking and cracking and loss of moisture from all the surfaces of the concrete.

1. Chemical Compound

   Curing compounds when used shall be applied in strict accordance with the manufacturer's recommendations.

2. Water

   Concrete cured with water shall be kept wet by covering with ponded water of fog spraying to keep all surfaces continuously wet.

3.04 FIELD QUALITY CONTROL

A. Concrete Delivery Ticket

A ticket system for recording the transportation of concrete from the batching plant to point of delivery. This ticket shall be issued to the truck operator at the point of loading and given to the ENGINEER upon delivery.

B. Concrete Delivery Rejection

Concrete not permitted for inclusion in the Work by the ENGINEER shall be removed from the site. Rejection of concrete will be determined through Field Quality Control and elapsed time from mixer charging to delivery.

C. Concrete Testing at Placement

Tests shall be made of each batch of concrete delivered each 50 cubic yards, or whenever consistency appears to vary. The sampling and testing of slump, air content and strength will be performed at no cost to the CONTRACTOR.

1. Sampling

   Composite samples shall be secured in accordance with the Method of Sampling Fresh Concrete, ASTM C172.

2. Slump Test

   Test shall be in accordance with ASTM C143. The CONTRACTOR shall use the least slump possible consistent with workability for proper placing of the various classifications of concrete.

3. Air Content

   Determine air content of normal weight concrete in accordance with Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method, ASTM C231, for each strength test.

4. Compressive Strength

   Make two (2) strength tests of three (3) samples each for each 50 cubic yards, or fraction thereof, of each mix design of concrete placed in any one (1) day.

   a. Handling Samples

      Mold and cure three specimens from each sample in accordance with Method of Making and Curing Concrete Test Specimens in the Field,

ASTM C31. Any deviation from the requirements of this Standard shall be recorded in the test report.

b. Compressive Strength of concrete shall meet 2003 MDOT Interim Specifications, Section 601.

c. Testing

Test specimens in accordance with Method of Test for Compressive Strength of Cylindrical Concrete Specimens, ASTM C39. One (1) specimen shall be tested at seven (7) days for information and two (2) shall be tested at 28 days for acceptance. The acceptance test results shall be the average of the strengths of the two (2) specimens tested at 28 days. If one (1) specimen in a test manifests evidence of improper sampling, molding or testing, it shall be discarded and the strength of the remaining cylinder shall be considered the test result. Should both specimens in a test show any of the above defects, the entire test shall be discarded.

d. Acceptance of Concrete

The strength level of the concrete will be considered satisfactory so long as the averages of all sets of three (3) consecutive strength test results equal or exceed the specified 28-day strength and no individual strength test result falls below the specified 28-day strength by more than 500 psi.

If the strength test is not acceptable, further testing shall be performed to qualify the concrete.

e. Concrete Temperature

Determine the temperature of concrete sample for each strength test.

D. Defective Concrete

If, in the opinion of the ENGINEER, the defects in the concrete are of such a nature as to warrant condemnation, that potion of the pour may be ordered replace in its entirety and the CONTRACTOR shall promptly replace same without additional compensation.

SECTION 04100

PEDESTRIAN BRIDGE

1.0 GENERAL

1.1 Scope

These specifications are for a fully engineered clear span bridge of steel construction and shall be regarded as minimum standards for design and construction. These specifications are based on products designed and manufactured by Continental Bridge, 8301 State Highway 29 North, Alexandria, MN 56308, or an approved equal.
Phone: 1-800-328-2047 or (320) 852-7500 Fax: 320-852-7067
E-mail: conbridg@continentalbridge.com

1.2 Qualified Suppliers

Each bidder is required to identify their intended bridge supplier as part of the bid submittal. Qualified suppliers must have at least 5 years experience fabricating these type structures.

Pre-approved Manufacturers:
Continental Bridge
8301 State Highway 29 North
Alexandria, Minnesota 56308
1-800-328-2047

Approved equal bridge may be provided by suppliers other than those listed above may be used provided the engineer evaluates the proposed supplier and approves the supplier 5 days prior to bid.

The contractor must provide the following documentation, for any proposed supplier who is not pre-approved, at least 10 days prior to bid:

* Product Literature

* All documentation to insure the proposed substitution will be in compliance with these specifications. This shall include:

  - Representative design calculations
  - Representative drawings
  - Splicing and erection procedures
  - Warranty information
  - Inspection and Maintenance procedures
  - AISC Shop Certification
  - Welder Qualifications

* Proposed suppliers must have at least five (5) years experience designing and fabricating these type structures and a minimum of five (5) successful bridge projects, of similar span and construction, each of which has been in service at least three (3) years. List the location, bridge size, owner, and a contact for reference for each project.

  The engineer will evaluate and verify the accuracy of the submittal prior to bid. If the engineer determines that the qualifying criteria have not been met, the contractor's proposed supplier shall be rejected. The engineer's ruling shall be final.

2.0 GENERAL FEATURES OF DESIGN

2.1 Span

Bridge span shall be 125'-0" (straight line dimension) and shall be as measured from each end of the bridge structure.

2.2 Width

Bridge width shall be 6'-0" and shall be as measured from the inside face of structural elements at deck level.

2.3 Bridge System Type

Bridge(s) shall be designed as a Continental Half-Through H-Section System, Model Number H1-SQ (or equal), that has one (1) diagonal per panel and plumb end vertical members. Interior vertical members may be either plumb or perpendicular to the chord faces.

2.3.1 Bridge(s) shall be designed utilizing an H-Section configuration where the floor beams are placed up inside the trusses and attached to the truss verticals.

2.3.2 The distance from the top of the deck to the top and bottom truss members shall be determined by the bridge manufacturer based upon structural and/or shipping requirements.

2.3.3 The top of the top chord shall not be less than 54 inches above the deck (measured from the high point of the riding surface).

2.4 Member Components

All members of the vertical trusses (top and bottom chords, verticals, and diagonals) shall be fabricated from square and/or rectangular structural steel tubing. Other structural members and bracing shall be fabricated from structural steel shapes or square and rectangular structural steel tubing.

Unless the floor and fastenings are specifically designed to provide adequate lateral support to the top flange of open shape stringers (w-shapes or channels), a minimum of one stiffener shall be provided in each stringer at every floor beam location.

2.5 Attachments

2.5.1 Safety Rails

Horizontal safety rails shall be placed on the structure up to a minimum height of 4′-6″ above the deck surface. Safety rails shall be placed so as to prevent a 4″ sphere from passing through the truss. Safety rails shall be placed on the outside of the structure.

The safety rail system shall be designed for an infill loading of 200 pounds, applied horizontally at right angles, to a one square foot area at any point in the system.

