BID DOCUMENTS

FOR

CARGILL ACCESS ROAD

CITY OF OWOSSO
301 W. MAIN STREET
OWOSSO, MICHIGAN 48867

July 5, 2016

NOTICE TO BIDDERS

CARGILL ACCESS ROAD
FOR THE CITY OF OWOSSO, MICHIGAN

Sealed proposals will be received by the city of Owosso for the CARGILL ACCESS ROAD bid and should be addressed to:

Bid Coordinator
City of Owosso
301 W. Main Street
Owosso, Michigan 48867

Major items include:

0.28 miles of new road construction within 1.07 miles of water main construction.

Bids will be accepted until **3:00 p.m. Wednesday, August 03, 2016** for the CARGILL ACCESS ROAD at which time bids will be publicly opened and read aloud.

A non-mandatory pre-bid meeting will be held on July 12, 2016 at 10:00 AM in the Council Chambers, Owosso City Hall, 301 W. Main St., Owosso, MI 48867.

All bids must be in writing and must contain an original signature by an authorized officer of the firm. Electronic bids (i.e., telephonic, fax, email, etc.) are **NOT** acceptable.

All bids must be accompanied by a certified **Cashier's Check or Bid Bond** for a sum of not less than five percent (5%) of the total bid and shall be made payable to the city of Owosso. This amount shall be forfeited in the case of failure on the part of the successful bidder to sign a contract and furnish satisfactory bonds as required within ten (10) consecutive calendar days after the acceptance of the bid by the city of Owosso.

All bids shall clearly contain on the outside of the **sealed** envelope in which they are submitted:

CARGILL ACCESS ROAD BID

Hard copies of the proposal, contract forms and specifications are on file and may be obtained for a fee in accordance with the city's FOIA Policy at the office of the Bid Coordinator, City Hall, 301 West Main Street, Owosso, Michigan 48867. Bid documents are available at no charge on our website at www.ci.owosso.mi.us or on the MITN website at www.mitn.info.

The city reserves the right to accept any proposal; or to reject any proposal; to waive irregularities in a proposal; or to negotiate if it appears to be in the best interest of the city of Owosso.

No work can begin before August 22, 2016 and all work is to be completed by June 30, 2017, with an incentive to be substantially complete by November 30, 2016.

INQUIRIES/ADDENDUMS

Addendums will be available on the city's website at www.ci.owosso.mi.us and on the MITN website at www.mitn.info.

All inquiries regarding this bid request must be received at least five (5) calendar days prior to the submission and shall be received in, and responded to, in writing, or via FAX at 989-723-8854 or by e-mail to glenn.chinavare@ci.owosso.mi.us, and be address to the Bid Coordinator. Call 989-725-0555 to arrange a field inspection.

INSTRUCTIONS TO BIDDERS

1. Bidders are requested to use the Vendor Proposal form furnished by the city when submitting proposals. Bid responses must be in a **sealed** envelope/container when submitted and clearly marked on the outside indicating the name of the bid.

2. Proposals, to receive consideration, must be received prior to the specified time of opening and reading as designated in the invitation.

3. Each proposal must be signed by the bidder with his usual signature. Bids by partnerships should be signed with the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and title of the person signing. Proposals by corporations must be signed with the name of the corporation, followed by the signature and designation of the president, vice-president or person authorized to bind it in the matter. **Any paperwork not filled out properly or signed will cause the bid to be considered non-responsive and shall be rejected by the city.**

4. Proposals having and erasures or corrections thereon may be rejected unless explained or noted over the signature of the bidder.

5. Proposals should be mailed or delivered to the Bid Coordinator's Office, City Hall, 301 W. Main Street, Owosso, MI 48867.

6. Special conditions included in this invitation shall take precedence over any conditions listed under General Conditions or Instructions to Bidders.

7. Insurance Coverage – the winning bidder, prior to execution of the contract, shall file with the city copies of completed certificates of insurance naming the city of Owosso as an additional insured party, as evidence that the contractor carries adequate insurance satisfactory to the city.

8. The city of Owosso has a local preference policy for the purchase of goods and services. The policy in part states: *A business located within the city limits and paying real or personal property taxes to the city of Owosso will be granted a six percent (6%) bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. A business located outside the city limits but within Shiawassee County and paying property taxes to the county will be granted a three percent (3%) bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. The preference also applies to subcontractors performing twenty-five percent (25%) or more of the work of a general contract.*

9. **The following items must be included with the bid response:**
    a. **Vendor Proposal**
    b. **Local Preference Affidavit**
    c. **W-9 Request for Taxpayer ID No. and Certification**
    d. **Bid Bond**
    e. **Insurance Endorsement**
    f. **Signature Page & Legal Status/Acknowledgement of Addendum(s)**

BID Proposal

CARGILL ACCESS ROAD

TO: THE CITY OF OWOSSO (HEREINAFTER CALLED THE "CITY")

Bidder must provide pricing for each item listed. If additional pricing elements are being offered by the bidder, they are to be listed under "other services/items offered."

The undersigned, having examined the bid proposal forms and specifications, does hereby offer to CARGILL ACCESS ROAD through project completion listed below at the following prices:

Item #	Item Code	Description	Unit	Approx. Quantity	Unit Price	Subtotal
1	1500001	Mobilization, Max. ____	LS	1		
2	2010001	Clearing	Acre	1.21		
3	2020002	Tree, Rem, 19 inch to 36 inch	Ea	4		
4	2020003	Tree, Rem, 37 inch or Larger	Ea	1		
5	2020004	Tree, Rem, 6 inch to 18 inch	Ea	1		
6	2030011	Dr Structure, Rem	Ea	2		
7	2030015	Sewer, Rem, Less than 24 inch	Ft	113		
8	2037001	Repair Existing Sewer Service	Ft	75		
9	2040020	Curb and Gutter, Rem	Ft	50		
10	2040045	Masonry and Conc Structure, Rem	Cyd	125		
11	2040055	Sidewalk, Rem	Syd	390		
12	2040065	Track, Rem	Ft	492		
13	2047011	Driveway, Rem	Syd	310		
14	2047011	Pavt, Rem, Modified	Syd	2261		
15	2050010	Embankment, CIP	Cyd	500		
16	2050016	Excavation, Earth	Cyd	10000		
17	2050031	Non Haz Contaminated Material Handling and Disposal, LM	Cyd	100		
18	2057021	Subgrade Undercutting, Type II, Modified	Cyd	100		
19	2080020	Erosion Control, Inlet Protection, Fabric Drop	Ea	22		
20	2080036	Erosion Control, Silt Fence	Ft	1100		

21	2090001	Project Cleanup	LS	1		
22	3010002	Subbase, CIP	Cyd	2220		
23	3027011	Aggregate Base, 12 inch, Modified	Syd	5631		
24	3027011	Aggregate Base, 6 inch, Modified	Syd	1445		
25	3027011	Aggregate Base, 8 inch, Modified	Syd	1853		
26	3027011	Aggregate Base, 9 inch, Modified	Syd	1106		
27	3077011	Approach, Cl II, 6 inch, Modified	Syd	120		
28	3087011	Geotextile, Separator, Modified	Syd	9949		
29	4010030	Culv End Sect, 30 inch	Ea	1		
30	4011123	Steel Casing Pipe, 20 inch, Jacked in Place	Ft	155		
31	4027001	Sewer, Storm, 12 inch, SDR-26, Special Trench Detail	Ft	558		
32	4027001	Sewer, Storm, 15 inch, SDR-26, Special Trench Detail	Ft	22		
33	4027001	Sewer, Storm, 30 inch, SDR-26, Special Trench Detail	Ft	1223		
34	4030010	Dr Structure Cover, Type B	Ea	6		
35	4030040	Dr Structure Cover, Type G	Ea	1		
36	4030050	Dr Structure Cover, Type K	Ea	10		
37	4030312	Dr Structure, Tap, 12 inch	Ea	2		
38	4030330	Dr Structure, Tap, 30 inch	Ea	1		
39	4037001	Drainage Structure, 60 inch, Additional Depth	Ft	3		
40	4037050	Drainage Structure, 24 inch, Catch basin	Ea	1		
41	4037050	Drainage Structure, 48 inch, Catch basin	Ea	8		
42	4037050	Drainage Structure, 48 inch, Manhole	Ea	1		
43	4037050	Drainage Structure, 60 inch, Catch basin	Ea	1		
44	4037050	Drainage Structure, 60 inch, Manhole	Ea	5		
45	4037050	Structure Cover, Adj, Case 1, Modified	Ea	4		

46	4040083	Underdrain, Subgrade, Open-Graded, 6 inch	Ft	3316		
47	5010025	Hand Patching	Ton	50		
48	5010030	HMA, 2C	Ton	1024		
49	5010033	HMA, 13A	Ton	1286		
50	5017011	HMA, Driveway	Syd	541		
51	5017011	HMA, Repair	Syd	198		
52	6030005	Cement	Ton	5		
53	8017011	Driveway, Nonreinf Conc, 6 inch, Modified	Syd	227		
54	8020038	Curb and Gutter, Conc, Det F4	Ft	3020		
55	8020050	Driveway Opening, Conc, Det M	Ft	296		
56	8030010	Detectable Warning Surface	Ft	50		
57	8037010	Sidewalk Ramp, Conc, 6 inch, Modified	Sft	621		
58	8037010	Sidewalk, Conc, 4 inch, Modified	Sft	2426		
59	8070095	Post, Mailbox	Ea	10		
60	8080120	Fence, Moving	Ft	30		
61	8100371	Post, Steel, 3 lb	Ft	126		
62	8100402	Sign, Type III, Erect, Salv	Ea	6		
63	8100403	Sign, Type III, Rem	Ea	4		
64	8100404	Sign, Type IIIA	Sft	17		
65	8100405	Sign, Type IIIB	Sft	13		
66	8110045	Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	Ft	13		
67	8110052	Pavt Mrkg, Ovly Cold Plastic, Accessible Symbol	Ea	2		
68	8110232	Pavt Mrkg, Waterborne, 4 inch, Yellow	Ft	1104		
69	8110293	Pavt Mrkg, Waterborne, for Rest Areas, Parks, & Lots,4 inch, Blue	Ft	126		
70	8120012	Barricade, Type III, High Intensity, Double Sided, Lighted,Furn	Ea	20		
71	8120013	Barricade, Type III, High Intensity, Double Sided,	Ea	20		

		Lighted,Oper				
72	8120100	Dust Palliative, Applied	Ton	5		
73	8120140	Lighted Arrow, Type C, Furn	Ea	2		
74	8120141	Lighted Arrow, Type C, Oper	Ea	2		
75	8120170	Minor Traf Devices	LS	1		
76	8120250	Plastic Drum, High Intensity, Furn	Ea	75		
77	8120251	Plastic Drum, High Intensity, Oper	Ea	75		
78	8120350	Sign, Type B, Temp, Prismatic, Furn	Sft	320		
79	8120351	Sign, Type B, Temp, Prismatic, Oper	Sft	320		
80	8120370	Traffic Regulator Control	LS	1		
81	8130010	Riprap, Plain	Syd	20		
82	8167011	Turf Establishment, Performance	Syd	10400		
83	8237001	3/4 inch Copper Service Lead, Type "K", Modified	Ft	430		
84	8237001	Water Main, C900 PVC, 12 inch, Tr Det F, Modified	Ft	3583		
85	8237001	Water Main, C900 PVC, 12 inch, Tr Det G, Modified	Ft	467		
86	8237001	Water Main, C900 PVC, 8 inch, Tr Det G, Modified	Ft	509		
84	8237001	Water Main, DI, 12 inch, Tr Det F, Modified	Ft	1115		
85	8237001	Water Main, DI, 12 inch, Tr Det G, Modified	Ft	275		
86	8237001	Water Main, DI, 8 inch, Tr Det G, Modified	Ft	14		
87	8237001	Water Main, Rem	Ft	140		
88	8237050	Connect to Existing Water Main	Ea	14		
89	8237050	Curb Box, Stop, 3/4 inch, Corporation Stop and Connection, Modified	Ea	14		
90	8237050	Fire Hydrant Valve and Assembly	Ea	14		
91	8237050	Gate Valve and Box, 12 inch, Modified	Ea	11		

92	8237050	Gate Valve and Box, 8 inch, Modified	Ea	10		
93	8237050	Hydrant, Rem	Ea	8		
94	8237050	Water Main, 4 inch, Cut and Plug, Modified	Ea	5		
95	8237050	Water Main, 8 inch, Cut and Plug, Modified	Ea	1		
96	8237051	Testing and Chlorination of Water Main	LS	1		
97	8507040	Railroad Flag Person	Hr	24		

Bid Total _____

Bidder's Initial _____

VARIANCE FROM SPECIFICATIONS: If the bidder is unable to comply with the specifications as outlined, the bidder shall clearly note these variations from the specifications. The bidder may also propose additions to these specifications for the city to consider, but the costs associated with these additions shall be stated separately.

If the work is not complete on or before the date set for completion or any extension, the Contractor shall pay the city liquidated damages of *$900.00* a calendar day until the work is satisfactorily completed. Liquidated damages for delay may be deducted from payments due the contractor or may be collected from the Contractor or the Contractor's surety.

The undersigned agrees that if the city accepts this proposal, Contractor will, within 10 consecutive calendar days after receiving notice of this acceptance, enter into a contract to furnish all labor, equipment and tools necessary to execute the work at the unit prices named in the bid proposal. Contractor will furnish the surety for performance, for 100% of this bid, which shall be accepted and approved by the city.

The undersigned agrees that if the city accepts this proposal, Contractor will start this project no sooner than August 22, 2016 and will substantially complete the entire work under this contract by June 1, 2017. This schedule may be extended for rain days or cold weather for calendar days after June 30, 2017, only as approved by the City of Owosso.

WORK INCENTIVE

An incentive opportunity to substantially complete the work under this contract by November 30, 2016 has been provided below. The CITY withholds the right to either award the incentive or proceed with the base bid schedule and price based on the contractor's ability to perform.

Incentive Total _____

Bidder's Initial _____

On behalf of _____, I hereby submit this proposal for CARGILL ACCESS ROAD for your consideration. The undersigned acknowledges that this proposal is subject to the General Conditions and the General Specifications included in the contract documents. In submitting this proposal, it is understood that the right is reserved by the CITY to reject any and all proposals, and waive any irregularities in the bidding process. The CITY may award this contract based on any combination of the total bid and/or alternates.

Dated and signed at _____ State of _____

This _____ day of _____, 20____.

_____

Bidder

Witness:

_____ By/s/

_____

Business Address

_____

Signature

_____

Title

_____

Telephone Number

GENERAL CONDITIONS

The contractor shall direct all phases of the work. A representative of the contractor, authorized to make decisions, shall be on the job when work is in progress. Contractor shall build this work according to the ***2012 M.D.O.T. Standard Specifications Construction***.

The project listed is as follows: CARGILL ACCESS ROAD
Unless otherwise stated otherwise all materials, procedures and testing shall follow the **M.D.O.T. 2012 Standard Specifications for Construction.**

The project under construction shall limit through traffic during the project, with access for local traffic to their driveways. See the Maintenance of Traffic Special provision for details.

The contractor, before execution of the contract, shall file with the city copies of completed certificates of insurance naming the city of Owosso as an insured party, as evidence that the contractor carries adequate insurance, satisfactory to the city.

1. LOCAL PREFERENCE POLICY
The city of Owosso has a local preference policy for the purchase of goods and services. The policy in part states: *A business located within the city limits and paying real or personal property taxes to the city of Owosso will be granted a 6% bid advantage or $2,500, whichever is less, over a business located outside the city limits of Owosso. A business located outside the city limits but within Shiawassee County and paying property taxes to the county will be granted a 3% bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. The preference also applies to subcontractors performing 25% or more of the work of a general contract.*

2. BID ACCEPTANCE
The city reserves the right to reject any or all proposals. Unless otherwise specified, the city reserves the right to accept any item in the proposal. In case of error in extending the total amount of the bid, the unit prices shall govern.

3. PAYMENT
Unless otherwise stated by the bidder, time, concerning discount offered, will be computed from date of delivery and acceptance at destination or from date correct bill or claim voucher properly certified by the contractor is received. When so stated herein, partial payments, based on a certified approved estimate by the city of materials, supplies or equipment delivered or work done, may be made upon presentation of a properly-executed claim voucher. The final payment will be made by the city when materials, supplies, equipment or the work done have been fully delivered or completed to the full satisfaction of the city.

4. BID DEFAULT
In case of default by the bidder or contractor, the city of Owosso may procure the articles or services from other sources and hold the bidder or contractor responsible for any excess cost occasioned thereby.

5. UNIT PRICES
Prices should be stated in units of quantity specified.

6. QUOTED PRICES
Unless otherwise stated by the bidder, prices quoted will be considered as being based on delivery to a designated destination and to include all charges for packing, crating, containers, shipping, etc., and being in strict accordance with specifications and standards as shown.

7. SUBSTITUTIONS
Wherever a reference is made in the specifications or description of the materials, supplies, equipment, or services required, to a particular trade name, manufacturer's catalog, or model number, the bidder, if awarded a contract or order, will be required to furnish the particular item referred to in strict accordance with the specifications or description unless a departure or substitution is clearly noted and described in the proposal.

8. HOLD CITY HARMLESS
The bidder, if awarded an order or contract, agrees to protect, defend, and save the city harmless against any demand for payment for the use of any patented material, process, article, or device that may enter into the manufacture, construction, or form a part of the work covered by either order or contract. Bidder further agrees to indemnify and save the city harmless from suits or action of every nature and description brought against it, for or on account of any injuries or damages received or sustained by any party or parties, by or from any of the acts of the contractor, his employees, subcontractors, or agents.

9. COMPETITIVE BIDDING STATUTES
The laws of the state of Michigan, the charter and ordinances of the city of Owosso, as far as they apply to the laws of competitive bidding, contracts and purchases, are made a part hereof.

10. SAMPLES
Samples, when requested, must be furnished free of expense to the city and, if not destroyed, will upon request be returned at the bidder' expense.

11. BONDS
A certified check or bid bond may be required, payable to the City of Owosso. If so required in the bid documents, a performance bond and labor and material bond in the amounts stated in the bid documents, shall be on file with the city before work commences. The city will determine the amount and sufficiency of the sureties.

12. PROPOSAL GUARANTY
All checks or bid bonds except those of the three lowest bidders will be returned when the bids have been opened and tabulated. The certified checks or bid bonds of the three lowest bidders will be held until the contract documents have been signed, after which remaining certified checks or bid bonds will be returned to the respective bidders.

13. BIDDERS
The city may demand that the contractor file a sworn experience and financial statement setting forth the financial resources, adequacy of plant and equipment, organization, experience and other pertinent and material facts as may be desirable.

14. DAMAGE LIABILITY AND INSURANCE
The contractor shall save harmless and indemnify the city and its employees against all claims for damages to public or private property and for injuries to persons arising during the progress and because of the work.

a. Workers' compensation insurance - The contractor, before the execution of the contract, shall file a certification that the contractor carries workers' compensation insurance.

b. Bodily injury and property damage - The contractor, before execution of the contract, shall file with the city copies of completed certificates, of insurance acceptable to the city naming the city as an insured party. The coverage shall afford protection against damage claims to public or private property, and injuries to persons, arising out of and during the progress of the work, and to its completion and, where specified in the proposal, similar insurance to protect the owners of premises on or near which construction operations take place.

c. Bodily injury and property damages other than automobile - Unless otherwise specifically required by special provisions in the proposal, the minimum limits of property damage and bodily injury liability covering each contract shall be:

   Bodily injury and property damage liability:
   Each occurrence: $1,000,000
   Aggregate: $2,000,000

Such insurance shall include, but not be limited to, coverage for: a) underground damage to facilities due to drilling and excavating with mechanical equipment and b) collapse or structural injury to structures due to blasting or explosion, excavation, tunneling, pile driving, cofferdam work, or building moving or demolition.

d. Owners' protective liability - Bodily injury and property damage protection shall be extended to the city.

e. Bodily injury liability and property damage liability automobiles - Unless otherwise specifically required by special provisions in the proposal, the minimum limits of bodily injury liability and property damage liability shall be:

Bodily injury liability:
Each person: $ 500,000
Each occurrence: $1,000,000

Property damage liability:
Each occurrence: $1,000,000

Combined single limit for bodily injury and property damage liability:
Each occurrence: $2,000,000

f. Notice - The contractor shall not cancel or reduce the coverage of any insurance required by this section without providing 30-day prior written notice to the city. All such insurance must include an endorsement under which the insurer shall agree to notify the city immediately of any reduction by the contractor. The contractor shall cease operations on the occurrence of any such cancellation or reduction, and shall not resume operations until new insurance is in force.

g. Reports - At the request of the city, the contractor or the contractor's insurance carrier shall report claims received, inspections made, and disposition of claims.

h. Railroad liability insurance – Listing MDOT, Great Lakes Central Railroad, OHM, and the City as additional insured, the Contractor shall obtain the following:

Commercial General Liability (per Great Lakes Central):
Occurrence: $ 2,000,000
Aggregate: $ 4,000,000

15. PROTECTION OF LAND MONUMENTS AND PROPERTY STAKES

Land monuments or stakes marking property corners shall not be moved or otherwise disturbed except as directed by the city. If any land monuments or lot stakes are moved or disturbed by the contractor, the cost of replacing each land monument or lot stake so moved or disturbed shall be deducted from any money due the contractor, as payment to the city for the cost of replacing said land monument or lot stakes.

16. CONTRACTOR'S RESPONSIBILITY FOR WORK

The contractor shall be responsible for any damages that the work may sustain before its acceptance, and shall rebuild, repair, restore and make good, at its own expense, all injuries and damages to any portion of the work by the action of the elements or from any cause whatsoever before its acceptance. Neither the final payment nor any provision in the contract documents shall relieve the contractor of the responsibility for negligence or faulty materials or workmanship within the extent and period provided by law, and, upon written notice, the contractor shall remove any defects due therefrom and pay for any damaged due to other work resulting therefrom, which shall appear within one year after the date of completion and acceptance.

17. PAYMENT
At monthly intervals commencing after construction has been started, the city will make partial payment to the contractor based on a duly-certified estimate prepared by the city of the work done by the contractor during the preceding four-week period. Each estimate will be submitted to the city council for approval on either the first or third Monday of each month. The city will retain ten percent (10%) of the amount of each such estimate until final completion and acceptance of all work covered by this contract.

Before the contractor shall demand final estimates or payment, contractor will furnish to the city, supported by sworn statements, satisfactory evidence that all persons that have supplied labor, materials, or equipment for the work embraced under this contract have been fully paid for the same; and that, in case such evidence be not furnished as aforesaid, such sums as the city may deem necessary to meet the lawful claims of such persons may be retained by the city from any monies that may be due or become due to the contractor under this contract until such liabilities shall be fully discharged and the evidence thereof be furnished to the city.

18. CITY'S RIGHT TO WITHHOLD CERTAIN AMOUNTS AND MAKE APPLICATION THEREOF
Besides the payment to be retained by the city under the preceding provisions of these general conditions, the city may withhold a sufficient amount of any payment otherwise due to the contractor to cover a) payments earned or due for just claims for furnish labor or materials on the project under this contract, b) for defective work not remedied and c) for failure of the contractor to make proper payments to subcontractors. The city shall disburse and shall have the right to act as agent for the contractor in disbursing such funds as have been previously withheld pursuant to this paragraph to the party or parties who are entitled to payment from it. The city will pay to the contractor a proper accounting of all such funds disbursed for the contractor.

19. OWNER'S RIGHT TO DO WORK
If the contractor should neglect to prosecute the work properly or fail to perform any provisions of this contract, the city, after three (3) days' written notice to the contractor and contractor's surety, may without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost of it from the payment due the contractor.

20. DEFINITION OF NOTICE
Where in any of the contract documents there is any provision in respect to the giving of notice, such notice shall be deemed given to the owner, when written notice is delivered to the city manager, or placed in the United States mail addressed to the city clerk; as to the contractor, when a written notice shall be delivered to contractor's representative at the project site or by mailing such written notice in the United States mail addressed to the contractor at the place stated in the bid proposal as the business address; as to the surety on the performance bond, when a written notice is placed in the United States mail addressed to the surety at the surety's home office or to its agent or agents who executed such performance bond on behalf of the surety.

21. SUBCONTRACTS
The contractor shall not subcontract any work in the execution of this contract without the written consent of the city. The contractor shall be responsible for the acts or omissions of any subcontractor and of anyone employed directly or indirectly by such subcontractor.

22. ASSIGNMENT OF CONTRACT
The contractor shall not assign this contract or any part hereof without the written consent of the city. No assignment shall be valid unless it shall contain a provision that any funds to be paid to the assignee under this agreement are subject to a prior lien for services rendered or materials or supplies for the performance of the work specified in the contract in favor of all persons, firms, or corporations rendering such services or supplying such materials.

23. MAINTAINING TRAFFIC
The contractor shall provide flares, signs, barricades, traffic regulators, etc., to conform to the current *Michigan Manual of Uniform Traffic Control Devices* or as directed by the city. The contractor shall not

close any road or street without the permission of the city. If any street or road is to be closed by the contractor, it shall be the responsibility of the contractor to notify the Owosso fire department when the street will be closed and again when the street is open to traffic. Traffic control devices for any detours deemed necessary by the city shall be provided by the contractor. Cost of maintaining shall be incidental to the cost of the project unless otherwise provided.

24. ORDER OF COMPLETION
The contractor shall submit, whenever requested by the city, a schedule of the work showing completion dates. The city may request that certain portions of the work be done before other portions. If so requested, the contractor shall arrange to schedule to meet the request by the owner.

25. USE OF COMPLETED PORTIONS
The city shall have the right to take possession and use any completed or partially completed portions of the work; but such taking possession and use shall not be deemed acceptance. Pending final completion and acceptance of the work, all necessary repairs and adjustments on any section of the work due to defective material, workmanship, natural causes, or other operations of the contractor, other than normal wear and tear, shall be done by and at the expense of the contractor.

26. WATER SUPPLY
The contractor shall arrange for securing an adequate water supply for use in construction and for drinking water for his employees. If the city's water is used on the work, the contractor shall make the necessary application and shall pay all costs involved. Connections, piping and the contractor shall furnish and maintain fittings for conveying water. Contractor shall pay for water according to the city's established rates.

27. CLEANUP
The contractor shall keep the project free from waste materials or rubbish caused by its employees or work. This includes as a minimum excess excavation or backfill material, broken or rejected materials, empty containers or general debris. The owner may require complete cleanup of certain areas as construction is completed.

28. SUPERVISION
The contractor shall have a superintendent on the job site to coordinate and expedite the various construction activities for the duration of this contract.

29. EQUAL EMPLOYMENT OPPORTUNITY AND OTHER CLAUSES
The contractor shall agree not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined by Michigan Complied Statutes, or national origin. This provision shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rate of pay or other forms of compensation, and selection for training including apprenticeship. The contractor further agrees to take affirmative action to ensure equal employment opportunities for persons with disabilities. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provision of the non-discrimination clause.

30. PERMITS
The Contractor shall obtain the following permit(s):
Shiawassee County Health Department – Soil Erosion and Sedimentation Control (SESC) Permit
(MDOT R-96 Standard Plan symbols have been added to the plans)

31. BID HOLDS
The City is entitled to hold bids up to 90 days.

LOCAL PREFERENCE POLICY

The following affidavit should be completed if a bidder is located within Shiawassee County or intends to sub-contract more than twenty-five percent (25%) to a Shiawassee County based business: The city of Owosso has a local preference policy for the purchase of goods and services as recorded in the city ordinance in section 2-348. "Lowest qualified bidder" defined.

1. The term "lowest qualified bidder," as used in this division, shall mean the lowest bidder having qualifications to perform the work which are satisfactory to the council. The lowest bidder shall be determined based on an adjusted bid tabulation which shall be prepared in the following manner: To the bid of any bidder which is neither a city-based business nor a county-based business shall be added an amount equal to six (6) percent of the bid or two thousand five hundred dollars ($2,500.00), whichever is less.

2. To the bid of any bidder which is a county-based business shall be added an amount equal to three (3) percent of the bid or two thousand five hundred dollars ($2,500.00), whichever is less; provided, however, that if no bid is received from a city-based business, no additional amount shall be added to the bid of a county-based business.

3. "Owosso-based business" shall be interpreted to mean a business registered with the county clerk or a corporation registered with the state having a business address within the city limits which pays real and/or personal property taxes levied by the city.

   The term "county-based business" shall be interpreted to mean a business other than a city-based business registered with the county clerk or a corporation registered with the state having a business address within the county which pays real and/or personal property taxes levied by the county.

4. If twenty-five (25) percent or more of a contract for construction or other services is to be subcontracted by a city-based business bidder to a non-city-based business or businesses, or by a county-based business bidder to a non-county-based business or businesses, the adjusted bid shall be calculated by applying the provisions of this section separately to each portion of the contract based on the status of the contractor or subcontractor performing that portion of the contract as a city-based or county-based business.

AFFIDAVIT

In accordance with Section 2-348 of the Owosso city code, the bid from a business located in Shiawassee County shall be adjusted to reflect a preference. In order for the city to calculate the adjustment, the bidder hereby deposes and states that their business address is registered, and is currently paying real and/or personal property taxes in Shiawassee County at the following address:

_____
Registered business address

The affiant further deposes and states that a sub-contract with a business registered, and paying real and/or personal property taxes in Shiawassee County will be executed for a percentage equal to or greater than twenty-five percent (25%) as stated below:

_____
Business name and address of sub-contractor

_____
Percentage of contract

_____
Authorized signature

_____ _____
Date Title

_____
Company name

SIGNATURE PAGE AND LEGAL STATUS

The undersigned certifies that he is an official legally authorized to bind his firm and to enter into a contract should the city accept this proposal.

Bid proposal by _____
(Name of Firm)

Legal status of bidder. Please check the appropriate box and **USE CORRECT LEGAL NAME.**

A. Corporation ____ ; State of Incorporation _____

B. Partnership ____ ; List of names _____

_____

C. DBA ____ ; State full name _____ DBA

_____

_____

D. Other ____ ; Explain _____

_____

Signature of Bidder _____ Title _____
(Authorized Signature)

Signature of Bidder _____ Title _____
(Authorized Signature)

Address _____ City _____ Zip_____

Telephone ( ) _____

Signed this _____ day of _____ 20____.

Bidder acknowledges receipt of the following Addenda:

ADDENDUM NO.	BIDDER'S INITIALS
_____	_____
_____	_____
_____	_____

W-9 INFORMATION FOR LEGAL STATUS

Sole proprietor. Enter your individual name as shown on your income tax return on the “Name” line. You may enter your business, trade, or “doing business as (DBA)” name on the “Business name/disregarded entity name” line.

Partnership, C Corporation, or S Corporation. Enter the entity's name on the “Name” line and any business, trade, or “doing business as (DBA) name” on the “Business name/disregarded entity name” line.

