REQUEST FOR QUOTATION		
No. 9599	**TROY SCHOOL DISTRICT** **1140 RANKIN, TROY, MICHIGAN 48083** **248-823-4052** **FAX: 248-823-4077**	
DUE DATE NO LATER THAN 4/13/09 3 p.m.		DATE 3/25/09

REQUEST FOR QUOTE – NOT AN ORDER

THIS FORM MUST BE UTILIZED WHEN RESPONDING TO THIS REQUEST
BID ENVELOPE ENCLOSED

THE RFQ NUMBER MUST APPEAR ON ALL QUOTATIONS AND RELATED CORRESPONDENCE, THIS IS NOT AN ORDER

Quantity	DESCRIPTION	UNIT PRICE	AMOUNT
	Please supply us with your bid to furnish the Troy School District with BUS LOOP RECONSTRUCTION AT COSTELLO ELEMENTARY SCHOOL. Copies of the bid are available at: www.troy.k12.mi.us/purchasing/items_out_for_bid.htm (left column) Bid recaps will be available at: www.troy.k12.mi.us/purchasing/items_out_for_bid.htm (right column) ***FACSIMILE BID IS NOT ACCEPTABLE*** Bids will not be accepted if submitted after the deadline specified (local time) in the advertisement to bid or in the information to bidders. The late submission of a bid makes the bid nonrepsonsive and is a material defect which shall not be waived by the Board of Education. Delays in the mail will not be considered. All Late bids in the mail will be returned to the bidder unopened. Proposal for the submission of alternatives by vendors will be accepted and reviewed. However, if any substitution or departure is not clearly noted and described, it will be understood that the bid intends to exactly meet the specifications. The Board of Education shall be the sole judge as to whether the proposed goods are "equal" or "approved". Quotations must be mailed or delivered to the Purchasing Office, 1140 Rankin, Troy, MI 48083 no later than 3 p.m. on the date shown above. Michigan State Sales and Use Taxes and Federal Excise Taxes do not apply unless otherwise indicated. Exemption certificates will be furnished when necessary. This request imposes no obligations on the buyer. The Board of Education reserves the right to accept or reject any or all bids or to split awards by items or to accept bids, which will best serve the Board of Education.		

THIS AREA MUST BE FILLED IN

DELIVERY TIME	PRICES FIRM FOR	NAME OF COMPANY	TELEPHONE NO.
TERMS		NO. & STREET	FAX #
FOB DELIVERED	ALL DELIVERY CHARGES MUST BE INCLUDED IN PRICES SHOWN	CITY, STATE & ZIP CODE	E-MAIL
CONTACT PERSON (PLEASE PRINT)		SIGNATURE	DATE

Note: All bidders are specifically reminded that a completed Affidavit of Bidder (Familial Disclosure) MUST be completed and submitted with the bid response. Failure to include a completed copy will be grounds for disqualification of bid. The Affidavit of Bidder is required to be notarized for construction bids only. All others only require completion and signature.

AFFIDAVIT OF BIDDER

The undersigned, the owner or authorized officer of _____ (the "Bidder), pursuant to the familial disclosure requirement provided in the _____ _____ (the "School District") advertisement for construction bids, hereby represent and warrant except as provided below, that no familial relationships exist between the over(s) or any employee of _____ and any member of the Board of Education of the School District or the Superintendent of the School District.

List any Familial Relationships:

BIDDER:

_____

By: _____

Its: _____

STATE OF MICHIGAN)
)ss.
COUNTY OF _____)

This instrument was acknowledged before me on the _____ day of _____, 2009, by _____.

_____

,Notary Public

_____County, Michigan

My Commission Expires: _____

Acting in the County of: _____

ADVERTISEMENT TO BID

The **Troy School District** is seeking qualified bids for the bus loop reconstruction at Costello Elementary School, 1333 Hamman, Troy, MI 48085. Bid proposals will be received by Troy School District, 1140 Rankin, Troy, MI 48083 delivery or mail, to the attention of Frank Lams by 3:00 p.m. local time on Monday, April 13, 2009. (The clock used for receiving bids is located at the Rankin office in the main office area). Proposals must be sealed with Bidder's name on the outside of the envelope and designated as follows:

Sealed Proposal
Bus Loop Reconstruction #9599
Contractor Name, Address, Phone Number

Proposals shall be based on the requirements set forth in this bid package specification. Any resultant contract shall be based on these specifications.

Accepted Bidders will be required, as a condition precedent to award of Contract, to furnish in the amount of 100% of the contract price, satisfactory Performance Bond and Payment Bond and Certificates of Insurance as required.

Unless otherwise specifically set forth, this Project is subject to state sales and/or use taxes and Bidder is required to include such taxes in its Bid Proposal.

Bid Proposals will be publicly opened immediately following receipt of bids by the Troy School District and evaluated by Owner with awards subsequently made by Troy School District.

The Owner shall not open, consider or accept a Bid Proposal that is received after the date and time specified for bid submission in this Advertisement for Bids.

Bidding Documents will be available for examination and distribution on or after Wednesday, March 25, 2009. Examination made be made at the following locations:

- Troy School District, 1140 Rankin, Troy, MI 48083
- Construction Association of Michigan, 43636 Woodward Ave., Bloomfield, MI 48302
- F.W. Dodge, 21415 Civic Center Drive, Suite 115, Southfield, MI 48076

Bid Proposals shall be on forms furnished by **Troy School District**. Bidders will be required to submit with their Bid Proposals, a notarized Familial Relationship Disclosure Form, a Bid Security by a qualified surety authorized to do business in the State of Michigan where the Project is located, an OSHA Form 300 for the most recent completed year, their worker's compensation Experience Modification Rate (EMR) factor and any other information required in the Instructions to Bidders. Bidders shall not withdraw Bid Proposals for a period of **ninety (90)** days after date for receipt of Bid Proposals.

The right to accept or reject any or all Bid Proposals, either in whole or in part, to waive any informalities or irregularities therein and to award the contract to other than the low bidder is reserved by Troy School District.

All Bid Proposals shall be accompanied by the sworn and notarized statement disclosing any familial relationship that exists between the owner or any employee of the Bidder and any member of the School Board or the superintendent of the School District. Bid proposals that do not include this sworn and notarized disclosure statement will not be considered accepted.

The successful bidder and its subordinate parties shall comply with the Prevailing Wage Requirements for all work as required by the State of Michigan Public Act 166 Dated 1965 As Amended.

End of Advertisement

BID SECURITY

A. Bid security in the form of a bid bond issued by a qualified surety, certified check or cashier's check in the amount of five percent (5%) of the Base Bid amount will be required at the time of submission of the Bid Proposal. Bid bonds shall b e duly executed by the bidder, as principal and by a surety that is properly licensed and authorized to do business in the state in which the Work is to be performed. All sureties providing bonds for this Project must be listed in the latest version of the Department of Treasury's Circular 570, entitled "Companies Holding Certificates of Authority as Acceptable Sureties on Federal bonds and as Acceptable Reinsuring Companies", with the bond amount less than or equal to the underwriting limitation, and/or have an A.M. best rating of A- or better.

B. Bid bond shall pledge that the Bidder, with the understanding that if its Bid Proposal is accepted, will enter into the Agreement with Troy School District for any of the Bid Category(ies) accepted from its Bid Proposal and will, if required, furnish performance and payment bonds covering the faithful performance of the Agreement and the payment of all obligations arising there under. The attorney-in-fact, who signs the surety bond, must submit along with the bond, a certified and effectively dated copy of his/her power of attorney.

C. Bid bond form AIA Document A310 is approved for use on this Project.

D. The bid security obligees shall be **Troy School District** and the amount of the bid security shall become their property in the event that the Bidder fails, within Sixty (60) days of notice of award or receipt of the Agreement form, to execute the Agreement, and deliver the performance and payment bonds as described. In such case, the bid security shall be forfeited to Troy School District as liquidated damages, not as a penalty.

E. The Owner will have the right to retain the bid security(ies) of Bidders to whom an award is being considered until either (a) the Agreement has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bid Proposals may be withdrawn, or (c) all Bid Proposals have been rejected.

F. Bid security will be returned to the successful bidders after the Agreement has been executed, and acceptance of required performance and payment bonds. The bid security of Bidders that are not under consideration for award of the Agreement will be returned to those Bidders.

SUBMISSION OF BIDS

A. All copies of the Bid Proposal, the bid security and any other documents required to be submitted with the Bid Proposal shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the bids and shall be identified with the Project name, the bidder's name and address, if applicable, the designated portion of the Work for which the Bid Proposal is submitted. If the Bid Proposal is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face of the envelope.

B. Bid Proposals shall be deposited at the designated location prior to the time and date for receipt of Bid Proposals indicated in the Advertisement to Bid, or any extension thereof made by Addendum. Bid Proposals received after the date and time for receipt of bids will be returned unopened.

C. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bid Proposals.

D. Oral, telephonic, facsimile, emailed or telegraphic Bid Proposals or bid securities are invalid and will not receive consideration.

E. Bid Proposals will only be accepted for individual Bid Categories. Bidders are required to bid an entire Bid Category. Bidders may bid more than one Bid Category. Combined bids covering several Bid Categories may not be accepted unless separate bid amounts are listed for each Bid Category making up the combined bid amount. The amount for a combined bid, however, need not be equal in amount to the total of the individual category bids.

MODIFICATION OR WITHDRAWAL OF BID PROPOSAL

A. A Bid Proposal may not be modified, withdrawn or canceled by the Bidder after the stipulated time period and date designated for the receipt of Bid Proposals, and each Bidder so agrees in submitting its Bid.

B. Prior to the time and date designated for receipt of Bid Proposals, any Bid Proposal submitted may be modified or withdrawn by notice to the party receiving Bid Proposals at the place designated for their receipt. Such notice shall be in writing over the signature of the Bidder.

C. Withdrawn Bid Proposals may be submitted up to the time designated for the receipt of bids provided that they are then fully in conformance with these Instructions to Bidders.

D. Bid security under B. or C., above shall be in an amount for the Base Bid as modified or resubmitted.

CONSIDERATION OF BIDS

OPENING OF BIDS

A. Bid Proposals received on time will be open publicly.

B. Bid Proposals shall be held open and irrevocable for **Forty-five (45)** days after the receipt of bids.

REJECTION OF BIDS

A. **Troy School District** shall have the right to reject any or all bid Proposals and to reject a Bid Proposal not accompanied by the required bid security or by other information required by the Bidding Documents, or to reject a Bid Proposal which is in any way incomplete or irregular.

B. Bid Proposals are considered irregular and may be rejected for any of the following reasons unless otherwise provided by law:

1. If Bid Proposal Form furnished is not used or is altered.
2. If there are unauthorized additions, qualified or conditional Bid Proposals, or irregularities of any kind which may make the Bid Proposal incomplete, indefinite, or ambiguous as to its meaning.
3. If Bidder adds any provisions reserving right to accept or reject any award, or enter into the Agreement pursuant to an award.
4. If Unit or Lump Sum prices or Alternates contained in the Bid Proposal are obviously unbalanced either in excess of, or below, reasonable cost analysis values.
5. If Bidder fails to complete the Bid Proposal Form where information is requested so the Bid Proposal form cannot be properly evaluated.
6. Bidder is deemed to not be the Lowest Responsive, Responsible Bidder by definition and prevailing statutes.
7. Bidder does not submit with its Bid Proposal a sworn and notarized statement of Familial Disclosure.

ACCEPTANCE OF BID (AWARD)

A. It is the intent of the **Troy School District** to award the Agreement to the Lowest Responsive and Responsible Bidder provided the Bid Proposal has been submitted in accordance with the requirements of the bidding Documents and does not exceed the funds available. **Troy School District** shall have the right to waive any informality or irregularity in any bid Proposal received and to accept Bid Proposals which, in its judgment, are in its own best interest which includes not awarding to the low bidder. **Troy School District** reserves the right to reject any bid Proposal in its sole discretion except where otherwise provided by law.

B. **Troy School District** shall have the right to accept any Alternates in any order or combination and to determine the low bidder on the basis of the sum of the Base Bid, Voluntary Alternates and Alternates accepted.

INSURANCE REQUIREMENTS

As a condition of performing work under the Agreement, Contractor will keep in force, at all times during performance of the Work, policies of insurance covering all Basic Insurance Requirements and any applicable Supplemental Insurance Requirements. The requirements identified below are minimum requirements. If the Agreement or other Contract Documents impose additional or higher standards, contractor shall meet those as well. Where a Controlled Insurance Program ("CIP") is specified in the Contract Documents, these insurance requirements shall not apply to coverage supplied by the CIP, but shall apply to coverage which Contractor is required to carry outside the scope of the CIP.

Basic Insurance Requirements

Workers' Compensation covering Contractor's statutory obligations in the State(s) in which the Work is to be performed or Federal statutory obligations, if applicable to the Project and Employers' Liability insurance with limits of liability of $1,000,000 per accident. Where applicable, a US Longshore and Harborworker's Compensation Act endorsement must be included.

If Contractor employs the services of leased employees for the Work or for a portion of the Work, it will be required to submit evidence, to the satisfaction of the Troy School District, that such leased employees are fully covered by the minimum limits of Workers' Compensation and Employers' Liability Insurance. Such evidence shall include, but not be limited to, submission of the applicable leasing agreement.

Automobile Liability insurance with the limit of $1,000,000 per accident covering Contractor's owned, non-owned and hired automobiles.

. Commercial General Liability Insurance written on the 1988 ISO OCCURRENCE policy form or subsequent versions with the limits of liability as follows:

General Aggregate	$2,000,000
Products-Completed Operations Aggregate	$2,000.000
Personal/Advertising Injury	$2,000,000
Each Occurrence	$2,000.000

This coverage shall include coverage for premises-operations, independent contractors' protective products and completed operations, personal injury and broad form property damage (including coverage for explosion, collapse, and underground hazards), and Contractual Liability protection with respect to Contractor's indemnification obligations under the Contract Documents. Products-completed operations coverage must be maintained for at least two years after final completion of the Project.

General Provisions
Every policy must be written by an insurance company licensed in the state of Michigan and is reasonably acceptable to the Troy School District.

For Employer's Liability, Commercial General Liability and Automobile Liability may be attained by a combination of an underlying policy with an umbrella or excess liability policy.

The Troy School District shall be endorsed as additional insureds on Contractor's liability insurance (including general liability, excess liability, automobile liability and pollution liability, where applicable, with respect to liability arising out of activities performed by or on behalf of Contractor. The coverage provided by the additional insured endorsement shall be at least as broad as the Insurance Service Office, Inc.'s Additional insured, Form B CG 20 10 11 85 or CG 20 26 11 85. Forms that do not provide additional insured status for completed operations will not be accepted.

Contractor will furnish, before any work is started, certificates of insurance showing the required coverage Receipt by Troy School District of a non-conforming certificate of insurance without objection, or Troy School District's failure to collect a certificate of insurance, shall not waive or alter Contractor's duty to comply with the insurance requirements. Modifications to these insurance will not be effective unless made in a writing executed by an authorized representative of the Troy School District. Upon written request by Troy School District, contractor will provide copies of its insurance policies.

Evidence of the required insurance is to be provided to Troy School District on ACORD Certificate Form 25-S and must indicate:

Any coverage exclusions or deviations from the 1988 ISO commercial general liability form or subsequent versions;

Best's rating for each insurance carrier at A minus VII or better;

That the issuing insurance company will provide thirty (30) days written notice of cancellation to the certificate holder and the words "endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives" do not apply or have been removed;

That additional insured endorsements have been provided as required under the Contract Documents;

and

Any deductibles over $10,000 applicable to any coverage.