2.5.2 Rubrails

The bridge will be supplied with a 1"x 5-1/2" (actual size) naturally durable hardwood Ipe (Tabebuia Spp Lapacho Group) rubrail. Rubrail shall be partially air dried to a moisture content of 15% to 20%, shall be supplied S4S (surfaced four sides), E4E (eased four edges), with the edges eased to a radius of 1/8″. Measured at 30% moisture content, the width and thickness shall not vary from specified dimensions by more than ± 0.04 inches. Ends of each piece shall be sealed with "Anchorseal" Mobil CER-M or an equal aqueous wax log sealer.

Rubrails shall be attached flush to the inside face of the bridge truss verticals and fastened with two carriage bolts at each support location. The span of the rubrail from centerline to centerline of support shall not exceed 6′-6″.

The top of the rubrail shall be 3′-0″ above the top of the deck (measured at the outside edge of the deck).

2.5.3 Overlook Landings

The bridge shall be supplied with two (2) 20'-6" x 3'-0" bolt on overlook landings one on each side of the bridge located at the center of the length of the structure (see drawings). The overlook should have safety rails, rub rails and diagonals to match the bridge structure.

2.6 Camber

The bridge shall have a vertical camber dimension at midspan equal to 100% of the full dead load deflection.

2.7 Elevation Difference

The bridge abutments shall be constructed at the same elevation on both ends of the bridge.

3.0. ENGINEERING

Structural design and inspection of the bridge structure(s) shall be performed by or under the direct supervision of a licensed professional engineer and done in accordance with recognized engineering practices and principles. The engineer shall be licensed to practice in Michigan.

3.1 Design Loads

In considering design and fabrication issues, this structure shall be assumed to be statically loaded. No dynamic analysis shall be required nor shall fabrication issues typically considered for dynamically loaded structures be considered for this bridge.

3.1.1 Dead Load

The bridge structure shall be designed considering its own dead load (superstructure and original decking) only. No additional dead loading need be considered.

3.1.2 Uniform Live Load

3.1.2.1 Pedestrian Live Load

Main Members: Main supporting members, including girders, trusses and arches shall be designed for a pedestrian live load of 85 pounds per square foot of bridge walkway area. The pedestrian live load shall be applied to those areas of the walkway so as to produce maximum stress in the member being designed. If the bridge walkway area to which the pedestrian live load is applied (deck influence area) exceeds 400 square feet, the pedestrian live load may be reduced by the following equation:

$$w = 85\,[0.25 + \frac{15}{\sqrt{A_I}})]$$

Where w is the design pedestrian load (psf) and A_I is the deck influence area in square feet.

The reduced design live load shall not be less than 65 pounds per square foot of bridge walkway area.

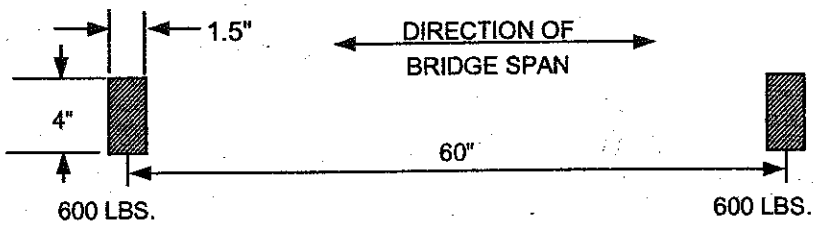
Secondary Members: Bridge decks and supporting floor systems, including secondary stringers, floor beams and their connections to main supporting members shall be designed for a live load of 85 pounds per square foot, with no reduction allowed.

3.1.3 Concentrated Loads

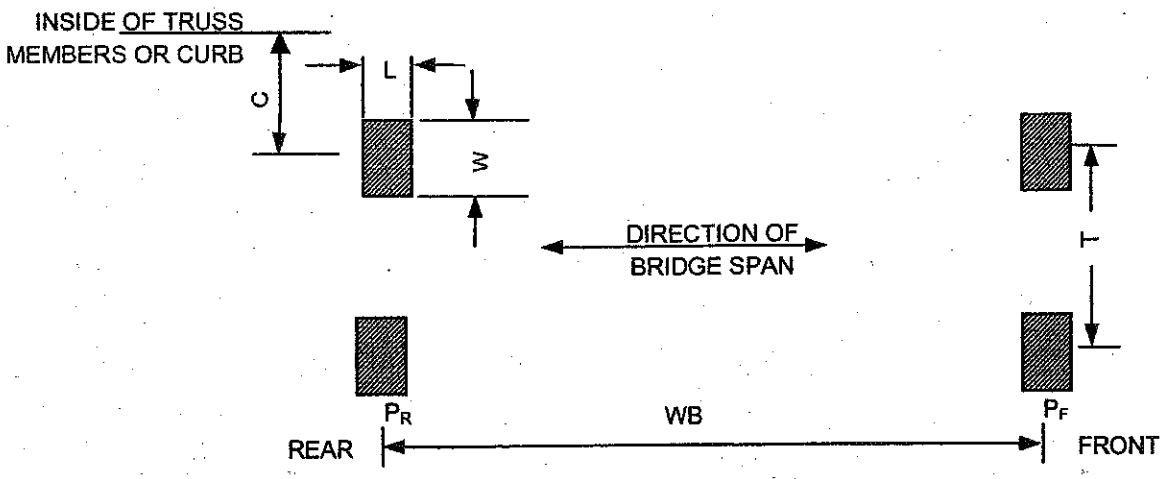
The bridge superstructure, floor system and decking shall be designed for each of the following point load conditions:

3.1.3.1 A concentrated load of 1000 pounds placed on any area 2.5 ft x 2.5 ft square.

3.1.3.2 A 1200 pound two wheel vehicle with a wheelbase and tire print area as shown in the following diagram:



3.1.3.3 A 6,000 pound four wheeled vehicle with the appropriate wheelbase, tire track and tire print area as shown in the following diagram: (See Table I for the values corresponding to the selected vehicle.)



Vehicle	Axle and Wheel Spacings		Front Wheels			Rear Wheels			
Weight	WB	T	P_F	L	W	P_R	L	W	C*
4,000#	48"	32"	1,000#	2.0"	5.0"	1,000#	2.0"	5.0"	9"
6,000#	66"	48"	1,500#	2.5"	6.0"	1,500#	2.5"	6.0"	12"

(C is the minimum dimension from center of wheel to the inside face of truss or curb.)

TABLE I

All of the concentrated or wheel loads shall be placed so as to produce the maximum stress in each member being analyzed. Critical stresses need be calculated assuming there is only one vehicle on the bridge at any given time. Assumptions that vehicles only travel down the center of the bridge or that the vehicle load is a uniform line load will not be allowed.