Disregarded entity. Enter the owner's name on the “Name” line. The name of the entity entered on the “Name” line should never be a disregarded entity. The name on the “Name” line must be the name shown on the income tax return on which the income will be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a domestic owner, the domestic owner's name is required to be provided on the “Name” line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the “Business name/disregarded entity name” line. If the owner of the disregarded entity is a foreign person, you must complete an appropriate Form W-8.

Note. Check the appropriate box for the federal tax classification of the person whose name is entered on the “Name” line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

Limited Liability Company (LLC). If the person identified on the “Name” line is an LLC, check the “Limited liability company” box only and enter the appropriate code for the tax classification in the space provided. If you are an LLC that is treated as a partnership for federal tax purposes, enter “P” for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter “C” for C corporation or “S” for S corporation. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the “Name” line) is another LLC that is not disregarded for federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the “Name” line.

Other entities. Enter your business name as shown on required federal tax documents on the “Name” line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the “Business name/disregarded entity name” line.

Please see attached W-9 Request for Taxpayer Identification Number and Certification form for a detailed explanation on filling out the W-9 form.

Form **W-9**
(Rev. December 2011)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Business name/disregarded entity name, if different from above

Check appropriate box for federal tax classification:
☐ Individual/sole proprietor ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶

☐ Other (see instructions) ▶

☐ Exempt payee

Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

City, state, and ZIP code

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number

			-		-				

Employer identification number

		-							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here | **Signature of U.S. person** ▶ | **Date** ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

PROOF OF INSURANCE

This is to certify that the following endorsement is part of the policy(ies) described below:

NAMED INSURED (CONTRACTOR)	**COMPANIES AFFORDING COVERAGE**
	A.
	B.
ADDRESS	**C.**

It is hereby understood and agreed that the city of Owosso, its city council and each member thereof and every officer and employee of the city shall be named as joint and several assureds with respect to claims arising out of the following project:

CARGILL ACCESS ROAD

It is further agreed that the following indemnity agreement between the city of Owosso and the named insured is covered under this policy: Contractor agrees to indemnify, hold harmless and defend city, its city council and each member thereof and every officer and employee of city from any and all liability or financial loss resulting from any suits, claims, losses or actions brought against and from all costs and expenses of litigation brought against city, its city council and each member thereof and any officer or employee of city which results directly or indirectly from the wrongful or negligent actions of contractor's officers, employees, agents or others employed by Contractor while engaged by contractor in the (performance of this agreement) construction of this project.

It is further agreed that the inclusion of more than one assured shall not operate to increase the limit of the company's liability and that insurer waives any right on contribution with insurance which may be available to the city of Owosso.

The contractor, or any of their subcontractors, shall not commence work under this contract until they have attained the insurance required below, and shall keep such insurance in force during the entire life of this contract. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and acceptable to the city of Owosso. The requirements below should not be interpreted to limit the liability of the Contractor. All deductibles and SIR's are the responsibility of the Contractor.

The Contractor shall procure and maintain the following insurance coverage:

1. **Worker's Compensation Insurance** including Employers' Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

2. **Commercial General Liability Insurance** on an "Occurrence Basis" with limits of liability not less than $1,000,000 per occurrence and aggregate. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent, if not already included.

3. **Automobile Liability** including Michigan No-Fault Coverages, with limits of liability not less than $1,000,000 per occurrence, combined single limit for Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

4. **Additional Insured:** Commercial General Liability and Automobile Liability, as described above, shall include an endorsement stating the following shall be ***Additional Insureds*****:** City of Owosso, all elected and appointed officials, all employees and volunteers, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof. It is understood and agreed by naming City of Owosso as additional insured, coverage afforded is considered to be primary and any other insurance the city of Owosso may have in effect shall be considered secondary and/or excess.

5. **Cancellation Notice:** All policies, as described above, shall include an endorsement stating that it is understood and agreed that a Ten (10) days notice for non-payment of premium is required and a Thirty (30) days notice is required for Non-Renewal, Reduction, and/or Material Change, shall be sent to: City of Owosso, Bid Coordinator, 301 W. Main Street, Owosso, Michigan 48867.

6. **Proof of Insurance Coverage**: The Contractor shall provide the city of Owosso, at the time that the contracts are returned by him/her for execution, a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, if applicable, a copy of the policy sections where coverage is provided for additional insured and cancellation notice would be acceptable. Copies or certified copies of all policies mentioned above shall be furnished, if so requested.

If any of the above coverages expire during the term of this contract, the Contractor shall deliver renewal certificates and endorsements to the city of Owosso at least ten (10) days prior to the expiration date.

Please include a copy of insurance declaration verifying amounts of coverage. The verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

DATE _____ BY _____
Authorized Insurance Agent

AGENCY _____ TITLE _____

ADDRESS _____

_____

PROGRESS CLAUSE: Submit a complete, detailed and signed MDOT Form 1130, Progress Schedule, to the Engineer within seven (7) calendar days of confirmation of low bid by the department. The Engineer for this project is as follows:

Andrew VanWormer, P.E.
OHM Advisors
929 Bridgeview South
Saginaw, MI 48604
Andrew.VanWormer@ohm-advisors.com

The progress schedule submittal must include, as a minimum, the controlling work items for the completion of the project and the planned dates (or work days for a work day project) that the work items will be the controlling operations. All contract dates including open to traffic, project completion, interim completion and any other controlling dates in the contract must be included in the project schedule. **Review the Due Care Plan attached in this proposal.**

After receiving Notice of Award, start work on the date agreed upon with the Engineer, which date shall be no earlier than **August 22, 2016**. In no case, shall any work be commenced prior to receipt of formal notice of award by the department.

All contract work, except for Turf Establishment, Performance, must be complete and the road fully open to traffic no later than the interim completion date of **June 1, 2017**. A work incentive has been provided to substantially complete the work under this contract by **November 30, 2016.**

The entire project must be completed on/before the final project completion date of **June 30, 2017**.

No Work will be allowed from 3:00 pm on Friday, September 2, 2016 through 7:00 am on Tuesday, September 6, 2016 (Labor Day), 3:00 pm on Wednesday, November 23, 2016 through 7:00 am on Monday, November 28, 2016 (Thanksgiving), 3:00 pm on Friday, December 23, 2016 through 7:00 am on Monday, January 2, 2017 (Christmas and New Years), and 3:00 pm on Friday, May 26, 2017 through 7:00 am on Tuesday, May 30, 2017 (Memorial Day).

Failure by the Contractor to meet interim, final and/or any stage completion dates will result in the assessment of liquidated damages in accordance with subsection 108.10 of the Standard Specifications for Construction. Liquidated damages will be assessed separately and simultaneously for failure to meet interim, final, and any stage completion dates. Liquidated damages will continue to be assessed for each calendar day that the work associated with the interim, final and/or any stage completion dates remains incomplete, even if these days extend beyond the normal seasonal shut down date specified in the Standard Specifications for Construction, unless approved otherwise by the Engineer.

After award and prior to the start of work, the Contractor must attend a preconstruction meeting with the Engineer. The Engineer will determine the day, time and place for the preconstruction meeting. The meeting will be conducted after project award and may be rescheduled if there are delays in the award of the project.

The named subcontractor(s) for, Designated and/or Specialty Items, as shown in the proposal, is recommended to be at the preconstruction meeting if such items materially affect the work schedule.

The Contractor may be required to meet with department representatives for a post-construction review meeting, as directed by the Engineer. The Engineer will schedule the meeting.

Failure on the part of the Contractor to carry out the provisions of this Progress Clause may be considered sufficient cause to prevent bidding future projects until a satisfactory rate of progress is again established.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
TECHNICAL SPECIFICATIONS

DESCRIPTION

The 2012 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION shall govern all technical specifications for this project. The following parts of the Contract will prevail over all other parts in the following order:

A. Special Provisions
B. Supplemental Specifications
C. Project Plans and Drawins
D. MDOT Standard Plans
E. 2012 MDOT Standard Specifications for Construction
F. City of Owosso Standard Specifications for Construction

The Contractor shall not take advantage of any apparent error or omission in the contract documents. If any uncertainty, inconsistency, omission, or conflict is discovered in the contract documents, the Engineer will solely decide as to the true intent of the language.

CITY OF OWOSSO

NOTICE TO BIDDERS
UTILITY COORDINATION

The contractor shall cooperate and coordinate activities with the owners of utilities as stated in Section 104 of the 2012 MDOT Standard Specifications for Construction. In addition, for the protection of underground utilities, the contractor shall follow the requirements in Section 107.12 of the 2012 MDOT Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108 of the 2012 MDOT Standard Specifications for Construction.

PUBLIC UTILITIES

The following Public Utilities have facilities located within the Project CIA:

UTILITY	OWNER	CONTACT
Telephone	Frontier 1943 W. M-21 Owosso, Michigan 48867	Mark Stevens 989.723.0373 Mark.Stevens@ftr.com
Cable TV / Fiber Optic	Charter Communications 1392 Trade Centre Drive Traverse City, Michigan 49696	Dan Bielaczyc 231.941.3819 Dan.Bielaczyc@charter.com
Gas	Consumers Energy 530 W. Willow Street Lansing, Michigan 48906	Douglas Furman 517.374.2375 Douglas.Furman@cmsenergy.com
Electric	Consumers Energy 530 W. Willow Street Lansing, Michigan 48906	Jacob Chalut 517.580.2049 Jacob.Chalut@cmsenergy.com
Water and Sewer	City of Owosso 522 Milwaukee Street Owosso, MI 48867	Mark Sedlak 989.666.8203 Mark.Sedlak@ci.owosso.mi.us
Storm/County Drain	Shiawassee County Drain Comm. 149 E. Corunna Avenue L-1 Corunna, MI 48817	Tony Newman 989.743.2398 drains@shiawassee.net
Railroad	Great Lakes Central Railroad 600 Oakwood Avenue Owosso, MI 48867	Mark Russell 989.666.2706 msrussell@glcrailroad.com

For the protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall contract the Miss Dig system, Inc. by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for single address or rte.missdig.org, a minimum of 3 business days prior to excavation, excluding weekends and holidays.

Owners of Public Utilities will not be required by the municipality to move poles or structures in order to facilitate the operation of construction equipment unless it is determined by the Project Engineer that such poles or structures constitute a hazard to the public or are extraordinarily dangerous to the Contractor's operations. Contractor shall coordinate with Public Utility companies to relocate any facilities required to accommodate the proposed scope of work.

Underground electrical, phone, and gas services may exist throughout the project limits. The Contractor shall be prepared to work with these utility companies to coordinate necessary relocations if conflicts arise.

CITY OF OWOSSO

NOTICE TO BIDDERS
RAILROAD COORDINATION AND GENERAL LIABILITY INSURANCE

The contractor shall cooperate and coordinate activities with the owners of Great Lakes Central Railroad as covered in subsection 104.08 of the Standard Specifications for Construction. The contractor shall protect the railroad lines and coordinate work within the railroad right of way with the Railroad. A flag person may be required at times and this work shall be coordinated by Contractor. Payment for the Railroad Flag Person will be completed per the pay item provided in the contract for number of hours. Contractor shall determine the number of Railroad Flag Person hours needed and include in their bid.

The Contractor initiate contact via e-mail or hard copy letter with the Railroad identified in the Notice to Bidders – Utility Coordination, 30 calendar days, excluding Saturdays, Sundays and Holidays, prior to starting work in the vicinity of their tracks. Copy the Engineer in all correspondence to the Railroad.

Do not work or place equipment within 10 feet of the nearest rail.

The Contractor shall obtain Commercial General Liability Insurance naming the Great Lakes Central Railroad as additional insured in limits no less than $2 million dollars per occurrence and $4 million dollars in aggregate. The policy or policies where applicable and available, shall contain Insurance Services Office Standard Endorsement CG 2417 or its equivalent. A waiver or subrogation in favor of the railroad must also be shown as an endorsement to the policy. This coverage may be purchased through the Railroad and an application can be found at their website: www.glcrailroad.com.

The Contractor shall include this insurance with their contract and include the insurance purchase cost within the contract pay items. No additional compensation will be given from the Owner for obtaining the Railroad insurance policy.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
HIGH VISIBILITY CLOTHING

SSA:JDG 1 of 1 APPR:MWB:CRB:06-18-14
FHWA:APPR:06-27-14

Add the following, to the end, of subsection 104.07.B, Safety and Health Requirements, on page 36 of the Standard Specification for Construction:

4. **Worker Visibility.** Effective November 24, 2008, all workers within the right-of-way who are exposed to traffic or to construction equipment within the work area, must wear high visibility clothing.

   High visibility clothing or high visibility safety apparel is personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage. High Visibility safety apparel must meet the Performance Class 2 or 3 requirements of the American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) 107-2004 for High-Visibility Safety Apparel and subsequent revisions thereof.

   Costs incurred to comply with this requirement will be the responsibility of the Contractor.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
REPAIR EXISTING SEWER SERVICE

DESCRIPTION

This work shall consist of connecting existing house drains or sump leads to the drainage system as directed by the Engineer and also for repairing sanitary sewer leads that may be damaged due to vertical conflicts with proposed utilities.

MATERIALS

The materials used shall be in accordance with Section 402 and 404 of the 2012 MDOT Standard Specifications for Construction.

The type of pipe shall be SDR 26 PVC pipe.

CONSTRUCTION METHODS

The construction methods used shall be as defined in Section 402 and 404 of the 2012 MDOT Standard Specifications for Construction.

This item shall include all excavation, backfilling, bends, tees, connection sleeves, risers, concrete encasement, tapping of mainline storm sewer, coring, saddles, bulkheads, and all other work and materials required to connect existing house drains or sump leads to the storm sewer system, to repair existing sanitary sewer leads that may conflict with proposed utilities and to extend existing storm lines to proposed catch basins as noted in the plans.

Trench Detail B shall be followed, in accordance with MDOT Standard Plan No. R-83 and as directed by the Engineer. Maximum size of pipe replacement installed will be 10-inch diameter. Use of rubber gasket fittings with stainless steel clamps shall be utilized to connect to existing pipes as required.

MEASUREMENT AND PAYMENT

The completed work for sump leads or sanitary sewer lead repair will be paid for at the contract unit prices for the following contract items (pay items):

Pay Item	Pay Unit
Repair Existing Sewer Service	Feet

Repair Existing Sewer Service will be measured by length in feet and will be paid for at the contract unit price per foot, which price shall be payment in full for all labor, material and equipment needed to accomplish this work.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
DRIVEWAY, REM
PAVT, REM, MODIFIED

DESCRIPTION

The work shall consist of removing driveway and pavement as shown on the plans or as directed by the Engineer.

CONSTRUCTION

Driveway removal shall be performed in accordance with Section 204 of the 2012 MDOT Standard Specifications for Construction, except as specified herein.

The Contractor shall remove driveways and pavement of whatever material or thickness or multiple layers of pavement that may be encountered. Driveway and pavement removal shall be to an existing joint or to a sawed joint as shown on plans or as directed by the Engineer.

MEASUREMENT AND PAYMENT

Driveway and pavement removal will be paid for at the contract unit prices for the following pay items and shall include all labor, equipment and materials to complete the work.

Pay Item	Pay Unit
Driveway, Rem	Square Yard
Pavt, Rem, Modified	Square Yard

Payment for sawcutting, if required, will be included in the related removal pay item and will not be paid for separately.

Materials or debris resulting from driveway and pavement removal shall become the property of the Contractor and disposed of in accordance with Subsection 204.03.B of the 2012 MDOT Standard Specifications for Construction.

The contract unit price will be compensation for removing driveways and material of whatever material and thicknesses are encountered.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
SUBGRADE UNDERCUTTING, TYPE II, MODIFIED

DESCRIPTION

The work shall be done in accordance with the requirements of the Michigan Department of Transportation 2012 Standard Specifications for Construction Section 205 except as specified herein.

MATERIALS

The material to be used for Subgrade Undercutting, Type II, Modified shall be:

Dense-graded MDOT 21AA crushed limestone aggregate

CONSTRUCTION METHODS

If areas of peat are exposed and directed to be undercut by the Engineer, the undercut shall follow the requirements of the Michigan Department of Transportation 2012 Standard Specifications Section 205, with the exception that the material undercut shall include peat.

MEASUREMENT AND PAYMENT

The complete work as measured for subgrade undercutting will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, labor, aggregate, compaction and material disposal to complete the items.

Pay Item	Pay Unit
Subgrade Undercutting, Type II, Modified	Cubic Yard

Only the volume under the proposed aggregate base and proposed embankment limits will be measured and paid for as Subgrade Undercutting Type II, Modified.

Areas of subgrade undercutting shall be verified and approved by Engineer prior to work being completed. Any undercut operations performed without approval from Engineer shall not be paid for.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
AGGREGATE BASE, _ INCH, MODIFIED

DESCRIPTION

Aggregate base for HMA surface shall meet the requirements of Section 302 and 902 of the 2012 MDOT Standard Specifications for Construction except as herein specified.

MATERIALS

The material to be used for Aggregate Base, _ inch, Modified shall be:
Dense-graded MDOT 21AA crushed limestone aggregate

MEASUREMENT AND PAYMENT

The completed work as measured for aggregate base will be paid for at the contract unit prices for the following contract item (pay item):

Pay Item	Pay Unit
Aggregate Base, _ inch, Modified	Square Yard

Pay items will be measured by area in square yards and will be paid for at the contract unit price per square yard which price shall payment in full for material, labor, and equipment needed to accomplish the work as shown on the plans.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
APPROACH, CL II, _ INCH, MODIFIED

DESCRIPTION

This work shall consist of placing aggregate driveways and approaches where shown on the plans or as directed by the Engineer and shall be in accordance with Section 307 of the MDOT 2012 Standard Specifications for Construction and as specified herein:

MATERIALS

The material to be used for Approach, Cl II, _ inch, Modified shall be:
Dense-graded MDOT 21AA crushed limestone aggregate

MEASUREMENT AND PAYMENT

The completed work as measured for Approach, Cl II, _ inch, Modified will be paid for at the contract unit prices for the following contract item (pay item):

Pay Item	Pay Unit
Approach, Cl II, _ inch, Modified	Square Yard

Pay items will be measured by area in square yards and will be paid for at the contract unit price per square yard which price shall payment in full for material, labor, and equipment needed to accomplish the work as shown on the plans.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
GEOTEXTILE, SEPARATOR, MODIFIED

ARP:OHM 1 of 1 5/27/16

DESCRIPTION

The work of Geotextile, Separator, Modified shall consist of furnishing and placing geotextile in accordance with Section 910 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except as noted herein.

MATERIALS

Geotextile Separator shall be woven fabric, meeting or exceeding Table 910-1 of Section 910, and approved by Engineer.

CONSTRUCTION METHODS

Spread geotextiles smoothly on prepared grades and anchor firmly prior to placing backfill or cover materials. Do not operate equipment required to place backfill or cover materials directly on the geotextile. Smooth wrinkles or waves which develop in the geotextile. Either shingle-lap (minimum 24") or seam all longitudinal and transverse joints in the geotextile. Field or factory seams, sewn or sealed, must meet specified grab tensile strength. Install seams facing upward.

MEASUREMENT AND PAYMENT

The completed work as measured for Geotextile, Separator, Modified will be paid for at the contract unit price for the following contract item (Pay Item).

Pay Item	Pay Unit
Geotextile, Separator, Modified	Square Yard

Geotextile, Separator, Modified will be measured in place by area in square yards and will be paid for at the contract unit price per square yard which price shall be payment in full for all labor, material and equipment needed to accomplish this work. No payment for overlaps will be made.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
STORM SEWER SYSTEM

DESCRIPTION

This work consists of excavation, furnishing and placing storm sewer pipe, drainage structures, their appurtenances and trench backfill; in accordance with sections 402 and 403 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction; MDOT Standard Plan R1 and R83 as amended; special details as shown on the plans; except as herein modified.

MATERIALS

The Contractor shall furnish all pipe, manhole pieces and appurtenances. All material shall be certified by the manufacturer and meet requirements of MDOT, City of Owosso, and other standards herein identified:

1. Plastic Sewer Pipe:
   Plastic sewer pipe shall meet or exceed ASTM D-3034 SDR-26 or ASTM D-2241 SDR-26 specifications for PVC integral gasket sewer pipe, for applicable pipe diameters.

2. Concrete Sewer Pipe:
   Reinforced concrete pipe shall be ANSI/ASTM C-76 premium joint rubber O-ring gasket pipe. The class of reinforced concrete pipe shall be Roman numeral Class III, in accordance with AASHTO M 170, with depth of cover up to 16 feet. The class of reinforced concrete pipe shall be Roman Numeral Class IV, in accordance with AASHTO M 170, with depth of cover exceeding 16 feet.

3. Pipe Accessories:
   Fittings and branch connections shall be same material as pipe, molded or formed to meet pipe size and end design; in required tee, bends, elbows, reducers and other configurations as required to complete connections of pipe.

4. Drainage Structures:
   a) Structure material shall be reinforced, circular precast concrete pipe section, conforming to ASTM C-478. Cone section shall be eccentric type, tapered except for shallow conditions when the cone shall be ‘flat-top’ style with minimum depth of 12 inches.
   b) O-ring rubber gasket premium pipe joints shall be used at all connections.
   c) Core manhole and connect branches to drainage structures with a flexible neoprene gasket with stainless steel band, as manufactured by either:
      1. Kor-N-Seal, by National Pollution Control Systems, Inc.
      2. Model PSX, by Press Seal Gasket Corp.
      3. Or equal, as approved by the engineer.

d) All drainage structure sections shall be constructed such that the top of the precast cone section shall have a minimum 3" high vertical sealing surface that is smooth and free of any form offsets or excessive honeycomb.

e) External chimney seals shall be installed on all drainage structures. External seals shall be the "X-85 Seal" as manufactured by Cretex Specialty Products. Internal seals, if required, shall be as recommended and manufactured by Cretex Specialty Products, or equal, as approved by the Engineer.

f) Manhole steps shall be plastic coated steel. The steps shall begin 1'-6" below top of casting, then spaced sixteen inches (16") apart, unless otherwise shown on the plans, and shall be pre-cast into the manhole wall. Plastic-coated steel steps shall consist of a 3/8-inch diameter deformed steel reinforcing rod covered with a co-polymer polypropylene plastic coating. The steel rod shall be grade 60 and conform to ASTM A-615. The plastic coating shall conform to ASTM 2146-68, Type II, Grade 49108. Steps shall also conform to the following standards:

- Michigan Department of Labor Occupational Safety Standards, Part 3, Rule 341.
- ASTM C-478.
- OSHA 1910.27G.

5. Drainage Structure Chimney and Cover

a) The chimney (adjustment) portion of the drainage structure shall be constructed of brick, or block, and mortar in the area between top of cone and drainage structure cover. Brick shall be concrete conforming to requirements of ASTM C-55, Grade-N. Block shall be concrete conforming to requirements of ASTM C-139. All drainage structures shall be constructed to receive a chimney section, between three inches (3") and twelve inches (12") in vertical height. All masonry items shall be clean and thoroughly wetted by immersion, when practical to do so, prior to laying. If immersion is impractical, masonry items shall be thoroughly sprinkled before laying them. Each layer of brick shall be laid onto a full bed of mortar. Interior mortared joints shall be more than ¼-inch in depth. All brick, or block, shall be whole, except when cutting is necessary to complete closures.

b) Adjusting rings may be used if approved prior to construction. Adjustment rings shall be pre-cast grade rings conforming to ASTM C-478 with an inner-diameter that is acceptable to the City of Owosso.

c) After construction, the chimney shall be thoroughly coated inside and outside with non-shrinking mortar. After curing, the chimney shall then be externally sealed with "X-85 Seal" as manufactured by Cretex Specialty Products, or approved equal chimney seal product.

d) The drainage structure cover, of type specified, shall be set upon a full bed of mortar. Nothing other than the chimney and mortar bed will be allowed to support the cover.

CONSTRUCTION METHODS

Contractor shall furnish all labor and equipment necessary to install all pipe, drainage structures and appurtenances, and fill material, in accordance with sections 402 and 403 of the 2012 MDOT Standard Specifications for Construction; as shown on the plans and as specified herein:

1. Execution by Contractor:
    a) Existing pavements shall be cut back so that the opening is minimum 1 foot wider than the top edge of the trench, each side.
    b) Unless otherwise permitted by the Engineer, not more than 200 feet of trench shall be open at one time in advance of the sewer construction.
    c) Shall verify that the trench cut is ready to receive work; and that necessary excavation, dimensions, and elevations are as indicated on construction drawings.
    d) Shall hand-trim excavations to required elevations wherever necessary. Correct over excavation areas with specified bedding material.
    e) Remove large stones or other hard matter, as directed by the Engineer; that in his sole judgment could cause damage to pipe or impede consistent backfilling methods and compaction.
    f) Perform necessary excavation to receive pipe bells.
    g) Place bedding material at trench bottom in accordance with trench details in continuous layer fashion, not exceeding 6 inch compacted depth, and compacted to 95 percent of maximum unit weight.
    h) Maintain optimum moisture content of bedding material to attain required density.

2. General Installation of Pipe:
    a) Install pipe, fittings and accessories in accordance with ASTM C12 or ASTM C1479 for rigid pipe, or ASTM D2321 for plastic pipe, whichever specification applies for given material, in accordance to manufacturer's instructions. Joints are to be sealed and watertight.
    b) Use laser-beam alignment method by competent staff to lay pipe to proper line and grade.

3. Pipe bedding and trench fill requirements for SDR-26 Plastic Pipe:
    a) Install bedding material, MDOT 6A compacted crushed limestone, to a depth of ¼ outside pipe diameter, or 4 inches minimum, under the pipe.
    b) Place and compact first lift of same material, as used in bedding, to haunch of pipe.
    c) Place and compact second lift of same material, as used in bedding, to top of pipe.
    d) Place and compact third lift of same material as used in bedding, to a height 1 foot above pipe.
    e) Place geotextile blanket over full width of third lift. Geotextile blanket shall conform to material requirements of Section 910.03(A) of the MDOT Standard

Specifications for Construction. Approved material products for geotextile blanket for this work are:

1. Mirafi 180N
2. US Fabrics 205NW
3. Synthetic Industries 801 Non-Woven
4. Approved equal by Engineer

f) Place and compact Granular Material, Class-II, in lifts (12 inches maximum) to plan grade. Granular Material, Class-III may be used in areas outside the roadway.

4. Pipe bedding and trench fill requirements for Reinforced Concrete Pipe:
   a) Install Granular Material, Class-II, bedding material to a depth of ¼ outside pipe diameter, or 4 inches minimum, under the pipe.
   b) Place and compact first lift of same material, as used in bedding, to haunch of pipe.
   c) Place and compact second lift of same material, as used in bedding, to top of pipe.
   d) Place and compact third lift of same material as used in bedding, to a height 1 foot above pipe.
   e) Place and compact remaining lifts of Granular Material, Class II (12 inches maximum) to plan grade. Granular Material, Class-III may be used in areas outside the roadway.

5. Drainage Structures:
   a) Install according to manufacturer's instructions.
   b) Trim bottom of excavation clean and smooth to correct elevation for receiving bedding.
   c) Place 6 inches (minimum) MDOT 6A compacted crushed limestone bedding to grade for receiving precast bases. Should conditions warrant a field modification, a concrete footing shall be placed in lieu of the crushed limestone, as directed by the Engineer.
   d) Place reinforced concrete precast base to correct elevation.
   e) Connect all sewer connections in accordance with the construction plans. All stubs and sewer laterals shall be installed in accordance with respective bedding and trench fill requirements of these specifications.
   f) Install barrel section(s), cone section, chimney, frame and cover to required grade. Maximum chimney height is 12 inches. Frame to be set onto a full bed of mortar.
   g) Mortar chimney and area under frame with non-shrinking mortar mixture that meets or exceeds ASTM C 1107, R-3, and ASTM C 1107.
   h) Construct flow channels through manhole with 3000 psi (minimum) concrete. The flow channel shall be constructed with a minimum depth of 80% of the pipe diameter and sloped to prevent accumulation of debris and shall have a brushed finish.

TESTING AND ACCEPTANCE.

1. The specified pipe, manholes and appurtenances will be visually inspected. The Contractor shall furnish the city with reports of material certification from the manufacturer upon its delivery. Material certification shall include information that includes; date and location of manufacture, ASTM designation, including class and testing of lot number corresponding to certification report. The Contractor must receive visual acceptance of all materials before covering with backfill material. Failure to receive visual acceptance before backfilling will require exposing pipe and/or structures at contractor's expense.

2. All joints, connections, pipe, manholes and catch basins shall be water tight from infiltration as applicable to industry standards.

3. All joints in reinforced concrete pipe shall be driven home within a tolerance of ¼ inch. Any joints left open beyond this tolerance shall be properly sealed, as directed by the Engineer.

4. All joints in SDR-26 plastic pipe shall be properly seated.

5. Bedding and back filling operations will be tested for density in accordance with the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as herein described will be measured and paid for at the contract unit price using the following contract items (pay items):

Pay Item	Pay Unit
Sewer, Storm, ___ inch, SDR-26	Feet
Drainage Structure, ___ inch, Manhole	Each
Drainage Structure, ___ inch, Catch basin	Each
Drainage Structure, ___ inch, Additional Depth	Feet

Sewer, Storm, ___ inch, SDR-26: Sewer, Storm, C-76, Cl ___:
Storm sewer of various types, classes and diameters, shall be measured in place by length in linear feet and will be paid for at the contract unit price per foot which shall be payment in full for any excavation, sheeting or shoring trench walls as required, bedding, backfill, fittings, couplers, mechanical fasteners, filter fabric, support of existing utilities, bypass pumping, connecting to existing building leads, connecting to existing or proposed sewer; and all labor, material and equipment necessary to accomplish this work. Measures will be from center of structures, or terminating end, whichever applies.

Drainage Structure, ___ inch, Manhole: Drainage Structure, ____ inch, Catch basin:
Drainage structure of various types and diameters, shall be measured to bottom of foundation, in place to a maximum depth of eight feet; by the unit Each and will be paid for at the contract unit price per Each which shall be payment in full for any excavation, sheeting or shoring trench walls as required, bedding, backfill, concrete foundation and barrel sections, rubber seals, fittings, mechanical fasteners, filter fabric, support of existing utilities, bypass pumping, cone, connecting to existing building leads, connecting to existing or proposed sewer, adjusting blocks or rings, mortar, flexible neoprene gasket and stainless steel band; and all labor, material and equipment necessary to accomplish this work. The unit price for Drainage Structures of the various types and diameters includes the cost of concrete footing (if necessary) for depths no greater than 8 feet.

Drainage Structure, ___ inch, additional Depth:
This contract item shall be measured in place by depth of vertical feet from eight-foot depth (8’) to bottom of foundation and paid for at the contract unit price per vertical feet, in full, for any excavation, sheeting or shoring trench walls as required, bedding, backfill, concrete foundation and barrel sections, rubber seals, fittings, mechanical fasteners, filter fabric, support of existing utilities, bypass pumping, connecting to existing building leads, connecting to existing or proposed sewer, flexible neoprene gasket, stainless steel band; and all labor, material and equipment necessary to accomplish this work. The measure shall extend to bottom of concrete footing if constructed.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
STRUCTURE COVER, ADJ, CASE _, MODIFIED

ARP:OHM Page 1 of 1 5/27/16

DESCRIPTION

Structure Covers shall be adjusted and meet the requirements of Section 403 of the 2012 MDOT Standard Specifications for Construction except as herein specified.