All coverage must be primary and not excess over or contributory with any other valid, applicable and collectible insurance in force for Troy School District, or other insureds.

Contractor will provide full coverage for all of Contractor's equipment, property and tools used in the Work.

Contractor shall waive, and shall require (by endorsement or otherwise) its insurers providing the coverage required by these insurance requirements to waive, subrogation rights against Troy School District, and all other additional insureds for losses and damages incurred and/or paid under the insurance policies required by these insurance requirements or other insurance applicable to Contractor or its Subordinate Parties, and will include this same requirement in contracts with its Subordinate Parties. If the policies of insurance referred to in this paragraph require an endorsement

to provide for continued coverage where there is a waiver of subrogation, the owners of each policies will cause them to be so endorsed.

Contractor will send or fax a copy of these insurance requirements to its agent when an insurance certificate is requested to assure that the policies comply with the insurance requirements.

If Contractor requires its Subordinate Parties to provide additional insured endorsements in favor of Contractor, those endorsements shall be extended to Troy School District and all other required additional insureds.

Contractor's duty to provide the insurance coverage set forth in these insurance requirements is a severable obligation from Contractor's indemnification obligations under the Contract Documents. Nothing in these insurance requirements shall be deemed to limit Contractor's liability under the Agreement.

TROY SCHOOL DISTRICT
BID 9599
PRICING SHEET

Base Bid $_____
All Work Per Specifications

Alternate Bid	Unit Price
Asphalt	$_____per S/F
Cement Curbing	$_____per L/F
Asphalt Curbing	$_____per L/F
Cement Sidewalks	$_____per S/F

COMPANY:_____

ADDRESS:_____

CITY:_____STATE:_____ZIP:_____

PHONE:_____

March 24, 2009

O'BOYLE
COWELL
BLALOCK
& Associates, Inc.

Specification Index

Costello Elementary Bus Loop Reconstruction
Troy School District
Bid 9599

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C4-O	Costello Cover Sheet
	State of Michigan Prevailing Wages

521 South Riverview Drive
Kalamazoo, Michigan 49004
Ph (269) 381-3357, Fax (269) 381-2944

801 Monroe Avenue NW, Suite 01
Grand Rapids, Michigan 49503
Ph (616) 301-7453, Fax (616) 301-7460

www.ocba.com

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Sections:

1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.

1.3 DEFINITIONS

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

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

1.4 ACTION SUBMITTALS

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

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

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

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

a. Scheduled date for first submittal.
b. Specification Section number and title.
c. Submittal category: Action, informational.
d. Name of subcontractor.
e. Description of the Work covered.
f. Scheduled date for Architect's final release or approval.
g. Scheduled dates for purchasing.
h. Scheduled dates for installation.
i. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

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

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

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

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

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

C. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 4 by 4 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Name of subcontractor.
f. Name of supplier.
g. Name of manufacturer.
h. Number and title of appropriate Specification Section.
i. Drawing number and detail references, as appropriate.
j. Location(s) where product is to be installed, as appropriate.
k. Other necessary identification.

D. Options: Identify options requiring selection by the Architect.

E. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

F. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.

1. Transmittal Form: Provide locations on form for the following information:

a. Project name.
b. Date.
c. Destination (To:).
d. Source (From:).
e. Names of subcontractor, manufacturer, and supplier.
f. Category and type of submittal.
g. Submittal purpose and description.
h. Specification Section number and title.
i. Indication of full or partial submittal.
j. Remarks.
k. Signature of transmitter.

2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

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

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

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

2. Action Submittals: Submit five paper copies of each submittal, unless otherwise indicated. Architect will return three copies.
3. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

4. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

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

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

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.

d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. Submit Product Data in **one** the following format:

a. PDF electronic file.
b. Five paper copies of Product Data, unless otherwise indicated. Architect will return three copies.

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

D. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

E. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

F. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Submit subcontract list in the following format:

a. PDF electronic file.
b. Number of Copies: five paper copies of subcontractor list, unless otherwise indicated. Architect will return three copies.

G. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

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

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

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

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

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

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

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

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

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

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

PART 3 - EXECUTION

3.1 ARCHITECT'S ACTION

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

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

C. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

D. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 101453 – TRAFFIC SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes provisions for the following items:

1. Traffic Regulatory Signs.

1.3 REFERENCES

A. Michigan Department of transportation (MDOT), *Manual of Uniform Traffic Control Devices*, and current edition of *MDOT Standard Specifications for Construction*.

1.4 SUBMITTALS

A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Shop drawings for all regulatory and directional signs indicating construction, materials and text sizes.

C. Manufacturer's color charts showing the full range of colors available.

PART 2 - PRODUCTS

2.1 REGULATORY SIGNS

A. See plan and details for sign locations and installation.

B. All regulatory signs shall comply with MDOT Manual of Uniform Traffic Control Devices.

C. Regulatory sign panels shall be .090 aluminum with baked enamel finish.

D. All regulatory sign panels and posts shall be painted per Owner's color selection.

E. Text shall be reflective, white scotchlite or approved alternate.

2.2 FINISHES

E. General: Specifications are based on products of The Sherwin-Williams Company.

1. Prime Coat: Zinc Clad IV - B69A8 / B69V8 - 1 coat.
2. Intermediate Coat: Recoatable Epoxy - B67H5 / B67V5 - 1 coat.
3. Finish Coat: Hi-Solids Polyurethane - B65 / B60V30 - 1 coat.
4. Colors: To match existing signage.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all regulatory signs and guard posts in locations indicated on Drawings.

3.2 SHOP COATING

A. Surface Preparation: Commercial blast cleaning in conformance with SSPC-SP6 or NACE 3.

B. Apply Prime Coat per manufacturers recommendations to a dry film thickness of 3.0 mils minimum.

C. Apply Intermediate Coat per manufacturers recommendations to a dry film thickness of 4.0 mils minimum.

D. Apply Finish Coat per manufacturers recommendations to a dry film thickness of 3.0 mils minimum. Coating must have full coverage.

E. Finished Appearance shall be of approved color, texture, and coverage, smooth and free from runs, sags, crawls, skips or other defects.

END OF SECTION 101453

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Temporary erosion- and sedimentation-control measures.

B. Related Sections:

1. Division 01 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, security and protection facilities, and temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.

D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil needed for re-use and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

D. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Erection of sheds or structures.
4. Impoundment of water.
5. Excavation or other digging unless otherwise indicated.
6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

E. Do not direct vehicle or equipment exhaust towards protection zones.

F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

G. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Division 31 Section "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. General: Protect trees and plants remaining on-site according to requirements in Division 01 Section "Temporary Tree and Plant Protection."

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

3.4 EXISTING UTILITIES

A. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

B. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches (450 mm) below exposed subgrade.
3. Use only hand methods for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm) in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 311000

SECTION 312000 – EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Preparing subgrades for walks, pavements, and lawns and grasses.
2. Subbase and base courses for concrete walks and pavements.
3. Subbase and base courses for asphalt paving.

B. Related Sections include the following:

1. Division 31 Section "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
2. Division 32 Section "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.

1.3 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Construction Manager. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Construction Manager. Unauthorized excavation, as well as remedial work directed by Construction Manager, shall be without additional compensation.

F. Fill: Soil materials used to raise existing grades.

G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

H. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Owner will engage an independent testing agency qualified according to ASTM E 329 to conduct soil materials testing, as documented according to ASTM D 3740 and ASTM E 548.

1.5 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Construction Manager and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify Construction Manager not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Construction Manager's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: For Concrete Pavements use MDOT Class II sand.

E. Subbase Course: for Asphalt Pavements use MDOT 21AA crushed limestone.

F. Engineered Fill: MDOT Class II sand.

G. Bedding Course: MDOT Class II sand.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."

C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.

D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches. If necessary, provide a temporary dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 SUBGRADE INSPECTION

A. Notify Construction Manager when excavations have reached required subgrade.

B. If Construction Manager determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade under direction of Owner's testing agent with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph (5 km/h).
2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes).
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Construction Manager, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Construction Manager, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavations as directed by Owner's testing agent.

3.8 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.10 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.11 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under pavements, and walkways, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.

3.13 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Finish subgrades to required elevations within the tolerances specified in other Division 2 Sections.

3.14 SUBBASE AND BASE COURSES

A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase and base course under pavements and walks as follows:

1. Place base course material over subbase course under hot-mix asphalt pavement.
2. Shape subbase and base course to required crown elevations and cross-slope grades.
3. Place subbase and base course 6 inches (150 mm) or less in compacted thickness in a single layer.
4. Place subbase and base course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
5. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

C. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.15 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Construction Manager; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 312000

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Hot-mix asphalt paving.
2. Asphalt surface treatments.
3. Pavement-marking paint.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for aggregate subbase and base courses and for aggregate pavement shoulders.

1.3 DEFINITIONS

A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

B. MDOT: Michigan Department of Transportation.

1.4 SYSTEM DESCRIPTION

A. Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements of standard specifications of state or local DOT.

1. Standard Specification: Michigan Department of Transportation Standard, current edition.
2. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: For each job mix proposed for the Work.

C. Material Test Reports: For each paving material.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Manufacturer shall be a paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as documented according to ASTM E 548.

C. Regulatory Requirements: Comply with current MDOT standards for asphalt paving work.

D. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Prime and Tack Coats: Minimum surface temperature of 60 deg F (15.5 deg C).
2. Asphalt Base Course: Minimum surface temperature of 40 deg F (4 deg C) and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.5 deg C) at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F (4 deg C) for oil-based materials, 50 deg F (10 deg C) for water-based materials, and not exceeding 95 deg F (35 deg C).

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

2.2 ASPHALT MATERIALS

A. Prime Coat: Asphalt emulsion prime complying with MDOT requirements.

B. Tack Coat: ASTM D 977 or AASHTO M 140, emulsified asphalt or ASTM D 2397 or AASHTO M 208, cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

C. Emulsion Seal Coating: ASTM D 5727-00 or ASTM 3320-90. Star Seal Heavy Duty Coal tar Emulsion Seal Coating System.
   1. As manufactured by Star Specialties Technology and Research, 1150 Milepost Drive, Columbus, OH 43228 or approved substitute.

D. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with FS TT-P-115.

   1. Color: Match existing marking colors. Provide blue for barrier-free parking areas.

2.4 MIXES

A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:
   1. Light Duty Flexible Pavement:
      a. Leveling Course: 13A.
      b. Wearing Course: 36A.
   2. Heavy Duty Pavement:
      a. Leveling Course: 13A.
      b. Wearing Course: 36A.

B. Reclaimed Asphalt Pavement (RAP) shall not be allowed in the wearing course of any pavement.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

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

3.2 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

3.3 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
2. Spread mix at minimum temperature of 250 deg F (121 deg C).
3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.
4. Regulate paving machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).
3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
4. Construct transverse joints as described in AI MS-22, "Construction of Hot Mix Asphalt Pavements."

5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to AASHTO T 245, but not less than 94 percent nor greater than 100 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the minimum thickness indicated. No minus tolerance is provided.

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:

1. For general paved areas:

a. Base Course: 1/4 inch (6 mm).
b. Surface Course: 1/8 inch (3 mm).

3.7 SURFACE TREATMENTS

A. Emulsion Seal Coating: Apply 2 coats per manufacturer's recommendation.

B. Prime all existing paint striping prior to sealing.

3.8 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age for 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.

a. One core sample will be taken for every 1000 sq. yd. (836 sq. m) or less of installed pavement, with no fewer than 3 cores taken.
b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow excavated materials to accumulate on-site.

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Curbs, pavements and walkways.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for subgrade preparation and grading.

1.3 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed pavement work similar in material, design and extent to that indicated for the Project and whose work has resulted in construction with a record of successful in-service performance.

B. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.

D. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

E. Concrete Testing Service: Owner will engage a qualified independent testing agency to perform material evaluation tests.

1.5 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves with a radius 100 feet (30.5 m) or less.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

B. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the same brand and type of cementitious material from the same manufacturer throughout the Project:

B. Portland Cement: ASTM C 150, Type IA Portland type, gray color.

C. Aggregate: MDOT 6A limestone.

1. Do not use fine or coarse aggregates containing substances that cause spalling.

D. Water: ASTM C 94.

2.4 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

E. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

2.5 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 994, Asphalt Expansion Joint Filler. **Fiber expansion material will not be acceptable.**

2.6 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 4000 psi (27.6 MPa).
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 4-1/2 percent plus or minus 1.5 percent for 1-inch (25-mm) nominal maximum aggregate size.

D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

E. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll as specified in other Division 2 sections.

C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.5 JOINTS

A. General: Construct joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.

1. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip pavement, unless otherwise indicated.
2. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
3. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet (15.25 m), unless otherwise indicated.
2. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant, specified in Division 2 Section "Pavement Joint Sealants," is indicated.
4. Furnish joint fillers in one-piece lengths for full width being placed where possible. Where more than one length is required, lace or clip joint-filler sections together.
5. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces. **Sawed joints will not be accepted.**

a. Radius: 1/4 inch (6 mm).

E. Edging: Tool edges of pavement and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

1. Radius: 1/4 inch (6 mm).

3.6 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site.

F. Do not add water to fresh concrete after testing.

G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

I. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

J. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

K. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.

1. Remove and replace concrete that has been placed for more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.

L. Screed pavement surfaces with a straightedge and strike off.

M. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

N. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch (6 mm).
2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
3. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/4 inch (6 mm).
4. Joint Spacing: 3 inches (75 mm).
5. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
6. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Tests will be performed according to ACI 301.

3.11 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 323113 – CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Galvanized steel chain-link fabric.
2. Galvanized steel framework.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for filling and for grading work.

1.3 DEFINITIONS

A. CLFMI: Chain Link Fence Manufacturers Institute.

B. Zn-5-Al-MM Alloy: Zinc-5 percent aluminum-mischmetal alloy.

1.4 SUBMITTALS

A. Product Data: Material descriptions, construction details, dimensions of individual components and profiles, and finishes for the following:

1. Fence and gate posts, rails, and fittings.
2. Chain-link fabric, reinforcements, and attachments.
3. Gates and hardware.

B. Product Certificates: Signed by manufacturers of chain-link fences and gates certifying that products furnished comply with requirements.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Construction Managers and owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Source Limitations for Chain-Link Fences and Gates: Obtain each color, grade, finish, type, and variety of component for chain-link fences and gates from one source with resources to provide chain-link fences and gates of consistent quality in appearance and physical properties.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. Steel Chain-Link Fence Fabric: Provide fabric fabricated in one-piece widths for fencing in height of 12 feet (3.6 m) and less. Comply with CLFMI's "Product Manual" and with requirements indicated below:

1. Mesh and Wire Size: 2-inch (50-mm) mesh, 9 gauge.
2. Zinc-Coated Fabric: ASTM A 392, with zinc coating applied to steel wire before weaving according to ASTM A 817, Type II, zinc coated (galvanized) with the following minimum coating weight:

    a. Class 1: Not less than 1.2 oz./sq. ft. (366 g/sq. m) of uncoated wire surface.

3. Coat selvage ends of fabric that is metallic coated during the weaving process with manufacturer's standard clear protective coating.

B. Selvage: Knuckled at both selvages.

2.2 INDUSTRIAL FENCE FRAMING

A. Round Steel Pipe: Standard weight, Schedule 40, galvanized steel pipe complying with ASTM F 1083. Comply with ASTM F 1043, Material Design Group IA, external and internal coating Type A, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) zinc; and the following strength and stiffness requirements:

1. Line, End, Corner, and Pull Posts and Top Rail: Per requirements for Heavy Industrial Fence.

B. Post Brace Rails: Match top rail for coating and strength and stiffness requirements.

C. Top Rails: Fabricate top rail from lengths 21 feet (6.4 m) or longer, with swedged-end or fabricated for expansion-type coupling, forming a continuous rail along top of chain-link fabric.