Each four wheeled vehicle load listed in Table I, up to and including the maximum weight vehicle selected, must be used in determining critical deck stresses. The wheel distribution for deck design shall be as specified in Section 4.3.1. Stringers shall be designed for the applied wheel loads assuming no lateral load distribution to adjacent stringers.

A vehicle impact allowance is not required.

3.1.4 Wind Load

3.1.4.1 Horizontal Forces

The bridge(s) shall be designed for a wind load of 35 pounds per square foot on the full vertical projected area of the bridge as if enclosed. The wind load shall be applied horizontally at right angles to the longitudinal axis of the structure.

The wind loading shall be considered both in the design of the lateral load bracing system and in the design of the truss vertical members, floor beams and their connections.

3.1.4.2 Overturning Forces

The effect of forces tending to overturn structures shall be calculated assuming that the wind direction is at right angles to the longitudinal axis of the structure. In addition, an upward force shall be applied at the windward quarter point of the transverse superstructure width. This force shall be 20 pounds per square foot of deck.

3.1.7 Top Chord/Railing Loads

The top chord, truss verticals, and floor beams shall be designed for lateral wind loads (per section 3.1.4.1) and for any loads required to provide top chord stability as outlined in Section 3.3.6; however, in no case shall the load be less than 50 pounds per lineal foot or a 200 pound point load, whichever produces greater stresses, applied in any direction at any point along the top chord or at the top of the safety system (42" or 54" above deck level), if higher than the top chord.

3.1.9 Load Combinations

The loads listed herein shall be considered to act in the following combinations, whichever produce the most unfavorable effects on the bridge superstructure or structural member concerned.
[DL=Dead Load; LL = Live Load; WL = Wind Load; VEH = Vehicle Load]

DL + LL
DL + VEH
DL+WL
DL+LL+.3WL
DL+VEH+.3WL

NOTE: For service load design, the percentage of the basic unit stress used for each combination shall be in accordance with table 3.22.1A of the AASHTO "Standard Specifications for Highway Bridges".

It shall be the responsibility of the foundation engineer to determine any additional loads (i.e. earth pressure, stream force on abutments, wind loads other than those applied perpendicular to the long axis of the bridge, etc.) and load combinations required for design of the abutments.

3.2 Design Limitations

3.2.1 Deflection

3.2.1.1 Vertical Deflection

The vertical deflection of the main trusses due to service pedestrian live load shall not exceed 1/500 of the span.

The vertical deflection of cantilever spans of the structure due to service pedestrian live load shall not exceed 1/300 of the cantilever arm length.

The deflection of the floor system members (floor beams and stringers) due to service pedestrian live load shall not exceed 1/360 of their respective spans.

The service pedestrian live load shall be 85 PSF, reduced in accordance with Section 3.1.2.1, but should in no case be less than 65 PSF for deflection checks.

Deflection limits due to occasional vehicular traffic shall not be considered.

3.2.1.2 Horizontal Deflection

The horizontal deflection of the structure due to lateral wind loads shall not exceed 1/500 of the span under a 35 PSF wind load.

3.2.2 Minimum Thickness of Metal

The minimum thickness of all structural steel members shall be 1/4" nominal and be in accordance with the AISC Manual of Steel Constructions' "Standard Mill Practice Guidelines". For ASTM A500 and ASTM A847 tubing, the section properties used for design shall be per the Steel Tube Institute of North America's Hollow Structural Sections "Dimensions and Section Properties".

3.3 Governing Design Codes / References

Structural members shall be designed in accordance with recognized engineering practices and principles as follows:

3.3.1 Structural Steel Allowable Stresses

American Association of State Highway and Transportation Officials (AASHTO).
Allowable Design Stresses shall be in accordance with the "Standard Specifications for Highway Bridges" latest edition (AASHTO).

3.3.2 Welded Tubular Connections

American National Standards Institute / American Welding Society (ANSI/AWS) and the Canadian Institute of Steel Construction (CISC).

All welded tubular connections shall be checked, when within applicable limits, for the limiting failure modes outlined in the ANSI/AWS D1.1 Structural Welding Code or in accordance with the "Design Guide for Hollow Structural Section Connections" as published by the Canadian Institute of Steel Construction (CISC).

When outside the "validity range" defined in these design guidelines, the following limit states or failure modes must be checked:

* Chord face plastification
* Punching shear (through main member face)
* Material failure
    - Tension failure of the web member
    - Local buckling of a compression web member
* Weld failure
    - Allowable stress based on "effective lengths"
    - "Ultimate" capacity
* Local buckling of a main member face
* Main member failure:
    - Web or sidewall yielding
    - Web or sidewall crippling
    - Web or sidewall buckling
    - Overall shear failure

All tubular joints shall be plain unstiffened joints (made without the use of reinforcing plates) except as follows:

* Floor beams hung beneath the lower chord of the structure may be constructed with or without stiffener (or gusset) plates, as required by design.

* Floor beams which frame directly into the truss verticals (H-Section bridges) may be designed with or without end stiffening plates as required by design.

* Where chords, end floor beams and in high profiles the top end struts weld to the end verticals, the end verticals (or connections) may require stiffening to transfer the forces from these members into the end vertical.

* Truss vertical to chord connections.

NOTE: The effects of fabrication tolerances shall be accounted for in the design of the structure. Special attention shall be given to the actual fit-up gap at welded truss joints.

3.3.3 Bolted Splices

American Institute of Steel Construction (AISC) and the Research Council on Structural Connections of the Engineering Foundation (RCSC).

Bolted splice design shall be in accordance with Section J3 of the "Manual of Steel Construction: Allowable Stress Design". Splices shall be designed for the actual load in the member but in no case for less than 50% of the effective strength of the member.

Bolted field splices shall be located on the bridge so as to produce a structure which can be economically shipped and erected. Splices along the length of the bridge (in chords and diagonals) shall be placed at the approximate mid point of a bay (between two panel points). Splices across the width of the bridge (in floor beams and wind braces) may be used, when necessary, to keep the overall structure width within reasonable limits for shipping.

3.3.4 Wood

American Institute of Timber Construction (AITC), the U.S. Forest Products Laboratory, and the American Forest & Paper Association (AF&PA).

Sawn lumber shall be designed in accordance with the ANSI/AF&PA NDS, "National Design Standard for Wood Construction", as published by the American Forest & Paper Association or the "Timber Construction Manual" as published by the American Institute of Timber Construction (AITC). Design properties for naturally durable hardwoods shall be in accordance with "Tropical Timbers of the World", as published by the U.S. Forest Products Laboratory.

3.3.6 Top Chord Stability

Structural Stability Research Council (SSRC), formerly Column Research Council.