MATERIALS

Material shall be in accordance with Section 403 of the 2012 MDOT Standard Specifications for Construction.

Structure Cover, Adj, Case _, Modified applies to all structures regardless if the structures are for drainage, sanitary sewer, water main, or private utility.

If private utility is involved, the contractor must coordinate all adjustments with the utility owner.

MEASUREMENT AND PAYMENT

The completed work as measured by Structure Cover, Adj, Case _, Modified will be paid for at the contract unit price for the following contract pay item, and shall include all labor, materials, coordination with utility owners, and equipment necessary to complete the work.

Pay Item	Pay Unit
Structure Cover, Adj, Case _, Modified	Each

CITY OF OWOSSO

SPECIAL PROVISION
FOR
HMA APPLICATION ESTIMATE

ARP:OHM Page 1 of 1 5/27/16

DESCRIPTION

This work shall be done in accordance with the requirements of Division 5 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

MATERIALS

HMA, 13A estimated thickness of 1.5 inches with a yield of 165 pounds per square yard (lbs/syd) shall be placed as a top course. Aggregate Wear Index number required shall be a minimum of 220. The Performance Grade asphalt binder range for the mixture shall be PG 58-28.

HMA, 13A estimated thickness of 1.5 inches with a yield of 165 pounds per square yard (lbs/syd) shall be placed as a leveling course. The Performance Grade asphalt binder range for the mixture shall be PG 58-28.

HMA, 2C estimated thickness of 3.0 inches with a yield of 330 pounds per square yard (lbs/syd) shall be placed as a base course. The Performance Grade asphalt binder range for the mixture shall be PG 64-28.

HMA, Driveway estimated thickness of 3.0 inches of HMA, 13A in two equal lifts and 3.0 inches of HMA, 2C in one lift with a yield of 660 pounds per square yard (lbs/syd) shall be placed. The Performance Grade asphalt binder range for the mixtures shall be PG 58-28 for HMA, 13A and PG 64-28 for HMA, 2C.

HMA, Repair estimated thickness of 5.0 inches of HMA, 13A in two equal lifts and a yield of 550 pounds per square yard (lbs/syd) shall be placed. The Performance Grade asphalt binder range for the mixture shall be PG 58-28.

Hand Patching of variable thickness HMA, 13A shall be placed with Performance Grade asphalt binder range of the mixture PG 58-28.

The Bituminous Bond Coat material shall be per Section 501. The uniform rate of application shall be 0.05 to 0.15 gallons per square yard.

CONSTRUCTION METHODS

This work shall be done in accordance with the requirements of Section 501 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

Measurement and payment shall be at the contract unit price.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
HMA, DRIVEWAY

ARP:OHM Page 1 of 1 5/27/16

DESCRIPTION

This work shall consist of placing HMA driveways where shown on the plans or as directed by the Engineer and shall be in accordance with Sections 501 of the 2012 Michigan Department of Transportation Standard Specifications for Construction and as specified herein.

MATERIALS

The material to be used for HMA driveways shall be:

HMA, 13A placed in two equal lifts for a total of 3" and HMA, 2C placed in one 3" lift as shown on the plans. Minimum 6" dense-graded MDOT 21AA crushed limestone aggregate base.

CONSTRUCTION METHODS

Driveway pay items shall include furnishing, placement and compaction of the aggregate base prior to placing proposed driveway material. Work includes all compaction, sawing if required, proper placement of driveway material and expansion material as required.

Any aggregate used to maintain access at driveways shall be included in the HMA, Driveway pay item and will not be paid for separately.

MEASUREMENT AND PAYMENT

The completed work as measured for HMA driveways will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
HMA, Driveway	Square Yard

HMA items will be measured in square yards and will be paid for at the contract unit price which shall be payment in full for material, labor, and equipment needed to accomplish the work, including furnishing, placing, and compacting the aggregate base.

Any placement, grading, compaction, and removal of aggregate used to maintain access will be included in the HMA, Driveway pay item and will not be paid for separately.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
HMA, REPAIR

ARP:OHM Page 1 of 1 5/27/16

DESCRIPTION

This work shall be done in accordance with Section 302 and 501 of the MDOT 2012 Standard Specifications for Construction and as specified herein.

MATERIALS

The material to be used for HMA, Repair shall be:

HMA, 13A, placed in two equal lifts for a total of 5" thick. Aggregate Base, if needed shall be dense-graded MDOT 21AA crushed limestone aggregate. Existing base material and any added aggregate base shall be compacted.

CONSTRUCTION METHODS

Work shall include the furnishing, placement, grading, and compaction of HMA and/or aggregate to achieve the proposed section at the locations shown in plan.

MEASUREMENT AND PAYMENT

The completed work as quantified for HMA, Repair will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
HMA, Repair	Square Yard

HMA, Repair shall be payment in full for material, labor, and equipment needed to accomplish the work.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
DRIVEWAY, NONREINF CONC, _ INCH, MODIFIED

DESCRIPTION

This work shall consist of placing concrete driveways where shown on the plans or as directed by the Engineer and shall be in accordance with Sections 801 of the MDOT 2012 Standard Specifications for Construction and as specified herein.

MATERIALS

The material to be used for concrete driveways shall be:

Concrete – Uniform, Grade P1, 6 Full Sack Mix, 3500 PSI, Air Entrained. Minimum of 4" Cl II sand base. Sand base shall meet requirements of Granular Material Class II, Section 902 of the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

Driveway pay items shall include furnishing, placement, and compaction of the sand base prior to placing proposed driveway material. Work includes all excavation, compaction, sawing if required, proper placement of driveway material, and expansion material as required.

Concrete driveways shall be part width constructed where possible to allow access at all times. Any aggregate used to maintain access at concrete driveways shall be included in the driveway pay items and will not be paid for separately.

MEASUREMENT AND PAYMENT

The completed work as measured for concrete driveways will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Driveway, Nonreinf Conc, _ inch, Modified	Square Yard

Item will be measured by area in square yards and will be paid for at the contract unit price per square yard which shall be payment in full for material, labor and equipment needed to accomplish the work, including furnishing, placing and compacting the sand base. Any placement, grading, compaction, and removal of aggregate used to maintain access at concrete drives will be included in the driveway pay items and will not be paid for separately.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
SIDEWALK, CONC, _ INCH, MODIFIED
SIDEWALK RAMP, CONC, _ INCH, MODIFIED

DESCRIPTION

This work shall consist of placing concrete sidewalk and concrete ramps where shown on the plans or as directed by the Engineer and shall be in accordance with Section 803 of the MDOT 2012 Standard Specifications for Construction and as specified herein.

CONSTRUCTION METHODS

Sidewalk and ramp pay items shall include furnishing, placement and compaction of the sand base to a minimum depth of 4 inches compacted in place, prior to concrete placement. Work includes all excavation, compaction, reinforcing steel, sawing if required, proper placement of sidewalk and ramp material and expansion material as required.

The material to be used for Sidewalk and Ramps shall be:

Concrete – Uniform, Grade P1, 6 Full Sack Mix, 3500 PSI, Air Entrained.
Sand base shall meet requirements of Granular Material Class II, Section 902 of the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured for Sidewalk and Ramps will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Sidewalk, Conc, 4 inch, Modified	Square Foot
Sidewalk Ramp, Conc, 6 inch, Modified	Square Foot

Pay Items will be measured by area in square feet and will be paid for at the contract unit price per square foot which price shall be payment in full for material, labor, and equipment needed to accomplish the work including furnishing, placing, and compacting the sand base.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

DESCRIPTION

Traffic shall be maintained by the Contractor throughout the project in accordance with Section 104.07, 104.11, 812 and 922 of the MDOT 2012 Standard Specifications and in accordance with any Supplemental Specifications, the MDOT Maintaining Traffic Typicals and as specified herein. All traffic control devices shall conform to the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD).

The Contractor shall notify all emergency response, road commission, municipalities, school bus garages or other necessary agencies a minimum of three days prior to implementing the road closure.

The Contractor shall coordinate his operations with other Contractors or Utility owners performing work on other projects within or adjacent to the Construction Influence Area (CIA) or adjoining areas to avoid conflicts in maintenance of traffic, construction signing and to provide for the orderly progress of work.

The Contractor shall provide access at all times during construction for school buses, garbage trucks, and any other service vehicles required to traverse and service residences within the construction area.

The Michigan Department of Transportation (MDOT), the Shiawassee County Road Commission, and the City of Owosso maintenance crews and/or Contract Maintenance Agencies may perform maintenance work within or adjacent to the CIA. No additional payment will be made to the Contractor for the joint use of traffic control items.

CONSTRUCTION INFLUENCE AREA (CIA)

The CIA shall include the right of way of the Cargill Access Road, Chestnut Street, and Bennett Field Drive within the extents indicated on the plans, including all intersecting access, and as far as the advanced signing is required to accommodate all traffic control devices.

The Contractor shall notify the Engineer and property owners a minimum of 48 hours in advance of driveway work / closure. The Contractor shall maintain driveway access throughout the entire project during construction. Driveways that are to be removed and replaced shall be maintained and shall be constructed as part width.

The Contractor shall maintain pedestrian access throughout the entire project at all times during construction. Areas of sidewalk that are to be removed and replaced shall be maintained. Pedestrian access to all residences, churches, and businesses shall be allowed at all times.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

The Contractor shall maintain access to all adjacent property locations at all times. Temporary ramps for sidewalk ramps and driveways shall be constructed as directed by the Engineer, and the cost shall be included in the Maintaining Traffic Pay Items.

Drums used shall be plastic drums only.
Barricades used to control traffic at night shall be lighted.
Signs shall be Type B temporary with a 7-foot bottom height, unless otherwise directed by the Engineer.
Gas powered arrow boards are prohibited.

Maintaining Traffic includes all additional work and materials necessary for traffic maintenance, utility maintenance and coordination, and maintenance during construction for all items of work.

TRAFFIC RESTRICTIONS

Changes or adjustments in the signing provided may be necessary as determined by the Engineer.

The Contractor shall schedule work between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. No work is allowed outside these time periods. The Contractor shall coordinate work so that any necessary preliminary or closing operations are also done within these time periods.

No Work will be allowed from 3:00 pm on Friday, September 2, 2016 through 7:00am on Tuesday, September 6, 2016 (Labor Day), 3:00 pm on Wednesday, November 23, 2016 through 7:00am on Monday, November 28, 2016 (Thanksgiving), 3:00 pm on Friday, December 23, 2016 through 7:00 am on Monday, January 2, 2017 (Christmas and New Years), and 3:00 pm on Friday, May 26, 2017 through 7:00 am on Tuesday, May 30, 2017 (Memorial Day).

Traffic shall be maintained in accordance to the following MDOT Maintaining Traffic Typicals while impacting traffic within MDOT ROW:

- WZD-100-a
- WZD-125-e
- M0020a
- M0110a
- M0140a

All local noise and dust control ordinances shall apply to this project.

STAGE CONSTRUCTION

North Water Main

No traffic control is expected for this stage and the order of construction is open.

South Water Main

The traffic control required by this Special Provision for work on Chestnut Street, Bennett Field Drive, and the Chipman Street connection is based on a shoulder closure (MDOT Typical M0110a) while working within the right of way. Lane closures are not anticipated, but are in the contract, and will require written approval by the Engineer. Water main crossings along Chestnut and Bennett Field shall be handled with barricades and advanced warning signs. This section shall be constructed before the Cargill Access Road.

Cargill Access Road

The traffic control required by this Special Provision for work on the Cargill Access Road has five parts **(as shown in Figure 1 attached at the end of this Special Provision)**:

Part 1 – Construct the south parking lot to allow Sonoco temporary access to the east face of their building while the road is being constructed.
Part 2 – P.O.B. to STA 12+00 construction while access is still available to the east face.
Part 3 – Using aggregate for proposed north parking lot, temporarily place an 8” aggregate path wide enough for one-way traffic to bypass outside of the proposed roadbed.
Part 4 – STA 12+00 to P.O.E. construction with temporary 8” aggregate bypass active.
Part 5 – North parking lot construction utilizing aggregate from Part 3.

Payment for Part 3 is included in the Maintaining Traffic Pay Items.

This section shall be constructed after the South Water Main.

The Contractor shall coordinate their efforts with the contractor on the adjacent Cargill site.

No spoils are to be transferred between the Cargill and Sonoco properties.

A minimum 24 foot width aggregate base course must be placed to provide access to the Cargill site before November 30, 2016.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

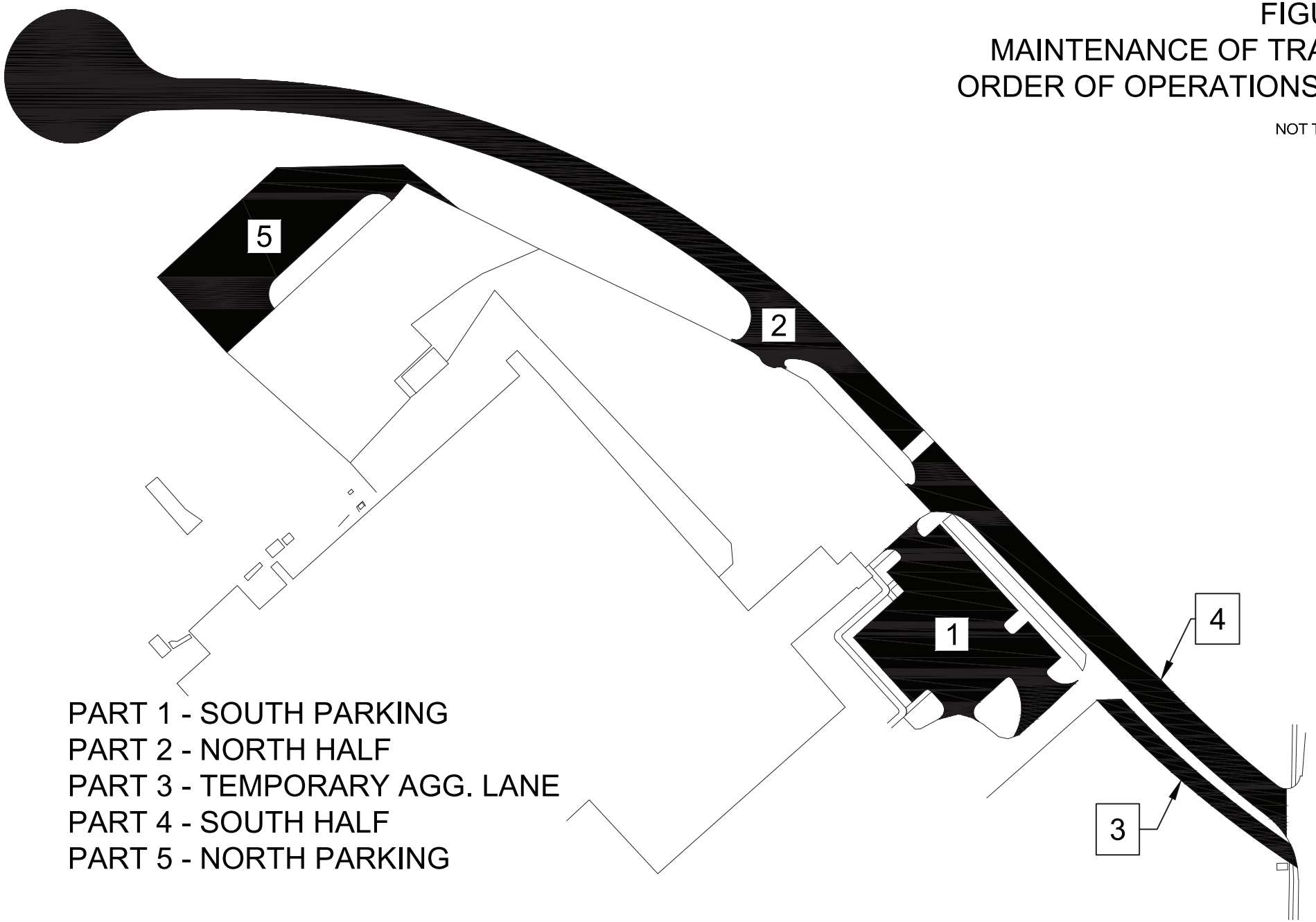
MEASUREMENT AND PAYMENT

Payment for Maintaining Traffic shall be in accordance with Section 812 of the Michigan Department of Transportation 2012 Standards for Construction for the work items listed on the plans and in the proposal, which shall be payment in full for all labor, material, and equipment needed to accomplish this work.
Payment for Temporary Signs, Lighted Arrows, Plastic Drums, and Barricades shall be made based on the maximum quantity in place at any one time as determined by the Engineer for the entire project. Moving of units from one location to another is considered included in the appropriate pay item.

Any additional signing or maintaining traffic devices required to expedite the construction of facilitate the Contractor's operations shall be at the Contractor's expense.

FIGURE 1
MAINTENANCE OF TRAFFIC
ORDER OF OPERATIONS MAP

NOT TO SCALE



PART 1 - SOUTH PARKING
PART 2 - NORTH HALF
PART 3 - TEMPORARY AGG. LANE
PART 4 - SOUTH HALF
PART 5 - NORTH PARKING

CITY OF OWOSSO

SPECIAL PROVISION
FOR
TURF ESTABLISHMENT, PERFORMANCE

DESCRIPTION

Section 816 of the Standard Specifications for Construction is deleted and replaced by this special provision. The Contractor shall be responsible for the performance and quality of turf growth in the areas indicated on the plans and as identified by the Engineer. The Contractor shall comply with all state and federal laws and regulations in completing this work.

The Contractor shall establish a durable, permanent, weed-free, mature, perennial turf. The work consists of fundamental turf work, including but not limited to topsoiling, seeding, mulching, erosion control, maintenance, and repair of turf as described herein during the life of the contract.

The Contractor shall choose and implement proven turf establishment industry practices; provide all necessary labor and equipment; select and provide all turf establishment materials; and control erosion and any subsequent sedimentation at all times.

The Contractor shall be responsible for a site analysis and its interpretation for their own use to ensure compliance with this specification. The site analysis will take into consideration topsoil needs, fertilizer and pH requirements, seed mix, existing and future soil moisture levels, slopes and grades, required erosion control items and devices, maintenance requirements, local highway snow deicing practices, and any other characteristics that influence and affect turf establishment.

Section 107.11 of the Standard Specifications for Construction is revised relative to the Contractor's responsibility for the repair of turf establishment work as follows. The Contractor shall be responsible, at no additional cost to the contract, for the repair of turf establishment work occasioned by storm events up to and including 3 inches of rain in a 24 hour period as documented by local meteorological data submitted to the Engineer for review and approval. All other portions of Section 107.11 remain unchanged.

1. Contractor Turf Establishment Experience Requirements.

   The Contractor shall possess valid Michigan Department of Agriculture commercial pesticide applicator's certificate for right-of-way category.

   All herbicide applications shall be made by a commercial applicator licensed in the State of Michigan. All individuals applying pesticides shall possess a valid Michigan Department of Agriculture commercial pesticide applicator's certificate for the appropriate category. All application procedures and materials shall meet all federal, state and local regulations.

At least 10 days prior to start of turf establishment, the Contractor performing the turf establishment work shall provide the Engineer with documentation that they will meet one or both of the following requirements.

A. At least one person employed by the Contractor and assigned to the job site shall have a degree or certificate in Turf Management, Horticulture, or related field.

B. At least one person employed by the Contractor and assigned to the job site shall have at least five (5) years of experience in roadside turf establishment.

MATERIALS

The Contractor shall use topsoil, seed, mulch, pesticide, herbicide and/or mulch blankets and any other unique erosion control materials as necessary to fulfill this specification, as detailed in the plans, and as indicated in the work plan. The Contractor may use additional materials as necessary to meet the standards set forth for turf establishment in this special provision. The use of any sod on the project requires the prior approval of the Engineer and if approved, may be used at limited site locations only.

Selection of all materials is the responsibility of the Contractor with the following minimum conditions.

1. Soil. The Contractor shall provide furnished or salvaged topsoil which may be blended compost that will provide vigorous growth. It shall be humus bearing and of not less than four inches in depth. It shall be free of stones larger than 1 inch in diameter and other debris. The finished slope shall be trimmed and graded according to subsection 205.03.N of the Standard Specifications for Construction.

2. Seed. The Contractor shall use a seeding mixture that is composed of a blend of four or more species of perennial grass. All species and their cultivars or varieties shall be guaranteed hardy for Michigan

   The following is a list of recommended species of perennial grasses: Kentucky Bluegrass, Perennial Ryegrass, Hard Fescue, Creeping Red Fescue, Chewings Fescue, Turf-type Tall Fescue, Buffalo Grass, and Alkaligrass-Fults Puccinellia distans. The cultivars or varieties of grasses selected shall be disease and insect resistant and good color. No one species in the blend shall be more than 25 percent of the mixture by weight. No one species in the blend shall be less than 5 percent of the mixture by weight. No grass species selected shall be considered noxious or objectionable, such as Quack Grass, Smooth Brome, Orchard Grass, Reed Canary Grass, and others.

Buffalo Grass shall be used on all berms (maintenance purposes).

A. The seed shall be legally saleable in Michigan. The seed product shall not contain more than 10 percent inert materials. The seed source shall be from an MDOT approved certified vendor.

B. The species and varieties of seed shall be adapted to all site conditions, to the site use, and to the soils, moisture, and local climate. Site use may include but is not limited to detention pond, wildlife habitat, playground, wetlands, forested wetland, rural roadside, urban roadside and highly maintained front yard.

C. At least two of the species in the mixture proposed to be planted within fifteen (15) feet behind the curb or the shoulder shall be salt tolerant.

3. Mulch. Seeded areas shall be mulched with the appropriate materials for the site conditions, shall promote germination and growth of seed and to mitigate soil erosion and sedimentation.

4. Herbicides. The Contractor shall comply with all federal, state and local laws as noted in the standard specifications, Section 107. A weed control application will require the Contractor to make proper notifications and/or postings as per label and MDA requirements for all locations that will be sprayed. The Contractor will also notify selected Engineer staff 48 hours prior to any applications being made. The Contractor shall furnish and apply herbicide(s) as needed. It shall be the Contractor's responsibility to select the herbicide(s) and the rate at which it will be used. The work and herbicide(s) shall be approved by the Engineer prior to the application of the material. A spray log will be required to be completed and submitted to the project office, each day an application is made.

   No water shall be drawn from any waterway (i.e. river, ditch, creek, lake etc.) that is located on any state, county or municipal right-of-way, for mixing with herbicides.

5. Fertilizers. The Contractor shall furnish and apply fertilizer(s) as needed. It shall be the Contractor's responsibility to select the fertilizer(s) and the rate at which it will be used. The work and fertilizer(s) shall be approved by the Engineer prior to the application of the material.

6. Water. The Contractor shall furnish and apply water from an approved source as specified in the work plan at a rate of promote healthy growth.

CONSTRUCTION

The Contractor shall be responsible for all work and any and all construction methods used in completing this work. Any part of MDOT standard specifications or standard plans chosen to be implemented by the Contractor shall not imply responsibility on the part of the Engineer or Owner for acceptability of the Contractor's construction methods or for the quality of the Contractor's work outcome at any time.

1. Inspection of the work. The Contractor shall be responsible for all inspection of turf establishment work.

   The Contractor shall use a Contractor's Daily Report approved by the Engineer to report inspections made and to document turf establishment work performed on this project. The Contractor's Daily Report shall be completed and submitted to the Engineer when any work performed under this special provision is in progress.

   The Contractor's Daily Report shall be accompanied by all necessary materials documentation including tests slips, certifications, etc.

   The Engineer shall determine the acceptability of these reports in terms of their completeness and accuracy. The Engineer reserves the right to verify all submitted measurements and computations. Failure by the Contractor to submit acceptable and timely reports to the Engineer may result in withholding of progress pay estimates on turf-related items until such time as reports are submitted in an acceptable and timely fashion.

   The Engineer reserves the right to inspect the project for any reason in accordance with subsection 104.01 of the Standard Specifications for Construction, including the fulfillment of other inspection requirements such as soil erosion and sedimentation control, NPDES, etc. These inspections made by the Engineer shall not relieve the Contractor of the inspections required by this special provision or the Contractor's responsibilities for erosion control and turf establishment.

2. Erosion Control. Erosion shall be controlled at all times according to Section 208 of the standard specifications. Control of soil erosion is the responsibility of the Contractor. However, sedimentation controls shall be placed as indicated on the plans or as directed by the Engineer. The site shall be continuously monitored by the Contractor for needed erosion repair from any cause as addressed in the contract documents. All eroded areas shall be returned to their original grade as detailed in the contract documents.

If sedimentation occurs in drainage structures or any watercourse or water containment area, corrective action shall be taken immediately and all disturbed areas contributing to this sedimentation shall be restored within 24 hours of erosion occurrence. Sediment deposited as a result of the Contractor's inability to control the soil erosion shall be removed at the Contractor's expense.

The Contractor shall reimburse the Owner for any costs levied against the Owner, such as fines, environmental costs, costs for remedies required, or any other costs as a result of the Contractor's failure to comply with this specification and with all federal, state, and local laws.

3. Erosion Repair. The Contractor is responsible for all repair and liable for all consequences (legal, monetary, or other) associated with erosion or sedimentation damage to finished or unfinished work.

   All erosion occurrences and the repairs made by the Contractor shall be reported to the Engineer in the format and at the frequency required by the Engineer. Any erosion, displacement, or disturbance to ongoing or completed work by any cause shall be repaired by the Contractor at no additional cost to the contract unless otherwise noted herein.

   The Contractor shall be responsible and liable for all traffic control and safety measures required to repair and protect damaged turf areas. Any eroded area that may affect the support of the roadbed or safety of the public shall be repaired within 24 hours of the erosion occurrence.

   Protection devices such as barriers, directional sign/signals, temporary fence, or any other safety measures shall be placed by the Contractor immediately after any erosion damage occurs that has the potential of endangering the public. In these instances, the Contractor shall, within 24 hours of the occurrence of the damage, provide the Engineer with a written summary of the immediate action taken and describing the repairs made and the safety measures taken.

4. Final Acceptance. Before final acceptance of the turf establishment work, all of the following minimum parameters shall be met throughout all exposed areas of the project designated on the plans or identified by the Engineer as turf establishment areas. There shall be no exposed bare soil and the turf shall be fully germinated, erosion free, weed free, disease free, dark green in color and in a vigorous growing condition.

   The Engineer will notify the Contractor of the dates and times of all acceptance inspections. The Contractor may accompany the Engineer while these inspections are

being made. If the Contractor does not agree with the decision made by the Engineer, the Contractor can request an inspection by a mutually agreed upon third party (Michigan State University Extension service or other). A joint inspection, including the Engineer, the Contractor, and the third party, will be scheduled. All expert fees and expenses charged by the third party will be paid by the Contractor.

Any and all claims for extra compensation shall be according to subsection 104.09 of the Standard Specifications.

MEASUREMENT AND PAYMENT

The completed work as measured will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Turf Establishment, Performance	Square Yard

Turf Establishment, Performance shall be measured in place by area in square yards. All materials, labor, and equipment required or selected by the Contractor to install, maintain, inspect, repair, and meet the acceptance parameters for turf establishment specified in this special provision, including preparation, updating, and submittal of the Contractor's work plan and Contractor's Daily Reports, will not be paid separately but will be considered included in the contract unit price bid for Turf Establishment, Performance.

Repairs made to damaged turf establishment areas as a result of a documented storm by local meteorological data resulting in rainfall amounts of more than 3 inches in a 24 hour period will be paid for as an increase to original quantities as described in subsection 109.07 of the Standard Specifications for Construction.

The following schedule of payment applies to work performed according to this special provision. Upon completion of topsoil surfacing stage, fifty percent of the authorized amount for Turf Establishment, Performance will be paid to the Contractor. The remaining authorized amount will be paid upon completion of all other work necessary to comply with this special provision and to meet all final acceptance parameters for Turf Establishment, Performance.

CITY OF OWOSSO

SPECIAL PROVISION
FOR
WATER MAIN INSTALLATION

DESCRIPTION

This work shall consist of installing water main and appurtenances in accordance with the plans, this special provision, AWWA, MDEQ, and the MDOT 2012 Standard Plans and Specifications. This shall include all labor, equipment, and materials to complete the work.

For the protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall contract the Miss Dig system, Inc. by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for single address or rte.missdig.org, a minimum of 3 business days prior to excavation, excluding weekends and holidays.

The Department of Public Works can assist the Contractor in locating existing water service leads and mains. All removed valves and hydrants shall be salvaged and returned to the Department of Public Works.

The Contractor shall contact the Engineer to schedule work that may interfere with existing water service. Approval of temporary shut off shall be obtained from the Department of Public Works.

MATERIALS

All materials supplied by the Contractor shall be new, meeting the specifications contained herein. Michigan and United States of America products shall be used whenever possible and shall comply with the Safe Drinking Water Act.

Pipe

Water main constructed of PVC pipe shall conform to AWWA C900/C909. Pipe shall meet both NSF/ANSI Standard 61 and NSF/ANSI Standard 14. PVC pipe shall have a ratio of diameter to wall thickness of 18, unless noted otherwise on the plans or in the proposal.

Water main constructed of ductile iron pipe shall conform to AWWA C151/C600. Pipe shall meet Thickness Class 52 and Pressure Class 350. Ductile iron pipe shall be lined with a cement mortar and bituminous seal coat in accordance with AWWA C104.

Pipe manufacturer and class shall be marked on each length of pipe.

Pipe, fittings, joints, and fire hydrants in soils contaminated with volatile organic compounds, as determined in the field by the Engineer, shall require the use of 8 mil low-density or 4 mil high density polyethylene film encasement up to one foot of finished grade following ASTM C105.

Fittings/Joints

Joints shall be push-on type with elastomeric gaskets meeting the requirements of ASTM D3139/ F477 or AWWA C111 and shall be provided with an electrical conductivity device.

Fittings shall be cast iron or ductile iron with mechanical joints and shall be in accordance with AWWA A21.10/C110. Fittings shall be cement lined in accordance with ANSI/AWWA A21.4/C104 and rated for 250 psi, or more.

Following manufacturer's standards, mechanical joint restraint shall be required and shall be MEGALUG by EBAA Iron, or approved equal.

Corrosion protective material shall be required and shall be Sanchem, Inc. NO-OXG-ID GG-2, Corotech coal tar epoxy 10 mil dmt, or equal.

Ductile iron water main shall require the use of nitrile gaskets.

Fire Hydrants

This item shall include the fire hydrant, an auxiliary valve (placed 3 feet from hydrant), valve box, connector pieces and the hydrant tee. These items shall be installed in accordance with the standard construction practices and the standard fire hydrant detail. Bends approved by Engineer and Department of Public Works may be added into the connection, but shall not be paid for separately. Extensions will also not be paid for separately.