D. Bottom Rails: Match top rail for coating and strength and stiffness requirements.

2.3 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for the following swing-gate types:
   1. Double gate.

B. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1083 and ASTM F 1043 for materials and protective coatings.

C. Frames and Bracing: Fabricate members from round galvanized steel tubing with outside dimension and weight according to ASTM F 900 for the following gate fabric height:

   1. Gate Fabric Height: 6 feet (1.83 m) or less.

D. Frame Corner Construction: As follows:

   1. Welded.

E. Gate Posts: Fabricate members from round galvanized steel pipe with outside dimension and weight according to ASTM F 900.

F. Hardware: Latches permitting operation from both sides of gate, hinges, center gate stops and, for each gate leaf more than 5 feet (1.5 m) wide, keepers. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.

2.4 FITTINGS

A. General: Provide fittings for a complete fence installation, including special fittings for corners. Comply with ASTM F 626.

B. Post and Line Caps: Hot-dip galvanized pressed steel. Provide weathertight closure cap for each post.

   1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: Hot-dip galvanized pressed steel. Provide rail ends or other means for attaching rails securely to each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

   1. Top Rail Sleeves: Hot-dip galvanized pressed steel or round steel tubing. Not less than 6 inches (153 mm) long.
   2. Rail Clamps: Hot-dip galvanized pressed steel. Provide line and corner boulevard clamps for connecting intermediate and bottom rails in the fence line to line posts.

E. Tension and Brace Bands: Hot-dip galvanized pressed steel.

F. Tension Bars: Hot-dip galvanized steel, length not less than 2 inches (50 mm) shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: Hot-dip galvanized steel rod and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: Provide the following types according to ASTM F 626:

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:

a. Hot-Dip Galvanized Steel: 0.148-inch- (3.76-mm-) diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

2. Power-driven fasteners.
3. Round Wire Clips: Hot-dip galvanized steel for attaching chain-link fabric to H-beam posts.
4. Round Wire Hog Rings: Hot-dip galvanized steel for attaching chain-link fabric to horizontal tension wires.

2.5 CAST-IN-PLACE CONCRETE

A. General: Comply with ACI 301 for cast-in-place concrete.

B. Materials: Portland cement complying with ASTM C 150, aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94.

1. Concrete Mixes: Normal-weight concrete, air entrained, with not less than 3000-psi (20.7- MPa) compressive strength (28 days), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum size aggregate.

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. Do not begin installation before final grading is completed, unless otherwise permitted by Construction Manager.

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

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.

C. Post Setting: Hand-excavate holes for post foundations in firm, undisturbed or compacted soil. Set terminal, line and gate posts in concrete footings. Protect portion of posts aboveground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Using mechanical devices to set line posts per ASTM F 567 is not permitted. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during placement and finishing operations until concrete is sufficiently cured.

1. Dimensions and Profile: As indicated on Drawings.
2. Exposed Concrete Footings: Extend concrete 2 inches (50 mm) above grade, smooth, and shape to shed water.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.

B. Line Posts: Space line posts uniformly at 10 feet (3.05 m) o.c maximum.

C. Post Bracing Assemblies: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts. Locate horizontal braces at midheight of fabric on fences with top rail and at two-thirds fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

D. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended by fencing manufacturer.

E. Chain-Link Fabric: Apply fabric to play side of enclosing framework. Leave 1 inch (25.4 mm) between finish grade or surface and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

F. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches (380 mm) o.c.

G. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts 12 inches (304 mm) o.c. and to braces 24 inches (609 mm) o.c.

H. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.5 GATE INSTALLATION

A. General: Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates.

1. Test and adjust hardware and other operable components. Replace damaged or malfunctioning operable components.

END OF SECTION 323113

SECTION 329200 – TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Seeding.

B. Related Sections include the following:

1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

C. Qualification Data: For landscape Installer.

D. Planting Schedule: Indicating anticipated planting dates for each type of planting.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

1.7 SCHEDULING

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring Planting: April 15 through May 15.
2. Fall Planting: August 15 through September 15.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.8 LAWN MAINTENANCE – GENERAL LAWN AREAS

A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

1. Seeded Lawns: 60 days from date of Substantial Completion.

a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.

1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches (100 mm).

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water lawn at a minimum rate of 1 inch (25 mm) per week.

D. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow grass 2 to 3 inches (50 to 75 mm) high.

E. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.

1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) to lawn area.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 98 percent pure seed, and not more than 0.5 percent weed seed:

Species	Mix	Purity	Germination
Annual Rye	10%	98%	95%
*Turf Type Tall Fescue	90%	98%	95%

*Note: Provide a minimum of two varieties of Tall Fescue from the following list: Jubilee, Veranda, Morgan, Stagecoach.

2.2 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

2.3 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.4 FERTILIZER

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

2.5 MULCHES

A. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydromulch overspray.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LAWN PREPARATION

A. Limit lawn subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches (150 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Spread planting soil mix to a depth of 6 inches (150 mm) but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches (50 mm) of subgrade. Spread remainder of planting soil mix.

C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

E. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.4 DRILL SEEDING / HYDROMULCHING

A. Sow seed with a Brillion or equivalent drill seeding machine. Do not broadcast or drop seed. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

1. Do not use wet seed or seed that is moldy or otherwise damaged.

2. Hydro seeding is not acceptable.

B. Sow seed at the rate of 8 lb/1000 sq. ft. (3.6 kg/92.9 sq. m).

C. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.

D. Hydromulch within 24 hours after completing seeding operations.

1. Mix specified fertilizer and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

2. Apply slurry uniformly to all seeded areas in a one-step process. Apply mulch at a minimum rate of 1500-lb/acre (15.3-kg/92.9 sq. m) dry weight.

3.5 LAWN RENOVATION

A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.

B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

D. Mow, dethatch, core aerate, and rake existing lawn.

E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

H. Apply seed and hyrdromulch as required for new lawns.

I. Water newly planted areas and keep moist until new lawn is established.

3.6 SATISFACTORY LAWNS

A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).

B. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.7 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

C. Remove erosion-control measures after grass establishment period.

END OF SECTION 329200

SECTION 334100 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Nonpressure transition couplings.
3. Catch basins.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:
1. Catch basins. Include plans, elevations, sections, details, frames, covers, and grates.

C. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

1.3 PROJECT CONDITIONS

A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without Architect's written permission.

PART 2 - PRODUCTS

2.1 CONCRETE PIPE AND FITTINGS

A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76 (ASTM C 76M).
1. Bell-and-spigot ends and gasketed joints with ASTM C 443 (ASTM C 443M), rubber gaskets

2.2 CATCH BASINS

A. Standard Precast Concrete Catch Basins:

1. Description: ASTM C 478 (ASTM C 478M), precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Base Section: 6-inch (150-mm) minimum thickness for floor slab and 4-inch (102-mm) minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
3. Riser Sections: 4-inch (102-mm) minimum thickness, 48-inch (1200-mm) diameter, and lengths to provide depth indicated.
4. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
5. Joint Sealant: ASTM C 990 (ASTM C 990M), bitumen or butyl rubber.
6. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.
7. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch (150- to 225-mm) total thickness, that match 24-inch- (610-mm-) diameter frame and grate.
8. Steps: Individual FRP steps or FRP ladder, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch (300- to 400-mm) intervals. Omit steps if total depth from floor of catch basin to finished grade is less than 60 inches (1500 mm).
9. Pipe Connectors: ASTM C 923 (ASTM C 923M), resilient, of size required, for each pipe connecting to base section.

B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include flat grate with small square or short-slotted drainage openings.

1. Size: 24 by 24 inches (610 by 610 mm) minimum unless otherwise indicated.
2. Grate Free Area: Approximately 50 percent unless otherwise indicated.

C. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include 24-inch (610-mm) ID by 7- to 9-inch (175- to 225-mm) riser with 4-inch (102-mm) minimum width flange, and 26-inch- (660-mm-) diameter flat grate with small square or short-slotted drainage openings.

1. Grate Free Area: Approximately 50 percent unless otherwise indicated.

2.3 STORMWATER INLETS

A. Combination Inlets: Made with vertical curb and horizontal gutter openings, of materials and dimensions according to utility standards. Include heavy-duty frames and grates.

B. Frames and Grates: Heavy duty, according to utility standards.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

D. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.
2. Install piping NPS 6 (DN 150) and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
3. Install piping with 36-inch (915-mm) minimum cover.
4. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

3.3 CATCH BASIN INSTALLATION

A. Set frames and grates to elevations indicated.

3.4 IDENTIFICATION

A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.5 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches (610 mm) of backfill is in place, and again at completion of Project.

1. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
2. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 334100

TROY SCHOOL DISTRICT
COSTELLO ELEMENTARY SCHOOL
TROY, MICHIGAN

Directory

SITE
COSTELLO ELEMENTARY SCHOOL
1333 HAMMAN DRIVE
TROY, MICHIGAN 48085
248.823.3700

OWNER:
TROY SCHOOL DISTRICT
1140 RANKIN ROAD
TROY MICHIGAN 48083
248.823.4022

LANDSCAPE ARCHITECTS:
O'BOYLE, COWELL, BLALOCK AND ASSOCIATES
521 S RIVERVIEW DRIVE
KALAMAZOO, MICHIGAN 49004
269.381.3357

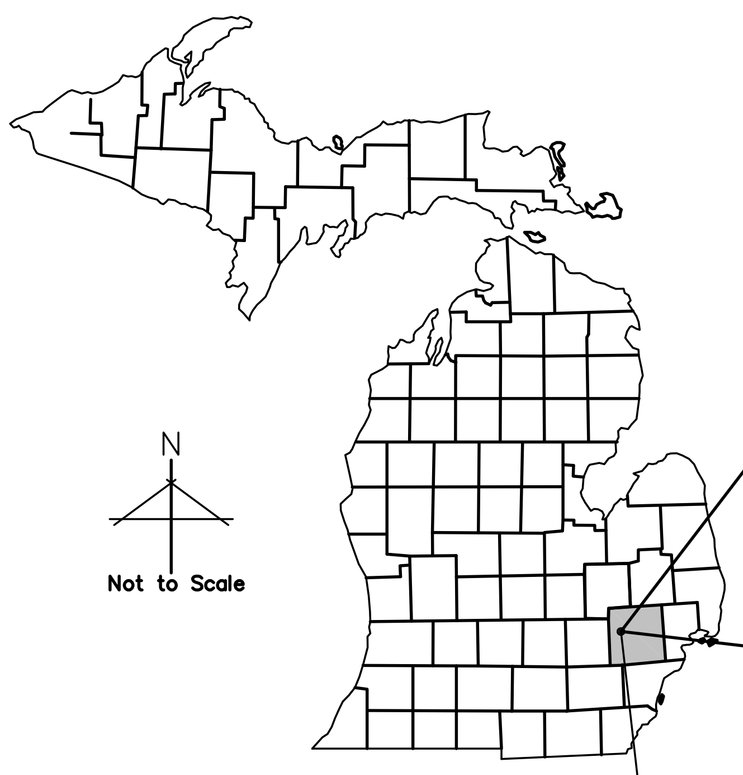
ARCHITECTS & ENGINEERS:
KINGSCOTT, INC.
229 E MICHIGAN AVENUE, SUITE 335
KALAMAZOO, MICHIGAN 49007
269.381.4880

ON SITE PERSON UNKNOWN
OAKLAND COUNTY WILL BE NOTIFIED UPON SELECTION OF ON SITE RESPONSIBLE PARTY

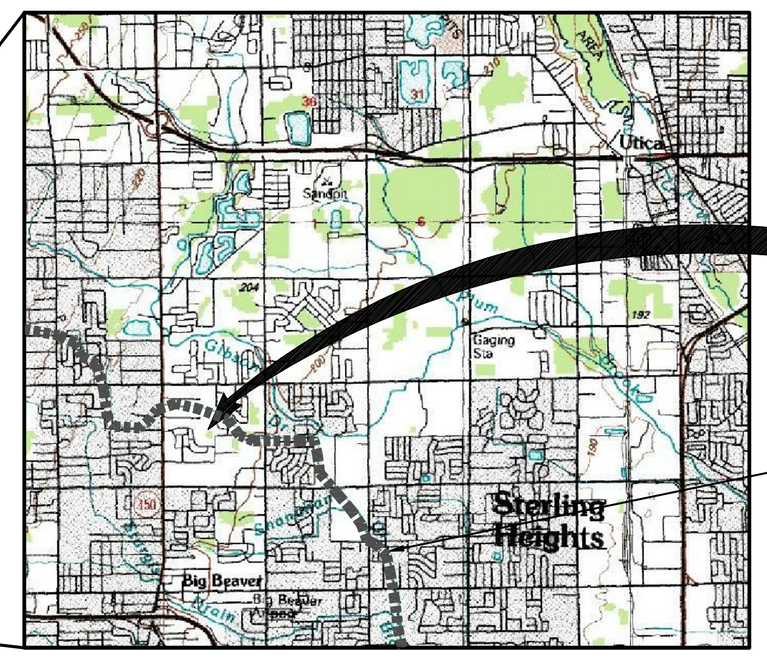
sheet index

sidwell number
20-24-177-012

Location Map



OAKLAND COUNTY, MICHIGAN



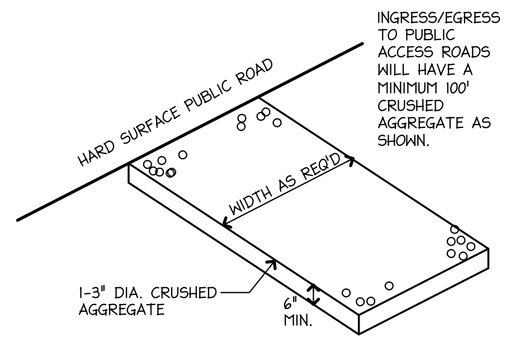
PROJECT SITE

ULTIMATE DRAINAGE OUTLET: Shanahan Drain to Big Beaver Creek to Red Run River

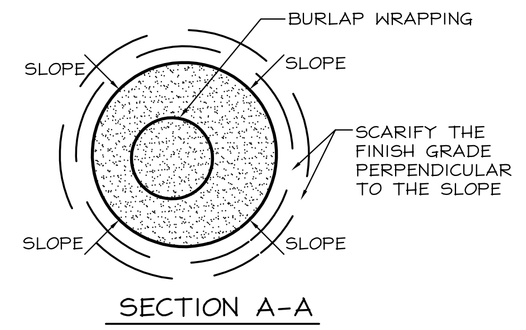
LEGAL DESCRIPTION:

LAND IN THE CITY OF TROY, OAKLAND COUNTY, MICHIGAN.