The top chord shall be considered as a column with elastic lateral supports at the panel points. The critical buckling force of the column, so determined, shall exceed the maximum force from dead load and live load (uniform or vehicular) in any panel of the top chord by not less than 50 percent for parallel chord truss bridges or 100 percent for bowstring bridges. The design approach to prevent top chord buckling shall be as outlined by E.C. Holt's research work in conjunction with the Column Research Council on the stability of the top chord of a half-through truss, with any externally applied out-of-plane bending moments on the "U-frames" equated to an "equivalent" calculated top chord compression force. See Appendix A for the calculation of the spring constant C and the determination of an appropriate K factor for out-of-plane buckling.

NOTE: The furnished "U-frame" stiffness factor "C", when external forces are applied to the "U-frame", shall be such so as to limit the K value used for out-of-plane buckling of the top chord to no more than 1.3. In addition, the spring constant "C" furnished by the transverse "U-frames" shall not be less than "C" required as defined by:

$$C\ required = \frac{1.46\ P_c}{L}$$

where P_c is a fictitious top chord compression equal to the actual top chord compression load plus the "equivalent" calculated top chord compression for any externally applied "U-frame" loads, all times an appropriate safety factor (1.5 for parallel chord truss bridges or 2.0 for bowstring bridges) and L is the length in inches of one truss panel or bay.

The vertical truss members, the floor beams and their connections (transverse frames) shall be proportioned to resist a lateral force of not less than 1% of the top chord compressive load, applied at the top chord panel points of each truss, plus all moments induced from loads externally applied to the "U-frame". The top chord load is determined by using the larger top chord axial force in the members on either side of the "U-frame" being analyzed. For end frames, the same concept applies.

The bending forces in the transverse frames, as determined above, act in conjunction with all forces produced by the actual bridge loads as determined by an appropriate analysis which assumes that the floor beams are "fixed" to the trusses at each end.

NOTE: The effects of three dimensional loading (including "U-frame" requirements) shall be considered in the design of the structure. The "U-frame" forces shall be added to the forces derived from three dimensional analysis of the bridge.

4.0 MATERIALS

4.1 Steel

4.1.1 Unpainted Weathering Steel

The Bridge shall be fabricated from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing and/or ASTM A588, or ASTM A242, ASTM A606 plate and structural steel shapes (Fy = 50,000 psi). The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM G101, shall be 6.0.

4.2 Bolts

Field splices shall be fully bolted with ASTM A325 type 3 high strength bolts in accordance with the "Specifications for Structural Joints Using ASTM A325 or A490 Bolts".

4.3 Decking

4.3.1 Hardwood Decking

All decking shall be full thickness planks unless approved otherwise.

4.3.1.1. Wood decking shall be naturally durable hardwood Ipe (Tabebuia Spp Lapacho Group). All planks shall be partially air dried to a moisture content of 15% to 20%, and shall be supplied S4S (surfaced four sides), E4E (eased four edges), with the edges eased to a radius of 1/8". Measured at 30% moisture content, the width and thickness shall not vary from specified dimensions by more than ± 0.04 inches. All planks shall be supplied with the end sealed with "Anchorseal" Mobil CER-M or an equal aqueous wax log sealer.

All planks shall be graded as FEQ-CAH (First Export Quality -Clear All Heart) grading rules, defined as follows:

* Lumber shall be graded both faces and both edges.
* Lumber shall be straight grained, maximum slope of grain to be 1:10.
* Lumber shall be parallel cut without heart centers or sap wood.
* Lumber shall be in sound condition, free from worm holes or knots.
* Allowable Imperfections are:
  <u>All faces</u>: Natural drying checks, Discoloration caused by weathering or chemical reaction, Bow or Spring which can be removed using normal installation methods and tools.
* Imperfections Not Allowed:
  Longitudinal heart cracks, Internal cracks, Firm or Soft sap wood, Splits, End splits, Ring shades, Fungi affects (blue to gray, brown to red, white to yellow, or incipient decay), Deformation (twisting or cupping) which cannot be removed using normal installation methods and tools.

All planks shall meet or exceed the following mechanical properties (based on the 2" standard) as defined by the U.S. Forest Products Laboratory publications and testing data:

MC%	Modulus of Rupture	Modulus of Elasticity	Max. Crush Strength
12%	22,360 psi	3,140,000 psi	13,010 psi

Janka side hardness is 3680 lbs. at 12% moisture content
Average air-dry density is 66 to 75 pcf.
Basic specific gravity is 0.85 - 0.97.

All planks shall be naturally fire resistant without the use of any fire resistant preservatives to meet NFPA Class A and UBC Class I.

Planks shall be supplied that meet or exceed the Static Coefficient of Friction for both Neolite and leather shoes in accordance with ASTM Test Method C1028-89.

	FORCE IN POUNDS	
SHOE MATERIAL	DRY	WET
Neolite	0.73	0.69
Leather	0.55	0.79

For transverse wood decking, wheel loads shall be assumed to act on one plank only. The wheel loads shown in Section 3.1.3 shall be distributed on the plank along a length equal to the tire print width (W). The plank shall be designed for shear and bending in accordance with the support conditions and spacing. For design, the following unfactored allowable values shall be used:

Allowable Bending	=	3700 psi
Allowable Shear	=	320 psi
Modulus of Elasticity	=	3,000,000 psi

4.3.1.2 Wood Decking Attachment

* At time of installation, planks are to be placed tight together with no gaps.

* Every plank must be attached with at least one fastener at each end.

* All fasteners to be zinc plated. Self-tapping screws or hex-head bolts, with a steel plank holddown, are to be used at the ends of planks. Self-tapping screws or carriage bolts are to be used as interior connection fasteners when required. Power actuated fasteners will not be allowed.

* Planks are to be drilled prior to installation of bolts and/or screws.

* In addition to at least one fastener at each end of every plank (typical for all installations), planks for bridges with widths of 72" to 143" shall be attached with a minimum of two fasteners at a location approximately near the center of the bridge width. Bridges wider than 143" are to have two fasteners located at a minimum of two interior stringer locations, approximately at the third points of the bridge width.

NOTE: Attachments at the ends of the planks may be modified as required when obstructions, such as interior safety system elements, prevent installation of the specified holddown system.

5.0 WELDING

5.1 Welding

Welding and weld procedure qualification tests shall conform to the provisions of ANSI/AWS D1.1 "Structural Welding Code", 1996 Edition. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification (i.e. AWS A 5.28 for the GMAW Process). For exposed, bare, unpainted applications of corrosion resistant steels (i.e. ASTM A588 and A847), the filler metal shall be in accordance with AWS D1.1, Section 3.7.3.