All fire hydrants shall be EJIW, or approved equal, and manufactured in accordance with AWWA C502 specifications. Hydrants shall be provided as outlined in the details within the construction plans and below:

1. Dry-barrel fire hydrant traffic model or traffic flange type and 150 pound working pressure, compression type, and opening with the line pressure, with mechanical joints.
2. Fire hydrants shall be bronze mounted throughout with no iron-to-iron or steel contacts or threads. The operating stem in the base and valve seat shall be bronze.
3. All iron parts shall be of high strength grey iron conforming ASTM A126 Class B.
4. Fire hydrants shall have a 6-inch valve opening with a 6-inch mechanical joint inlet.
5. The minimum inside dimension shall be 8 inches.
6. The operating nut shall turn to the right to open and have a weather shield. The opening direction shall be plainly marked with an arrow near the operating nut showing the opening direction.
7. The operating nuts and nut nozzle caps shall be square and slightly tapered; and it shall be $^{15}/_{16}$" at its base and $^{13}/_{16}$" square at its end and 1- $^{1}/_{8}$" long.

8. Fire hydrants shall be completely assembled at the factory with the drain opening sealed with a threaded plug.
9. Provide two fire hose connections and one pumper connection in accordance with municipality standards.
10. All nozzles shall be on a movable head on the hydrant barrel so that they may be rotated by changing the position of the top flange without removing the barrel.
11. Provide a Spring Cap Style McGard Fire Hydrant Lock for hydrant.
12. Provide proper length for installation in a water main depth as indicated on the drawings.
13. All fire hydrants shall have a concrete collar around the lower barrel, 12” below the ground line with 1” of expansion joint material between the hydrant barrel and collar, as directed by the Engineer. The collar shall be 6 inches thick with a diameter of at least 24 inches. Diameter will be as wide as necessary to reach undisturbed earth. Fire hydrants shall be tested to 300 pounds hydrostatic pressure from inlet side with valve in both open and closed position.
14. Fire hydrants shall be painted red above the grade line conforming to the municipality standards and black below the grade line.
15. Fire hydrants shall be designed so one man can easily remove or replace the working parts without removing the main valve seat.
16. Fire hydrants shall be flagged per municipality specifications.

Gate Valves & Boxes

Gate valves shall be manufactured by EJIW, or approved equal. All valves for use in water distribution systems shall be resilient seat, single wedge valves. The valves shall be in accordance with AWWA Specification C509 and shall also meet any supplemental requirements or specifications of the municipality. Valves used on this project shall have mechanical joints. The valves shall be manually operated with non-rising stems, iron body, bronze trim, and be furnished with a standard AWWA 2 inch square-operating nut. The wrench nut shall turn right (clockwise) to open and shall be indicated by an arrow cast on the operating nut skirt. Valve stem risers are required for depths greater than 6’-6” and will not be paid for separately.

Valve boxes shall be manufactured by EJIW, or approved equal. The valve box shall be cast iron, 5-½ inch diameter, and three-piece adjustable screw type. Valve box extensions are required for depths greater than 6'-6” and will not be paid for separately. No. 6 round bases are required for gate valves up 8" in diameter and No. 160 oval bases for gate valves 10" and greater. The drop covers shall be stamped “water”.

Curb Stops/Boxes, Taps, and Services

The water service piping shall be copper tubing, Type K, annealed, in accordance with ASTM B88. The size of tubing shall match the existing size of the water service being replaced. The fittings shall conform to ASTM B16.26, cast bronze. The joints of the copper tubing shall be flared.

Taps less than or equal to 2" shall be Ford Model #F-600-3, or approved equal.
Taps larger than ¾" up to 2" shall have Ford Brass Style 202B Double Strap Saddles, or approved equal.

Curb stops/boxes shall follow below:

1. Curb Stops shall be manufactured by Ford, Model #Z-22-333.
2. Curb Stops shall be 6' deep.
3. Curb Stop Boxes shall be the Standard Buffalo patterns and all parts of the same, including extension sections, shall be interchangeable and fit up with corresponding parts of other Standard Buffalo pattern boxes.
4. The internal diameter of the base shaft shall be 2-1/2 inches for (3/4 inch and 1 inch curb stop).
5. The boxes shall be cast iron, suitable coated to resist corrosion and the casting shall be smooth and free of any imperfections.
6. The covers shall overlap and fit outside the rim of the upper section, and they shall have a horseshoe-shaped groove in them to receive the bolt head and the word "water" embossed on the top surface.
7. All boxes shall be Tyler 6500 (2-1/2" Boxes) Series.

Tracer Wire and Boxes

Tracer wire shall be polyethylene coated steel core copper wire, attached to pipe by tape or other approved means, and manufactured by Copperhead Industries, LLC – Copperhead Reinforced Tracer Wire, or equal. Tracer wire connectors must contain a dielectric waterproof and corrosion proof sealant, lock shut, and be color coded blue.

Tracer wire boxes shall be magnetized, with a direct connection to tracer wire without removing the cover, be color coded, have a locking cover. Boxes shall be installed at every fire hydrant and shall be Copperhead Industries, LLC – SnakePit Magnetized Tracer Box, or equal.

CONSTRUCTION METHODS

Excavation

The Contractor shall excavate all material to the depths necessary to construct the water main as shown on the plans. Excavation shall include the removal of rock, dirt, abandoned pipelines, old foundations, stumps and roots and similar materials encountered. Excavation, of whatever material encountered, shall be included in the contract unit prices for water main installation and will not be paid for separately. Pavement removal and restoration will be paid for at the contract unit prices for the appropriate item in accordance with the Standard Specifications and Supplemental Specifications.

Excavated material that is suitable for backfill material shall be neatly piled adjacent to the excavation so as to prevent cave-ins of the excavation and damage to adjacent trees, shrubs, fences, and other property.

The excavated area shall be kept free of water at all times. Sheeting and shoring shall be provided if necessary for the protection of the workers.

Excavated material that is not to be used as backfill shall be disposed of by the Contractor.

Backfilling shall follow immediately behind trench excavation and pipe laying operations. In no case shall more than 100 ft. of trench excavation be open at any one time. Any excavation left open and unattended shall be protected with lighted Type III barricades and a "snow fence" constructed around the perimeter of the excavation.

The Contractor shall excavate to the depths required to construct the water main and appurtenances as described on the plans. For water main construction, trench excavation shall be to a depth sufficient to provide at least 5' cover over the top of the pipe and a four-inch sand cushion below the pipe. Over excavation will be at the Contractor's expense. The trench width at a level of twelve inches above the pipe shall be no greater than 32 inches in width.

In areas where the proposed construction may interfere with existing utilities, additional excavation may be required to determine the exact location of said existing utilities. This work will be included within the water main pay items and no additional compensation will be due to the Contractor for this work.

In some cases, the plans call for removing an existing water main or sewer in order to construct a new water main. All gate boxes shall be removed to at least 3 feet below the pavement surface under the road and to at least 12 inches below the planned grade outside the road. The Contractor shall remove said existing pipelines and gate boxes and dispose of them at his expense.

Open ends of an abandoned pipeline that is to be left in the ground shall be capped with a metallic cap, flowable filled, and bulkheaded with one course of brick and mortar. Removal, disposal, flowable filling, and bulkheading of pipelines to be abandoned is included in Cut and Plug Water Main pay item.

Pipe Handling

Pipe shall be handled in such a manner as to prevent the ends from splitting, damages to the protective coatings, and other undesirable conditions. Pipe shall not be dropped, skidded, or rolled into other conditions. Repairs to damaged pipe must be approved by the Engineer.

Pipe Cutting

Pipe cutting shall be done in a neat and workmanlike manner without damage to the pipe or lining and as to leave a smooth end at right angles to the axis of the pipe. Cutting shall be done by an approved mechanical saw or cutter. Hydraulic squeeze cutters are not acceptable.

Pipelaying

Pipe located inside structures shall be rigidly supported.

Pipe laid underground shall be uniformly supported through its entire length on a four-inch cushion of sand. A depression shall be carved out of the sand cushion to accommodate the pipe bells.

Pipe shall be inspected for defects, debris, or dirt while suspended in a sling prior to lowering it into the trench. Defective pipe shall be removed from the project site
immediately. Lumps, blisters, and excess coal tar coating shall be removed from inside the bell and outside the spigot. These areas shall be wirebrushed and wiped clean with a dry oil-free rag. No debris, tools, clothing, or other materials shall be allowed in the pipe.

Pipe shall be laid in a dry trench with bell ends facing in the direction of laying. After placing a length of pipe in the trench, and after installing the gasket and applying the gasket lubricant, the spigot end shall be centered in the bell and the pipe pushed home and brought to the correct line and grade. The pipe shall be secured in place by tamping granular material Class II around it. Precautions shall be taken to prevent dirt from entering the joint space. A watertight plug shall be inserted in the open end(s) of the pipe to prevent water, dirt, animals, or other foreign matter from entering the pipe.

When it is necessary to deflect pipe from a straight line, either horizontally or vertically, the deflection shall not exceed the following values:

Nominal Pipe Size (In.)	Mechanical Joint Maximum Deflection (In./18 ft. length
8	20
12	18

Jointing

Mechanical joints shall be installed in accordance with the joint manufacturer's recommendations. Copies of such recommendations shall be furnished to the Engineer prior to the start of construction.

Backfilling

Backfilling shall be in accordance with the trench detail called for on the plans or as directed by the Engineer in accordance with the following:

Trench Detail G shall be used when part of the trench is within the 1 on 1 influence area of an existing or proposed roadway, sidewalk, building, or similar structure. The trench shall be backfilled with granular material Class III, in lifts of ten inches, and mechanically tamped to 95% of maximum unit weight.

Trench Detail F shall be used when the trench is not within the 1 on 1 influence area of a road or structure. The trench shall be backfilled with granular material Class III to a level of six inches above the top of the pipe and compacted to not less than 95% of maximum weight. The remaining portion of the trench shall be backfilled in twelve-inch lifts with suitable excavated material and compacted to at least 90% of maximum unit weight. Suitable excavated material used for backfill shall be free of rocks, debris, trees, stumps, broken concrete, and organic material. Backfill material shall not be saturated with water.

Where the proposed water main crosses under an existing utility, the proposed water main shall be deflected around the existing utility in accordance with the following:

1. Maintain 5' 6" cover over top of proposed water main.
2. Maintain at least 18” of vertical separation and 10’ horizontal separation between the outside of the proposed water main and the outside of a sewer, drain pipe, or catch basin lead.
3. Maintain at least one foot of vertical separation between the outside of the proposed water main and the outside of an existing utility other than a sewer, drain, or catch basin lead.
4. When crossing an existing sewer, drain pipe, or catch basin lead, construct the proposed water main so that its joints are equidistant from the utility being crossed.

Hydrants

General

Hydrants shall be located as shown on the plans and approved by the municipality.

Use of bends in connection shall be approved by Engineer and municipality.

Bury depth shall be a 5 1/2 foot minimum.

Valves

General

Valves shall be located as shown on the plans and approved by the municipality. Valves placed in location without approval will require that the Contractor correct the error at his own expense.

Setting Valves

Valves shall be examined by the Contractor prior to lowering in the trench. Check all nuts and bolts to assure tightness.

Valves shall be installed with the valve closed, supported on two 2" x 6" x 18" hardwood blocks, and vertically plumb. The valve box shall be set plumb and its axis shall be in line with the stem. Valve boxes shall have the ability for future adjustments of up to 6 inches, above or below grade.

Reaction Backing

All tees, bends, and other fittings that may be subjected to unequal thrust shall be restrained using mechanical joint fittings with retainer glands.

Boring and Jacking

1. Construct and maintain jacking/boring pits as required. Adequately clear site required for pits as needed to perform the work. Size pits for boring machine, frames, reaction blocks, minimum 2 sections of pipe and with sufficient room for working. Provide steel safety ladder.

2. Locate pits such that no damage occurs to trees, poles (not specified for removal) or structures in the immediate area.

3. Construct pits with sheeting and bracing as required for proper support in accordance with O.S.H.A. Standards and as needed to sufficiently support reaction blocks.

4. Place crushed rock or approved bedding to sufficiently support equipment and protect pit floor.

5. A pushing or jacking frame shall be built and furnished to fit or match the end of the pipe to be jacked so that the pressure of the jacks will be evenly distributed over the end of the pipe.

6. The hydraulic jacks shall have sufficient power to apply a smooth and even pressure to move the pipe in place. Hammering or ramming of the pipe will not be allowed.

7. The pipe shall be jacked upgrade where possible.

8. The excavation shall be done within the inside of the pipe and shall not exceed 12” ahead of the pipe being jacked in place.

9. After each pipe section is in place the pipe shall be checked for correct grade and line. Pipe not meeting the correct grade and line shall be rejected and replaced.

10. Excavation at the top and sides may be approximately 1” greater than the outside periphery of the pipe.

11. The bottom of the excavation shall be accurately cut to line and grade.

12. Adjoining sections of pipe sleeve shall be attached with a continuous weld. Connecting steel pipe to concrete shall be completed with a poured in place concrete collar with reinforcement.

Hydrostatic Pressure Test

All new construction shall be subjected to a hydrostatic pressure test. Testing should be performed as soon as possible after construction on a section is complete.

The Contractor shall provide all equipment, materials, and labor necessary to perform the tests, including pumps, gauges, plugs, corporations, excavation and backfill, water, miscellaneous piping and fittings, and a means of measuring the volume of water lost.
The Contractor shall fill the main with water through hydrants or corporations. Air shall be bled off at the ends and at highpoints through corporations or hydrants. The Contractor shall plug all taps made solely for the pressure test by inserting brass plugs.

Water shall be added until the hydrostatic pressure at the highest point of the main is at least 150 psig.

The Engineer shall be notified two hours prior to testing and shall witness the test and determine the leakage over a two hour period.

Water shall be added as necessary throughout the two hour test period to maintain a uniform pressure of 150 psi, plus or minus 5 psi.

At the end of the two hour period, the total volume of water added to maintain the required test pressure will be determined and will be the actual leakage in a two hour period.

The allowable leakage rate will be determined by the following formula:

$$L = \frac{S*D*((P)^{\wedge}1/2)}{148{,}000}$$

Where:

L = Total allowable leakage rate (gal/hr).
S = Total number of joints in line segment being tested.
D = Nominal inside pipe diameter (inches).
P = Actual test pressure (p.s.i.g).
^1/2 = Square Root of P

Maximum leakage for 8 inch pipe = 1.3 gallons per two hours per 100 joints.

If the actual leakage rate exceeds the allowable leakage rate, the Contractor at his own expense, shall locate and repair the leak(s). The test process shall be repeated until satisfactory results are obtained.

The cost of pressure testing shall be included in the pay item for Testing and Chlorination.

STERILIZATION

General

1. All pipe and fittings connected to and forming a part of a potable water supply shall be sterilized in accordance with the AWWA Standard C651-14.

2. Generally, sampling taps shall be provided on the water main every five hundred (500) feet, in order to afford representative water testing and sample collection. When long transmission mains are constructed, without side connections, the distance between each

tap may, at the discretion of the Engineer, be increased. In all instances, however, sampling taps shall be provided to collect a source sample and enough representative water samples for laboratory examination.

Preliminary Flushing

The main shall be flushed prior to sterilization as thoroughly as possible with water pressure and outlets available. The main shall be flushed from the north gate valve first with the south gate valve closed, the north valve shall then be closed and the south valve opened. After the flushing is completed the plug for the 8 inch tee shall be installed. The minimum velocity in the main shall be 3.0 fps. The flushing operation shall be done after the pressure test has been made.

Disinfecting

1. Before being placed in service, all mains and existing piping disturbed in any manner by the work shall be disinfected in accordance with the AWWA Standard C651-14. Drawing the water from existing piping or even lowering the water pressure more than one-half will constitute disturbances of the piping.

2. The disinfecting of water mains, valves and other appurtenances incorporated into the main construction shall be done in accordance with the AWWA Standard C651-14.

3. During the disinfecting operation, valves, hydrants and other mechanical devices controlling the water shall be operated to permit full effectiveness of the disinfectant. Valves shall be manipulated so that the strong solution within the main being sterilized will not flow back into the supply line nor flow into mains already in service.

Final Flushing and Tests

1. After the required period of retention has elapsed, the heavily chlorinated water shall be flushed out completely discharged to the sediment basin by the Contractor until the replacement water throughout the length of the main shall, upon test, be proven comparable in quality to the water supply source.

2. When the water in the treated main shall have been proven comparable to that of the source, at least 2 safe bacteriological samples collected at least 24 hours apart must be obtained from every 500 feet sections of WM, must be obtained before placing each section WM section in service. Samples shall be taken in the presence of the Department of Public Works. Under no circumstances shall such samples be collected from hydrants or unsterilized hose connections. Should the results of the bacteriological examination prove satisfactory, the main shall be placed in service. Should the initial disinfecting fail

to result in approval, the disinfecting procedure shall be repeated until satisfactory results are obtained.

3. Bacteriological samples must be picked up by the Contractor and run by a commercial or other laboratory, approved by the Engineer, employed and paid by the Contractor.

The completed work of water main installation will be paid for at the contract unit prices for the actual quantity of the following contract items (pay items) actually constructed.

PAY ITEMS	PAY UNIT
¾ inch Copper Service Lead, Type "K", Modified	Feet
Water Main, C900 PVC, 12 inch, Tr Det F, Modified	Feet
Water Main, C900 PVC, 12 inch, Tr Det G, Modified	Feet
Water Main, C900 PVC, 8 inch, Tr Det G, Modified	Feet
Water Main, DI, 12 inch, Tr Det F, Modified	Feet
Water Main, DI, 12 inch, Tr Det G, Modified	Feet
Water Main, DI, 8 inch, Tr Det G, Modified	Feet
Water Main, Rem	Feet
Connect to Existing Water Main	Each
Curb Box, Stop, ¾ inch Corporation Stop and Connection, Modified	Each
Fire Hydrant and Valve Assembly	Each
Gate Valve and Box, 12 inch, Modified	Each
Gate Valve and Box, 8 inch, Modified	Each
Hydrant, Rem	Each
Water Main, 4 inch, Cut and Plug, Modified	Each
Water Main, 8 inch, Cut and Plug, Modified	Each
Testing and Chlorination of Water Main	Lump Sum

Water main will be paid for at the contract unit price for the actual length of water main installed in-place, for the various sizes and trench details called for. The contract unit price includes all labor, equipment, and materials necessary for the construction of the water main, including excavation, disposal, pipe, fittings, tees, crosses, hydrant tees, bends, plugs, reducers, thrust blocking, connections to the existing mains, backfill, snow fencing and barricading, locating and protecting existing utilities, repair of defective work, and cleanup.

Water main will be measured horizontally in linear feet along the centerline of the main, including the length of valves, sleeves, and fittings. Measurements will begin and end at connections, plugs, or the centerline of a perpendicular pipeline.

Testing and Chlorination will be paid for at the contract price upon completion and acceptance of the proposed water main and all tie ins. The contract unit price includes all labor, equipment, and

materials necessary for hydrostatic pressure testing, disinfecting, and bacteriological testing of the proposed water main and appurtenances.

Connect to Existing Water Main will be paid for at the contract unit price for each connection made. Payment will include all labor, equipment, and materials necessary to connect the proposed water main to existing water mains. Additional payment will not be made for all necessary coordination with the Department of Public Works or any exploratory excavation that is required to connect the proposed water main to the existing water mains.

Fire hydrant and valve assembly with box will be paid for at the contract unit price for each assembly installed. Payment will include furnishing and installing the hydrant, valve, valve box, connection, and lead. Excavation, thrust blocking, and backfill are all incidental to the contract unit price for hydrant and valve assembly with box.

Gate valves, of the size required will be paid for at the contract unit price for each installed. The price includes excavation, installation of manhole or box, removal of valve and box to be replaced, anchorage, and backfill.

Cutting and Plugging Water Main will be paid for at the contract unit price for each cut and plug made, and flowable fill. Payment will include all labor, equipment, and materials necessary to shore up the existing water main.

REQUEST TO USE MDOT CONTROLLED FREIGHT RAILROAD PROPERTY
GENERAL CONDITIONS

This permit is issued subject to the following conditions:

1. This permit grants to the permittee only those rights specifically stated and no other. Maintenance work within the railroad right-of-way will require at least of a five (5) day advance notification to the operating railroad.

2. Issuance of this permit does not relieve permittee from meeting any and all requirements of law, or of other public bodies or agencies. The permittee shall be responsible for securing and shall secure any other permits or permission necessary or required by law from cities, villages, townships, corporations, or individuals for the activities hereby permitted.

3. The permittee agrees as a condition of this permit to:
   a. Have the approved permit or a copy thereof, with necessary plans or sketches, on the job site at all times.
   b. Give notice to the Operating Railroad at least five (5) days prior to commencements of any operations covered by this permit.
   c. Perform no work except emergency work, unless authorized by the Department, on Saturdays, Sundays, or from 3:00 p.m. on the day preceding until the normal starting time the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.
   d. Provide and maintain all necessary precautions to prevent injury or damage to persons and property from operations covered by this permit.

4. Nothing in this permit shall be construed to grant any rights whatsoever to any public utilities, except as to the consent herein specifically given, nor to impair any existing rights granted in accordance with the constitution or laws of this state.

5. Performance of the requirements of this permit is the responsibility of the permittee. The permittee shall complete all operations for which this permit is issued in accordance with the conditions of this permit within one year of issuance. The permittee shall meet all requirements of the current Department Standard Specifications set forth on or incorporated as a part of this permit.

6. The construction, operation and maintenance of the facility covered by this permit shall be performed without cost to the Department unless specified herein. The permittee shall be responsible for the cost of restoration of the railroad facilities and right-of-way determined by the Department to be damaged as a result of the activities of the permittee. In the event of damage to the track and/or track structure; all track work restoration shall be done by the Operating Railroad, unless otherwise authorized by the Operating Railroad or the Department.

7. Facilities allowed on railroad right-of-way shall be placed and maintained in a manner which will not impair the railroad. Failure of the permittee to maintain the facilities located within the railroad right- of-way so as not to interfere with the operation or maintenance may result in revocation of the permit and removal of the facilities at the expense of the permittee.

8. The permittee is solely and fully responsible for all activities undertaken pursuant to the permit. Any and all actions by the Department shall not be construed as a warranty or assumption of liability on the part of the Department. It is expressly understood and agreed that any such actions are for the sole and exclusive purposes of the Department and that such actions are a governmental function incidental to the permit activities under this permit. Any such actions by the Department will not relieve the permittee of its obligations hereunder, nor are such actions by the Department to be construed as a warranty as to the propriety of the permittee's performance. The permittee shall hold harmless, indemnify, and defend the State of Michigan, Michigan State Transportation Commission, the Department and all officers, agents and employees thereof, and the Operating Railroad against any and all claims for damages to public or private property and for injuries to persons arising from operations covered by the permit and shall furnish proof of specified insurance coverage for the term of this permit. A copy of this proof of insurance must be attached to this permit and kept on the job site at all times.

9. This permit is not assignable and not transferable unless specifically agreed to in writing by the Department.

10. The permittee, upon request of the Department, shall immediately remove, cease operations, and surrender this permit, or alter or relocate, at the permittee's own expense, the facility for which this permit is granted. Upon failure to do so, the Department may take any necessary action to protect the railroad interest and the permittee shall reimburse the Department for its costs in doing same. The permittee expressly waives any right to claim damages or compensation in the event this permit is revoked.

11. The Department and the Operating Railroad reserves the right during the time any or all of the work is being performed to assign an inspector to protect the railroad interest, and to charge the permittee all such costs incurred. In addition, the permittee may be billed any extraordinary engineering and review fees incurred by the Department in connection with the work covered by this permit.

12. In time of disaster or emergency when utility lines or facilities are so damaged as to constitute a danger to the life or property of the public and railroad, notice shall be given to the nearest police authority, MDOT (517-335-2926), and the Operating Railroad as soon as can reasonably be done under the circumstances.

Operating Railroads

Huron and Eastern Railway Co., Inc.	800-968-1975
Indiana Northeastern Railroad Co.	517-439-4677
Lake State Railway Company	989-757-2129
Great Lakes Central Railway Co, Inc.	800-640-8729

13. No easements will be issued by the Department on its Railroad Property. Only sales, license agreements, leases, and temporary permits will be issued.

REQUEST TO USE MDOT CONTROLLED FREIGHT RAILROAD PROPERTY SUPPLEMENTAL SPECIFICATIONS

General Conditions

Excavation is not allowed within: 20 feet from either rail; the front slopes; or the load influence zone as described by a 1-on-1 slope descending from the ends of the ties, except where specifically authorized in writing by the Department.

Construction equipment and excavated material shall not be stored within 20 feet of the track and in such locations that inhibit drainage, create a hazard or interfere with rail operations, or clear vision for motorists at road intersections. Under no circumstances shall any heavy equipment, especially machinery with caterpillar treads or cleated tracks, be allowed upon the railroad track or front slopes, without approved special provisions for protecting the track structure and front slopes.

Construction Methods

Bore/Jack Installation

1. Where the method of installation consists of pushing the casing pipe into the sub grade section with a boring auger rotating within the pipe to remove the spoil, the auger shall not be advanced more than one-half the diameter of the casing pipe, where the auger and casing advancement is coordinated. Where the auger is advanced separately, the auger shall not precede the casing pipe.

2. A bore/jack installation shall have a push hole essentially the same as the outside diameter of the pipe plus protective coating. If voids should develop creating a hole diameter greater than 1 in. plus the pipe diameter, grout shall be used to fill such voids. The auger shall be removable from within the pipe in the event an obstruction is encountered. When an obstruction is encountered that stops the forward advancement of the pipe, operations shall cease and the pipe shall be abandoned in place, cut flush with the front slope, and filled completely with grout before any further bore attempts are made.

3. Where field welding is required, the steel pipe ends shall be prepared and a minimum of three complete circumference passes or three overlapping beads of weld shall be applied at seams or joints. During field welding, water shall not be present inside the pipe and must be a sufficient distance below the pipe to allow a quality weld.

Other Installation Methods

1. The use of jetted water is strictly prohibited for excavating under the track

2. Directional boring/drilling, which utilizes bits with jets, may be used in certain conditions only when specifically authorized in writing.

3. Sheeting, shoring, and/or dewatering shall be used to prevent caving, slides, or undermining of the foundation material supporting the track structure, ballast section, or any other railroad structures (culverts, signals, switch stands, etc). When water is present or anticipated, ow shall be maintained at the site. When dewatering, the railroad embankment, tracks, and facilities shall be closely monitored for settlement or displacement.

4. The installation of a sub-surface crossings by cutting or removing rail and trenching is prohibited unless specifically approved. Approval of open trench installation will require additional special provisions not contained herein.

Backfilling

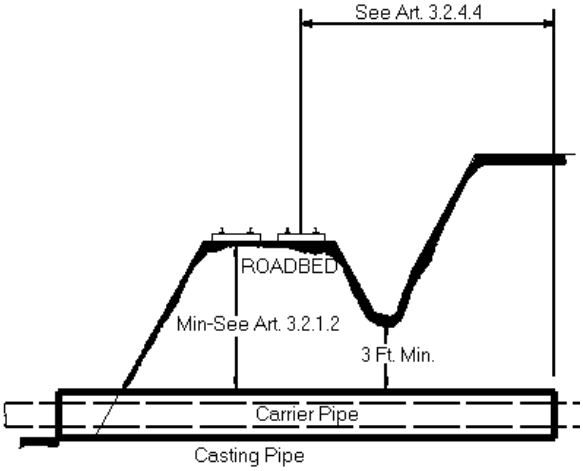
1. All trenches, holes, and pits shall be backfilled with an approved material, placed in successive layers not more than 9 in. in depth, and thoroughly compacted to within 95percent of maximum unit weight. Maximum unit weight and compaction shall be determined by: the M•DOT One-PointT-99 (Proctor) Test for materials having more than 15 percent loss-by-washing; the One-Point Michigan Cone Test for materials having less than or equal to 15 percent loss-by-washing; M•DOT approved nuclear gage methods; or approved method.

2. Backfill material shall consist of approved bank-run sand and gravel or Class II granular material per MDOT Standard Specifications for Construction, pass through a screen having 2-3/8 in. square openings, and contain no cementitious properties unsuitable for water percolation nor deleterious or organic materials.

Restoration

1. All surplus or unsuitable material shall be properly disposed outside of the limits of the railroad right-of-way, unless the approved application provides for designated disposal locations on railroad property. Any permitted disposed material shall be leveled and trimmed in an approved manner.

2. Sod and topsoil shall be stored separately from other excavated material and shall be used for turf establishment. Turf restoration shall begin within one week of completing the installation. Restore the grade by placing sod or seed, fertilizing and mulch. Mulch which has become displaced prior to complete seed germination shall be restored.



REQUEST TO USE MDOT CONTROLLED FREIGHT RAILROAD PROPERTY
DESIGN CRITERIA

Subsurface Crossings

MATERIALS

SteelPipe - Either: ASTM A53-Type E or S, Grade B; or ASTM A139 - Grade B, and have a minimum yield strength of 35,000 psi.

Casing pipe and non-encased carrier pipe shall have the following wall thickness. Numerical values are in inches.

WALL THICKNESS	PIPE WALL DIAMETER
.188 = 3/16	12-3/4 and under
.250 = ¼	14
.282 = 9/32	14, 16
.313 = 5/16	18
.344 = 11.32	20
.375 = 3/8	22
.407 = 13/32	24
.438 = 7/16	26
.469 = 15/32	28, 30
.500 = ½	32
.532 = 17/32	34, 36
.563 = 9/16	38, 40, 42

Grout - A mixture of Portland cement and sand in any proportion which does not have more than 50 percent sand by volume.

LOW PRESSURE

Where a low pressure (60 psi or less) substance is conveyed through a six(6) inch or less diameter pipeline, a casing pipe is not required. Unencased carrier pipe, other than steel, shall be a heavy duty material and may be used where the depth of burial exceeds eleven (11) feet from the base of rail to top of pipe.

HAZARDOUS, HIGH PRESSURE

Where a hazardous or high pressure (greater than 60 psi) substance is conveyed in a pipeline, a casing pipe is required. A steel casing pipe is required for all flammable substances. Casing pipes made of material other than steel or leak proof C-76 Class V reinforced concrete must provide a minimum cover of 6-1/2 ft. from base of rail to top of pipe.

ELECTRICAL, TELEPHONE, FIBER OPTICS

Electrical, telephone, or fiber optic cable do not require a casing pipe.

CULVERTS, GRAVITY SEWERS

Pipes shall have a minimum of two (2) feet of cover from the base of rail to the top of pipe. The pipe shall be of leak proof construction and can be 12gauge steel or C-76 Class V reinforced concrete.

DEPTH OF PIPE

Casing or carrier pipes shall be placed at a depth that will provide not less than 5-1/2 ft. of cover from base of rail to top of pipe and provide a minimum of 3 ft. of cover below proposed ditch bottoms.