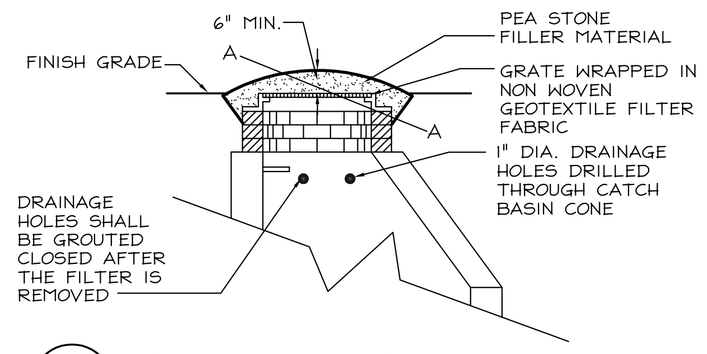
TOWN 2 NORTH, RANGE 11 EAST OF SECTION 14, PART OF THE NORTHWEST ¼ BEGINNING AT A POINT DISTANT S 89°47'00" E 1984.10 FEET AND S 00°04'00" E 1083.72 FEET FROM THE NORTHWEST SECTION CORNER, THENCE S 00°04'00" E 1713.04 FEET, THENCE S 89°14'15" E 621.50 FEET, THENCE N 00°07'55 W 1474.72 FEET, TO THE CENTERLINE OF HOUGHTON DRAIN, THENCE N 62°56'29" W 341.51 FEET AND N 74°07'24" W 329.17 FEET ALONG CENTERLINE OF DRAIN TO THE POINT OF BEGINNING. CONTAINING 22.95 ACRES OF LAND, MORE OR LESS.



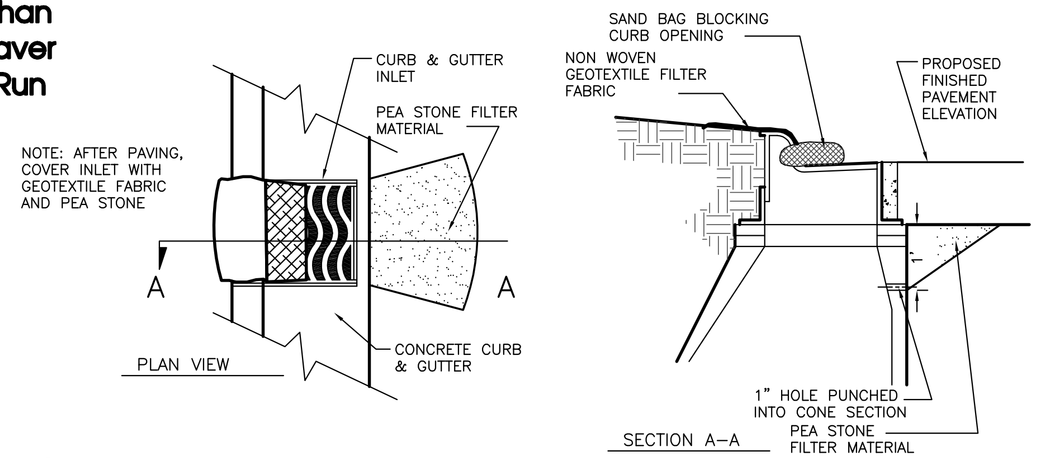
1 **Temporary Construction Entrance**
Not To Scale



SECTION A-A



2 **Inlet Protection Fabric Drop**
Not to Scale — As Per Oakland County Soil Soil Erosion Control Manual



3 **Curb & Gutter Inlet Filter (before paving)**
Not To Scale

Kingscott
KALAMAZOO | SOUTHFIELD | CHELSEA
229 East Michigan Ave., Suite 335
Kalamazoo, MI 49007-6403
P: 269.381.4880 F:269.381.9110
800.632.7815

OCBa
O'BOYLE COWELL BLALOCK & Associates, Inc.

TROY SCHOOL DISTRICT

Costello ELEMENTARY SCHOOL

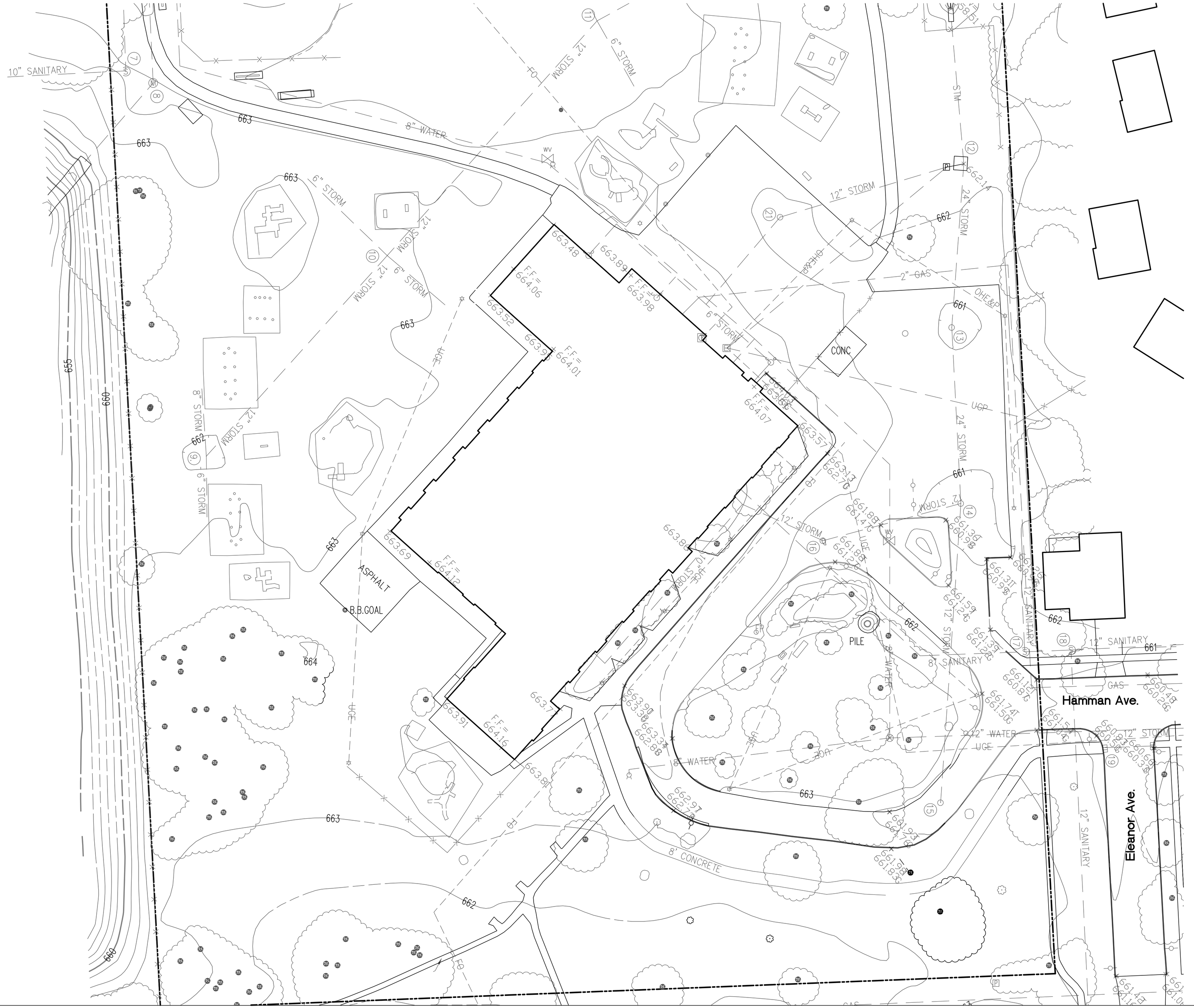
REVISIONS/REVIEW	DATE
OWNER REVIEW	11-12-08
BIDDING	03-20-09

PARKING LOT IMPROVEMENTS

JOB NO. # 30809 NORTH

SHEET TITLE
Cover Sheet

SHEET NO.
CS



Kingscott

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TROY
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PARKING LOT
IMPROVEMENTS

JOB NO. # 30809 NORTH

SHEET TITLE
Existing Conditions

SHEET NO.
C0.0

DEMOLITION LEGEND:

- REMOVE BITUMINOUS PAVEMENT AND BASE
- REMOVE CONCRETE
- REMOVE TREE
- REMOVE SITE FEATURE
- LIMIT OF WORK

DEMOLITION NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY METRO LAND S.E.A. CORPORTATION, 401 S. MAIN ST., CLAWSON, MI 48071, PHONE: 248-588-2600.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO LAYOUT PLAN FOR LIMITS OF WORK.
5. DISCREPANCIES BETWEEN SITE AND PLANS SHOULD BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
6. ALL AREAS OF TREE CLEARING SHALL BE STAKED FOR ARCHITECT'S APPROVAL PRIOR TO CLEARING.
7. ALL TOPSOIL AND EXCESS FILL MATERIAL SHALL BE STOCKPILED ON SITE SEPARATELY FOR LATER RE-USE. LOCATE STOCKPILES IN AREAS AS DIRECTED BY CONSTRUCTION MANAGER AND PROTECT FROM EFFECTS OF EROSION.

SITE DEMOLITION KEY

1. REMOVE EXISTING BITUMINOUS PAVING INCLUDING SUB-BASE.
2. REMOVE EXISTING CONCRETE PAVING INCLUDING SUB-BASE.
3. REMOVE EXISTING CONCRETE CURB AND GUTTER- SAW CUT ASPHALT PAVEMENT WHERE GUTTER PAN IS COVERED
4. REMOVE EXISTING BITUMINOUS CURB- SAW CUT PAVEMENT
5. REMOVE EXISTING SIGN COMPLETELY (INCLUDING FOUNDATION).
6. REMOVE AND SALVAGE EXISTING LIGHT
7. REMOVE EXISTING TREE INCLUDING ALL ROOT SYSTEMS
8. RELOCATE EXISTING TREE

TREE PROTECTION NOTES:

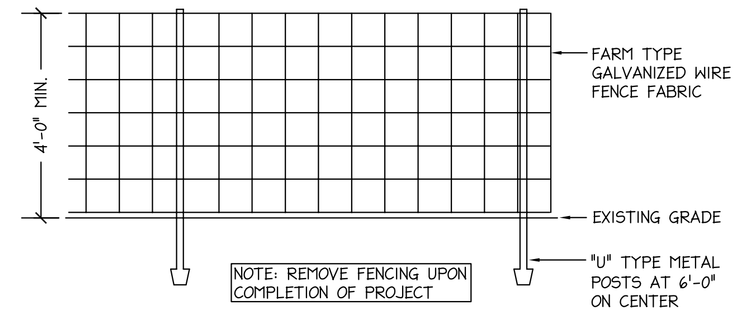
PROVIDE AND MAINTAIN TEMPORARY TREE PROTECTION FENCING IN ALL LOCATIONS MARKED •——•——•——•——•. TREE FENCING SHALL BE PROVIDED AND IN PLACE PRIOR TO ANY WORK ON SITE (INCLUDING TOPSOIL STRIPPING OPERATIONS). REFER TO THE FOLLOWING NOTES AND THE SPECIFICATIONS FOR TREE PROTECTION REQUIREMENTS.

1. NO CONSTRUCTION OPERATIONS, EQUIPMENT, MATERIALS, OR TOPSOIL SHALL BE ALLOWED WITHIN THE TREE PROTECTION AREAS.

2. EXISTING GROUND COVER AND TOPSOIL SHALL NOT BE REMOVED FROM TREE PROTECTION AREAS DURING EARTHWORK PHASE.

3. VEHICULAR TRAFFIC, PARKING, EQUIPMENT OR MATERIAL STORAGE MAY NOT OCCUR WITHIN THE TREE PROTECTION AREAS AT ANY TIME.

4. NO EXCAVATION SHALL BE MADE WITHIN THE TREE PROTECTION AREAS EXCEPT AS NOTED OTHERWISE.

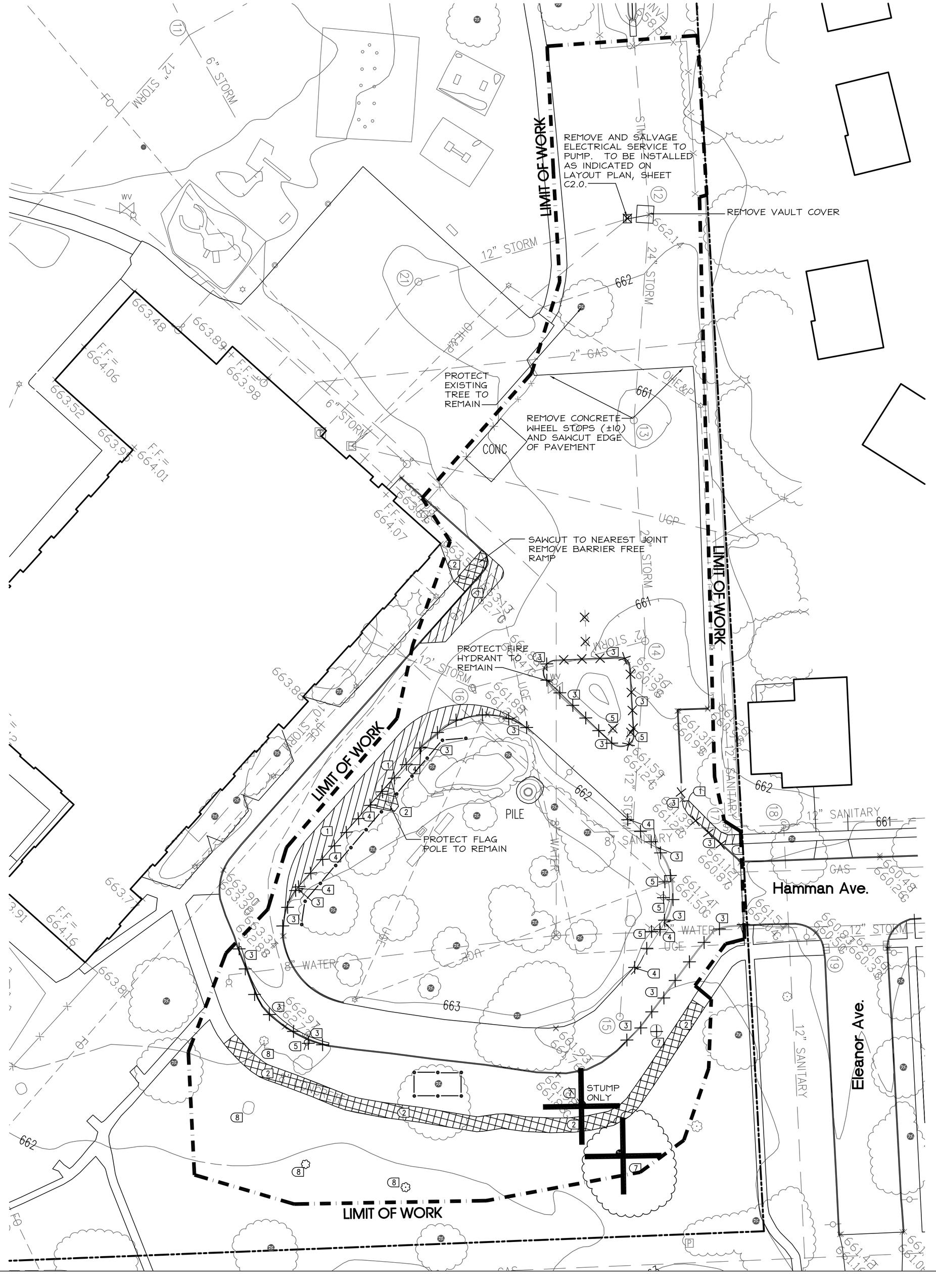


1 Tree Protection Fencing
NOT TO SCALE

EXISTING SEWER TABLE:

SEWER TABLE

N/N	NAME	RIM	INV			INV			INV			INV						
1	BH CB	660.82	E	12	654.12	E	4"	655.62	W	4"	656.72							
2	BH CB	659.20	W	12"	655.30													
3	STM MH	662.42	E	108"	644.67	W	108"	644.67										
4	STM MH	664.30	N	42"	647.50	S	42"	647.50										
5	SAN MH	665.31	W	12"	649.11	S	12"	649.11										
6	SAN MH	664.41	N	12"	648.21	S	12"	648.21										
7	SAN MH	662.83	N	12"	647.13	W	10"	647.13										
8	STM MH	663.00	CAN NOT OPEN															
9	RD CB	661.45	N	8"	659.95	NE	12"	659.75	S	6"	660.05							
10	RD CB	662.00	NE	12"	659.30	SW	12"	659.40	E	6"	659.40	W	6"	659.40				
11	RD CB	662.01	NE	12"	659.21	SE	6"	659.41	SW	12"	659.21	NW	6"	659.41				
12	SLS	662.14	W	12"	655.34	S	24"	655.34										
13	RD CB	660.06	N	24"	655.36	S	24"	655.46										
14	RD CB	660.34	N	24"	655.94	S	12"	655.94	W	12"	656.34							
15	RD CB	661.25	NE	12"	657.70													
16	RD CB	661.04	NW	12"	656.64	NE	12"	656.54										
17	SAN MH	661.38	W	8"	651.38	E	12"	639.58	W	12"	639.58							
18	SAN MH	661.00	E	12"	638.75	W	12"	638.75	S	12"	638.75							
19	CB	660.46	E	12"	656.46													
20	STM MH	664.63	N	42"	647.83	S	42"	647.83	W	24"	655.83	NW	12"	659.63	SW	12"	659.63	



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PARKING LOT IMPROVEMENTS

JOB NO. # 30809 NORTH

SHEET TITLE
Demolition Plan

SHEET NO.
C1.0

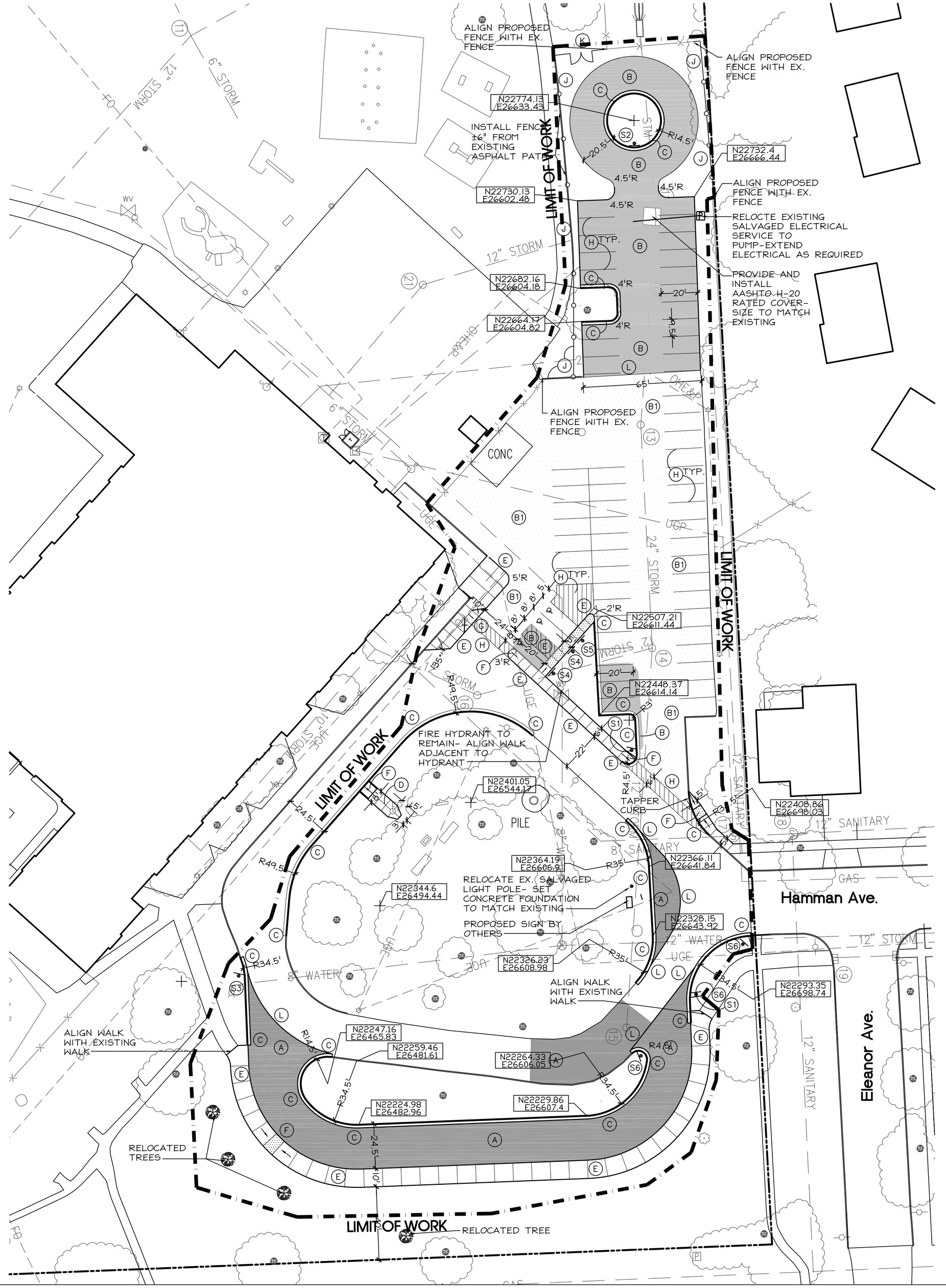
SYMBOL	DESCRIPTION	DETAIL
A	HEAVY DUTY BITUMINOUS PAVEMENT	1/C4.0
B	STANDARD DUTY BITUMINOUS PAVING	2/C4.0
B1	EMULSION SEAL COAT	SEE SPECS
	CONCRETE FLUSH WITH PAVEMENT SLOPED PORTION OF RAMP	6A7/C4.0

KEY	DESCRIPTION	DETAIL
C	CONCRETE CURB AND GUTTER	3/C4.0
D	CONCRETE WALK	4/C4.0
	NOTE: SCORING PATTERN SHOWN FOR CLARIFICATION ONLY. REFER TO SPECS. FOR JOINT SPACING.	
E	INTEGRAL WALK AND CURB	5/C4.0
F	BARRIER FREE RAMP (TYPE I)	6C4.0
G	BARRIER FREE RAMP (TYPE II)	7/C4.0
H	PAVEMENT GRAPHICS	
J	CHAIN-LINK FENCING 4' HEIGHT	8/C4.0
K	4' HEIGHT-12' WIDE CHAIN LINK GATE	9/C4.0
L	BITUMINUS PAVEMENT EXISTING/NEW	10/C4.0
	LIMIT OF WORK	

SIGNS		
S1	STOP SIGN	SEE SPECS.
S2	ONE WAY	SEE SPECS.
S3	BUS ENTRANCE ONLY	SEE SPECS.
S4	BARRIER FREE PARKING	SEE SPECS.
S5	BARRIER FREE PARKING- VAN ACCESSIBLE	SEE SPECS.
S6	ONE WAY DO NOT ENTER	SEE SPECS.

LAYOUT NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY METRO LAND S.E.A. CORPORTATION, 401 S. MAIN ST., CLAWSON, MI 48071, PHONE: 248-588-2600.
2. PAVEMENT DIMENSIONS AND RADII ARE TO EDGE OF PAVEMENT OR BACK OF CURB.
3. DISCREPANCIES BETWEEN SITE AND PLANS SHOULD BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
4. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
5. PROVIDE BARRIER FREE PARKING SIGNS FOR ALL BARRIER FREE PARKING SPACES. ALL SIGNS TO COMPLY WITH THE MDOT MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
6. SITE LAYOUT POINTS SHOULD BE ESTABLISHED AND PROTECTED FOR FUTURE SITE WORK.



0 30 60 90

SCALE IN FEET

Kingscott

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TROY SCHOOL DISTRICT

Costello
ELEMENTARY SCHOOL

REVISIONS/REVIEW	DATE
OWNER REVIEW	11-12-08
BIDDING	03-20-09

PARKING LOT IMPROVEMENTS

JOB NO. # 30809 NORTH

SHEET TITLE
Site Layout Plan

SHEET NO.
C2.0

PROPOSED FEATURES LEGEND:

695	EXISTING CONTOURS
661.88 ×	EXISTING SPOT ELEVATIONS
710	PROPOSED CONTOURS
949.5 +	PROPOSED SPOT ELEVATIONS
949.5 + 949.5	PROPOSED SPOT ELEVATIONS TOP OF CURB BOTTOM OF CURB
2%	DIRECTION AND PERCENTAGE OF SLOPE
CB ●	CATCH BASIN. SEE DETAIL
- - - - - -	PROPOSED REINFORCED CONCRETE PIPE
HP	HIGH POINT
	SILT FENCE
	WORK LIMIT LINE

GRADING NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY METRO LAND S.E.A. CORPORTATION, 401 S. MAIN ST., CLAWSON, MI 48071, PHONE: 248-588-2600.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. ALL NEW PAVEMENTS AND TURF AREAS ARE INTENDED TO DRAIN FREELY WITH NO PONDING. IF THIS CANNOT BE ACHIEVED USING THE PROPOSED GRADES, NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY FOR RESOLUTION.
4. FINISH GRADE SLOPE AT ALL BARRIER FREE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 2% IN ALL DIRECTIONS, TYPICAL.
5. ADJUST TOP OF EXISTING MANHOLES, CATCH BASINS, VAULT COVERS, ETC. TO NEW FINISH GRADE AS REQUIRED.

PROPOSED STORM

CB #1
RIM 661.65
INV NE: 658.44

CB #2
RIM: 661.45
INV: ±656.44

CB #3 2' DIA.
(SOLID COVER)
RIM: 662.15
INV: MATCH EX.

CB #4
RIM: 661.80
INV: MATCH EX.

IMPORTANT NOTE

GENERAL EARTHWORK NOTE:

CUTS AND FILLS AT THIS SITE MAY OR MAY NOT BALANCE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE REQUIRED EARTHWORK VOLUMES BASED ON THE GRADING PLAN SHOWN. IF FILL IS REQUIRED, THE CONTRACTOR SHALL INCLUDE THE REQUIRED VOLUME OF IMPORTED CLASS II SAND IN THE BASE BID PROPOSAL. IF EXCESS SOILS NEED TO BE SPOILED, THE CONTRACTOR SHALL INCLUDE HAULING AND SPOILING SOILS OFF SITE IN THE BASE BID PROPOSAL. NO CONTRACT COST ADJUSTMENTS WILL BE CONSIDERED FOR EARTHWORK REQUIRED TO BALANCE THE SITE.

IMPORTANT NOTE

IMPORTANT NOTE

IMPORTANT NOTE

EROSION CONTROL TIMELINE

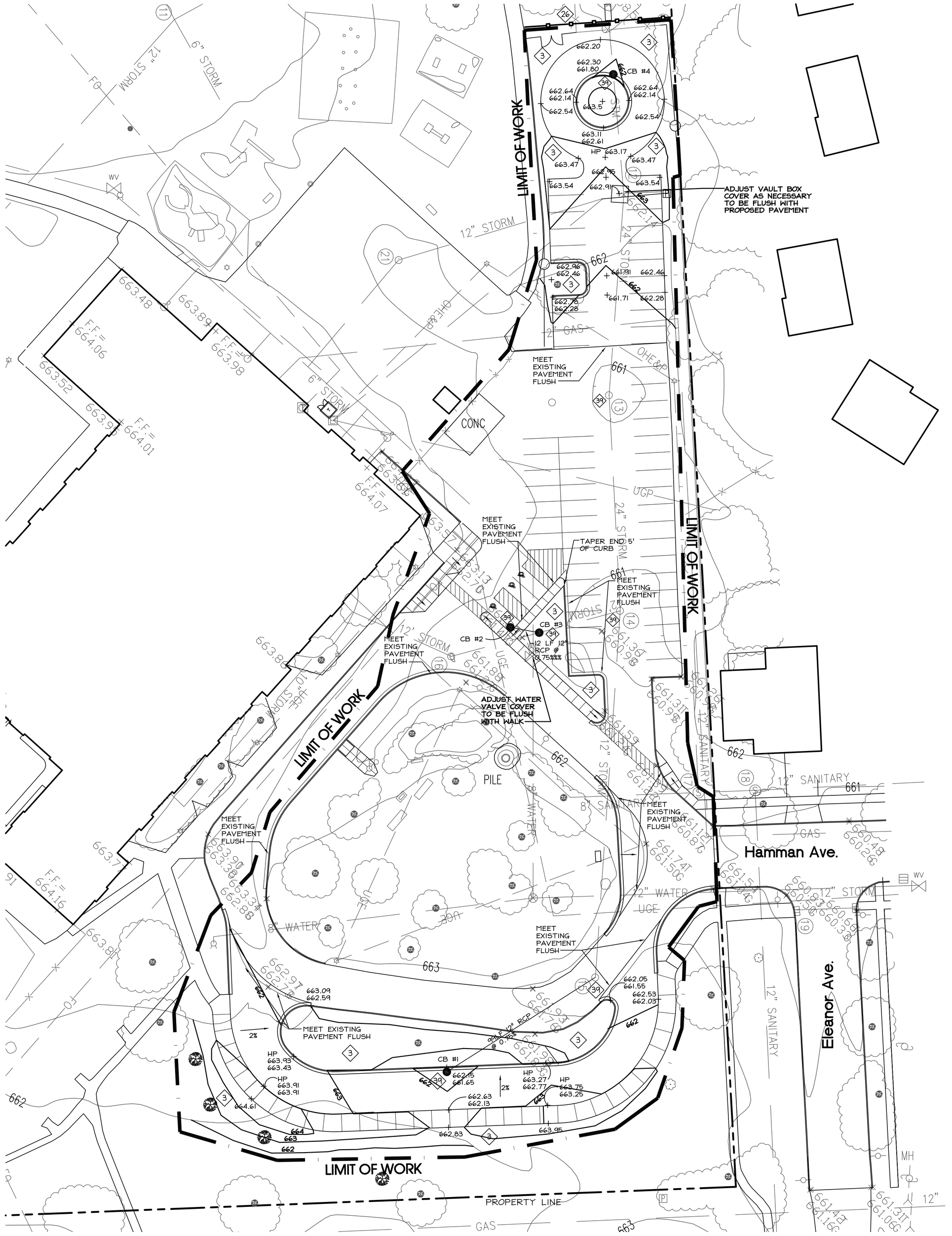
ITEM	DESCRIPTION	APPROXIMATE TIME FRAME	NOTES:
1.	INSTALL SILT FENCING / PERIMETER EROSION CONTROL	JUNE '09	1. CONTRACTOR SHALL MONITOR AND MAINTAIN ALL EROSION CONTROL DEVICES THROUGHOUT THE CONSTRUCTION PERIOD.
2.	STRIP & STOCKPILE TOPSOIL	JUNE '09	
3.	INSTALL STORM SEWER STRUCTURES AND PIPING	JUNE' 09	
4.	INSTALL INLET SEDIMENT FILTERS AT CATCH BASINS	JUNE '09	2. ADDITIONAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS REQUIRED TO MINIMIZE SILT LEAVING THE CONSTRUCTION SITE.
5.	INSTALL PAVEMENT SUB-BASE	JULY '09	
6.	INSTALL LEVELING COURSE OF PAVING	AUGUST '09	
7.	INSTALL WEARING COURSE OF PAVING	AUGUST '09	
8.	FINISH GRADE AND SEED / STABILIZE ALL AREAS	SUMMER '01	

EROSION CONTROL REQUIREMENTS:

ALL CONSTRUCTION SHALL COMPLY WITH THE SOIL EROSION AND SEDIMENTATION CONTROL ACT (P.A. 347 OF 1972, AS AMENDED) AS ADMINISTERED BY CITY OF TROY AND OAKLAND COUNTY. THE FOLLOWING EROSION CONTROL DEVICES ARE REFERENCED IN THE STANDARD EROSION CONTROL HANDBOOK PUBLISHED BY THE MICHIGAN DEPARTMENT OF TRANSPORTATION. (MDOT DRAWING R-96-C, 8-9-2001)

ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AT THE END OF CONSTRUCTION. TEMPORARY EROSION CONTROL DEVICES SHOULD BE IN PLACE PRIOR TO EXCAVATION, TO THE EXTENT POSSIBLE.