5.2 Welders

Welders shall be properly accredited operators, each of whom shall submit certification of satisfactorily passing AWS standard qualification tests for all positions with unlimited thickness of base metal, have a minimum of 6 months experience in welding tubular structures and have demonstrated the ability to make uniform sound welds of the type required.

6.0 SUBMITTALS

6.1 Submittal Drawings

Schematic drawings and diagrams shall be submitted to the customer for their review within three weeks of receipt of order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the work to be done. All relative design information such as member sizes, bridge reactions, and general notes shall be clearly specified on the drawings. Drawings shall have cross referenced details and sheet numbers. All drawings shall be signed and sealed by a Professional Engineer who is licensed in accordance with Section 3.0.

6.2 Structural Calculations

Structural calculations for the bridge superstructure shall be submitted by the bridge manufacturer and reviewed by the approving engineer. All calculations shall be signed and sealed by a Professional Engineer who is licensed in accordance with Section 3.0. The calculations shall include all design information necessary to determine the structural adequacy of the bridge. The calculations shall include the following:

* All AASHTO allowable stress checks for axial, bending and shear forces in the critical member of each truss member type (i.e. top chord, bottom chord, floor beam, vertical, etc.).

* Checks for the critical connection failure modes for each truss member type (i.e. vertical, diagonal, floor beam, etc.). Special attention shall be given to all welded tube on tube connections (see section 3.3.2 for design check requirements).

* All bolted splice connections.

* Main truss deflection checks.

* U-Frame stiffness checks (used to determine K factors for out-of-plane buckling of the top chord) for all half through or "pony" truss bridges.

* Deck design.

NOTE: The analysis and design of triangulated truss bridges shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered.

6.3 Welder certifications in compliance with AWS standard qualification tests.

6.4 Welding procedures in compliance with Section 5.1.

7.0 FABRICATION

7.1 General Requirements

7.1.1 Drain Holes

When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

7.1.2 Welds

Special attention shall be given to developing sufficient weld throats on tubular members. Fillet weld details shall be in accordance with AWS D1.1, Section 3.9 (See AWS Figure 3.2). Unless determined otherwise by testing, the loss factor "Z" for heel welds shall be in accordance with AWS Table 2.8. Fillet welds which run onto the radius of a tube shall be built up to obtain the full throat thickness (See Figure 7.1). The maximum root openings of fillet welds shall not exceed 3/16" in conformance with AWS D1.1, Section 5.22. Weld size or effective throat dimensions shall be increased in accordance with this same section when applicable (i.e. fit-up gaps> 1/16").

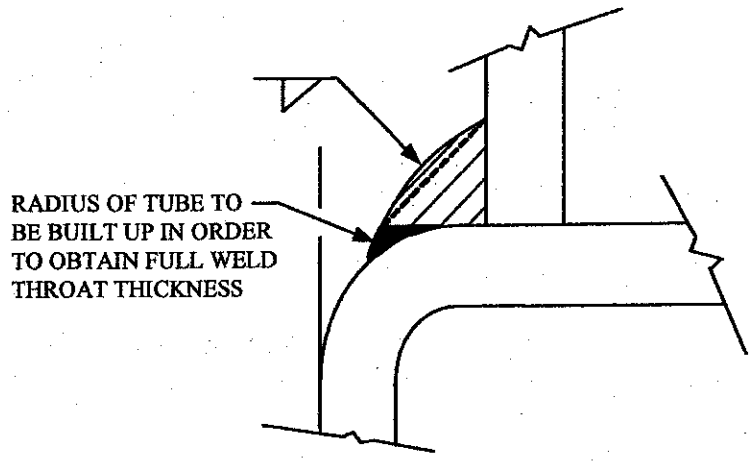


FIGURE 7.1
BUILD UP RADIUS WELD

The fabricator shall have verified that the throat thickness of partial joint penetration groove welds (primarily matched edge welds or the flare-bevel-groove welds on underhung floor beams) shall be obtainable with their fit-up and weld procedures. Matched edge welds shall be "flushed" out when required to obtain the full throat or branch member wall thickness.

For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube so as to be continuous around the full tube perimeter, including corners. Backing may be of four types:

* A "box" welded up from four (4) plates.

* Two "channel" sections, bent to fit the inside radius of the tube, welded together with full penetration welds.

* A smaller tube section which slides inside the spliced tube.

* A solid plate cut to fit the inside radius of the tube.

Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords. The solid plate option shall require a weep hole either in the chord wall above the "high side" of the plate or in the plate itself. In all types of backing, the minimum fit-up tolerances for backing must be maintained at the corners of the tubes as well as across the "flats".

7.2 Quality Certification

Bridge(s) shall be fabricated by a fabricator who is currently certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for the category "Simple Steel Bridges" as set forth in the AISC Certification Program. Quality control shall be in accordance with procedures outlined for AISC certification. For painted structures, the fabricator must hold a "Sophisticated Paint Endorsement" as set forth in the AISC certification program.

8.0 FINISHING

8.1 Blast Cleaning

8.1.1 Bare applications of enhanced corrosion resistant steels.

To aid in providing a uniformly "weathered" appearance, all exposed surfaces of steel shall be blast cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7 Brush-Off Blast Cleaning, SSPC-SP7 latest edition.

Exposed surfaces of steel shall be defined as those surfaces seen from the deck and from outside of the structure. Stringers, floor beams, lower brace diagonals and the inside face of the truss below deck and bottom face of the bottom chord shall not be blasted.

9.0 DELIVERY AND ERECTION

Delivery is made to a location nearest the site which is easily accessible to normal over-the-road tractor/trailer equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival.

The manufacturer will provide detailed, written instruction in the proper lifting procedures and splicing procedures (if required). The method and sequence of erection shall be the responsibility of others.

The bridge manufacturer shall provide written inspection and maintenance procedures to be followed by the bridge owner.

10.0 BEARINGS

10.1 Bearing Devices

Bridge bearings shall consist of a steel setting or slide plate placed on the abutment or grout pad. The bridge bearing plate which is welded to the bridge structure shall bear on this setting plate. One end of the bridge will be fixed by

fully tightening the nuts on the anchor bolts at that end. The opposite end will have finger tight only nuts to allow movement under thermal expansion or contraction.

The bridge bearings shall sit in a recessed pocket on the concrete abutment. Minimum 28-day strength for the abutment concrete shall be 3,000 PSI. The bearing seat shall be a minimum of 16" wide. The step height (from bottom of bearing to top-of-deck) shall be determined by the bridge manufacturer.