LENGTH OF CASING

PIPE Length of pipe shall be the greatest distance as measured at right angles to the track: 3 ft. beyond toe of slope; 3 ft. beyond the ditch; or a minimum distance of 25 ft. from the near rail, when the end of casing is belowground.

BORE PITS

A minimum of 20 feet (perpendicular measurement) shall be maintained from the near rail to any bore pit, unless specifically authorized in writing by the Department. Bore pit dimensions, depth, distance to each near rail, and to the toe of slope for each front slope must be shown on the plans.

Aerial Crossing

VERTICAL CLEARANCES

The minimum vertical clearance, including sag, from top of rail to utility line directly over the track(s) shall be:

26 ft	Communications
27 ft	0 – 750 Volts
28 ft	750V – 15 KV
30 ft	15 KV – 50 KV
32 ft	50 KV – 100 KV
33 ft	100 KV – 150 KV
35 ft	150 KV – 200 KV
37 ft	200KV – 250 KV

HORIZONTAL CLEARANCES

No poles or guy wires are allowed in Right-of-Way unless approved by the Michigan Department of Transportation – Office of Rail.

Required Information for All Crossings

A cross-sectional view of the proposed crossing shall be included with the application, and shall include the following topographical information, as applicable:

Adjacent utilities, obstructions or adjacent structures; actual cross-section elevations at the proposed crossing location measured at 0.1 ft increments relative to the top of rail and elevations at 5 ft intervals 50 ft. each side of centerline; ditch and rail profiles at 25 ft. intervals for 300 ft. each direction from crossing (or as necessary to describe drainage); dimensions of bore pits; the closest distance of bore pits to each near rail; and the location relative to a railroad milepost and/or nearby road crossings.

Longitudinal Occupancy

Depth of cover and offset from the track will be considered on an individual basis. Casing requirements can be waived where there is sufficient depth of cover and lateral offset from the track structure.

Utility Structures

No above or below ground structures are allowed in Right-of-Way unless approved by the Michigan Department of Transportation – Office of Rail.

CITY OF OWOSSO
CARGILL ACCESS ROAD

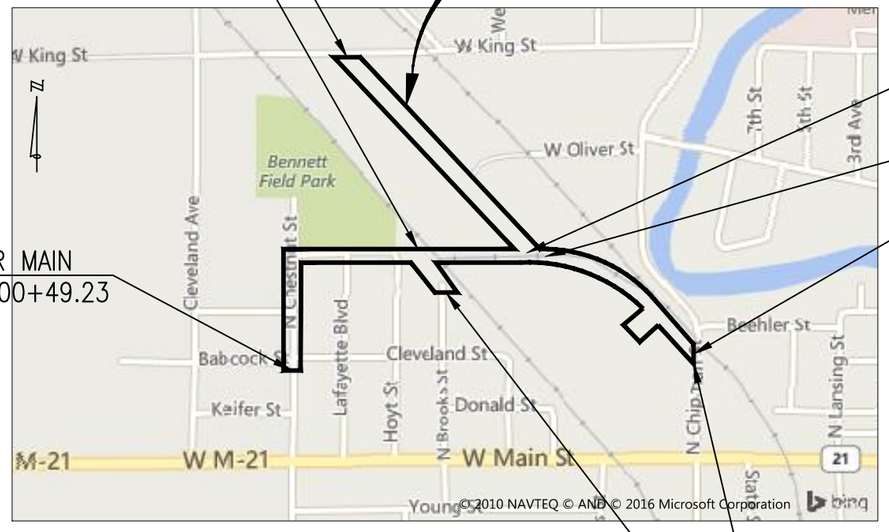
SHIAWASSEE COUNTY, MICHIGAN
CITY OF OWOSSO, SECTION 14

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2 – 4	ALIGNMENT SHEETS
5	LEGEND
6	NOTE SHEET
7	PROPOSED TYPICAL
8	SOIL BORINGS
9	GENERAL DETAIL SHEET
10, 13	REMOVAL SHEETS
11, 14	CONSTRUCTION SHEETS
16 – 17	PARKING PLAN SHEETS
12, 15	PROFILE SHEETS
18	WATER MAIN DETAIL SHEET
19 – 26	WATER MAIN PLAN AND PROFILE SHEETS
27	PAVEMENT MARKING AND SIGNING SHEET

NORTH WATER MAIN
P.O.B. STA 200+57.61

BROOKS WATER MAIN
E.O.C. STA 303+21.13

PROJECT LOCATION



LOCATION MAP
N.T.S.

NORTH WATER MAIN
E.O.C. STA 217+64.63

CARGILL ACCESS ROAD
P.O.B. STA 0+00.00

CARGILL ACCESS ROAD
P.O.E. STA 14+98.94

SOUTH WATER MAIN
B.O.C. STA 100+49.23

SOUTH WATER MAIN
E.O.C. STA 136+60.08

BROOKS WATER MAIN
B.O.C. STA 300+50.00

UTILITY NOTE

FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTRACT THE MISS DIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATION, EXCLUDING WEEKENDS AND HOLIDAYS.

UTILITY CONTACTS

TELEPHONE
FRONTIER
MARK STEVENS
1943 W. M-21
OWOSSO, MI 48867
(989) 723-0373
Mark.Stevens@ftr.com

ELECTRIC
CONSUMERS ENERGY
JACOB CHALUT
530 W. WILLOW STREET
LANSING, MI 48906
(517) 580-2049
Jacob.Chalut@cmsenergy.com

CABLE TV
CHARTER COMMUNICATIONS
DAN BIELACZYC
1392 TRADE CENTRE DRIVE
TRAVERSE CITY, MI 49696
(231) 941-3819
Dan.Bielaczyc@charter.com

GAS
CONSUMERS ENERGY
DOUGLAS FURMAN
530 W. WILLOW STREET
LANSING, MI 48906
(517) 374-2375
Douglas.Furman@cmsenergy.com

WATER AND SEWER
CITY OF OWOSSO
MARK SEDLAK
522 MILWAUKEE STREET
OWOSSO, MI 48867
(989) 666-8203
Mark.Sedlak@ci.owosso.mi.us

STORM/COUNTY DRAIN
SHIAWASSEE COUNTY DRAIN COMMISSION
TONY NEWMAN
149 E. CORUNNA AVENUE L-1
CORUNNA, MI 48817
(989) 743-2398
drains@shiawassee.net

RAILROAD
GREAT LAKES CENTRAL RAILROAD
MARK RUSSELL
600 OAKWOOD AVENUE
OWOSSO, MI 48867
(989) 666-2706
msrussell@glcrailroad.com

APPLICATION DATE	PERMITS	APPROVAL DATE
	SESC	
5/23/16	RAILROAD	X
5/26/16	MDEQ WATER MAIN	X
X	SHIAWASSEE COUNTY DRAIN	X
X	NPDES	X

Know what's **below.**
Call before you dig.

PROJECT DETAILS

DESIGN SPEED.....25 MPH
ESTIMATED ADT.....300 (50% COMMERICAL)
PROJECT LENGTH.....1.07 MILES

CARGILL ACCESS ROAD
P.O.B. = STA 0+00.00 P.O.E. = STA 14+98.94

SOUTH WATER MAIN
B.O.C. = STA 100+49.23 E.O.C. = STA 136+60.08

NORTH WATER MAIN
B.O.C. = STA 200+57.61 E.O.C. = STA 217+64.63

BROOKS STREET
B.O.C. = STA 300+50.00 E.O.C. = STA 303+21.13

M.D.O.T. STANDARD PLANS

TITLE	PLAN NO.
DRAINAGE STRUCTURES	R-1-G*
COVER B	R-7-F
COVER G	R-12-E
COVER K	R-15-F
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS	R-28-J*
DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS	R-29-I
CONCRETE CURB AND CONCRETE CURB & GUTTER	R-30-G
BUMPER & PARKING RAILS AND MISC. WOOD POSTS	R-74-D
GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS	R-80-E
UTILITY TRENCHES	R-83-C*
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E

* DENOTES SPECIAL DETAIL PROVIDED IN THE PROPOSAL

TRAFFIC & SAFETY STANDARD PLANS

TITLE	PLAN NO.
GROUND DRIVEN SIGN SUPPORTS FOR TEMP. SIGNS	WZD-100-A*
TEMPORARY TRAFFIC CONTROL DEVICES	WZD-125-E*

* DENOTES SPECIAL DETAIL PROVIDED IN THE PROPOSAL

THE IMPROVEMENTS BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SUPPLEMENTAL SPECIFICATIONS. THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE DESIGNED IN ACCORDANCE WITH THE AASHTO; A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011 EDITION AND SECTION B (4R) OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION LOCAL AGENCY PROGRAMS FOR GEOMETRICS. ALL TRAFFIC CONTROL TEMPORARY AND PERMANENT SHALL FOLLOW 2011 EDITION OF MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).

CONTRACT FOR:
0.28 MILES OF NEW ROAD CONSTRUCTION WITHIN 1.07 MILES OF WATER MAIN CONSTRUCTION.

THESE PLANS WERE PREPARED FOR THE CITY OF OWOSSO BY:

OHM
Advancing Communities
929 Bridgeview South | Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427

STATE OF MICHIGAN
ANDREW MANWORING
ENGINEER
NO. 62683
REGISTERED PROFESSIONAL ENGINEER

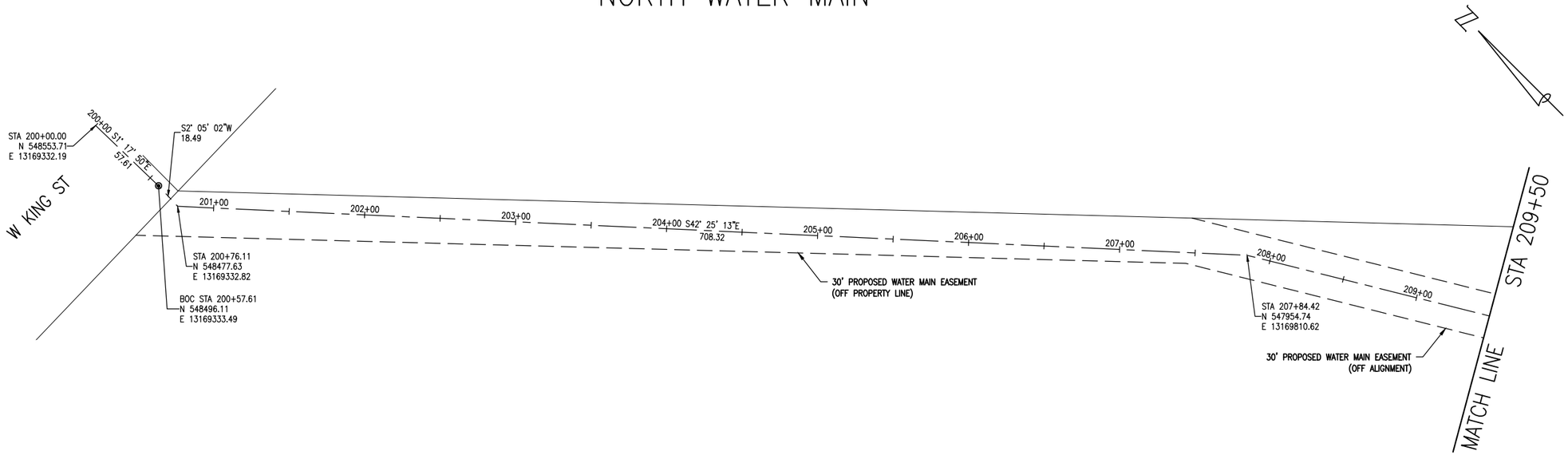
RECOMMENDED FOR APPROVAL BY:

RANDY J. CHESNEY, P.E. — DATE

REVISIONS

PROJECT NO.	SHEET NO.
0020-16-0020	1 OF 27

NORTH WATER MAIN



NORTH WATER MAIN ALIGNMENT

BENCHMARK DATA TABLE

NUMBER	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
BM 202	547185.69	13169602.82	769.582	–	–	SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
BM 204	546986.04	13171060.69	742.363	–	–	CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO PROTECTIVE SOLUTIONS ON N SIDE OF PARKING LOT

TRAVERSE POINT DATA TABLE

NUMBER	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
TP 104	547504.94	13170042.49	756.37	212+83.06	44.3' RT	

LEGEND:

● BENCHMARK △ TRAVERSE POINT ◉ ALIGNMENT POINT

NOTES:

VERTICAL DATUM IS NAVD88

HORIZONTAL DATUM IS MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD83 (2011)
UNITS ARE INTERNATIONAL FEET.

OHM
ARCHITECTS ENGINEERS PLANNERS
929 Bridgeview South
Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427
OHM-ADVISORS.COM

REVISIONS:

DATE | PROJ NUMBER | ENG | PROJ MGR | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | SCALE | HORIZ DATUM | VERT DATUM
003-16-0020 | ERS | AVW | ARP | SHIAWASSEE | CITY OF OWOSSO | H: 1"=40' V: 1"=4' | NAD 83 | NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
ALIGNMENT SHEET

SHEET 2 OF 27

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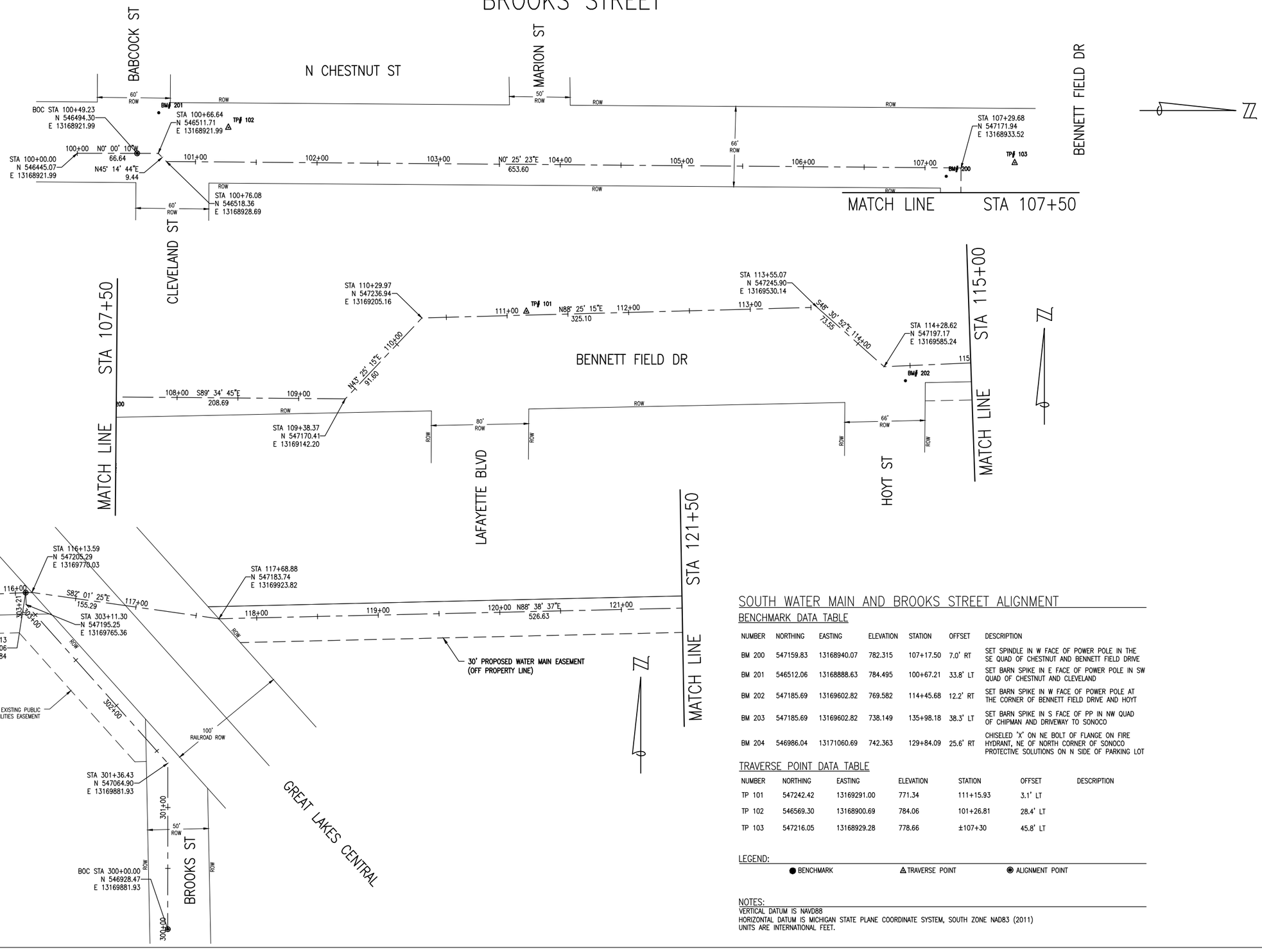
SOUTH WATER MAIN
BROOKS STREET



SOUTH WATER MAIN AND BROOKS STREET ALIGNMENT

BENCHMARK DATA TABLE

NUMBER	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
BM 200	547159.83	13168940.07	782.315	107+17.50	7.0' RT	SET SPINDLE IN W FACE OF POWER POLE IN THE SE QUAD OF CHESTNUT AND BENNETT FIELD DRIVE
BM 201	546512.06	13168888.63	784.495	100+67.21	33.8' LT	SET BARN SPIKE IN E FACE OF POWER POLE IN SW QUAD OF CHESTNUT AND CLEVELAND
BM 202	547185.69	13169602.82	769.582	114+45.68	12.2' RT	SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
BM 203	547185.69	13169602.82	738.149	135+98.18	38.3' LT	SET BARN SPIKE IN S FACE OF PP IN NW QUAD OF CHIPMAN AND DRIVEWAY TO SONOCO
BM 204	546986.04	13171060.69	742.363	129+84.09	25.6' RT	CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO PROTECTIVE SOLUTIONS ON N SIDE OF PARKING LOT

TRAVERSE POINT DATA TABLE

NUMBER	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
TP 101	547242.42	13169291.00	771.34	111+15.93	3.1' LT	
TP 102	546569.30	13168900.69	784.06	101+26.81	28.4' LT	
TP 103	547216.05	13168929.28	778.66	±107+30	45.8' LT	

LEGEND:

● BENCHMARK △ TRAVERSE POINT ◉ ALIGNMENT POINT

NOTES:

VERTICAL DATUM IS NAVD88
HORIZONTAL DATUM IS MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD83 (2011)
UNITS ARE INTERNATIONAL FEET.

OHM
ARCHITECTS ENGINEERS PLANNERS
929 Bridgeview South
Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
	0100-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40' V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

ALIGNMENT SHEET

SHEET 3 OF 27

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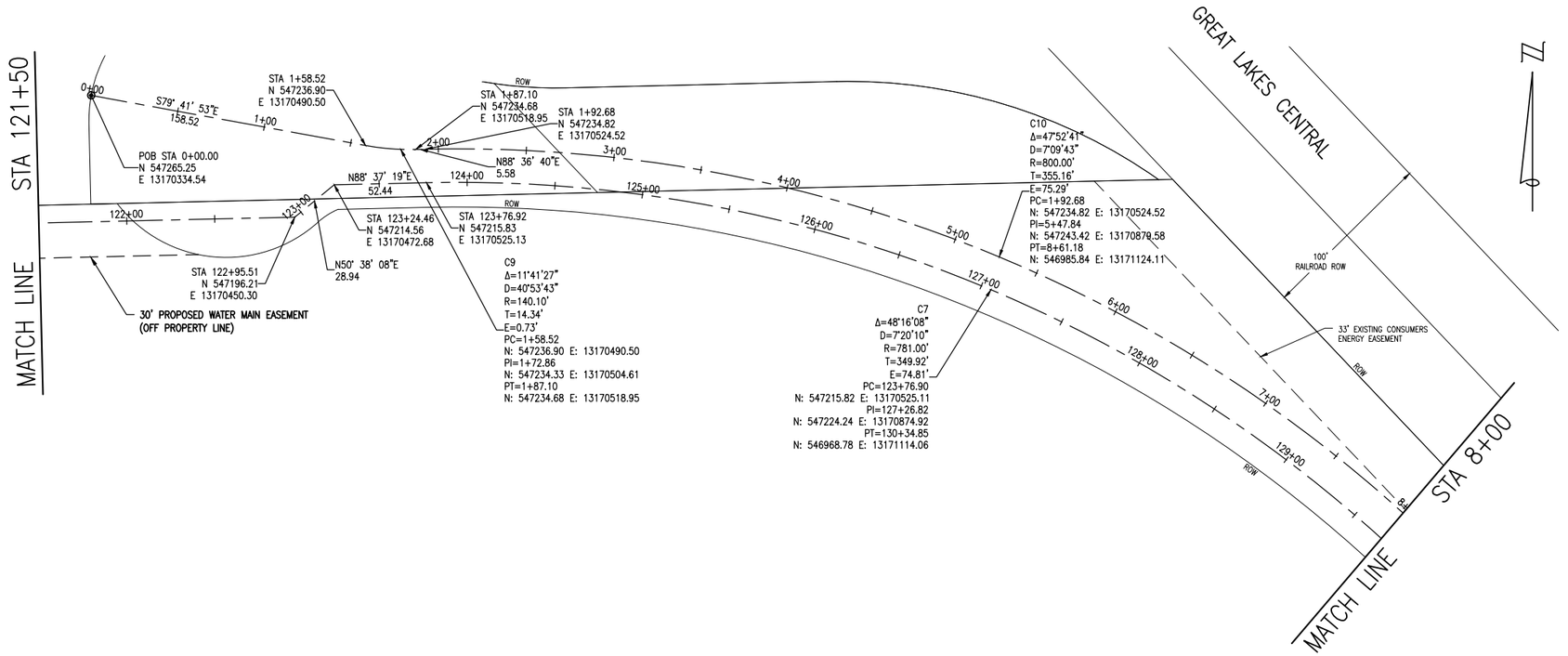
SOUTH WATER MAIN
CARGILL ACCESS ROAD



CARGILL ACCESS ROAD AND SOUTH WATER MAIN ALIGNMENT

BENCHMARK DATA TABLE

NUMBER	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
BM 202	547185.69	13169602.82	769.582	114+45.68	12.2' RT	SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
BM 203	547185.69	13169602.82	738.149	135+98.18	38.3' LT	SET BARN SPIKE IN S FACE OF PP IN NW QUAD OF CHIPMAN AND DRIVEWAY TO SONOCO
BM 204	546986.04	13171060.69	742.363	129+84.09	25.6' RT	CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO PROTECTIVE SOLUTIONS ON N SIDE OF PARKING LOT
BM 205	547185.69	13169602.82	769.582	–	–	CHISELED 'X' ON W BOLT OF STRAIN POLE BASE IN NE QUAD OF M-21 AND CHIPMAN ROAD

TRAVERSE POINT DATA TABLE

NUMBER	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
TP 101	547242.42	13169291.00	771.34	111+15.93	3.1' LT	
TP 104	547504.94	13170042.49	756.37	112+83.06	44.3' RT	

LEGEND:

● BENCHMARK △ TRAVERSE POINT ◉ ALIGNMENT POINT

NOTES:
VERTICAL DATUM IS NAVD88
HORIZONTAL DATUM IS MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD83 (2011)
UNITS ARE INTERNATIONAL FEET.

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Saginaw, MI 48604
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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORIZ DATUM	VERT DATUM
000-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40'	V: 1"=4'	NAD 83	NGVD 29	

CITY OF OWOSSO
CARGILL ACCESS ROAD
ALIGNMENT SHEET

SHEET 4 OF 27

DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Misc\160020ALN.dwg Jun 30, 2016 - 1:41pm

WATER & SEWER UTILITY SYMBOLS

EXISTING

- ST — STORM MANHOLE
- SQUARE CATCH BASIN
- ROUND CATCH BASIN
- CULVERT
- CULVERT W/O END SECTION
- CULVERT W/END SECTION
- S — SANITARY MANHOLE
- CO — CLEAN OUT
- GW — GATE VALVE & WELL
- GATE VALVE & BOX
- W — WATER STOP BOX
- FIRE HYDRANT
- MP — METER PIT
- WATER METER
- SH — SPRINKLER HEAD
- IRRIGATION VALVE

PROPOSED

- STORM MANHOLE
- INLET/CATCH BASIN
- CULVERT END SECTION
- SANITARY MANHOLE
- GV&W — GATE VALVE & WELL
- GV&B — GATE VALVE & BOX
- TSV&W — TAPPING SLEEVE VALVE & WELL
- TSV&B — TAPPING SLEEVE VALVE & BOX
- FIRE HYDRANT

REAL ESTATE SYMBOLS

- CONTIGUOUS PROPERTY SYMBOL
- XXXX — PARCEL NUMBER BOX
- XX&XX — NO ROW IMPACTS

MISCELLANEOUS UTILITY SYMBOLS

EXISTING

- GUY WIRE
- GP — GUY POLE
- U — UTILITY POLE
- UL — UTILITY POLE W/LIGHT
- LAMP POLE
- F — FLOOD LIGHT
- GAS VALVE
- GV — GAS VENT
- G — GAS METER
- GAS RISER
- TRAFFIC SIGNAL
- P — PEDESTRIAN RISER
- E — TRANSFORMER PAD
- U — PRIVATE UTILITY MANHOLE
- RAILROAD CROSSING
- E — ELECTRIC METER
- PB — PHONE BOOTH
- TS — TRAFFIC SIGNAL CONTROLLER
- HAND HOLE
- E — ELECTRIC RISER
- T — TELEPHONE RISER
- C — CABLE TV RISER
- W — MONITORING WELL
- UNDERGROUND MARKER

MISCELLANEOUS SYMBOLS

EXISTING

- RIPRAP
- SIGN
- FLOW DIRECTION
- STUMP
- WETLAND
- CONIFEROUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- DECIDUOUS TREE
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- SB# — SOIL BORING
- SECTION CORNER
- MON — MONUMENT
- IRON ROD/PIPE
- PK — PK NAIL
- BM# — BENCHMARK
- TP# — TRAVERSE POINT
- MAIL/NEWSPAPER BOX
- FP — FLAG POLE
- POST
- HAZARDOUS OR FLAMMABLE MATERIAL — USED WITH UNDERGROUND GAS & ELECTRICAL LINES
- CAUTION – CRITICAL UNDERGROUND UTILITY — USED WITH TELEPHONE & FIBER OPTIC LINES

PROPOSED

- RIPRAP
- SIGN
- FLOW DIRECTION
- XX XX XXX — STRUCTURE NUMBER WM SAN STM
- ADA SIDEWALK RAMP
- SR–X — SIDEWALK RAMP TYPE
- XX — SESC MEASURE (MDOT R–96–E)

UTILITY PATTERN

EXISTING

- ELEC — ELECTRICAL *
- 6" (COMPANY) GAS — GAS\OIL
- (COMPANY) CABLE/TEL — CABLE/TELEPHONE *
- FIBER OPTIC — FIBER OPTIC *
- 12" WM — WATER
- 12" SAN — SANITARY
- 12" STM — STORM

PROPOSED

- 12" — STORM/SANITARY/WATER
- 12" — PRIMARY UTILITY WILL HAVE A CONTINUOUS LINESTYLE, WITH THE SECONDARY UTILITY MATCHING ITS RESPECTIVE EXISTING UTILITY LINESTYLE

*OH = OVERHEAD , UG = UNDERGROUND

ROW PATTERN

EXISTING

- ROW — ROW
- SECTION
- PROPERTY/PARCEL

TOPO PATTERN

EXISTING

- HEDGE/TREE
- FENCE
- GUARDRAIL
- CENTERLINE OF DITCH
- RAILROAD
- WETLAND/EDGE OF WATER

PROPOSED

- GRADING LIMIT (SLOPE STAKE)
- CENTERLINE OF DITCH
- GUARDRAIL
- FENCE

REMOVAL LEGEND

- SIDEWALK, REM, MODIFIED
- DRIVEWAY, REM, MODIFIED
- PAVT, REM, MODIFIED
- CURB AND GUTTER, REM
- STORM, REM
- CULVERT, REM
- S–XXXXXX — SALVAGE
- B–XXXXXX — BULKHEAD
- A–XXXXXX — ABANDON
- R–XXXXXX — REMOVE
- ADJ–XXXXXX — ADJUST
- REL–XXXXXX — RELOCATE
- REC–XXXXXX — RECONSTRUCT
- R B/O–XXXXXX — REMOVE BY OTHERS
- ADJ B/O–XXXXXX — ADJUST BY OTHERS
- REL B/O–XXXXXX — RELOCATE BY OTHERS

IF NECESSARY FOR CLARITY

- (S) — SALVAGE
- (B) — BULKHEAD
- (A) — ABANDON
- (C) — CLEARING
- (R) — REMOVE
- (REL) — RELOCATE
- (REC) — RECONSTRUCT
- (REL B/O) — RELOCATE BY OTHERS
- (ADJ C_) — ADJUST CASE 1 OR 2
- (ADJ B/O) — ADJUST BY OTHERS

Know what's **below.** **Call** before you dig.

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	0020-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40'	V: 1"=4'	NAD 83

VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

LEGEND

SHEET 5 OF 27

DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Misc\160020LEG.dwg Jun 30, 2016 - 1:42pm

GENERAL PROVISIONS

THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) 2012 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION EXCEPT AS NOTED HEREIN AND IN THE PROPOSAL BOOK.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES FOR NOISE LEVELS, VIBRATIONS, OR ANY OTHER RESTRICTIONS WHILE REMOVING PAVEMENT OR FOR ANY OTHER CONSTRUCTION OPERATIONS WITHIN THIS CONTRACT TO BE INCLUDED IN THE RESPECTIVE ITEM OF WORK.

THE CONTRACTOR SHALL NOT ENTER UPON PRIVATE PROPERTY FOR ANY PURPOSE WITHOUT OBTAINING WRITTEN PERMISSION, NOTIFYING THE ENGINEER, AND HE/SHE SHALL BE RESPONSIBLE FOR PRESERVATION OF ALL PUBLIC PROPERTY, TREES, MONUMENTS, ETC. ALONG AND ADJACENT TO THE STREET AND/OR RIGHT OF WAY, AND SHALL USE EVERY PRECAUTION NECESSARY TO PREVENT DAMAGE OR INJURY THERETO. HE/SHE SHALL USE SUITABLE PRECAUTIONS TO PREVENT DAMAGE TO PIPES, CONDUITS, AND OTHER UNDERGROUND STRUCTURES AND SHALL PROTECT CAREFULLY FROM DISTURBANCE OR DAMAGE ALL MONUMENTS AND PROPERTY MARKERS UNTIL THE ENGINEER OR AUTHORIZED AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION AND SHALL NOT REMOVE THEM UNTIL DIRECTED.

THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE ENGINEER, LOCAL FIRE, POLICE, HOSPITAL, AND EMERGENCY AGENCIES 72 HOURS IN ADVANCE OF PROPOSED ROAD CLOSURES.