KEY	DESCRIPTION	TEMPORARY / PERMANENT
3	PERMANENT/TEMPORARY SEEDING	P
26	GEOTEXTILE SILT FENCE	P
39	INLET PROTECTION FABRIC DROP	T



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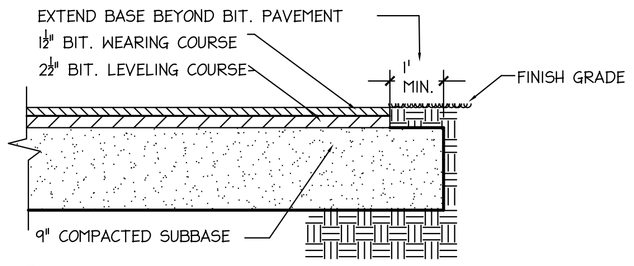
PARKING LOT IMPROVEMENTS

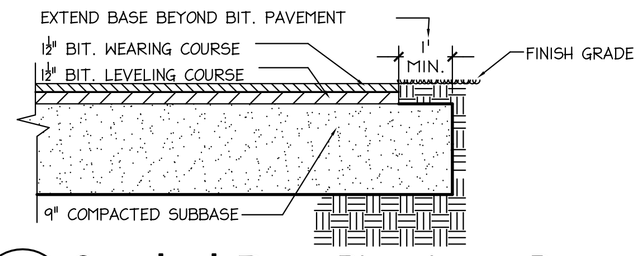
JOB NO. # 30809 NORTH

SHEET TITLE
Grading Plan

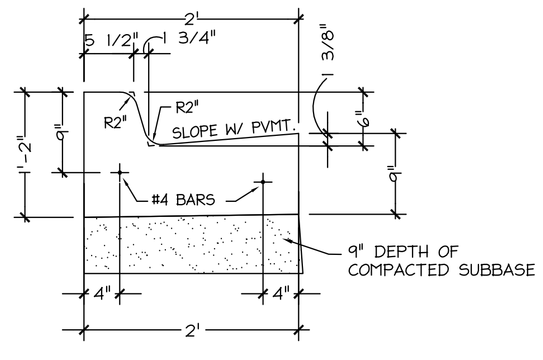
SHEET NO.
C3.0



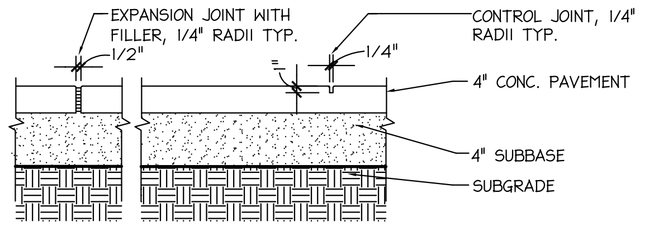
1 Heavy Duty Bituminous Pavement
Not To Scale



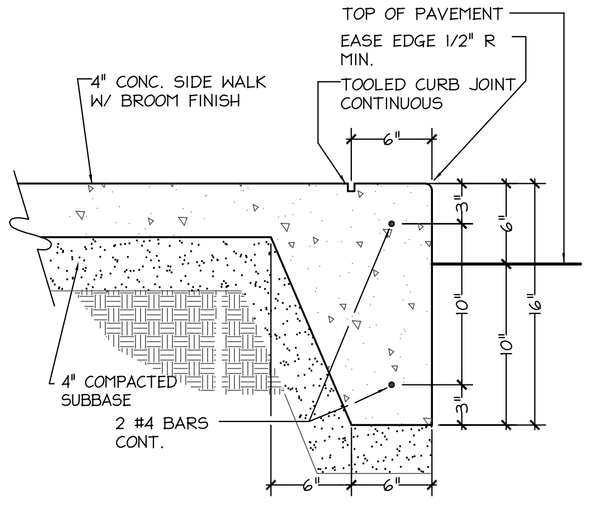
2 Standard Duty Bituminous Pavement
Not To Scale



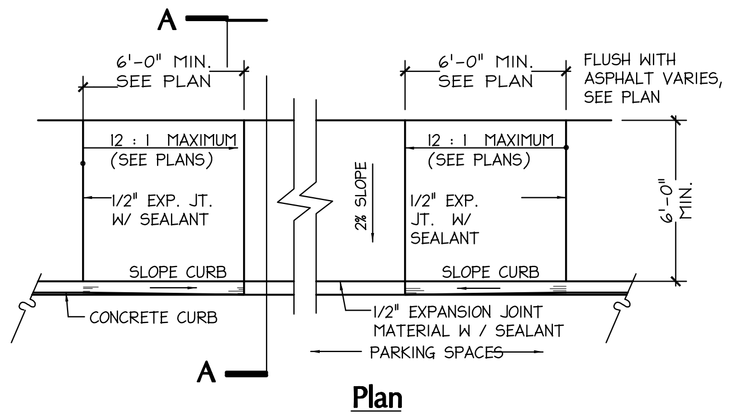
3 Concrete Curb And Gutter Detail
1" = 1'-0"



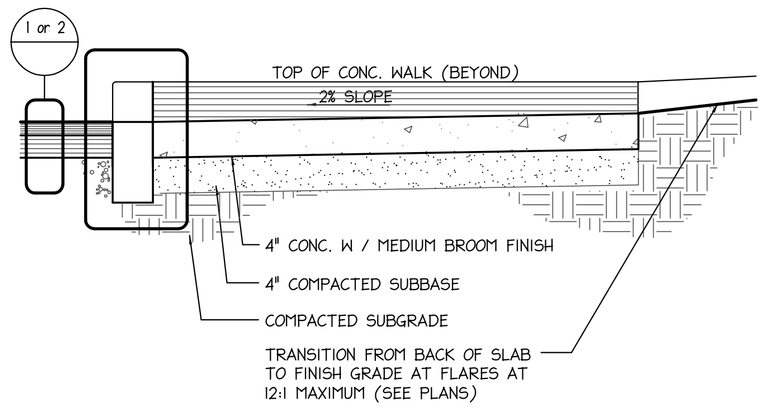
4 Section – Concrete Walk
Not To Scale



5 Integral Walk And Curb
1" = 1'-0"

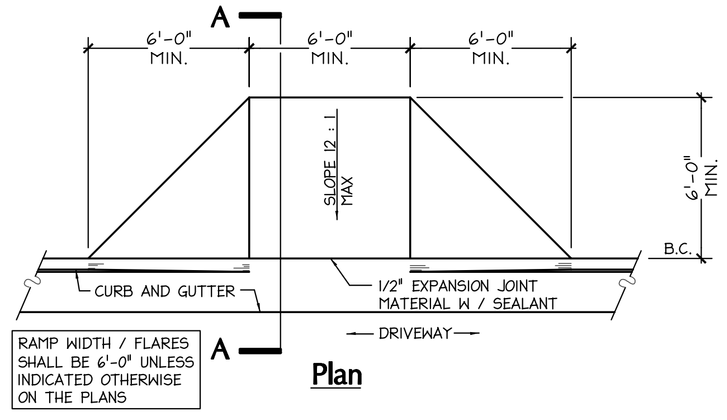


Plan

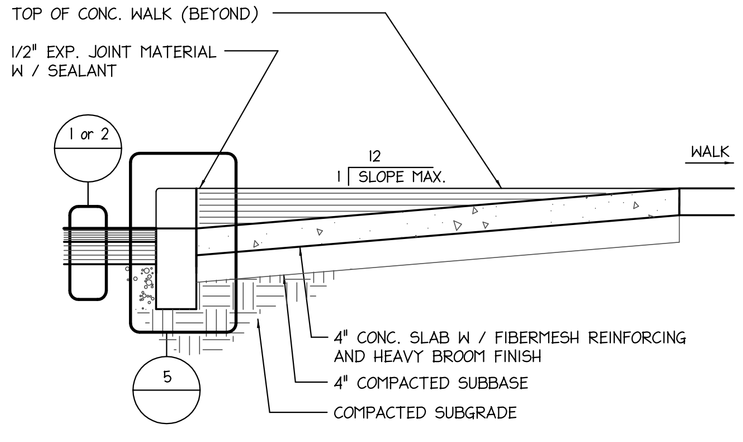


Section 'A–A'

6 Barrier Free Ramp (Type I) Detail
1/2" = 1'-0"

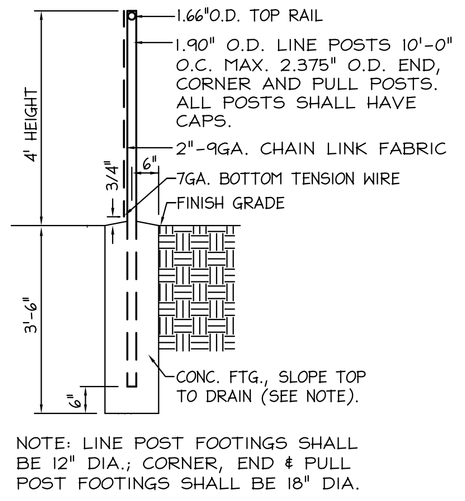


Plan



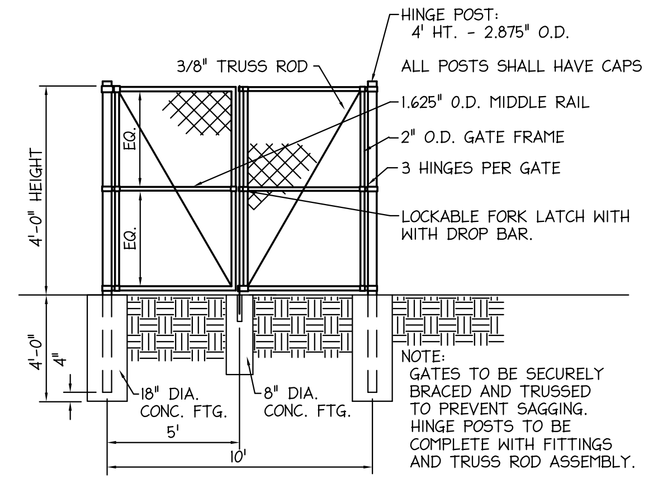
Section 'A–A'

7 Barrier Free Ramp (Type II) Detail
1/2" = 1'-0"

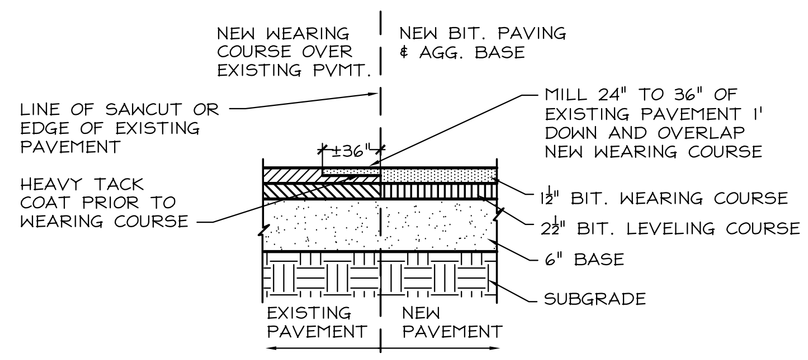


NOTE: LINE POST FOOTINGS SHALL BE 12" DIA.; CORNER, END & PULL POST FOOTINGS SHALL BE 18" DIA.

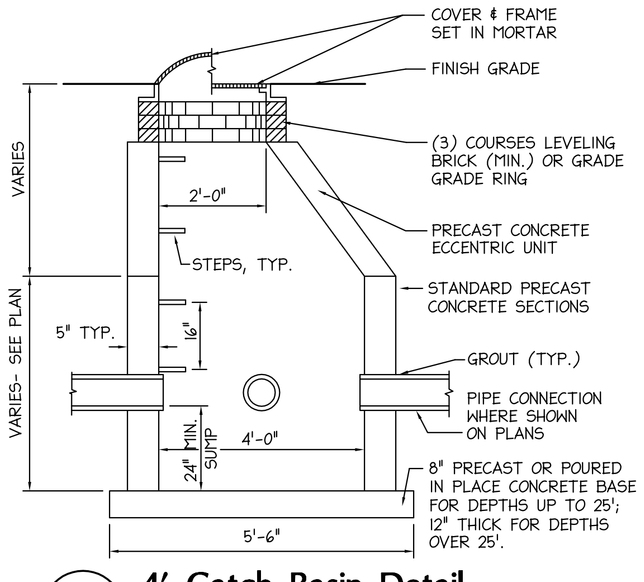
8 Chain Link Fencing– 4' Height
Not To Scale



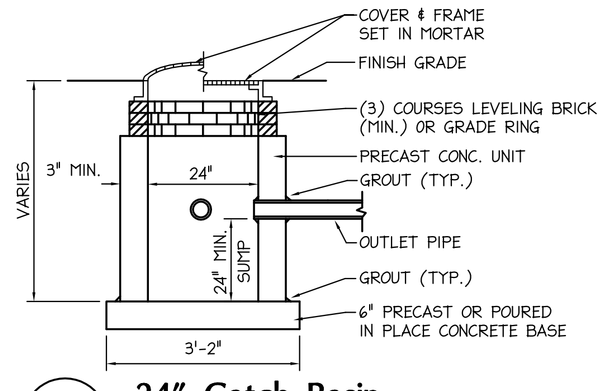
9 Section – Double Gate
Not To Scale



10 Section – Bituminous Pavement Existing/New
Not To Scale



11 4' Catch Basin Detail
Not To Scale



12 24" Catch Basin
Not To Scale

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PARKING LOT IMPROVEMENTS

JOB NO. # 30809 NORTH

SHEET TITLE
Details

SHEET NO.
C4.0

JENNIFER M.
GRANHOLM
GOVERNOR

Michigan Department of Energy, Labor & Economic Growth
Wage & Hour Division
PO Box 30476
Lansing , MI 48909-7976
517.335.0400
www.michigan.gov/wagehour

STANLEY "SKIP" PRUSS
DIRECTOR

Informational Sheet: Prevailing Wages on State Projects
General Information Regarding Fringe Benefits

Certain fringe benefits **may** be credited toward the payment of the Prevailing Wage Rate:

- If a fringe benefit is paid directly to a construction mechanic
- If a fringe benefit contribution or payment is made on behalf of a construction mechanic
- If a fringe benefit, which may be provided to a construction mechanic**,** is pursuant to a written contract or policy
- If a fringe benefit is paid into a fund, for a construction mechanic

When a fringe benefit is not paid by an hourly rate, the hourly credit will be calculated based on the annual value of the fringe benefit divided by 2080 hours per year (52 weeks @ 40 hours per week).