Bridges in excess of 100 feet in length or bridges with dead load reactions of 15,000 pounds or more (at each bearing location) shall have teflon on teflon or stainless steel on teflon slide bearings placed between the bridge bearing plate and the setting plate. The top slide plate shall be large enough to cover the lower teflon slide surface at both temperature extremes.

11.0 FOUNDATIONS

Unless specified otherwise, the bridge manufacturer shall determine the number, diameter, minimum grade and finish of all anchor bolts. The anchor bolts shall be designed to resist all horizontal and uplift forces to be transferred by the superstructure to the supporting foundations. Engineering design of the bridge supporting foundations (abutment, pier, bracket and/or footings), including design of anchor bolt embedments, shall be the responsibility of the foundation engineer. The contractor shall provide all materials for (including anchor bolts) and construction of the bridge supporting foundations. The contractor shall install the anchor bolts in accordance with the manufacturer's anchor bolt spacing dimensions.

Information as to bridge support reactions and anchor bolt locations will be furnished by the bridge manufacturer after receipt of order and after the bridge design is complete.

12.0 PAYMENT

A partial payment or "deposit" for the prefabricated bridge shall be made upon order and storage as required by the terms of the manufacturer.

13.0 SCHEDULE

Delivery of the prefabricated bridge and all other items required for erection of the bridge shall be within seven weeks of Engineer's approval of the shop drawings.

14.0 WARRANTY

The bridge manufacturer shall warrant their steel structure(s) to be free of design, material and workmanship defects for a period of ten years from the date of delivery. Naturally durable hardwood decking and hardwood attachments shall carry a ten-year warranty against rot, termite damage, or fungal decay. Other types of wood are excepted under this warranty.

This warranty shall not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper maintenance, alteration or any other cause not the result of defective materials or workmanship.

No other conditions shall be allowed.

Repair or replacement shall be the exclusive remedy for defects under this warranty. The bridge manufacturer shall not be liable for any consequential or incidental damages for breach of any express or implied warranty on their structures.

15.0 APPROVAL CHECKLIST

The following checklist will be used in the evaluation of all submittals to assure compliance with the Special Specifications for Prefabricated Bridge. This checklist is considered the minimum acceptable requirements for compliance with these specifications. Any deviations from this checklist shall be considered grounds for rejection of the submittal. Any costs associated with delays caused by the rejection of the submittal, due to non-compliance with this checklist, shall be fully borne by the contractor and bridge supplier.

SUBMITTAL DRAWINGS
Data Required to be Shown:

- ☐ Bridge Elevation
- ☐ Bridge Cross Section
- ☐ Bridge Details at Abutments
- ☐ All Member Sizes
- ☐ All Vertical Truss Members are Square or Rectangular Tubing
- ☐ Bridge Reactions
- ☐ General Notes Indicating
  - ☐ AASHTO Stress Conformance
  - ☐ Material Specifications to be Followed
  - ☐ Design Live Load
  - ☐ Design Vehicle Load (If Applicable)
  - ☐ Design Wind Load
  - ☐ Other Specified Design Loads
  - ☐ Welding Process
  - ☐ Blast Cleaning
  - ☐ Paint System to be Used (If Applicable)
- ☐ Paint Color Chart (If Applicable)
- ☐ Detailed Bolted Splices (If Applicable)
- ☐ Bolted Splice Location (If applicable)
- ☐ Signature and Seal of Professional Engineer, licensed in Accordance with Section 3.0

DESIGN CALCULATIONS
Data Required to be Shown:

- ☐ Data Input and results for 3-D Analysis of Bridge
  - ☐ Joint Coordinates & Member Incidences
  - ☐ Joint and Member Loads
  - ☐ Member Properties
  - ☐ Load Combinations
- ☐ AASHTO Member Stress Checks for Each Member Type
- ☐ Critical Connection Failure Mode Checks For Each Member Type
  - ☐ Chord Face Plastification Checks
  - ☐ Punching Shear Checks
  - ☐ Material Failure Checks (Truss Webs)
  - ☐ Weld Failure Checks (Effective Length)
- ☐ Weld Failure Checks (Ultimate)
- ☐ Local Buckling of the Main Member Face Checks
- ☐ Main Member Yielding Failure Checks
- ☐ Main Member Crippling Failure Checks
- ☐ Main Member Buckling Failure Checks
- ☐ Main Member Shear Failure Checks
- ☐ All Bolted Splice Checks (if applicable)
- ☐ Main Truss Deflection Checks
- ☐ Decking Material Checks
- ☐ "U-Frame" Stiffness Checks (if applicable)
- ☐ Interior and End Portal Design Checks (if applicable)
- ☐ Determination of Top Chord K Factor Based on "U-Frame" Stiffness (if applicable)
- ☐ Consideration of Individual Member Moments Due to Truss Deflection, Joint Fixity and Joint Eccentricity

FABRICATION SUBMITTALS

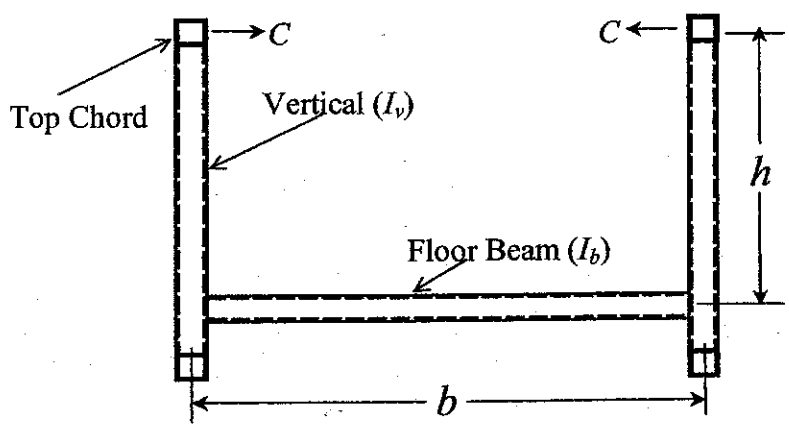
Data Required to be Shown:

- ☐** Written Installation Instructions
- ☐** Written Splicing Instructions
- ☐** Written Maintenance & Inspection Instructions
- ☐** Welder Certifications
- ☐** Welding Procedures
- ☐ Material Certifications (if applicable)
- ☐ Structural Steel (if applicable)
- ☐ Decking (if applicable)
- ☐ Structural Bolts (if applicable)
- ☐** Quality Control Section of AISC Certification Manual (if applicable)
- ☐** Painter Certifications (if applicable)
- ☐ Weld Testing Reports (if applicable)

** NOTE: These items are required to be submitted along with Submittal Drawings and Design Calculations. Those Fabrication Submittal Items not marked are to be submitted prior to shipment of the bridge.