THE CONTRACTOR AND/OR HIS SUBCONTRACTOR SHALL NOTIFY "MISS DIG", LOCAL SEWER, FIRE AND POLICE DEPARTMENTS 72 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

UTILITIES

THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE PROJECT LIMITS:

TELEPHONE

FRONTIER
MARK STEVENS
1943 W. M-21
OWOSSO, MI 48867
(989) 723-0373
Mark.Stevens@ftr.com

ELECTRIC

CONSUMERS ENERGY
JACOB CHALUT
530 W. WILLOW STREET
LANSING, MI 48906
(517) 580-2049
Jacob.Chalut@cmsenergy.com

CABLE TV

CHARTER COMMUNICATIONS
DAN BIELACZYC
1392 TRADE CENTRE DRIVE
TRAVERSE CITY, MI 49696
(231) 941-3819
Dan.Bielaczyc@charter.com

GAS

CONSUMERS ENERGY
DOUGLAS FURMAN
530 W. WILLOW STREET
LANSING, MI 48906
(517) 374-2375
Douglas.Furman@cmsenergy.com

WATER AND SEWER

CITY OF OWOSSO
MARK SEDLAK
522 MILWAUKEE STREET
OWOSSO, MI 48867
(989) 666-8203
Mark.Sedlak@ci.owosso.mi.us

STORM/COUNTY DRAIN

SHIAWASSEE COUNTY DRAIN COMMISSION
TONY NEWMAN
149 E. CORUNNA AVENUE L-1
CORUNNA, MI 48817
(989) 743-2398
drains@shiawassee.net

RAILROAD

GREAT LAKES CENTRAL RAILROAD
MARK RUSSELL
600 OAKWOOD AVENUE
OWOSSO, MI 48867
(989) 666-2706
msrussell@glcrailroad.com

FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTRACT THE MISS DIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATION, EXCLUDING WEEKENDS AND HOLIDAYS.

THE UTILITIES AND THEIR LOCATIONS ARE SHOWN ON THE PLANS ARE DEEMED ACCURATE BUT NOT GUARANTEED. THE CONTRACTOR SHALL CALL THE MISS DIG 3 WORKING DAYS BEFORE BEGINNING WORK.

GAS FACILITIES SHALL BE PROTECTED AND SUPPORTED PER THE FACILITIES OWNER STANDARDS.

THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.

THE CONTRACTOR SHALL BE AWARE OF AND USE CAUTION WHEN WORKING NEAR UNDERGROUND OR OVERHEAD LINES OF ALL UTILITIES WITHIN THE PROJECT AREA.

MAINTAINING TRAFFIC/TRAFFIC CONTROL

THE CONSTRUCTION INFLUENCE AREA (CIA) SHALL CONSIST OF THE WIDTH OF THE PROPOSED RIGHT-OF-WAY FROM THE PROJECT POINT OF BEGINNING TO THE POINT OF ENDING, INCLUDING WATER MAIN CONSTRUCTION, AND A SUFFICIENT DISTANCE BEFORE AND AFTER THE PROJECT TO WARN MOTORISTS OF THE CONSTRUCTION AHEAD, AS WELL AS THE POSTED DETOUR ROUTE AS SHOWN ON THE DETOUR SHEET.

THE CONTRACTOR SHALL MAINTAIN THE PEDESTRIAN ACCESS THROUGHOUT THE ENTIRE PROJECT AT ALL TIMES DURING CONSTRUCTION. AREAS OF SIDEWALK THAT ARE SHOWN TO BE REMOVED AND REPLACED SHALL BE MAINTAINED WITH A TEMPORARY HARD SURFACE. PEDESTRIAN ACCESS TO ALL RESIDENCES AND BUSINESSES SHALL BE ALLOWED AT ALL TIMES DURING CONSTRUCTION. PAYMENT FOR MAINTAINING PEDESTRIAN ACCESS IS INCLUDED IN THE MAINTAINING TRAFFIC PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT LOCAL TRAFFIC AND EMERGENCY VEHICLES SHALL HAVE ACCESS WITHIN THE PROJECT AT ALL TIMES IN A MANNER APPROVED BY THE ENGINEER. ALL EMERGENCY RESPONSE, ROAD COMMISSION, MUNICIPALITIES, SCHOOL BUS GARAGES, OR OTHER NECESSARY AGENCIES SHALL BE NOTIFIED A MINIMUM OF THREE DAYS IN ADVANCE OF IMPLEMENTING THE ROAD CLOSURE AND THIS SHALL BE INCLUDED IN THE COST OF THE PROJECT.

AGGREGATE FOR MAINTAINING LOCAL TRAFFIC IS INCLUDED IN THE AGGREGATE ITEMS OF THE PROJECT AND SHALL BE USED AS DIRECTED BY THE ENGINEER TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC ALONG THE PROJECT, DRIVEWAYS, AND STREET APPROACHES.

DUST PALLIATIVE, APPLIED (TON) HAS BEEN INCLUDED IN THE PROJECT TO BE USED AS DIRECTED BY THE ENGINEER TO CONTROL DUST WITHIN THE PROJECT LIMITS.

GAS POWERED ARROW BOARDS ARE PROHIBITED.

THE CONTRACTOR SHALL SCHEDULE WORK BETWEEN THE HOURS OF 7:00 A.M. AND 7:00 P.M., MONDAY THROUGH SATURDAY. NO WORK IS ALLOWED OUTSIDE THESE TIME PERIODS. THE CONTRACTOR SHALL COORDINATE WORK SO THAT ANY NECESSARY PRELIMINARY OR CLOSING OPERATIONS ARE ALSO DONE WITHIN THESE TIME PERIODS.

PAVEMENT REMOVAL QUANTITIES

PAVEMENT REMOVAL AS SHOWN ON THE PLANS WILL BE AT THE DISCRETION OF THE ENGINEER. IF IN HIS/HER JUDGEMENT, AREAS OF PAVEMENT MAY BE LEFT IN PLACE, OR ADDITIONAL AREAS ADDED TO PROVIDE THE PROPER CROSS-SECTION AND BASE, CHANGES WILL BE MADE TO THE QUANTITIES.

SOIL EROSION MEASURES

APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTH-DISTURBING ACTIVITIES. PLACE TURF ESTABLISHMENT ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODABLE SLOPES AS DIRECTED BY THE ENGINEER. PERMIT MUST BE ACQUIRED BY THE CONTRACTOR THROUGH THE PROPER AUTHORITY.

ALL SOIL EROSION AND SEDIMENTATION MUST BE CONTROLLED AND CONTAINED ON SITE.

SOIL EROSION AND SEDIMENTATION CONTROL: IN ADDITION TO THE GENERAL SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS IN THE PROPOSAL, THE FOLLOWING MEASURES SHALL BE INCORPORATED INTO THIS PROJECT:

1. THE CONTRACTOR SHALL CONDUCT HIS OR HER OPERATIONS IN SUCH A MANNER AS TO MINIMIZE THE AREAS LEFT BARREN DURING CONSTRUCTION AND TO DISTURB ONLY THOSE AREAS ABSOLUTELY REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
2. EROSION CONTROL ITEMS SHALL BE INSTALLED AND MAINTAINED ACCORDING TO THE MDOT STANDARD PLANS AND SHALL BE REMOVED WHEN THEY ARE NO LONGER EFFECTIVE AS DETERMINED BY THE ENGINEER. NO SEPARATE PAYMENT SHALL BE ALLOWED FOR EITHER MAINTENANCE OR REMOVAL OF THE EROSION CONTROL ITEMS.
3. THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED IN STORM SEWERS AND DRAINAGE STRUCTURES CONSTRUCTED WITH THE PROJECT WHEN SUCH SEDIMENT EXCEEDS 1/2 OF THE SUMP DEPTH. THE ENGINEER WILL INSPECT SUMPS AFTER STORMS AND DIRECT THE CONTRACTOR TO CLEAN OUT TO PROVIDE FOR SEDIMENT COLLECTIONS. CLEANING SUMPS FOR SEDIMENTATION CONTROL SHALL NOT BE PAID FOR SEPARATELY.
4. THE CONTRACTOR SHALL FOLLOW ALL ENTITIES HAVING JURISDICTION FOR SOIL EROSION AND SEDIMENTATION CONTROL FOR ALL MATERIALS DISPOSED OF OFF THE PROPERTY.

ALL AREAS DISTURBED BY THE CONTRACTOR AND/OR HIS OR HER SUBCONTRACTOR BEYOND THE GRADING LIMITS OF THIS PROJECT SHALL BE RESTORED WITH THE USE OF SOD OR HYDROSEED AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS ACTIVITY.

SAWCUTTING

PAYMENT FOR SAWCUTTING REQUIRED THROUGHOUT THIS PROJECT SHALL BE INCLUDED IN REMOVAL ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

PAVING

EXCAVATION OR FILL AS REQUIRED TO PREPARE DRIVE APPROACHES FOR PAVING ARE INCLUDED IN THE EXCAVATION AND EMBANKMENT PAY ITEMS.

ANY RANDOM, IRREGULARLY CRACKED NEW CONCRETE CURB AND GUTTER THAT OCCURS BEFORE THE TOP COURSE OF PAVEMENT IS INSTALLED SHALL BE REMOVED AND REPLACED AT THE SOLE EXPENSE OF THE CONTRACTOR PRIOR TO PLACING THE TOP COURSE.

FINAL ADJUSTMENTS OF ALL STRUCTURES, BOTH NEW AND EXISTING, SHALL BE MADE PRIOR TO PLACING THE TOP COURSE OF ASPHALT AT THE EXPENSE OF THE CONTRACTOR.

ILLICIT CONNECTIONS TO STORM WATER SYSTEM

CONNECTIONS TO EXISTING STORM CONVEYANCE SYSTEMS NOT SHOWN ON THE PLANS MUST BE RECONNECTED WITH MINIMAL INTERRUPTION IN SERVICE. SIZE, TYPE AND LOCATION BY STATION AND OFFSET AND ANY SUSPECT ILLICIT DISCHARGE OBSERVED SHALL BE REPORTED TO THE ENGINEER PRIOR TO RECONNECTING. CONTRACTOR SHALL PROCEED AS DIRECTED BY THE ENGINEER. PAYMENT INCLUDED IN REPAIR EXISTING SEWER SERVICE ITEM.

SIDEWALK AND SIDEWALK RAMP GRADES

ALL SIDEWALK AND SIDEWALK RAMP GRADES SHALL BE FORMED ACCORDING TO STANDARD PLAN R-28 SERIES AS SHOWN ON THE PLANS. PRIOR TO CONSTRUCTING THE SIDEWALK AND SIDEWALK RAMPS, THE ENGINEER WILL VERIFY THE GRADES ON THE FORMS SET AND AUTHORIZE THE CONSTRUCTION OF THE SIDEWALK AND SIDEWALK RAMPS.

ALL SIDEWALK RAMPS ON THIS PROJECT SHALL BE OF 6 INCH THICKNESS UNLESS OTHERWISE NOTED.

EARTHWORK

EARTHWORK QUANTITIES ARE ESTIMATED BY THE AVERAGE END AREA METHOD BASED UPON GROUND SURVEY INFORMATION. ALL EARTHWORK ITEMS WILL BE INCLUDED IN THE EXCAVATION AND EMBANKMENT PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

ALL EXCAVATION UNDER OR WITHIN 5 FEET OF THE PAVEMENT SECTION SHALL BE BACKFILLED AND COMPACTED WITH CLASS II SAND WITHIN THE PAVED SECTION AND A 1:1 INFLUENCE OUTSIDE THE PAVED SECTION.

THROUGHOUT THE DURATION OF CONSTRUCTION, NO UNDERCUTS WILL BE LEFT OVERNIGHT NEXT TO THE EDGE OF THE TRAVELED WAY.

EXCAVATION OF TRENCHES OVER 5' DEEP WITHIN 10' OF THE EDGE OF THE TRAVELED PAVEMENT SHALL NOT BE LEFT OPEN OVERNIGHT.

BACKFILL BEHIND ALL PROPOSED CURB IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS OF CONSTRUCTION. WORK IS INCLUDED IN THE EMBANKMENT PAY ITEM.

MISCELLANEOUS

RUBBISH COLLECTION IS DONE BY PRIVATE CONTRACTORS BETWEEN THE HOURS OF 7:00 A.M. AND 7:00 P.M. ACCORDING TO THE FOLLOWING SCHEDULE: ALL RESIDENTIAL CUSTOMERS NORTH OF MAIN STREET ARE SERVICED ON THURSDAYS. ALL RESIDENTIAL CUSTOMERS SOUTH OF MAIN STREET ARE SERVICED ON TUESDAYS. RUBBISH COLLECTED AT COMMERCIAL PROPERTIES IS COLLECTED ANY TIME/DATE. THE CONTRACTOR SHALL SCHEDULE WORK TO ALLOW AND PROVIDE ACCESS FOR REFUSE CONTRACTORS TO PROVIDE THEIR SERVICE TO THE RESIDENTIAL AND COMMERCIAL PROPERTIES. IF THE REFUSE CONTRACTORS ARE UNABLE TO COLLECT MATERIALS DUE TO CONSTRUCTION OPERATIONS, THEN THE CONTRACTOR SHALL COORDINATE WITH THE REFUSE CONTRACTORS THE MOVING OF CONTAINERS TO A COLLECTION SITE AND RETURNING SAME CONTAINERS TO THE PROPERTY OWNER.

AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL REPAIR OR REPLACE ANY MAILBOXES OR THEIR SUPPORTS DAMAGED BY THE CONTRACTOR OR THEIR SUBCONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS ACTIVITY.

ANY SEWER CLEANOUTS AND/OR CURB STOP BOXES LOCATED IN SIDEWALKS, DRIVEWAYS, OR ANY OTHER AREAS DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO MEET PROPOSED ELEVATIONS. PVC PIPE SHALL BE PLACED AROUND CLEANOUT AND STOPS PRIOR TO PLACING NEW CONCRETE OR HMA MATERIAL IF LOCATED WITHIN A DRIVEWAY OR SIDEWALK. ANY CURB STOP BOXES THAT NEED TO BE REPLACED SHALL BE COORDINATED WITH THE ENGINEER AND CITY TO ENSURE CITY APPROVED STOP BOXES ARE USED. PAYMENT FOR ADJUSTING, PVC SLEEVES, AND NEW STOP BOXES SHALL BE INCLUDED IN THE DRIVEWAY AND SIDEWALK PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

EXISTING WATER MAINS AND SEWERS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERLY IDENTIFED EXISTING WATER MAINS AND/OR EXISTING SEWERS DURING THE CONSTRUCTION OF THIS PROJECT.

PROPOSED SIGN LOCATIONS

PROPOSED SIGN LOCATIONS ARE SHOWN ON THE PLANS AS APPROXIMATE LOCATIONS ONLY. ACTUAL SIGN LOCATIONS WILL BE DETERMINED AND STAKED BY THE ENGINEER PRIOR TO PLACEMENT. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO SIGN INSTALLATION OPERATIONS TO ASSURE PROPOSED LOCATIONS HAVE BEEN STAKED.

STORM, WATER MAIN, AND SANITARY STRUCTURE COVERS

ALL OFFSETS FOR PROPOSED STRUCTURES ARE TO THE PROPOSED CENTER OF CASTING. GRADES FOR STRUCTURES LOCATED IN THE PROPOSED CURB LINE ARE PROPOSED FLOW LINE ELEVATIONS.

THE CONTRACTOR SHALL REVIEW MUNICIPALITY STANDARD, SUBMIT SHOP DRAWINGS FOR PROPOSED COVERS, AND THE CITY SHALL REVIEW AND APPROVE IN WRITING PRIOR TO THE CONTRACTOR ORDERING AND INSTALLING THE COVERS. COVER STYLE, MATERIAL, AND FINISH ARE AT THE CITY'S DISCRETION. ALL COORDINATION SHALL BE INCLUDED IN THE COVER PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

ALL COVERS SHALL BE EJIW:
TYPE B COVERS SHALL BE 1020 TYPE A, SEALED GASKET
TYPE G COVERS SHALL BE 1060 TYPE N
TYPE K COVERS SHALL BE 7000 TYPE M1

DETECTABLE WARNING SURFACES

THE CONTRACTOR SHALL REVIEW MUNICIPALITY STANDARD, SUBMIT SHOP DRAWINGS FOR PROPOSED PLATES, AND THE CITY SHALL REVIEW AND APPROVE IN WRITING PRIOR TO THE CONTRACTOR ORDERING AND INSTALLING THE PLATES. PLATE STYLE, MATERIAL, AND COLOR ARE AT THE CITY'S DISCRETION. ALL COORDINATION SHALL BE INCLUDED IN THE DETECTABLE WARNING SURFACE PAY ITEM AND WILL NOT BE PAID FOR SEPARATELY.

THE WORK ITEM ADA DETECTABLE WARNING SURFACE SHALL BE DONE IN ACCORDANCE WITH SECTIONS 204, 801 AND 803 OF THE MDOT 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND MDOT STANDARD PLAN R-28-F THIS WORK ITEM SHALL INCLUDE ALL WORK NECESSARY TO FURNISH AND INSTALL AN ADA APPROVED DETECTABLE WARNING SURFACE ONTO FRESH CONCRETE OF THE NEW SIDEWALK RAMP IN AREAS AS SHOWN ON THE CONSTRUCTION PLANS, OR AS DIRECTED BY THE DIRECTOR OF PUBLIC SERVICES. THE WARNING SURFACE SHALL BE 2' WIDE X 5' LONG PLASTIC MATERIAL WITH TRUNCATED CONES AND RED IN COLOR; ALL IN COMPLIANCE WITH CURRENT ADA GUIDELINES. THE WARNING SURFACE SHALL BE INSTALLED ONTO FRESH CONCRETE PER MANUFACTURER'S RECOMMENDATIONS. FAILURE TO PLACE THE PAD AND FINISH WORK IN A TIMELY MANNER WILL BE CAUSE FOR REJECTION OF THE SIDEWALK RAMP AND ANY OBJECTS OF THE SIDEWALK RAMP. RETROFITTING METHODS WILL NOT BE ALLOWED, UNLESS APPROVED BY SPECIAL PROVISION.

MISCELLANEOUS PROJECT QUANTITIES

TOTAL	UNIT	DESCRIPTION
1	LS	Mobilization, Max. _____
75	Ft	Repair Existing Sewer Service
500	Cyd	Embankment, CIP
10000	Cyd	Excavation, Earth
100	Cyd	Non Haz Contaminated Material Handling and Disposal, LM
100	Cyd	Subgrade Undercutting, Type II, Modified
1	LS	Project Cleanup
50	Ton	Hand Patching
5	Ton	Cement
20	Ea	Barricade, Type III, High Intensity, Double Sided, Lighted,Furn
20	Ea	Barricade, Type III, High Intensity, Double Sided, Lighted,Oper
5	Ton	Dust Palliative, Applied
2	Ea	Lighted Arrow, Type C, Furn
2	Ea	Lighted Arrow, Type C, Oper
1	LS	Minor Traf Devices
75	Ea	Plastic Drum, High Intensity, Furn
75	Ea	Plastic Drum, High Intensity, Oper
320	Sft	Sign, Type B, Temp, Prismatic, Furn
320	Sft	Sign, Type B, Temp, Prismatic, Oper
1	LS	Traffic Regulator Control
10400	Syd	Turf Establishment, Performance
1	LS	Testing and Chlorination of Water Main

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REVISIONS:

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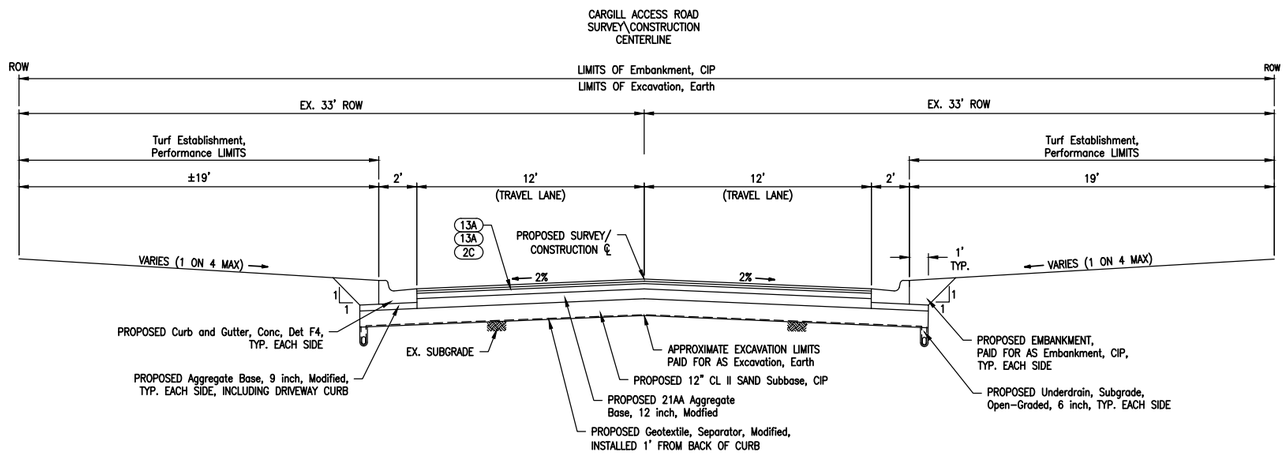
CITY OF OWOSSO
CARGILL ACCESS ROAD

NOTE SHEET

SHEET 6 OF 27

Know what's **below.** **Call** before you dig.



PROPOSED TYPICAL CROSS SECTION

APPLIES TO:
CARGILL ACCESS ROAD
P.O.B. STA 0+00.00 TO P.O.E. STA 14+98.94

HMA APPLICATION ESTIMATE				
IDENT NO.	ITEM	RATE (LBS/SYD)	PERFORMANCE GRADE	REMARKS
13A	HMA, 13A	165	58-28	TOP COURSE (ANI=220), PLACED IN ONE LIFT
13A	HMA, 13A	165	58-28	LEVELING COURSE, PLACED IN ONE LIFT
2C	HMA, 2C	330	64-28	BASE COURSE, PLACED IN ONE LIFT
HD	HMA, Driveway	660	VARIES	SEE DETAIL
HR	HMA, Repair	550	58-28	SEE DETAIL
HP	Hand Patching	VARIES	58-28	HMA, 13A
	* BOND COAT	0.05-0.15 GAL		

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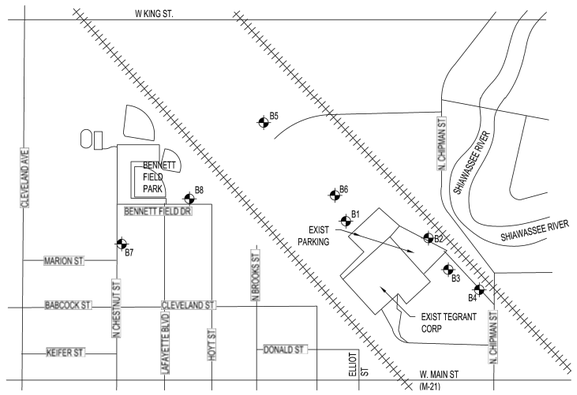
REVISIONS:

DATE
PROJ NUMBER 0020-16-0020
ENG ERS
PROJ MGR AVW
CADD ABP
COUNTY SHIAWASSEE
CITY/VILLAGE/TOWNSHIP CITY OF OWOSSO
SCALE H 1"=40' V 1"=4'
HORZ DATUM NAD 83
VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
PROPOSED TYPICAL

SHEET 7 OF 27

DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Typicals\160020TYP.dwg Jun 30, 2016 - 1:42pm



NORTH NOT TO SCALE

SOIL BORING LOCATION DIAGRAM

PROJECT NUMBER: 16-713-105	DATE: 05/24/2016	PROJECT TITLE: CARGILL PROJECT CITY OF OWOSSO, MICHIGAN	SNYDER & STALEY ENGINEERING, P.L.C. CONSULTING ENGINEERS 3085 BAY ROAD, SUITE 6 SAGINAW, MI 48603 PH: (989) 797-1710 FX: (989) 797-1715
SHEET NUMBER: SK1 SHT 1 OF 1	DRAWN BY: CAM		
	CHK'D BY: MDS	SHEET TITLE: SOIL BORING LOCATION DIAGRAM	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B1

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 6" of silty CLAY; trace root structures, sand, fine gravel, concrete – brown (CL)											
Silty CLAY; trace sand and gravel – mottled; gray and brown – very stiff to hard (CL)			S1	SS	13	3				15	
	5		S2	SS	30	4 1/2+				14	
			S3	SS	34	4 1/2+				13	
	10		S4	SS	32	4 1/2+				11	
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
NONE While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	1 of 8
NONE Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B2

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 6" of sand FILL; trace asphalt fragments (SP-FILL)											
Fine sand FILL; trace silt, sand, gravel, clay – brown – damp – loose (SP-FILL)			S1	SS	8						
Clayey sand FILL; trace gravel , silt – brown – stiff (SC-FILL)											
Fine sand FILL; trace slag, root structures, silt, clay, gravel – brown – damp – medium dense (SP-FILL)	5		S2	SS	20						
Sandy CLAY; trace silt, gravel – brown – stiff to very stiff (SC)			S3	SS	8	1				17	
	10		S4	SS	9	3				14	
Fine SAND; trace silt, gravel – brown – medium dense (SP)											
Clayey SILT; trace sand, gravel – gray – hard (ML)	15		S5	SS	30	4 1/2+				13	
Boring Terminated at 15 feet											

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
9' While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	2 of 8
DC 6'-6" Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B3

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 3" of clayey sand TOPSOIL; trace root structures, fine gravel – dark brown (SC-TOPSOIL)											
Clayey sand FILL; trace silt, fine gravel – brown (CL-FILL)			S1	SS	14	4 1/2+				12	
Silty clay FILL; trace sand, gravel, brick – mottled; gray and brown – very stiff (CL-FILL)											
	5		S2	SS	10	1				16	
Clayey SAND; trace silt, gravel – dark brown – loose (SC)			S3	SS	6						
	10		S4	SS	4						
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
9 1/2' While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	3 of 8
DC 7'-10" Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B4

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 7" of CONCRETE; overlaying 13" aggregate base course – brown (GP-BASECOURSE)											
Silty CLAY; trace sand, gravel – mottled; gray and brown – hard (CL)			S1	SS	18	4 1/2+				10	
	5		S2	SS	25	4 1/2+				12	
Clayey SAND; trace silt, fine gravel – brown – dense (SC)											
Weathered SHALE; trace silt, gravel, granite – brownish red			S3	SS	60						
	10		S4	SS	93						
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
NONE While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	4 of 8
NONE Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B5

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 1'-6" of clayey sand TOPSOIL; trace root structures, sand, fine gravel, slag, shale – dark brown (SC-TOPSOIL)			S1	SS	15	4 1/2+				10	
Silty CLAY; trace sand and gravel – mottled; gray and brown – hard (CL)	5		S2	SS	22	4 1/2+				12	
			S3	SS	30	4 1/2+				10	
	10		S4	SS	50	4 1/2+				12	
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
NONE While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	5 of 8
NONE Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B6

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 9" of clayey sand TOPSOIL; trace root structures, fine gravel – dark brown (SC-TOPSOIL)											
Clayey SAND; trace silt, gravel – brown – medium dense (SC)			S1	SS	20						
Silty CLAY; trace sand and gravel – mottled; gray and brown – stiff to hard (CL)	5		S2	SS	11	1				17	
			S3	SS	28	2 1/2				15	
	10		S4	SS	28	4 1/2+				12	
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
NONE While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	6 of 8
NONE Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B7

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 6" of clayey sand TOPSOIL; trace root structures, fine gravel – dark brown (SC-TOPSOIL)											
Silty CLAY; trace sand, gravel – mottled; gray and brown – very stiff to hard (CL)			S1	SS	8	2				17	
	5		S2	SS	21	3				16	
			S3	SS	45	3				17	
	10		S4	SS	40	4 1/2+				12	
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
NONE While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	7 of 8
NONE Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B8

Project: Cargill Project — Project No: 16-713-105

Location: City of Owosso, Michigan — Client: OHM Advisors

Description of Material	D (ft)	Sample Length	Sample I.D.	Sample Type	N Blows Per Ft.	Standard Penetration	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight ɣ (pcf)
Driller reported 10" of fine sand FILL; trace root structures, silt, fine gravel – brown (SP-FILL)			S1	SS	8	2				18	
Clayey sand FILL; trace silt, gravel – brown – very stiff (SC-FILL)											
Silty CLAY; trace sand and gravel – mottled; gray and brown – very stiff to hard (CL-FILL)	5		S2	SS	21	3				16	
			S3	SS	45	3				15	
	10		S4	SS	40	4 1/2+				12	
Boring Terminated at 10 feet											
	15										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS	BORING	SHEET
4 1/2' While Sampling or Drilling	Rig: AFT Drilling Foreman: B. BELLOWS	8 of 8
DC 7'-6" Immediately After Completion	Started: 05/23/2016 Drawn By: C. MARKHART	
. @ . After Completion	Completed: 05/23/2016 Approved: M. STALEY	

OHM
ARCHITECTS ENGINEERS PLANNERS
929 Bridgeview South
Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427
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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	H:	V:
	0003-16-0020	ERS	AJW	ARP	SHIAWASSEE	CITY OF OWOSSO			

HORIZ DATUM: NAD 83 — VERT DATUM: NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
SOIL BORINGS

SHEET 8 OF 27

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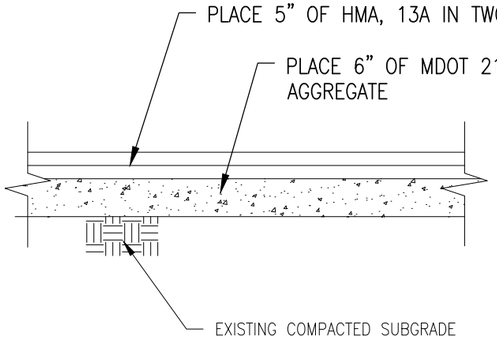
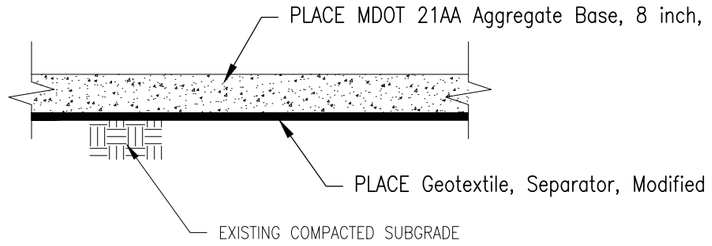
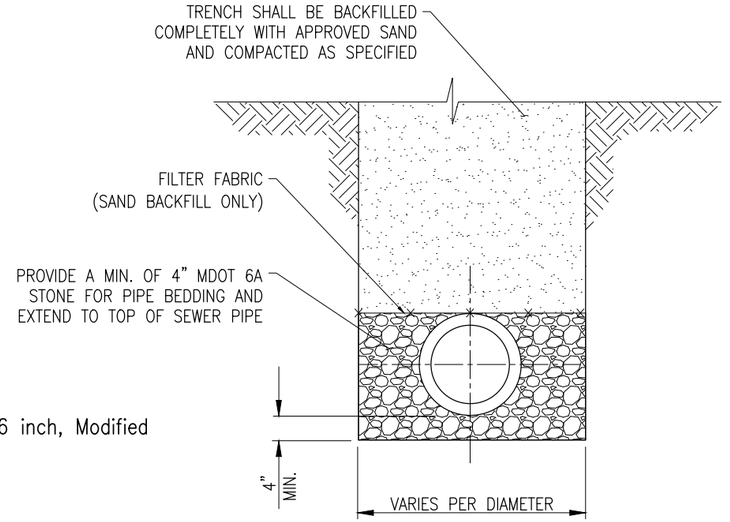