The following is an example of the types of fringe benefits allowed and how an hourly credit is calculated:

Vacation	40 hours X $14.00 per hour = $560/2080 =	$.27
Dental insurance	$31.07 monthly premium X 12 mos. = $372.84 /2080 =	$.18
Vision insurance	$5.38 monthly premium X 12 mos. = $64.56/2080 =	$.03
Health insurance	$230.00 monthly premium X 12 mos. = $2,760.00/2080 =	$1.33
Life insurance	$27.04 monthly premium X 12 mos. = $324.48/2080 =	$.16
Tuition	$500.00 annual cost/2080 =	$.24
Bonus	4 quarterly bonus/year x $250 = $1000.00/2080 =	$.48
401k Employer Contribution	$2000.00 total annual contribution/2080 =	$.96
Total Hourly Credit		$3.65

Other examples of the types of fringe benefits allowed:

- Sick pay
- Holiday pay
- Accidental Death & Dismemberment insurance premiums

The following are examples of items that **will not** be credited toward the payment of the Prevailing Wage Rate

- Legally required payments, such as:
  - Unemployment Insurance payments
  - Workers' Compensation Insurance payments
  - FICA (Social Security contributions, Medicare contributions)
- Reimbursable expenses, such as:
  - Clothing allowance or reimbursement
  - Uniform allowance or reimbursement
  - Gas allowance or reimbursement
  - Travel time or payment
  - Meals or lodging allowance or reimbursement
  - Per diem allowance or payment
- Other payments to or on behalf of a construction mechanic that are not wages or fringe benefits, such as:
  - Industry advancement funds
  - Financial or material loans

STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF ENERGY, LABOR & ECONOMIC GROWTH
LANSING

STANLEY "SKIP" PRUSS
DIRECTOR

REQUIREMENTS OF THE PREVAILING WAGES ON STATE PROJECTS ACT, PUBLIC ACT 166 OF 1965

The Michigan Department of Labor & Economic Growth determines prevailing rates pursuant to the Prevailing Wages on State Projects Act, Public Act 166 of 1965, as amended. The purpose of establishing prevailing rates is to provide minimum rates of pay that must be paid to workers on construction projects for which the state or a school district is the contracting agent and which is financed or financially supported by the state. By law, prevailing rates are compiled from the rates contained in collectively bargained agreements which cover the locations of the state projects. The official prevailing rates provide an hourly rate which includes wage and fringe benefit totals for designated construction mechanic classifications. The overtime rates also include wage and fringe benefit totals. Please pay special attention to the overtime and premium pay requirements. Prevailing wage is satisfied when wages plus fringe benefits paid to a worker are equal to or greater than the required rate.

State of Michigan responsibilities under the law:

- The department establishes the prevailing rate for each classification of construction mechanic ***requested by a contracting agent*** prior to contracts being let out for bid on a state project.

Contracting agent responsibilities under the law:

- If a contract is not awarded or construction does not start within 90 days of the date of the issuance of rates, a re-determination of rates must be requested by the contracting agent.
- Rates for classifications needed but not provided on the Prevailing Rate Schedule, ***must*** be obtained ***prior*** to contracts being let out for bid on a state project.
- The contracting agent, by written notice to the contractor and the sureties of the contractor known to the contracting agent, may terminate the contractor's right to proceed with that part of the contract, for which less than the prevailing rates have been or will be paid, and may proceed to complete the contract by separate agreement with another contractor or otherwise, and the original contractor and his sureties shall be liable to the contracting agent for any excess costs occasioned thereby.

Contractor responsibilities under the law:

- Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing rates prescribed in a contract.
- Every contractor and subcontractor shall keep certified payrolls, as used in the industry, of each and every construction mechanic, and verification of such certified payroll in writing by either a representative or auditor/certified accountant at the end of such a

certified payroll. These records should include the occupation and indicate the hours worked on each project for each classification and the actual wages and benefits paid. This record shall be available for reasonable inspection by the contracting agent or the department.

- Each contractor or subcontractor is separately liable for the payment of the prevailing rate to its employees.
- The prime contractor is responsible for advising all subcontractors of the requirement to pay the prevailing rate prior to commencement of work.
- The prime contractor is secondarily liable for payment of prevailing rates that are not paid by a subcontractor.
- A construction mechanic shall only be paid the apprentice rate if registered with the United States Department of Labor, Bureau of Apprenticeship and Training and the rate is included in the contract.

Enforcement:

A person who has information of an alleged prevailing wage violation on a state project may file a complaint with the Wage & Hour Division. The department will investigate and attempt to resolve the complaint informally. During the course of an investigation, if the requested records and posting certification are not made available in compliance with Section 5 of Act 166, the investigation will be concluded and a referral to the Office of Attorney General for civil action will be made. The Office of Attorney General will pursue costs and fees associated with a lawsuit if filing is necessary to obtain records.

A violation of Act 166 may result in the contractor's name being added to the Prevailing Wage Act Violators List published on the division's website, updated monthly. This list includes the names and addresses of contractors and subcontractors the division has found in violation of Act 166 based on complaints from individuals and third parties. The Prevailing Wage Act Violators List is intended to inform contracting agents of contractors that have violated Act 166 for use in determining who should receive state-funded projects.

MICHIGAN DEPARTMENT OF ENERGY, LABOR & ECONOMIC GROWTH
WAGE & HOUR DIVISION

2008 MICHIGAN PREVAILING WAGE RATE SCHEDULE
for Parking Lot, ROAD, HIGHWAY, BRIDGE & AIRPORT CONSTRUCTION

Issue Date: 03/23/2009

Contract must be awarded by: 6/21/2009

PW #404 Troy School District Costello Elementary School Bus Loop

Construction Mechanic Classification	Straight Time Rate	Time & One-Half Rate	Double Time Rate	Overtime Code
CARPENTERS				
Zone 1	$45.65	$64.95	$84.25	HHHHHHDDY
Apprentices				
0- 6 months	$24.03	$32.52	$41.00	HHHHHHDDY
7-12 months	$28.29	$38.91	$49.52	HHHHHHDDY
Year 2	$32.14	$44.68	$57.22	HHHHHHDDY
Year 3	$36.00	$50.47	$64.94	HHHHHHDDY
Year 4	$39.86	$56.26	$72.66	HHHHHHDDY
Zone 2	$36.51	$49.72	NONE	HHHHHHHHY
Apprentices				
1st Year	$25.94	$33.87	NONE	HHHHHHHHY
2nd Year	$28.58	$37.83	NONE	HHHHHHHHY
3rd Year	$31.23	$41.80	NONE	HHHHHHHHY
4th Year	$32.55	$43.78	NONE	HHHHHHHHY
CEMENT MASONS				
Zone 1	$36.98	$50.72	NONE	HHHHHHHHY
Apprentices				
Year 1	$24.50	$32.00	NONE	HHHHHHHHY
Year 2	$28.63	$38.20	NONE	HHHHHHHHY
Year 3	$32.77	$44.41	NONE	HHHHHHHHY
Zone 2	$35.48	$48.47	NONE	HHHHHHHHY
Apprentices				
Year 1	$23.67	$30.76	NONE	HHHHHHHHY
Year 2	$27.62	$36.68	NONE	HHHHHHHHY
Year 3	$31.59	$42.64	NONE	HHHHHHHHY

OPERATING ENGINEERS				
Zone 1 CLASS I	$44.67	$58.58	NONE	HHHHHHHHY
CLASS II	$37.94	$48.48	NONE	HHHHHHHHY
CLASS II GREASE TRUCK	$39.24	$50.43	NONE	HHHHHHHHY
CLASS III	$37.38	$47.64	NONE	HHHHHHHHY
CLASS IV	$37.21	$47.39	NONE	HHHHHHHHY
CLASS IV OILER	$36.86	$47.04	NONE	HHHHHHHHY
Zone 2 CLASS I	$44.67	$58.58	NONE	HHHHHHHHY
CLASS II	$37.79	$48.26	NONE	HHHHHHHHY
CLASS II GREASE TRUCK	$39.09	$50.21	NONE	HHHHHHHHY
CLASS III	$37.23	$47.42	NONE	HHHHHHHHY
CLASS IV	$36.91	$46.94	NONE	HHHHHHHHY
CLASS IV OILER	$36.56	$46.59	NONE	HHHHHHHHY
Apprentices (**Zones 1 & 2**)				
1st 6 Month Period	$35.97	$45.71	NONE	HHHHHHHHY
2nd 6 Month Period	$37.37	$47.79	NONE	HHHHHHHHY
3rd 6 Month Period	$38.76	$49.88	NONE	HHHHHHHHY
4th 6 Month Period	$40.15	$51.96	NONE	HHHHHHHHY
5th 6 Month Period	$41.54	$54.05	NONE	HHHHHHHHY
6th 6 Month Period	$42.93	$56.13	NONE	HHHHHHHHY
LABORERS				
CLASS 1 **Zone 1**	$33.46	$45.32	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$28.09	$37.27	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$29.17	$38.88	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$30.24	$40.49	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$32.39	$43.71	NONE	HHHHHHHHY
CLASS 1 **Zone 2**	$31.61	$42.32	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.81	$35.11	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.77	$36.55	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.73	$38.00	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.65	$40.88	NONE	HHHHHHHHY

LABORERS continued				
CLASS 1 **Zones 3 & 4**	$30.86	$41.20	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.24	$34.27	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.17	$35.65	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.09	$37.04	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$29.94	$39.81	NONE	HHHHHHHHY
CLASS 2 **Zone 1**	$33.59	$45.52	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$28.19	$37.42	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$29.27	$39.04	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$30.35	$40.66	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$32.51	$43.90	NONE	HHHHHHHHY
CLASS 2 **Zone 2**	$31.81	$42.62	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.96	$35.34	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.93	$36.79	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.90	$38.25	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.84	$41.16	NONE	HHHHHHHHY
CLASS 2 **Zones 3 & 4**	$31.07	$41.51	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.40	$34.51	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.33	$35.91	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.27	$37.31	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.14	$40.11	NONE	HHHHHHHHY
CLASS 3 **Zone 1**	$33.77	$45.79	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$28.33	$37.62	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$29.41	$39.25	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$30.50	$40.88	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$32.68	$44.15	NONE	HHHHHHHHY
CLASS 3 **Zone 2**	$32.05	$42.98	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$27.14	$35.61	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$28.12	$37.08	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$29.10	$38.56	NONE	HHHHHHHHY
Apprentice 3,001 – 4,000 work hours	$31.07	$41.51	NONE	HHHHHHHHY

LABORERS continued				
CLASS 3 **Zones 3 & 4**	$31.36	$41.95	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.62	$34.83	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.57	$36.25	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.51	$37.68	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.41	$40.52	NONE	HHHHHHHHY
CLASS 4 **Zone 1**	$33.85	$45.91	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$28.39	$37.71	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$29.48	$39.35	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$30.57	$40.99	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$32.76	$44.27	NONE	HHHHHHHHY
CLASS 4 **Zone 2**	$32.40	$43.51	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$27.40	$36.00	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$28.40	$37.50	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$29.40	$39.00	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$31.40	$42.00	NONE	HHHHHHHHY
CLASS 4 **Zones 3 & 4**	$31.80	$42.61	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.95	$35.33	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.92	$36.78	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.89	$38.24	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.83	$41.15	NONE	HHHHHHHHY
CLASS 5 **Zone 1**	$34.06	$46.22	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$28.54	$37.94	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$29.65	$39.60	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$30.75	$41.25	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$32.96	$44.56	NONE	HHHHHHHHY
CLASS 5 **Zone 2**	$32.27	$43.31	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$27.30	$35.86	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$28.29	$37.35	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$29.29	$38.84	NONE	HHHHHHHHY

LABORERS continued				
Apprentice 3,001-4,000 work hours	$31.28	$41.82	NONE	HHHHHHHHY
CLASS 5 **Zones 3 & 4**	$31.42	$42.04	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.66	$34.90	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.61	$36.33	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.57	$37.75	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.47	$40.61	NONE	HHHHHHHHY
CLASS 6 **Zone 1**	$34.36	$46.67	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$28.77	$38.28	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$29.89	$39.96	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$31.00	$41.64	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$33.24	$44.99	NONE	HHHHHHHHY
CLASS 6 **Zone 2**	$32.61	$43.82	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$27.56	$36.24	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$28.57	$37.75	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$29.58	$39.27	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$31.60	$42.30	NONE	HHHHHHHHY
CLASS 6 **Zones 3 & 4**	$31.85	$42.68	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$26.99	$35.38	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$27.96	$36.84	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$28.93	$38.30	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$30.88	$41.22	NONE	HHHHHHHHY
CLASS 7 Concrete Specialist **Zone 1**	$35.43	$48.28	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$29.57	$39.49	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$30.74	$41.24	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$31.91	$43.00	NONE	HHHHHHHHY
Apprentice 3,001-4,000 work hours	$34.26	$46.52	NONE	HHHHHHHHY
CLASS 7 Concrete Specialist **Zones 2, 3, & 4**	$35.18	$47.68	NONE	HHHHHHHHY
Apprentice 0-1,000 work hours	$29.48	$39.13	NONE	HHHHHHHHY
Apprentice 1,001-2,000 work hours	$30.62	$40.84	NONE	HHHHHHHHY
Apprentice 2,001-3,000 work hours	$31.76	$42.55	NONE	HHHHHHHHY

LABORERS continued				
Apprentice 3,001-4,000 work hours	$34.04	$45.97	NONE	HHHHHHHHY

TRUCK DRIVERS				
Zone 1				
Driver of all trucks of 8 cubic yard capacity or less	$35.84	$36.44	NONE	HHHHHHHHY
Driver of trucks of 8 cubic yard capacity or over	$35.94	$36.59	NONE	HHHHHHHHY
Driver of euclid type equipment	$36.09	$36.81	NONE	HHHHHHHHY
Zone 2				
Driver of all trucks of 8 cubic yard capacity or less	$35.74	$36.29	NONE	HHHHHHHHY
Driver of all trucks of 8 cubic yard capacity or over	$35.84	$36.44	NONE	HHHHHHHHY
Driver of euclid type equipment	$35.99	$36.66	NONE	HHHHHHHHY

Effective Date: November 10, 2008

Issue Date: 03/23/2009 Contract must be awarded by: 06/21/2009

PW #404 Troy School District Costello Elementary School Bus Loop

CARPENTERS

Zone 1 Wayne, Oakland, Macomb, Sanilac, St. Clair, Monroe, and the following townships of Livingston County: Brighton, Deerfield, Genoa, Hartland, Osceola and Tyrone

Zone 2 The entire state except those counties and townships listed in Zone 1

CEMENT MASONS

Zone 1 Genesee, Oakland, Macomb, Monroe, Washtenaw, Wayne, Livingston and Saginaw Counties

Zone 2 Alcona, Alger, Allegan, Alpena, Antrim, Arenac, Baraga, Barry, Bay, Berrien, Benzie, Branch, Calhoun, Cass, Charlevoix, Cheboygan, Chippewa, Clare, Clinton, Crawford, Delta, Dickinson, Eaton, Emmet, Gladwin, Gogebic, Grand Traverse, Gratiot, Hillsdale, Houghton, Huron, Ingham, Ionia, Iosco, Iron, Isabella, Jackson, Kalamazoo, Kalkaska, Kent, Keweenaw, Lake, Lapeer, Leelanau, Lenawee, Luce, Mackinac, Manistee, Marquette, Mason, Mecosta, Menominee, Midland, Missaukee, Montcalm, Montmorency, Muskegon, Newaygo, Oceana, Ogemaw, Ontonagon, Osceola, Oscoda, Otsego, Ottawa, Presque Isle, Roscommon, Sanilac, Schoolcraft, Shiawassee, St. Clair, St. Joseph, Tuscola, Van Buren, and Wexford Counties