1/K FOR VARIOUS VALUES OF CL/P_c and n

	n						
1/K	4	6	8	10	12	14	16
1.000	3.686	3.616	3.660	3.714	3.754	3.785	3.809
0.980		3.284	2.944	2.806	2.787	2.771	2.774
0.960		3.000	2.665	2.542	2.456	2.454	2.479
0.950			2.595				
0.940		2.754		2.303	2.252	2.254	2.282
0.920		2.643		2.146	2.094	2.101	2.121
0.900	3.352	2.593	2.263	2.045	1.951	1.968	1.981
0.850		2.460	2.013	1.794	1.709	1.681	1.694
0.800	2.961	2.313	1.889	1.629	1.480	1.456	1.465
0.750		2.147	1.750	1.501	1.344	1.273	1.262
0.700	2.448	1.955	1.595	1.359	1.200	1.111	1.088
0.650		1.739	1.442	1.236	1.087	0.988	0.940
0.600	2.035	1.639	1.338	1.133	0.985	0.878	0.808
0.550		1.517	1.211	1.007	0.860	0.768	0.708
0.500	1.750	1.362	1.047	0.847	0.750	0.668	0.600
0.450		1.158	0.829	0.714	0.624	0.537	0.500
0.400	1.232	0.886	0.627	0.555	0.454	0.428	0.383



" U - Frame"

Where: $$C = \frac{E}{h^2\,[h/3I_v + b/2I_b]}$$

$L = Length\ in\ inches\ of\ one\ truss\ panel$

$P_c = Buckling\ Load\ (= Top\ Chord\ Compression\ x\ F.S.)$

$n = Number\ of\ Panels$

Reference: Galambos, T.V. (1988) "Guide to Stability Design Criteria for Metal Structures", 4th Ed., PP 515-529.
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SECTION 04200

SPECIAL PROVISION
FOR
EAST DAM REPAIR

a. **Description.** This work consists of surface patching of concrete on the East Mill Pond Dam Spillway. The work shall include sand bagging as necessary to prevent flow over the spillway, surface preparation, furnishing and placing of repair mortar to repair spalled areas, and furnishing and placing a cement based water proof protective coating for all exposed concrete surfaces (except spillway slab).

Surfaces to be patched and coated include:
- Abutment exposed face to 7' from bridge deck
- Abutment top surface to 7' from bridge deck
- All pier surfaces
- Bridge Deck Fascias

b. **Materials.**
- Repair Mortar: See repair mortar specification, Section 04300.
- Cement Based Waterproof Protective Coating: Thoroseal by ChemRex, Inc. (800)433-9517, or approved equal.
- Acrylic Bonding and Modifying Admixture: Acryl 60 by ChemRex, Inc. (800) 433-9517. Admixture shall be used for mixing Thoroseal.

c. **Construction Methods.** Investigate concrete surface with a light hammer (2 lb. or under) to discover areas of unsound concrete. Mark areas requiring patching for approval by Engineer. Prepare and patch damaged surfaces as per the specifications, Section 4300 and as per repair mortar manufacturer's recommendations. Repaired surfaces must be smooth and match original concrete surface plane within 1/16th inch.

Contractor shall, install dowels or anchors into existing concrete at a spacing of 6 inches in both directions for areas where the depth of patching exceed 4 inches. Contractor shall submit shop drawings for a typical anchor for approval by the Engineer.

For large areas where forming is feasible, the Contractor may use concrete conforming to the project specifications or flowable mortar approved by the Engineer.

Once the repair of damaged concrete is complete, all surfaces shall be blasted clean as necessary and coated with two (2) coats of Thoroseal per manufacturer's recommendations. Apply first coat at 2 pounds per square yard and finish with smooth, uniform horizontal brush strokes. Apply second coat at 1 pound per square yard and finish with smooth, uniform vertical brush strokes.

The Thoroseal mixing liquid shall consist of 1 part Acryl 60 to 2 parts water.

SECTION 04300

REPAIR MORTAR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Section 4200 of the specifications.

1.2 SUMMARY

A. This Section specifies a one-component, polymer-modified, cement-based, high build, lightweight, thixotropic, non-structural surface renovation mortar with integral corrosion inhibitor.

B. This product is designed for repairing vertical and overhead concrete structures at a maximum repair depth of up to 2-3/4 in. (70mm) without aggregate extension.

1.3 REFERENCES

ASTM C 109-91	Test Method for Compressive Strength of Hydraulic Cement Mortars – Modified.
ASTM C 138-81	Test Method for Unit Weight, Yield, and Air Content of Concrete.
ASTM C 348-92	Test Method for Flexural Strength of Hydraulic Cement Mortars.
ASTM C 469-87	Test Method for Static Modulus of Elasticity and Poisson's Raito of Concrete in Compression.
ASTM C 496-90	Test Method for Spitting Tensile Strength of Cylindrical Concrete Specimens.
ASTM C 666-90	Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
ASTM C 882-87	Test Method for Bond Strength of Epoxy Resin Systems used with Concrete –Modified.

1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide polymern-modified lightweight repair mortar which when cured produces the following properties:

1. Compressive Strength (ASTM C 109): Minimum, 1-day 1500 psi (10.4 MPa); 7-day 3500 psi (24.2 MPa); 28-day 5000 psi (34.5 MPa).

2. Flexural Strength (ASTM C 348): Minimum, 1-day 250 psi (1.7 MPa); 7-day 700 psi (4.8 MPa); 28-day 900 psi (6.2 MPa).

3. Splitting Tensile Strength (ASTM C 496): Minimum, 1-day 200 psi (1.4 MPa); 7-day 300 psi (2.1 MPa); 28-day 600 psi (4.1 MPa).

4. Slant Shear Bond Strength (ASTM C 882, modified): Minimum, 1-day 500 psi (3.5 MPa); 7-day 1100 psi (7.6 Mpa); 28-day 1500 psi (10.4 MPa).

5. Modulus of Elasticity (ASTM C 469-87): Maximum 2.0 x 10^6 psi (14.0 MPa) @ 28 days.

6. Freeze-Thaw Resistance (ASTM C 666, 300 cycles): Minimum RDF 100%.

7. Unit Weight (ASTM C 138-81): Maximum 103 lb/ft^3 1650 kg/m^3).

1.5 PROJECT CONDITIONS

A. Weather Conditions: Apply repair mortar only when ambient and surface temperatures are 45° F (7°C) and rising. Do not make the repair if the ambient temperature is expected to fall below 45 °F (7°C) within 24 hours after placement.

B. Follow manufacturer's recommendations regarding additional installation information (hot weather-drying conditions, or cold weather installation.)