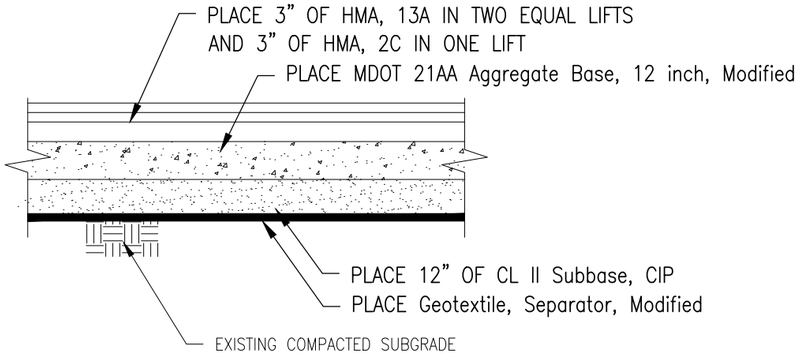
HMA, REPAIR DETAIL
WATER MAIN CROSSINGS



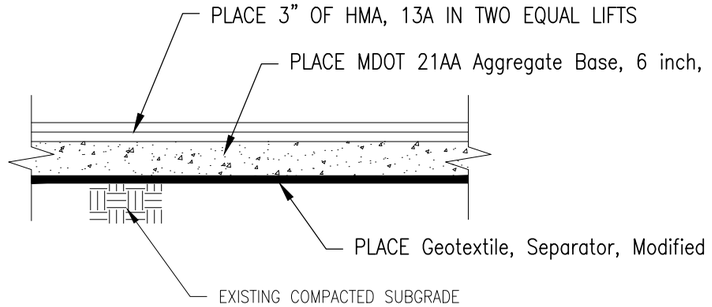
NORTH PARKING CROSS SECTION



STORM SEWER SPECIAL TRENCH DETAIL
NO SCALE



HMA, DRIVEWAY AND SOUTH PARKING CROSS SECTION
DRIVE AISLE
(SEE SHEET 17)



SOUTH PARKING CROSS SECTION
PARKING AREAS
(SEE SHEET 17)

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	H:	V:	HORIZ DATUM	VERT DATUM
	0003-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO				NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
GENERAL DETAIL SHEET

SHEET 9 OF 27

DRAWING PATH: P:\0000_0100\0002\160020_Owosso_Cargill_Project\Drawings\Civil\Details\160020DET.dwg Jun 30, 2016 - 1:43pm

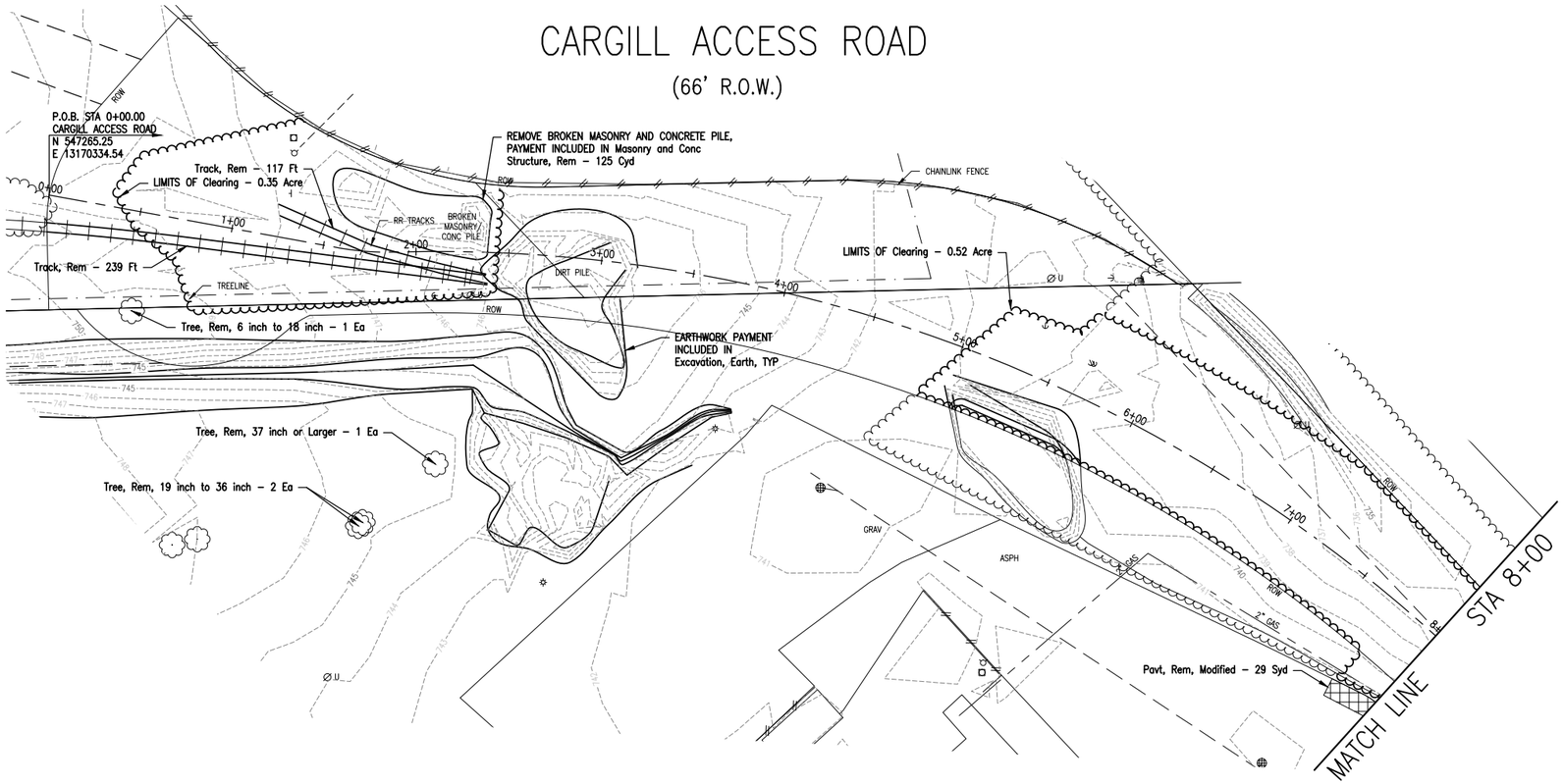
JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 13170042.49

CARGILL ACCESS ROAD

(66' R.O.W.)



QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
0.87	Acre	Clearing
2	Ea	Tree, Rem, 19 inch to 36 inch
1	Ea	Tree, Rem, 37 inch or Larger
1	Ea	Tree, Rem, 6 inch to 18 inch
125	Cyd	Masonry and Conc Structure, Rem
356	Ft	Track, Rem
29	Syd	Pavt, Rem, Modified

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORIZ DATUM	VERT DATUM
	0003-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40'	V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

REMOVAL SHEET

SHEET 10 OF 27

DRAWING PATH: P:\0000_0100\0020160320_Owosso_Cargill_Project\Drawings\Civil\Removal\160020REM.dwg Jun 30, 2016 - 1:44pm

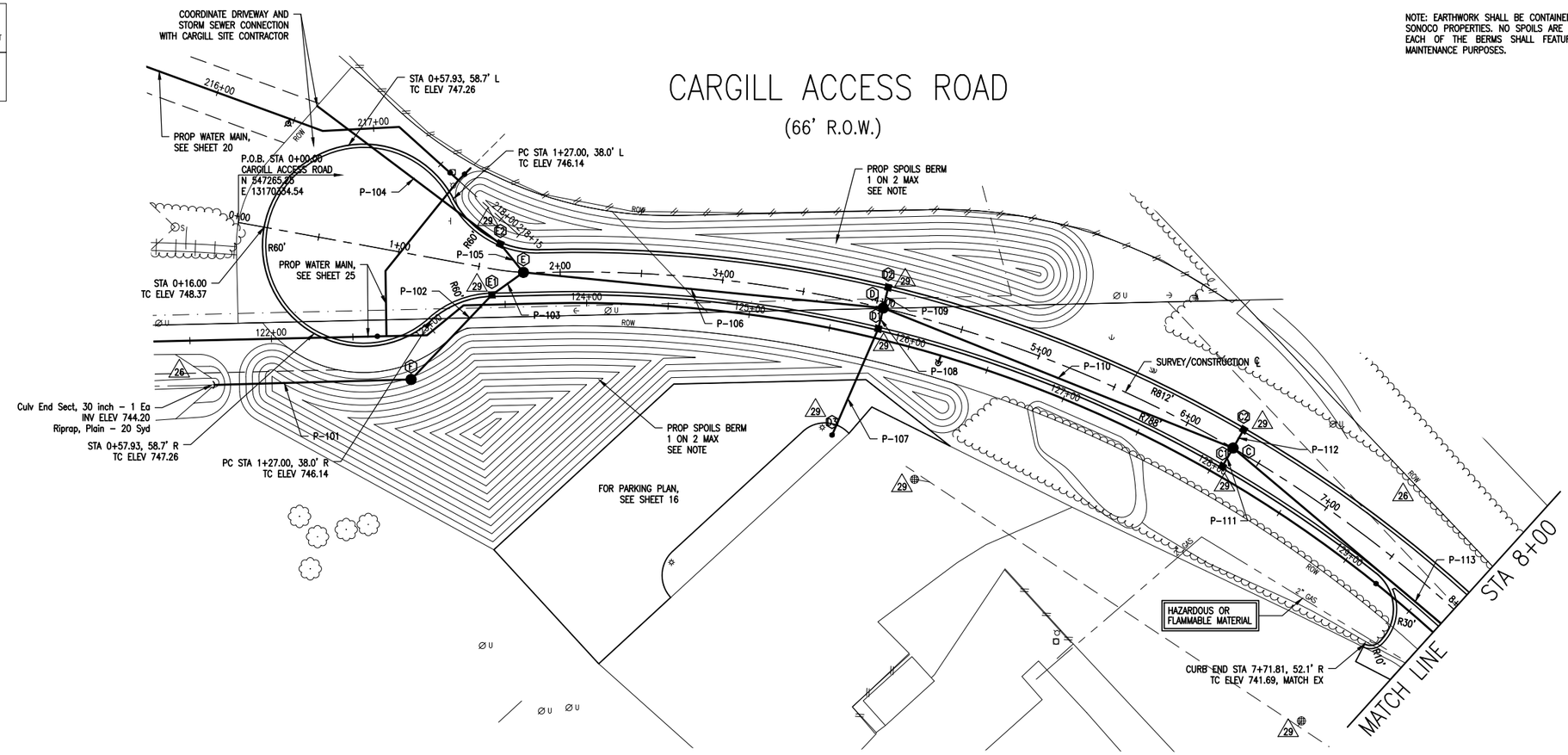
JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 13170042.49

CARGILL ACCESS ROAD

(66' R.O.W.)



NOTE: EARTHWORK SHALL BE CONTAINED WITHIN EACH OF THE RESPECTIVE EXISTING CARGILL AND SONOCO PROPERTIES. NO SPOILS ARE TO BE TRANSFERRED BETWEEN EACH OF THE PROPERTIES. EACH OF THE BERMS SHALL FEATURE BUFFALO GRASS SEED. THE SEED CHOICE IS FOR MAINTENANCE PURPOSES.

PROPOSED SEWER STRUCTURE SCHEDULE								
STRUCTURE NUMBER	DIAMETER (In)	STRUCTURE TYPE	COVER TYPE	RIM ELEVATION	PIPE INVERT AND DIRECTION	SUMP (Ft)	STATION	OFFSET
C	60	MH	B	737.82	P-110: 30" 731.33 W P-113: 30" 731.32 SE P-111: 12" 732.34 SW P-112: 12" 732.34 NE	0	6+31.93	0.0'
C1	48	CB	K	737.47	P-111: 12" 732.47 NE	2	6+31.93	13.0' R
C2	48	CB	K	737.47	P-112: 12" 732.47 SW	2	6+31.93	13.0' L
D	60	MH	B	740.96	P-106: 30" 734.46 W P-110: 30" 732.48 E P-108: 12" 735.06 S P-109: 12" 735.48 N	0	4+00.00	0.0'
D1	48	CB	K	740.61	P-107: 12" 735.29 SW P-108: 12" 735.19 N	2	4+00.00	13.0' R
D2	48	CB	K	740.61	P-109: 12" 735.61 S	2	4+00.00	13.0' L
D3	24	CB	G	740.50	P-107: 12" 735.50 NE	2	3+86.22	83.0' R
E	60	MH	B	745.14	P-103: 30" 738.38 SW P-106: 30" 735.57 E P-105: 15" 739.58 NW	0	1+77.50	0.0'
E1	60	CB	K	745.05	P-102: 30" 738.55 SW P-103: 30" 738.45 NE	2	1+60.66	15.8' R
E2	48	CB	K	745.05	P-104: 12" 740.00 NW P-105: 15" 739.80 SE	2	1+60.66	15.9' L
F	60	MH	B	751.00	P-101: 30" 743.84 W P-102: 30" 738.77 NE	0	1+21.48	75.7' R

PROPOSED SEWER PIPE SCHEDULE					
PIPE NUMBER	DIAMETER (In)	Length (Ft)	UPPER INVERT	LOWER INVERT	SLOPE
P-101	30	121	744.20	743.84	0.30%
P-102	30	72	738.77	738.55	0.30%
P-103	30	24	738.45	738.38	0.30%
P-104	12	141	741.41	740.00	1.00%
P-105	15	22	739.80	739.58	1.00%
P-106	30	222	735.57	734.46	0.50%
P-107	12	71	735.50	735.29	0.30%
P-108	12	13	735.19	735.06	1.00%
P-109	12	13	735.61	735.48	1.00%
P-110	30	231	732.48	731.33	0.50%
P-111	12	13	732.47	732.34	1.00%
P-112	12	13	732.47	732.34	1.00%
P-113	30	292	731.32	729.57	0.60%

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
9	Ea	Erosion Control, Inlet Protection, Fabric Drop
200	Ft	Erosion Control, Silt Fence
1215	Cyd	Subbase, CIP
3076	Syd	Aggregate Base, 12 inch, Modified
576	Syd	Aggregate Base, 9 inch, Modified
3645	Syd	Geotextile, Separator, Modified
1	Ea	Culv End Sect, 30 inch
264	Ft	Sewer, Storm, 12 inch, SDR-26, Special Trench Detail
22	Ft	Sewer, Storm, 15 inch, SDR-26, Special Trench Detail
837	Ft	Sewer, Storm, 30 inch, SDR-26, Special Trench Detail
4	Ea	Dr Structure Cover, Type B
1	Ea	Dr Structure Cover, Type G
6	Ea	Dr Structure Cover, Type K
1	Ea	Drainage Structure, 24 inch, Catch basin
5	Ea	Drainage Structure, 48 inch, Catch basin
1	Ea	Drainage Structure, 60 inch, Catch basin
4	Ea	Drainage Structure, 60 inch, Manhole
1726	Ft	Underdrain, Subgrade, Open-Graded, 6 inch
559	Ton	HMA, 2C
559	Ton	HMA, 13A
122	Syd	HMA, Driveway
1676	Ft	Curb and Gutter, Conc, Det F4
50	Ft	Driveway Opening, Conc, Det M
20	Syd	Riprap, Plain

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REVISIONS:

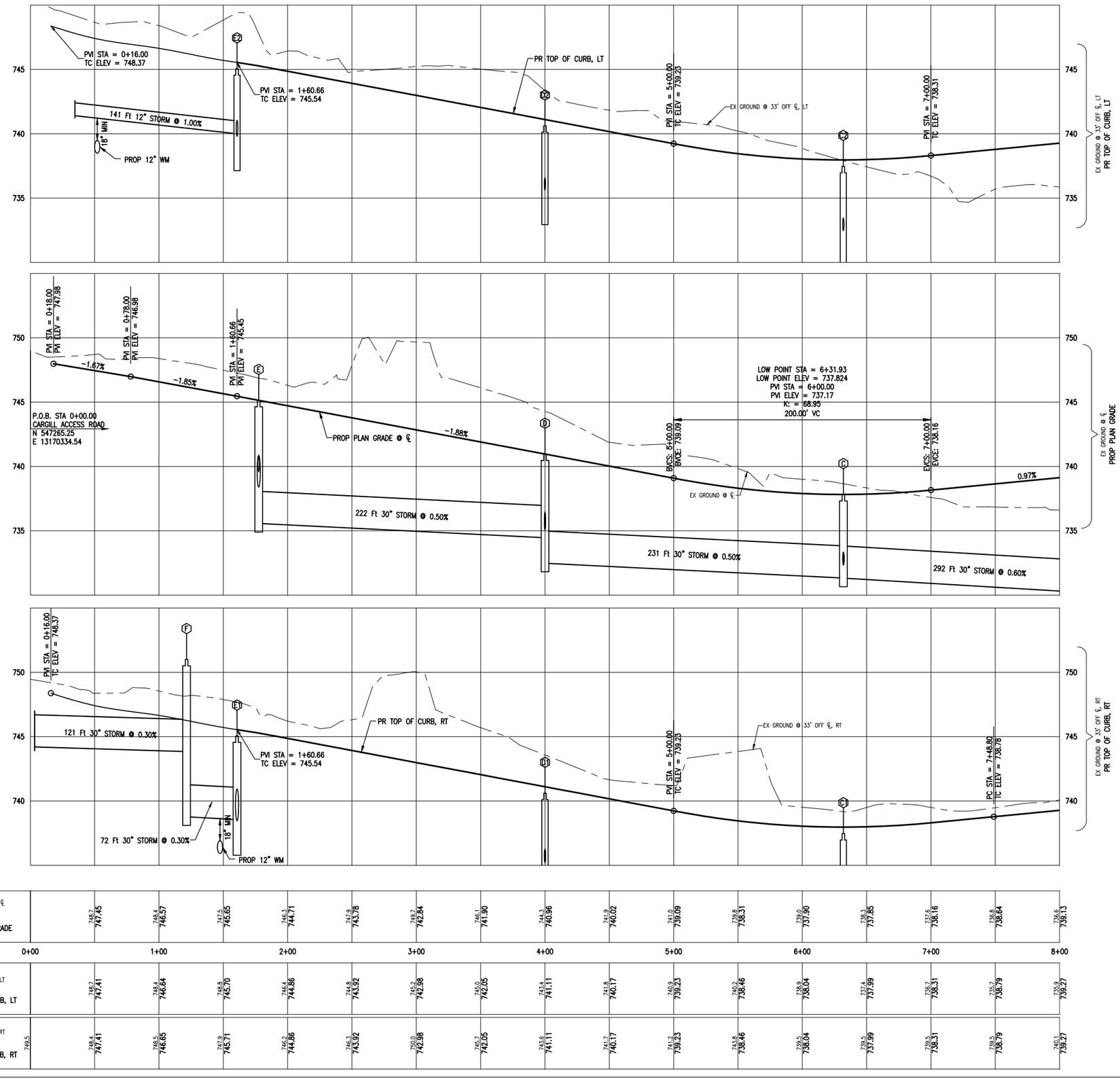
DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	SCALE		HORZ DATUM	VERT DATUM
	0030-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40' V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

CONSTRUCTION SHEET

SHEET 11 OF 27

DRAWING PATH: P:\0000_0100\0020160320_Owosso_Cargill_Project\Drawings\CivilPlans_Const\160020CON.dwg Jun 30, 2016 - 1:45pm



	0+00	1+00	2+00	3+00	4+00	5+00	6+00	7+00	8+00
EX GROUND @ ℄	748.7	748.4	747.5	746.3	747.9	749.7	746.1	741.3	741.9	741.0	739.8	739.0	738.3	737.6	736.8	736.8
PROP PLAN GRADE	747.45	746.57	745.65	744.71	743.78	742.84	741.90	740.96	740.02	739.09	738.31	737.90	737.85	738.16	738.64	739.13
EX GROUND @ 33' OFF ℄, LT	748.7	748.4	748.8	746.4	744.8	745.2	745.0	743.1	741.8	740.9	740.2	738.9	737.4	736.7	735.7	735.8
PR TOP OF CURB, LT	747.41	746.64	745.70	744.86	743.92	742.98	742.05	741.11	740.17	739.23	738.46	738.04	737.99	738.31	738.79	739.27
EX GROUND @ 33' OFF ℄, RT 749.5	748.4	748.5	747.9	746.0	746.3	750.0	745.7	743.6	741.7	741.2	743.8	739.5	739.5	739.5	739.5	740.1
PR TOP OF CURB, RT	747.41	746.65	745.71	744.86	743.92	742.98	742.05	741.11	740.17	739.23	738.46	738.04	737.99	738.31	738.79	739.27

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REVISIONS:

DESCRIPTION	DATE

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORIZ DATUM	VERT DATUM
XX/xx/XX	0003-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40'	V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
PROFILE SHEET

SHEET 12 OF 27

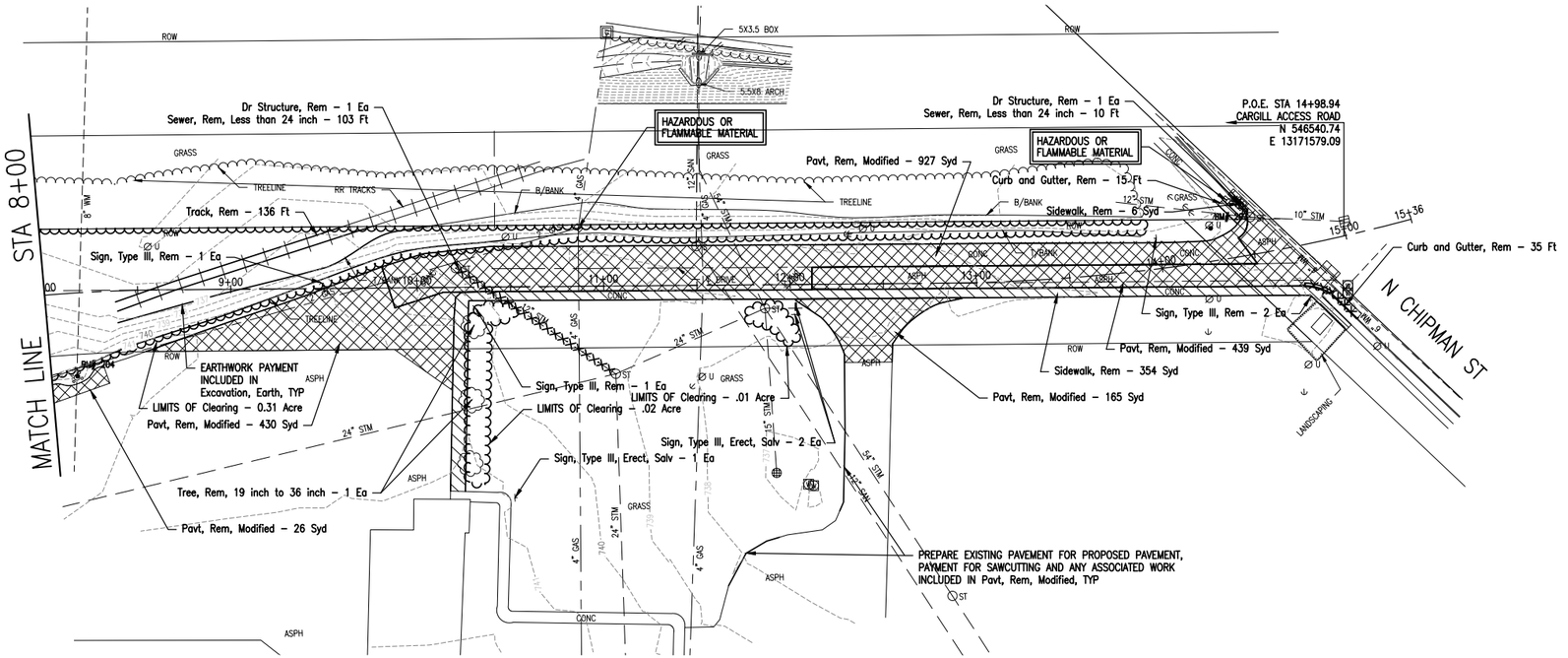
JOB BENCHMARK # 203
SET BARN SPIKE IN S FACE OF PP IN NW QUAD OF CHIPMAN AND DRIVEWAY TO SONOCO
ELEV 738.149

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 1317042.49

CARGILL ACCESS ROAD

(66' R.O.W.)



QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
0.34	Acre	Clearing
2	Ea	Tree, Rem, 19 inch to 36 inch
2	Ea	Dr Structure, Rem
113	Ft	Sewer, Rem, Less than 24 inch
50	Ft	Curb and Gutter, Rem
360	Syd	Sidewalk, Rem
136	Ft	Track, Rem
2034	Syd	Pavt, Rem, Modified
3	Ea	Sign, Type III, Erect, Salv
4	Ea	Sign, Type III, Rem

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM
	0003-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H. 1"=40' V. 1"=4'	NAD 83

VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

REMOVAL SHEET

SHEET 13 OF 27

DRAWING PATH: P:\0000_0100\0002016\0020_Owosso_Cargill_Project\Drawings\Civil\Removal\160020REM.dwg Jun 30, 2016 - 1:46pm

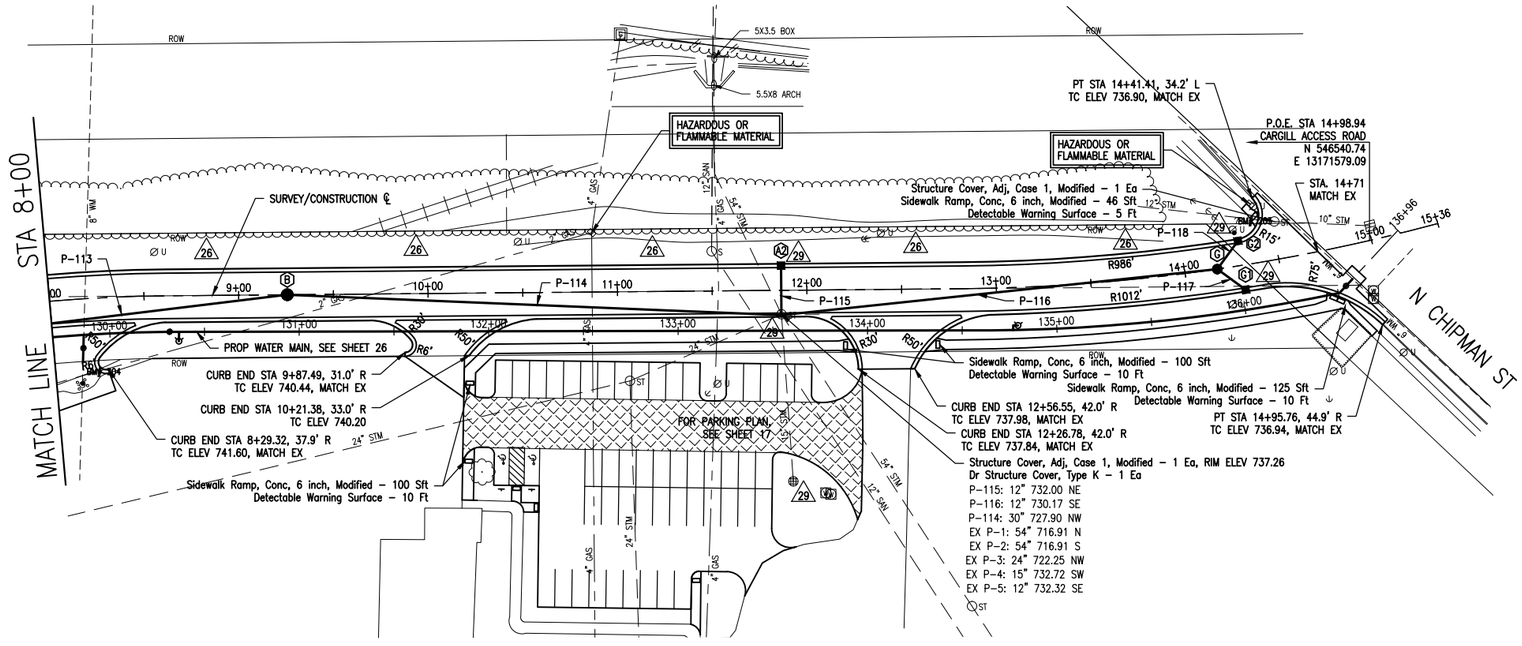
JOB BENCHMARK # 203
SET BARN SPIKE IN S FACE OF PP IN NW QUAD OF CHIPMAN AND DRIVEWAY TO SONOCO
ELEV 738.149

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 13170042.49

CARGILL ACCESS ROAD

(66' R.O.W.)