OPERATING ENGINEERS

Zone 1 Genesee, Oakland, Macomb, Monroe, Washtenaw and Wayne Counties

Zone 2 The entire state except those counties listed in Zone 1

OPERATING ENGINEERS CLASSIFICATION DESCRIPTIONS

Class I

Asphalt Paver (self-propelled)
Asphalt Planer (self-propelled)
Asphalt Plant Operator
Auto-Grader
Blade Grader Operator
Batch Plant (concrete-central mix)
Backhoe (with over 3/8 yard bucket)
Bulldozer Operator
Concrete Pump 3" and over
Conveyor Loader Operator (euclid type)
Crane Operator
Dragline Operator
Elevating Grader Operator
End-loader Operator (1 yard capacity or over)
Slip Form Paver
Finishing Machine Operator (asphalt)
Gradall Operator (and similar type machines)
Hoisting Engineer
Hydro demolisher (water blaster)
Locomotive Operator
Mechanic
Paver Operator (5 bags or more)
Pump Operator (6" discharge or over, gas, diesel powered, or generator of 300 amp or larger)
Pile Driving Operator
Roto Mill
Roller Operator (Asphalt)
Side Boom Tractor (type D-4, equivalent or larger)
Self-Propelled or Tractor Drawn Scraper
Slurry Machine (asphalt)
Swinging Boom Truck (over l2 ton capacity)
Shouldering or Gravel Distributing Machine Operator (self-propelled)
Shovel Operator
Side Boom Tractor (type D-4 or equivalent or larger)
Tractor Operator
Trenching Machine Operator
Tube Finisher (slip form paving)
Farm type tractor with attached pan

Class II

Sweeper (wayne type & similar equipment)
Screening Plant Operator
Washing Plant Operator
Crusher Operator
Vacuum Truck Operator
Backhoe (with 3/8 yard bucket or less)
Side Boom Tractor (smaller than D-4 type or equivalent)
Batch Plant (concrete-dry mix)

Class II

Grease Truck

OPERATING ENGINEERS CLASSIFICATION DESCRIPTIONS - continued

Class III
Air Compressor Operator (600 cfm or more)
Air Compressor (2 or more, less than 600 cfm)
Concrete Breaker
Tractor Operator (farm type with attachments)
Wagon Drill Operator

Class IV
Boiler Fireman
Oiler
End-loader Operator (under 1 yard capacity)
Mechanic's Helper
Trencher (service)
Flexplane Operator
Cleftplane Operator
Grader Operator Self-propelled
Fine-Grade or Form (concrete)
Finishing Machine Operator (concrete)
Boom or Winch Hoist Truck Operator
Stump Remover
Skid Steer
Fireman Roller Operator (other than asphalt)
Curing Equipment Operator (self-propelled)
Concrete Saw Operator (Over 40 HP)
Power Bin Operator
Plant Drier Operator (asphalt)
Vibratory Compaction Equipment (6' wide or over)
Guard Post Driver Operator
All Mulching Equipment, Stump Remover, Concrete Pump (under 3")
Farm Type Tractor Operator
End Dumps
Mesh Installer (self-propelled)

LABORERS

Zone 1 Genesee, Macomb, Monroe, Oakland, Washtenaw and Wayne

Zone 2 Allegan, Barry, Bay, Berrien, Branch, Calhoun, Cass, Clinton, Eaton, Gratiot, Hillsdale, Huron, Ingham, Jackson, Kalamazoo, Lapeer, Lenawee, Livingston, Midland, Muskegon, Saginaw, Sanilac, Shiawassee, St. Clair, St. Joseph, Tuscola, and Van Buren

Zone 3 Alcona, Alpena, Antrim, Arenac, Benzie, Charlevoix, Cheboygan, Clare, Crawford, Emmet, Gladwin, Grand Traverse, Ionia, Iosco, Isabella, Kalkaska, Kent, Lake, Leelanau, Manistee, Mason, Mecosta, Missaukee, Montcalm, Montmorency, Newaygo, Oceana, Ogemaw, Osceola, Oscoda, Otsego, Ottawa, Presque Isle, Roscommon, and Wexford

Zone 4 Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, and Schoolcraft

LABORERS CLASSIFICATION DESCRIPTIONS

Class 1 Asphalt Shoveler or Loader, Asphalt Raker Tender, Asphalt Plant Misc., Railroad Track and Trestle Laborer, Burlap Man, Carpenter's Tender, Top Man, Yard Man, Guard Rail Builder's Tender, Earth Retention Barrier and Wall and Mechanically Stabilized Earthen Wall Installers Tender, Highway and Median Barrier Installer's Tender (including Sound, Retaining and Crash Barrier), Fence Erector's Tender, Dumper (wagon, truck, etc.) Joint Filling Labor, Misc., Unskilled Labor, Sprinkler Labor, Form Setting Labor, Form Stripper, Pavement Reinforcing, Handling and Placing (e.g. wire mesh, steel mats, dowel bars, etc.) Mason's or Bricklayer's Tender on Manholes, Manhole Builder, Headwalls, etc., Waterproofing (other than buildings), Seal Coating and Slurry Mix, Shoring, Underpinning, Bridge Painting, etc. (spray, roller and brush) Sandblasting, Pressure Grouting, and Bridge Pin and Hanger Removal, Material Recycling Laborer, Horizontal Paver (brick, concrete, clay, stone and asphalt) Ground Stabilization and Modification Laborer, Grouting, Waterblasting, Sign Installer and remote control operated equipment.

Class 2 Mix Operator (less than 5 sacks), Air or Electric Tool Operator (jack hammer, etc.), Spreader, Boxman (asphalt, stone, gravel, etc.), Concrete Paddler, Power Chain Saw Operator, Paving Batch Truck Dumper, Tunnel Mucker (highway work only), Concrete Saw Operator (under 40 H.P.), Dry Pack Machine and Roto-Mill Grounds Person.

LABORERS CLASSIFICATION DESCRIPTIONS - continued

Class 3 Tunnel Miner (highway work only), Finishers Tender, Guard Rail Builder, Highway and Median Barrier Installer, Fence Erector, Bottom Man, Powder Man, Wagon Drill and Air Track Operators, Curb and Side Rail Setters' Tender, Diamond & Core Drills, Earth Retention Barriers, Walls and Mechanically Stabilized Earthen Wall Installer (including sound, retaining and crash barrier), grade checker and certified welder.

Class 4 Asphalt Raker

Class 5 Pipe Layers, Oxy-gun

Class 6 Line-Form Setter for Curb or Pavement and asphalt screed checker/screw man on asphalt paving machines.

Class 7 Concrete Specialist, finishing and troweling, of cast in place or precast concrete by any and all methods.

TRUCK DRIVERS

Zone 1 Genesee, Oakland, Macomb, Monroe, Livingston, Washtenaw and Wayne Counties

Zone 2 The entire state except those counties listed in Zone 1

OVERTIME PROVISIONS FOR MICHIGAN PREVAILING WAGE RATE SCHEDULE

1. Overtime is represented as a nine character code. Each character represents a certain period of time after the first 8 hours Monday thru Friday.

	Monday thru Friday	Saturday	Sunday & Holidays
First 8 Hours		4	8
9th Hour	1	5	
10th Hour	2	6	
Over 10 hours	3	7	

Overtime for Monday thru Friday after 8 hours:
the 1st character is for time worked in the 9th hour *(8.1 - 9 hours)*
the 2nd character is for time worked in the 10th hour *(9.1 - 10 hours)*
the 3rd character is for time worked beyond the 10th hour *(10.1 and beyond)*

Overtime on Saturday:
the 4th character is for time worked in the first 8 hours on Saturday *(0 - 8 hours)*
the 5th character is for time worked in the 9th hour on Saturday *(8.1 - 9 hours)*
the 6th character is for time worked in the 10th hour *(9.1 - 10 hours)*
the 7th character is for time worked beyond the 10th hour *(10.01 and beyond)*

Overtime on Sunday & Holidays
the 8th character is for time worked on Sunday or on a holiday

4 Ten hour days @ Regular Time
the last character indicates if an optional 4-day 10-hour per day workweek can be worked between Monday and Friday without paying overtime after 8 hours worked.

2. Overtime Indicators Used in the Overtime Provision:

H -means TIME AND ONE-HALF due
D -means DOUBLE PAY due
Y -means YES an optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked
N -means NO optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked

3. EXAMPLES:

HHHHHHDDY - This example shows that the 1½ rate must be used for time worked after 8 hours Monday thru Friday *(characters 1 - 3)*and for all hours worked on Saturday, *(characters 4 - 6),* except hours worked after 10 hours on Saturday *(7th character).* Work done after 10 hours must be paid at the double time rate. Work done on Sunday or holidays must be paid double time *(character 8).* The Y *(character 9)* indicates that 4 ten-hour days is an acceptable alternative workweek at regular pay.

HHHHHHHHY means that the 1½ rate must be used for time worked after 8 hours worked Monday thru Friday *(characters 1-3);* and for any hours worked on Saturdays, Sundays or holidays *(characters 4-8)*. The Y *(character 9)* indicates that 4 ten-hour days is an acceptable alternative workweek at regular pay.

O'Boyle, Cowell, Blalock & Associates, Inc.
521 South Riverview Drive
Kalamazoo, Michigan 49004
(269) 381-3357, (269) 381-2944 Fax

TO: ALL BIDDERS

SUBJECT: Parking Lot Improvements
Costello Elementary School
Troy School District
Troy, Michigan

ADDENDUM NO. ONE (1) 7 April 2008

The purpose of this addendum is to clarify and/or modify the Drawings and Specifications for this project. All work affected is subject to all applicable terms and conditions of the Bidding and Contract Documents.

Item No. 1 Sheet C1.0

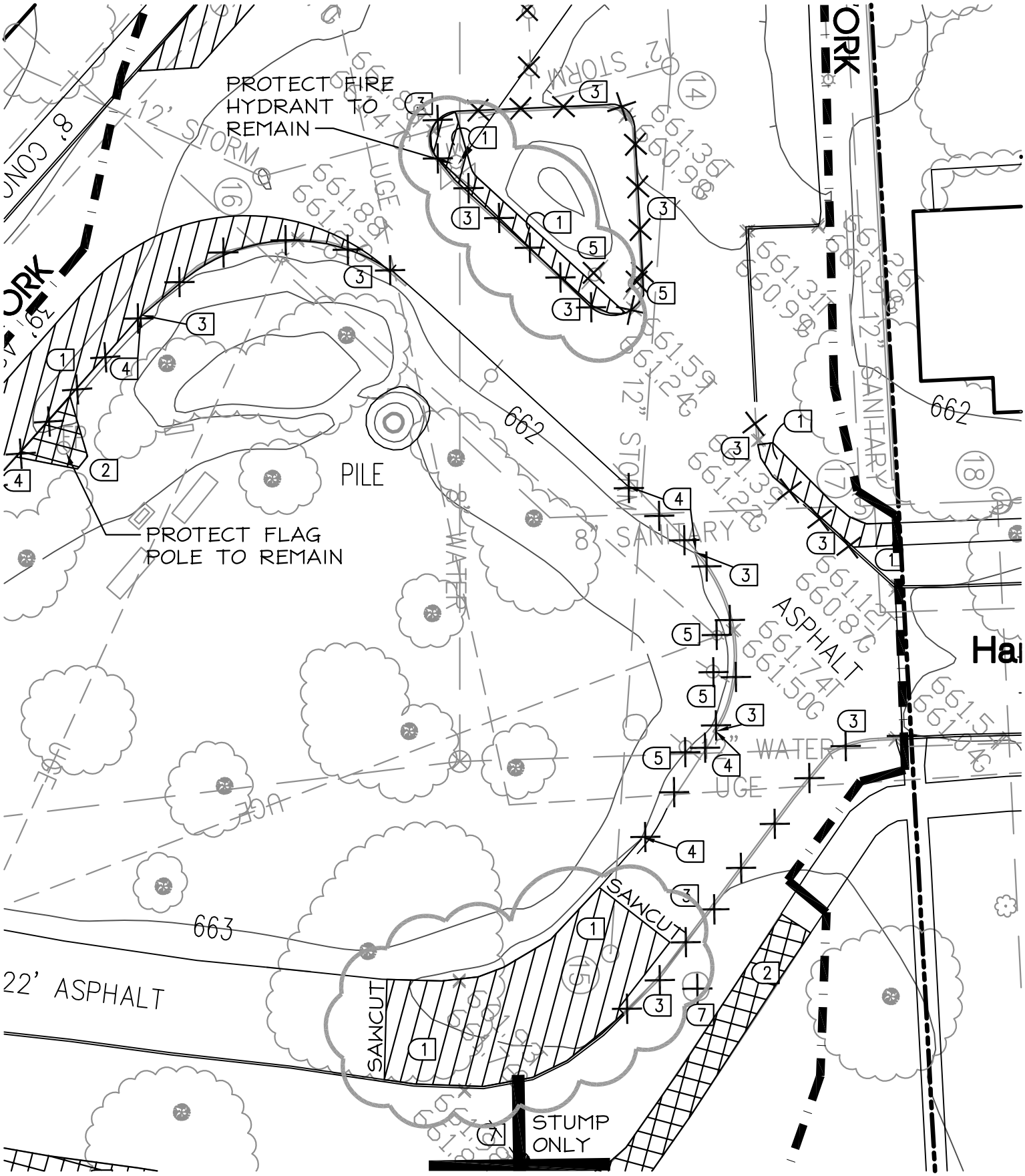
Add additional asphalt pavement removal in two (2) locations as indicated on Sketch A1-C1, included with this addendum.

Item No. 2 Sheet C2.0

Add the following notes to "Layout Notes":

7. In all disturbed areas place 6" minimum topsoil (planting soil), fine grade, and establish turf.

END OF ADDENDUM



Kingscott KALAMAZOO | SOUTHFIELD | CHELSEA	OCBa O'BOYLE COWELL BLALOCK & Associates, Inc.	ADDENDUM NO. 1 PROJECT NO.: 30809 SKETCH NO.: A1-C1 REFER TO SHEET: C1.0	SKETCH TITLE: ASPHALT PAVEMENT DEMOLITION PROJECT NAME: PARKING LOT IMPROVEMENTS COSTELLO ELEMENTARY TROY SCHOOL DISTRICT	SCALE: 1"=30' DATE: 4-7-09

TROY SCHOOL DISTRICT
BID# 9599
COSTELLO BUS LOOP RECONSTRUCTION

	Ahern Contracting	Pro Line Asphalt Paving	Best Asphalt	Asphalt Specialists Inc	T&M Asphalt Paving Inc	Nagle Paving	Flynn Paving Co.	Cortis Brothers Trucking & Exc.	Hutch paving Inc	MJ Chisholm Construction
BASE BID	108,300.00	118,000.00	133,400.00	139,910.00	143,949.00	147,700.00	147,974.00	149,400.00	162,336.00	no bid
Asphalt s/f	3.00	2.10	3.50	2.65	see below	2.50	3.74	2.30	2.50	no bid
Cement Curb l/f	16.00	15.00	18.00	22.00	12.00	13.00	20.00	18.00	14.00	no bid
Asphalt Curb l/f	11.00	9.00	6.75	6.00	3.95	4.00	4.25	10.00	8.00	no bid
Cement Sidewalk s/f	3.50	4.00	5.75	7.50	see below	3.50	6.00	3.50	3.70	2.75
Asphalt per inch					0.60					
Cement Sidewalk per inch					0.85					
Integrated walk & curb per l/f										10.00

The following companies were also notified of this bid:

Cadillac Asphalt - no response
Florence Cement Co. Inc - no response
Rite-Way Asphalt - no response
Quality Asphalt Paving - no response
Cranbrook Pavement Corp - no response