PART 2-PRODUCTS

2.1 Materials

A. One-Componet Polymer-Modified High Build LightWeight Surface Renovation Mortar: "EMACO® R350 CI" by Master Builders, Inc. (or approved equal) a blend of Portland cement, redispersible polymer additive, specially graded aggregates and set-control admixtures with integral corrosion inhibitor.

B. Water: Drinkable.

C. Curing Compounds: "MASTERKURE® 200W" by Master Builders, Inc., or approved equal.

D. Evaporation Reducer and Finishing Aid: "CONFILM® by Master Builders, Inc, or approved equal.

E. Rebar Coating: EMACO® P22 by Master Builders, Inc, or approved equal.

PART 3 – EXECUTION

3.1 Surface Preparation

A. Mechanically remove unsound concrete in areas approved by the Engineer.

B. Remove existing concrete facing as required to expose sound aggregate. Substrate should have a minimum amplitude of 1/8 in. (3mm). Limit the size of chipping hammers to 15 lb (6.8 kg) to reduce micro fractures.

C. Square cut or under cut perimeter of the area to be repaired to a minimum depth of ¼ in. (6 mm). Do not cut existing steel reinforcement.

D. Where reinforcing steel with active corrosion is encountered, comply with the following:

1. Abrasive blast reinforcing steel to remove rust and contaminants
2. When one-half or greater of the diameter of the reinforcing steelis exposed, chip out behind the reinforcing to a ¾ in. (20mm) minimum depth.
3. Splice new reinforcing steel to existing stell where corrosion has depleted the cross-section area by 25%, as directed by the Architect/Engineer.

E. Thoroughly abrade the roughened surface and exposed reinforcement to remove all bond inhibiting materials such as: rust, dirt, loose chips, and dust. Maintain substrate in a saturated, surface-dry condition.

F. Coat exposed reinforcing steel with EMACO® P22 rebar protection coating prior to patching.

3.2 Mixing

A. Comply with mortar manufacturer's recommendations for water quantity and mixing procedures.

3.3 Application

A. Apply a bond coat prior to the placing of the EMACO® R350 CI according to manufacturer's recommendations.

B. Apply thixotropic polymer-modified, one-component, high build, lightweight surface renovation mortar to vertical or overhead areas in thicknesses up to 2-3/4 in. (70 mm) per lift.

3.4 Finishing

A. Level surface of repair mortar using a float or screed.

B. Under desiccating conditions, spray apply undiluted "CONFILM®" evaporation retarder lightlyjust after placing.

C. Apply final finish when mortar has begun to stiffen.

3.5 Curing

A. Protect fresh mortar from premature evaporation. Cure finished repair mortar by one of the following methods:

1. Method: Keep area continuously moist with water as soon as mortar surface has hardened (thumb print hard), for a minimum of two days.

2. Method: Apply two coats of curing compound, Master Builders "MASTERKURE® 200W". Apply the first coat immediately after completing finishing operations. Apply the second coat 24 hours later.

SECTION 04400

SPECIAL PROVISION
FOR
RIPRAP AND FILTER FABRIC - SPECIAL

a. Description. - This work consists of furnishing and placing well-graded riprap on channel bottoms and side slopes according to the plans and the 1990 Standard Specifications for Construction.

b. Materials.-Stone used for riprap shall be quartz based "field stone". The stone shall be hard, durable, and resistant to weathering and water action; having 2.5 minimum specific gravity and 2.5% maximum absorption per ASTM C 127. The ratio of greatest to least dimension shall not exceed 3:1 for any individual stone.

The gradation shall meet the requirements specified in **Table 1**, attached. Acceptance of the gradation will be based on visual inspection of riprap in-place by the Engineer. Sampling for laboratory testing will be at the discretion of the Engineer.

c. Construction Methods.-Riprap shall be placed on prepared grades to the elevations, thickness, and lateral limits shown on the plans. Areas to be protected by riprap shall be cleared of brush, trees, stumps and debris. All grades shall be shaped and compacted to the required cross section, including excavation for toe and header plan details. *Geotextile Liner* shall be placed on the prepared grades according to the *Special Provision for Geosynthetics*. The riprap installation shall not damage the Geotextile Liner.

Careful placement of riprap with a clam bucket or other approved method will be required to assure that there is no damage to structure footings and no material loss around or under structure foundations. Any structure damage shall be repaired by the Contractor as directed by the Engineer, at no cost to the Department.

On slopes, placement of riprap stone shall start at the toe and proceed up the slope, with each stone firmly bedded into the slope and against the adjoining stones. End dumping from trucks at the top of the slope is not acceptable. The riprap shall be constructed to minimize voids by select placement of optimum stone sizes from the gradation specified. If placed riprap contains large voids, the Engineer may direct the contractor to place additional stones of the smaller gradation sizes to fill the voids. The finished surface of the riprap shall present a tight, even surface.

d. Filter Fabric. – Filter Fabric, of the type indicated on the plans shall be placed over surfaces that have been adequately compacted and smoothed. Provide overlaps of 18" and install securing pins with washers at an interval of 2 feet along the mid point of the overlaps. Provide a sufficient number of folds in the fabric to eliminate tension and stretching under settlement.

TABLE 1

Gradation Requirements for Riprap and Filter Fabric -Special, Individual Stones

Least Dimension (inches)	Percent Smaller Than Stone Size
1.6 D_{50}	100
1.3 D_{50}	85
1.0 D_{50}	50
0.5 D_{50}	15

SECTION 04500

SPECIAL PROVISION
FOR
TESTING NOTIFICATION

REQUEST FOR DENSITY TESTING

For this project, the Contractor will be required to coordinate his operations in such a way as to give the Department of Parks and Recreation, City of Mt. Pleasant a written 48-hour advance notice, for the request of testing as follows:

Density Testing
Rebar Placement Inspection and Concrete Testing
Pavement Testing

Without proper notification to the inspector in charge, any delays caused to the project or contractor will not be reason for a claim of extra or additional compensation. No payment will be allowed.

SECTION 04200

SPECIAL PROVISION
FOR
PROJECT SIGNS

a. Description. Contractor shall provide and install two (2) project signs in locations to be determined by the City of Mt. Pleasant.

b. Materials. Each project sign shall be made of 1 –4'x8' sheet of ¾" Marine plywood with wood frame, all primed with oil based primer and painted with a white background with exterior – grade high quality paint. Logos and lettering shall be of the colors indicated in page 2 of this special provision and of exterior grade high quality paint. The attached mock-up of the sign is available from Wilcox Professional Services, LLC in electronic jpeg format.

c. Construction Methods. Sign shall be painted by a professional sign painter to match attached design drawing. Alternate materials and methods shall be submitted to Engineer for review and approval prior to construction.

Wilcox