PROPOSED SEWER STRUCTURE SCHEDULE								
STRUCTURE NUMBER	DIAMETER (In)	STRUCTURE TYPE	COVER TYPE	RIM ELEVATION	PIPE INVERT AND DIRECTION	SUMP (Ft)	STATION	OFFSET
A2	48	CB	K	737.26	P–115: 12" 732.26 SW	2	11+86.43	13.0' L
B	60	MH	B	739.90	P–113: 30" 729.57 NW P–114: 30" 729.47 SE	0	9+25.63	0.0'
G	48	MH	B	736.55	P–117: 12" 730.96 S P–116: 12" 730.86 NW P–118: 12" 730.97 E	0	14+17.09	0.0'
G1	48	CB	K	736.15	P–117: 12" 731.15 N	2	14+30.21	13.0' R
G2	48	CB	K	736.15	P–118: 12" 731.15 W	2	14+30.21	13.0' L

PROPOSED SEWER PIPE SCHEDULE					
PIPE NUMBER	DIAMETER (In)	Length (Ft)	UPPER INVERT	LOWER INVERT	SLOPE
P–113	30	292	731.32	729.57	0.60%
P–114	30	261	729.47	727.90	0.60%
P–115	12	26	732.26	732.00	1.00%
P–116	12	231	730.86	730.17	0.30%
P–117	12	19	731.15	730.96	1.00%
P–118	12	18	731.15	730.97	1.00%

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
5	Ea	Erosion Control, Inlet Protection, Fabric Drop
625	Ft	Erosion Control, Silt Fence
773	Cyd	Subbase, CIP
1859	Syd	Aggregate Base, 12 inch, Modified
530	Syd	Aggregate Base, 9 inch, Modified
2310	Syd	Geotextile, Separator, Modified
294	Ft	Sewer, Storm, 12 inch, SDR–26, Special Trench Detail
386	Ft	Sewer, Storm, 30 inch, SDR–26, Special Trench Detail
2	Ea	Dr Structure Cover, Type B
4	Ea	Dr Structure Cover, Type K
2	Ea	Dr Structure, Tap, 12 inch
1	Ea	Dr Structure, Tap, 30 inch
3	Ft	Drainage Structure, 60 inch, Additional Depth
3	Ea	Drainage Structure, 48 inch, Catch basin
1	Ea	Drainage Structure, 48 inch, Manhole
1	Ea	Drainage Structure, 60 inch, Manhole
2	Ea	Structure Cover, Adj, Case 1, Modified
1590	Ft	Underdrain, Subgrade, Open–Graded, 6 inch
338	Ton	HMA, 2C
338	Ton	HMA, 13A
379	Syd	HMA, Driveway
1344	Ft	Curb and Gutter, Conc, Det F4
246	Ft	Driveway Opening, Conc, Det M
35	Ft	Detectable Warning Surface
371	Sft	Sidewalk Ramp, Conc, 6 inch, Modified
2126	Sft	Sidewalk, Conc, 4 inch, Modified

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REVISIONS:

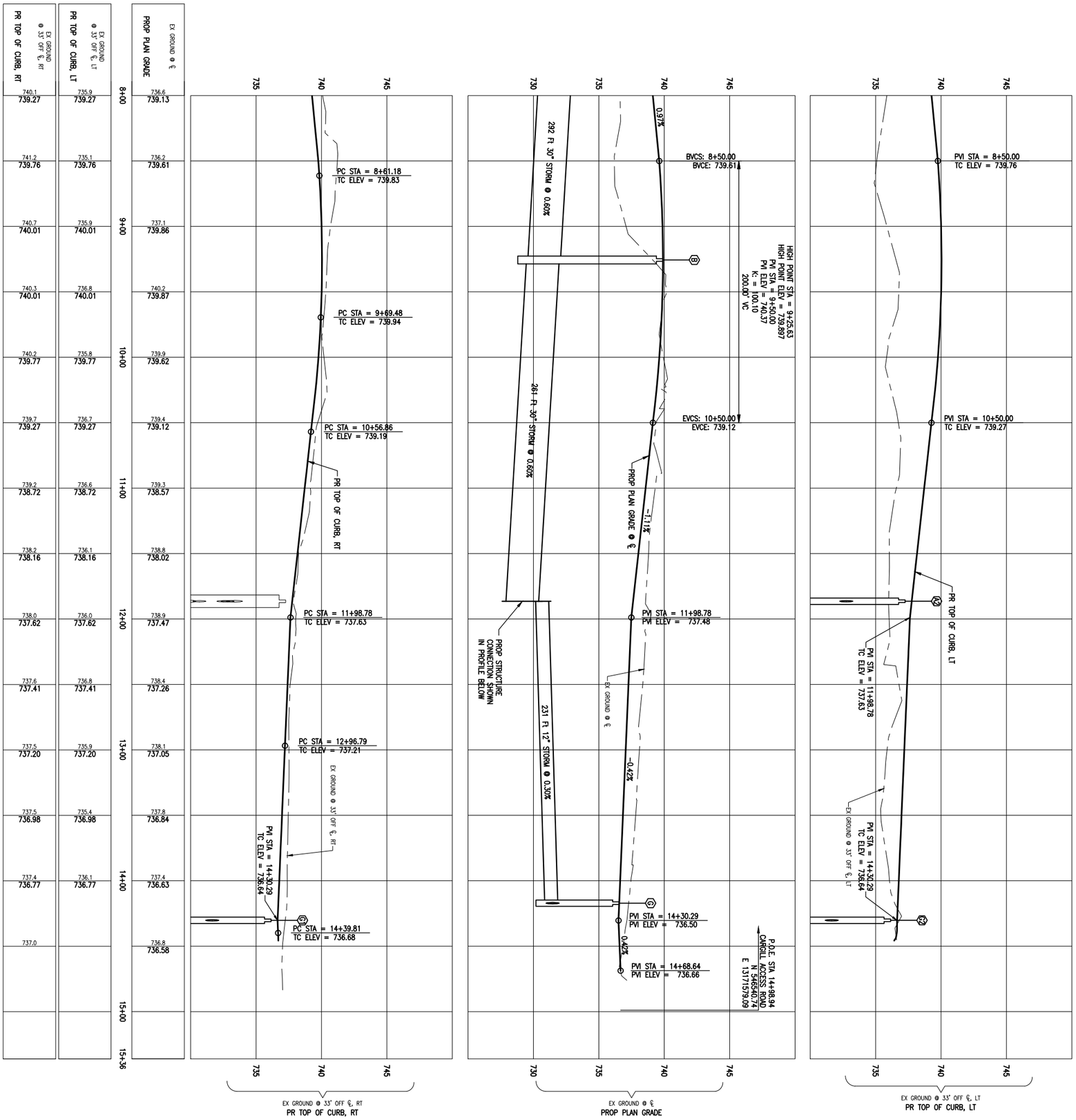
DATE
PROJ NUMBER 0005-15-0020
ENG ERS
PROJ MGR AVW
CADD ARP
COUNTY SHIAWASSEE
CITY/VILLAGE/TOWNSHIP CITY OF OWOSSO
SCALE H. 1"=40' V. 1"=4'
HORIZ DATUM NAD 83
VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

CONSTRUCTION SHEET

SHEET 14 OF 27

DRAWING PATH: P:\0000_0100\0020160\020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\1600220CON.dwg Jun 30, 2016 - 1:48pm



SHEET	DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORIZ DATUM	VERT DATUM
15 OF 27	XX/xx/XX	0020-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40'	V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

PROFILE SHEET

REVISIONS:	
DESCRIPTION	DATE

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JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

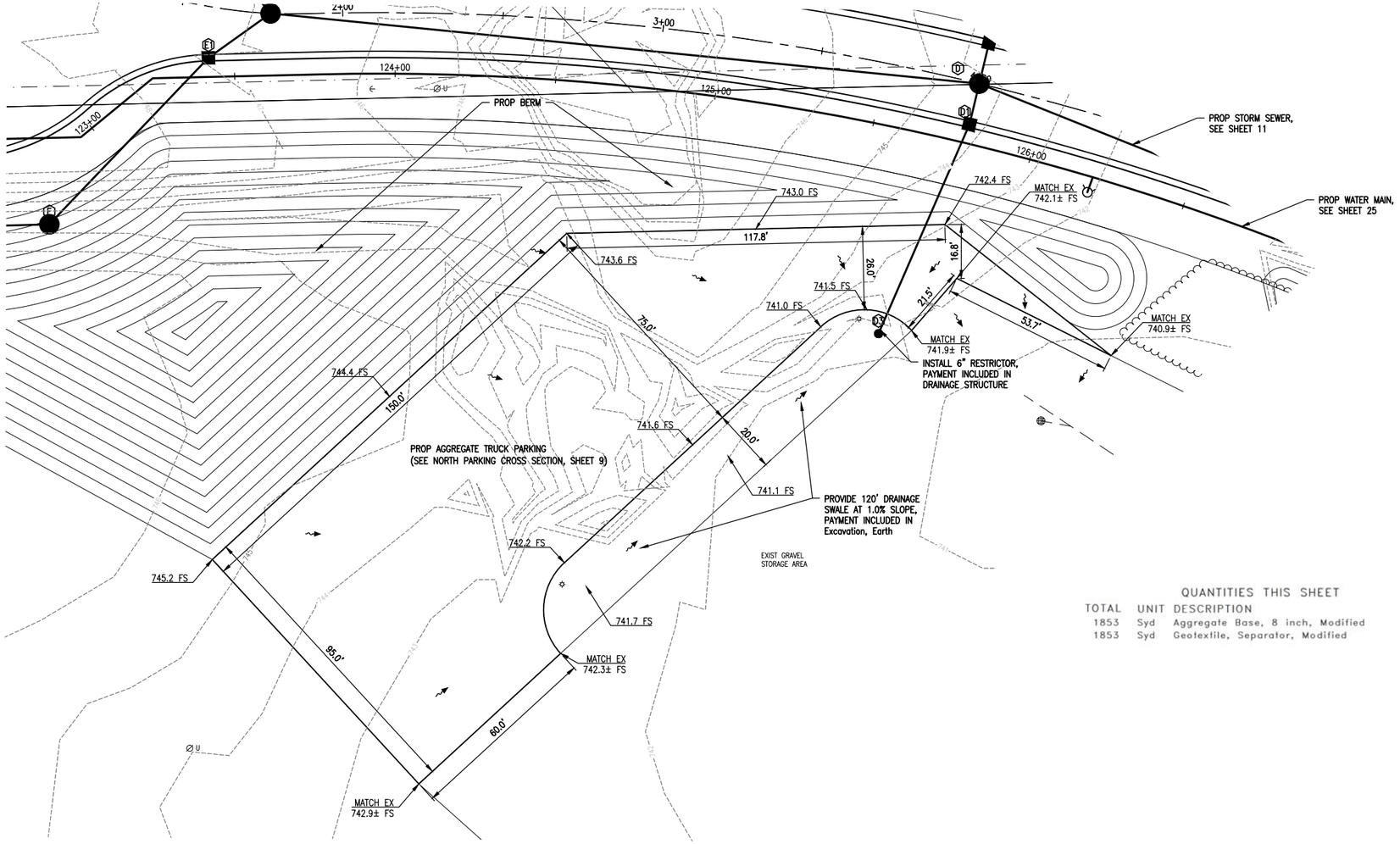
JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 13170042.49

NORTH PARKING

GRADING DELINIATIONS

FS FINISHED SURFACE
DRAINAGE FLOW ARROW



QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
1853	Syd	Aggregate Base, 8 inch, Modified
1853	Syd	Geotextile, Separator, Modified

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORZ DATUM	VERT DATUM
	0000-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H	1"=40'	NAD 83	NGVD 29
							V	1"=4'		

CITY OF OWOSSO
CARGILL ACCESS ROAD
PARKING PLAN SHEET

SHEET 16 OF 27

Know what's **below.** **Call** before you dig.

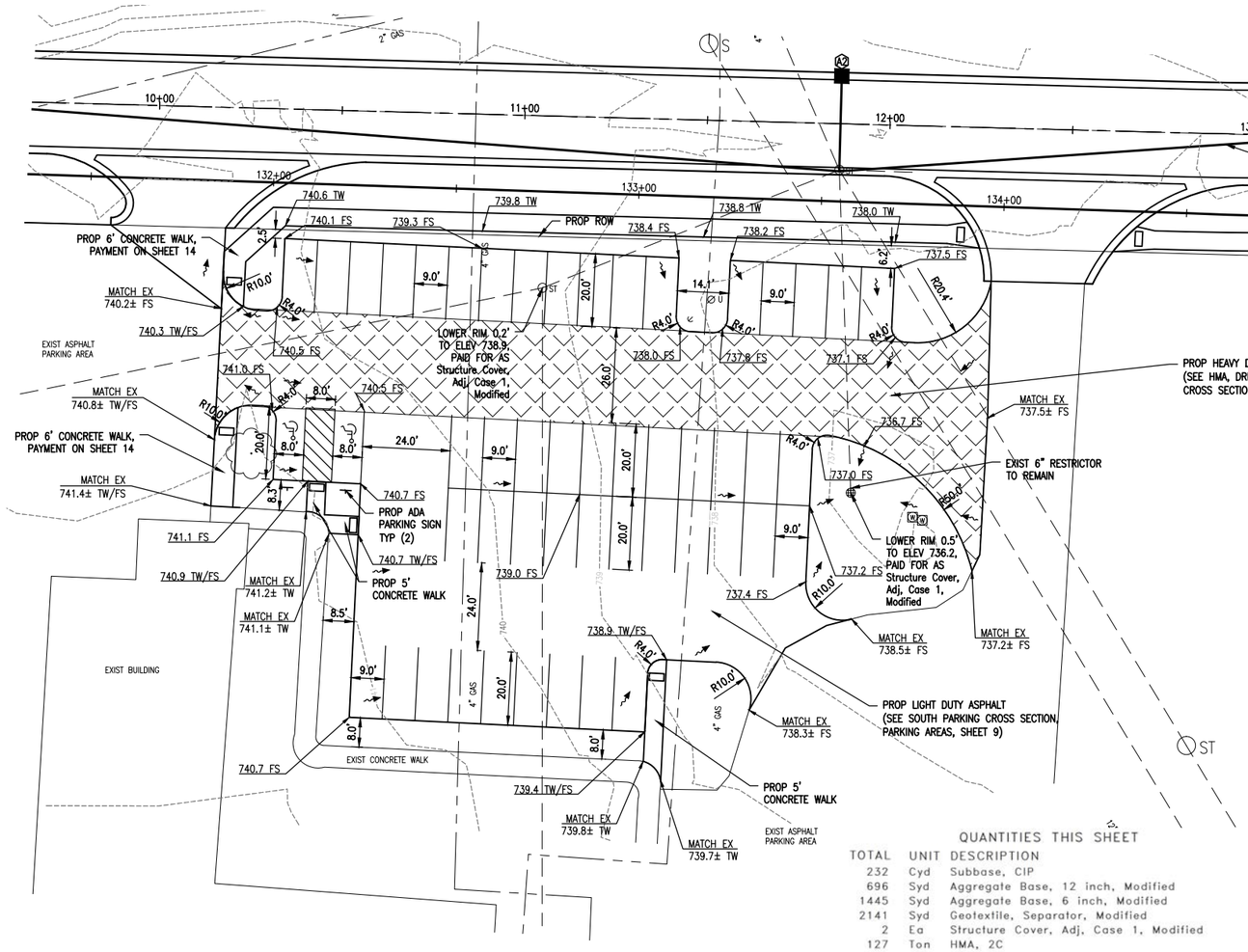
DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020CON.dwg Jun 30, 2016 - 1:50pm

JOB BENCHMARK # 203
SET BARN SPIKE IN S FACE OF PP IN NW QUAD OF CHIPMAN AND DRIVEWAY TO SONOCO
ELEV 738.149

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 13170042.49

SOUTH PARKING



GRADING DELINIATIONS

FS	FINISHED SURFACE
TW	TOP OF WALK
~→	DRAINAGE FLOW ARROW

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
232	Cyd	Subbase, CIP
696	Syd	Aggregate Base, 12 inch, Modified
1445	Syd	Aggregate Base, 6 inch, Modified
2141	Syd	Geotextile, Separator, Modified
2	Ea	Structure Cover, Adj, Case 1, Modified
127	Ton	HMA, 2C
389	Ton	HMA, 13A
15	Ft	Detectable Warning Surface
250	Sft	Sidewalk Ramp, Conc, 6 inch, Modified

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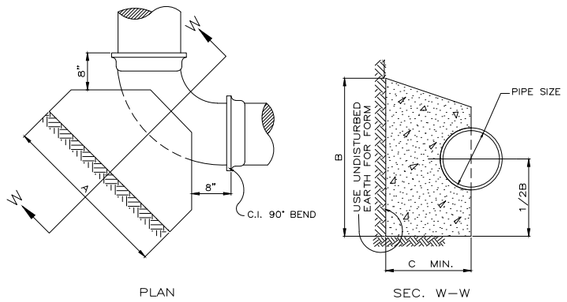
REVISIONS:

DATE | PROJ NUMBER | ENG | PROJ MGR | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | H | SCALE | V | HORIZ DATUM | VERT DATUM
0000-16-0020 | ERS | AVW | ARP | SHIAWASSEE | CITY OF OWOSSO | | 1"=40' | | 1"=4' | NAD 83 | NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
PARKING PLAN SHEET

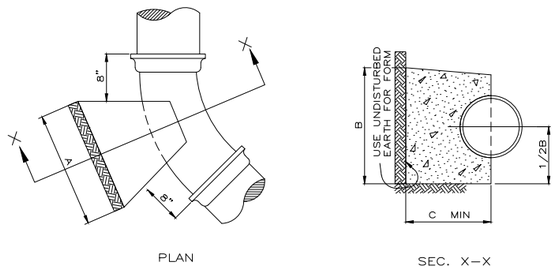
SHEET 17 OF 27

DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020CON.dwg Jun 30, 2016 - 1:50pm



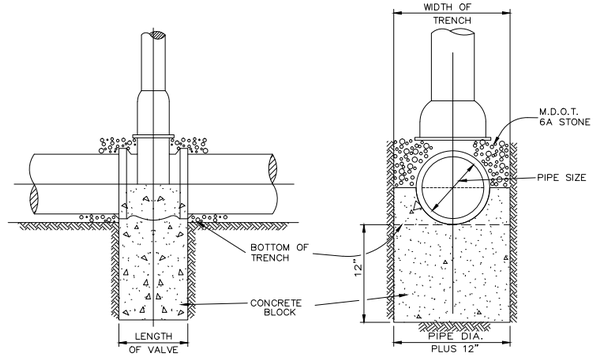
DETAIL OF BLOCK FOR 90 BEND OR TEE

Q – MIN. CU. YD. CONCRETE PER BLOCK



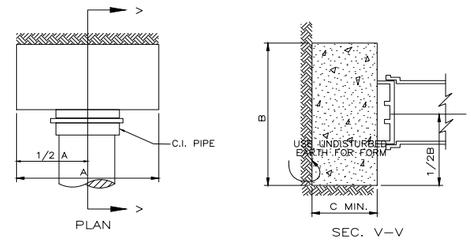
DETAIL OF BLOCK FOR 45 BENDS

Q – MIN. CU. YD. CONCRETE PER BLOCK



DETAIL OF BLOCK FOR VALVES

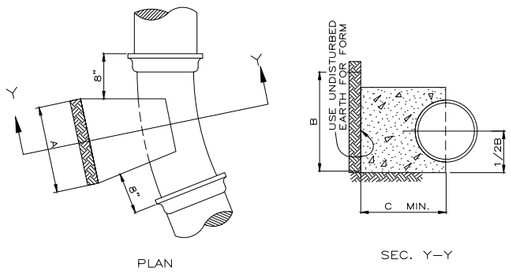
CYD. CONCRETE PER BLOCKING VARIES



DETAIL OF BLOCK FOR PLUGS

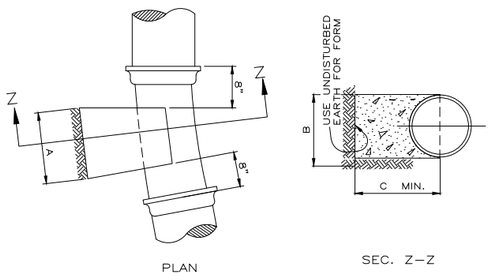
Q – MIN. CU. YD. CONCRETE PER BLOCK

SIZE OF MAIN	90° BENDS OR TEE					45° BENDS					22 1/2° BENDS					11 1/4° BENDS					PLUGS				
	A	B	C		Q	A	B	C		Q	A	B	C		Q	A	B	C		Q	A	B	C		Q
6",8",10"	3'–0"	2'–0"	1'–3"		0.3	2'–0"	1'–6"	1'–3"		0.1	1'–6"	1'–0"	1'–3"		0.1	1'–0"	1'–0"	1'–3"		0.1	2'–0"	2'–0"	1'–3"	1'–0"	0.2
12	3'–0"	2'–6"	1'–6"		0.4	2'–0"	2'–0"	1'–6"		0.2	2'–0"	1'–2"	1'–6"		0.1	1'–0"	1'–8"	1'–6"		0.1	2'–6"	2'–0"	1'–6"	1'–0"	0.3
16	4'–0"	3'–0"	2'–0"		0.9	3'–0"	3'–0"	2'–0"		0.5	2'–0"	2'–0"	2'–0"		0.2	2'–0"	1'–6"	2'–0"		0.1	3'–6"	3'–0"	2'–0"	1'–6"	0.7
20	5'–0"	4'–6"	2'–6"		1.23	4'–0"	3'–0"	2'–6"		0.82	3'–0"	2'–6"	2'–6"		0.58	2'–0"	1'–10"	2'–6"		0.3	4'–0"	4'–0"	2'–6"	2'–0"	1.45
24	6'–0"	5'–6"	3'–0"		2.74	4'–0"	4'–0"	3'–0"		1.21	3'–0"	3'–0"	3'–0"		0.8	2'–6"	2'–2"	3'–0"		0.42	5'–0"	5'–0"	3'–0"	2'–6"	2.78
30	7'–0"	7'–0"	3'–9"		5.39	5'–6"	5'–0"	3'–9"		2.14	4'–0"	3'–0"	3'–9"		1.35	3'–0"	2'–8"	3'–9"		0.98	6'–0"	6'–0"	3'–9"	3'–0"	4.96
36	8'–0"	7'–6"	4'–6"		8.12	6'–0"	6'–0"	4'–6"		4.03	5'–0"	4'–0"	4'–6"		2.77	3'–0"	3'–2"	4'–6"		1.36	8'–0"	6'–0"	4'–6"	3'–0"	8.00
42	9'–0"	8'–0"	5'–3"		11.58	7'–7"	7'–0"	5'–3"		6.43	5'–0"	5'–0"	5'–3"		3.85	4'–0"	3'–9"	5'–3"		2.17	8'–0"	8'–0"	5'–3"	4'–0"	12.44



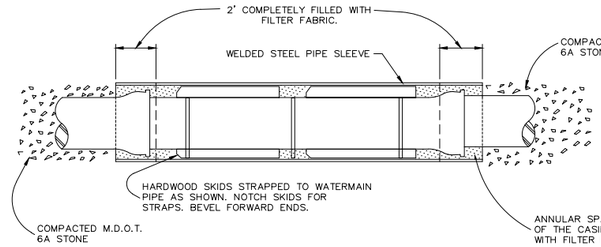
DETAIL OF BLOCK FOR 22 1/2 BENDS

Q – MIN. CU. YD. CONCRETE PER BLOCK



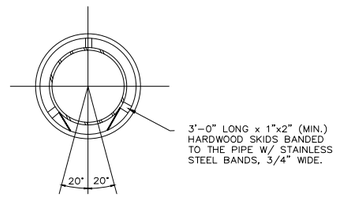
DETAIL OF BLOCK FOR 11 1/4 BENDS

Q – MIN. CU. YD. CONCRETE PER BLOCK

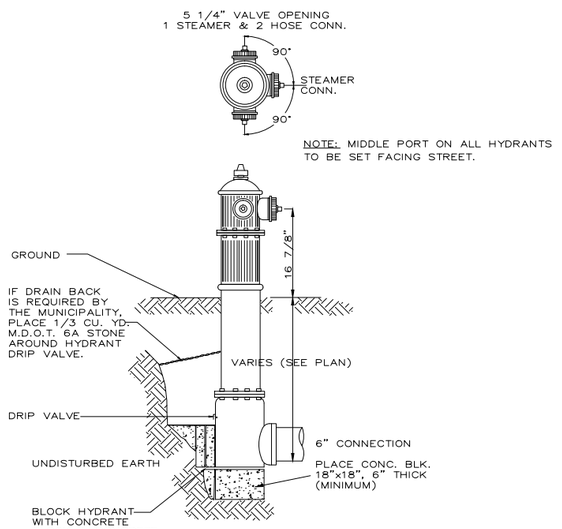


WATERMAIN IN SLEEVE DETAIL

NOTE: PRESSURE TREATED LUMBER MAY BE SUBSTITUTED FOR HARDWOOD SKIDS AT THE CONTRACTOR'S OPTION.



NOTE:
ALL WATER MAIN SHALL MAINTAIN AT LEAST 18" OF VERTICAL SEPARATION AND 10' HORIZONTAL SEPARATION BETWEEN THE OUTSIDE OF THE PROPOSED WATER MAIN AND THE OUTSIDE OF A SEWER, DRAIN PIPE, OR CATCH BASIN LEAD.



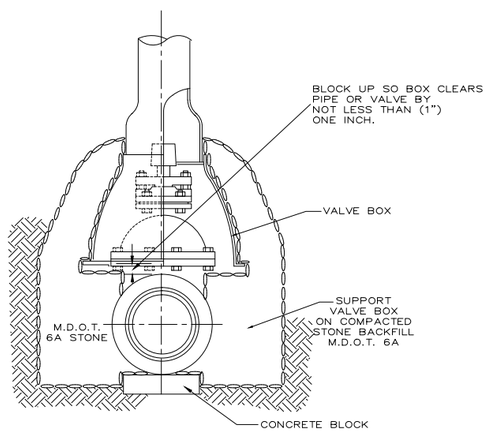
NOTE: MIDDLE PORT ON ALL HYDRANTS TO BE SET FACING STREET.

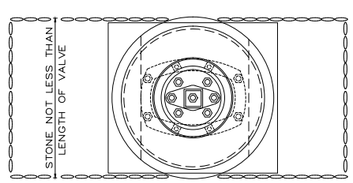
DETAIL OF SETTING HYDRANT

NOTE: THE CONCRETE USED FOR BLOCKING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS.

THE CONTRACTOR SHALL SECURE ALL BENDS WITH A MINIMUM OF 2–3/4" ANCHOR RODS PER FITTING TO EITHER CONCRETE BLOCK, WELDED STEEL PIPE SLEEVE OR COLLARS, METHOD USED SHALL BE DETERMINED BY THE ENGINEER. ALL BENDS SHALL BE MECHANICAL JOINT. ALL FERROUS PARTS SHALL RECEIVE A 10 MIL (DMT) COATING OF COAL TAR EPOXY.

WRAP ALL FITTINGS, VALVES, & HYDRANTS IN 4 MIL POLYETHYLENE SHEET TO WITHIN ONE FOOT OF FINISHED GRADE.





DETAIL OF SETTING OF VALVE BOXES

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929 Bridgeview South
Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427
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REVISIONS:

DATE | PROJ NUMBER | ENG | PROJ MGR | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | SCALE | HORIZ DATUM | VERT DATUM
0003-16-6020 | ERS | AVW | ARP | SHIAWASSEE | CITY OF OWOSSO | H: 1"=40' V: 1"=4' | NAD 83 | NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
WATER MAIN DETAIL SHEET

SHEET 18 OF 27

DRAWING PATH: P:\0000_0100\0002160020_Owosso_Cargill_Project\Drawings\Civil\Details\160020WTR_DET.dwg Jun 30, 2016 - 1:50pm

JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

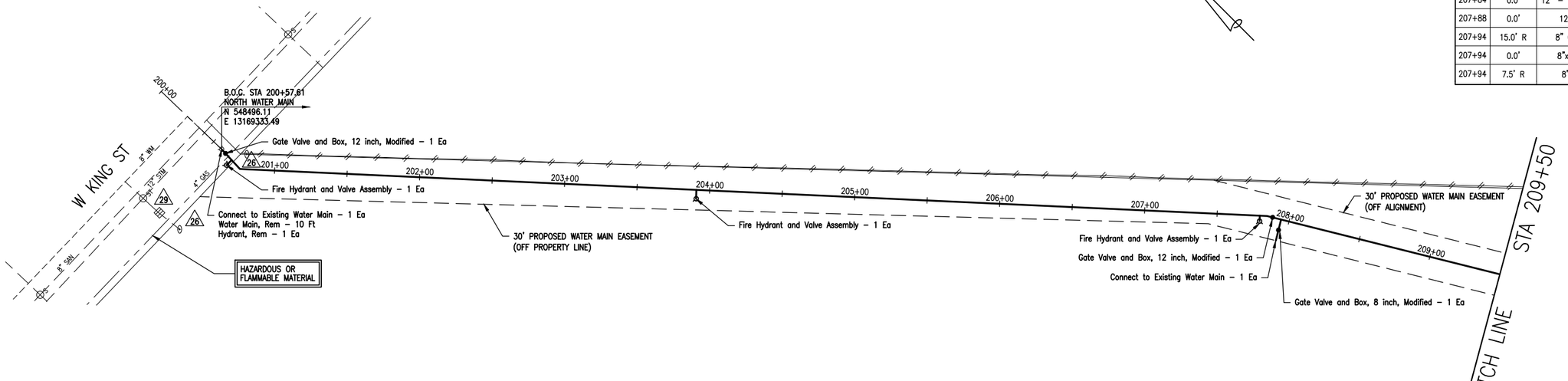
TRAVERSE POINT # 104
N 547504.94
E 13170042.49

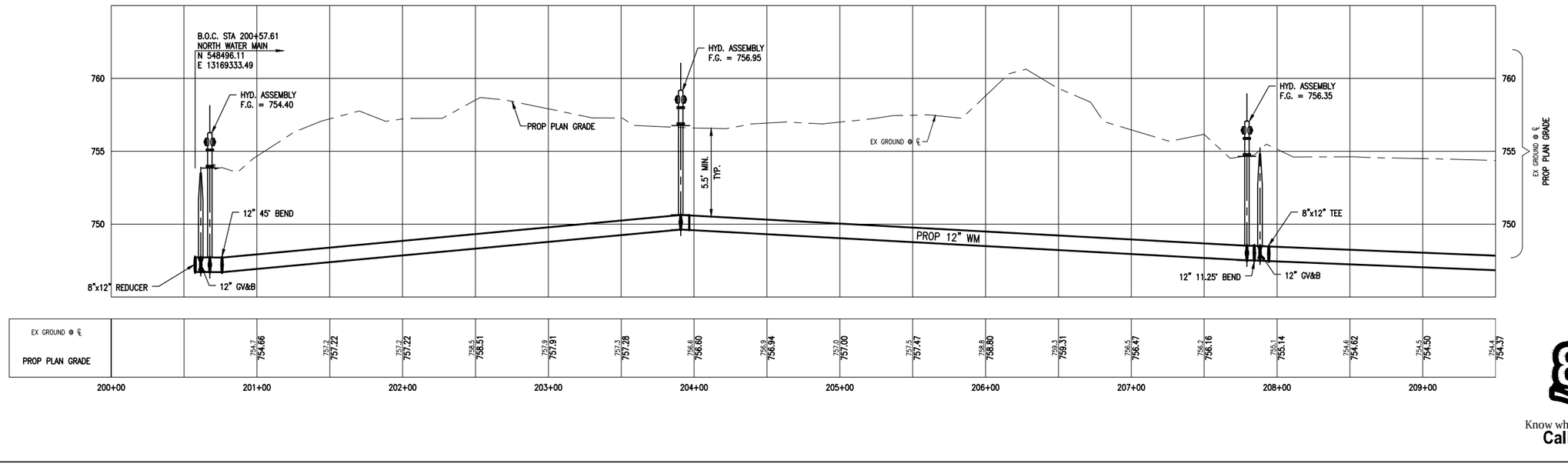
NORTH WATER MAIN

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
1	Ea	Erosion Control, Inlet Protection, Fabric Drop
75	Ft	Erosion Control, Silt Fence
893	Ft	Water Main, C900 PVC, 12 inch, Tr Det F, Modified
15	Ft	Water Main, C900 PVC, 8 inch, Tr Det G, Modified
10	Ft	Water Main, Rem
2	Ea	Connect to Existing Water Main
3	Ea	Fire Hydrant Valve and Assembly
2	Ea	Gate Valve and Box, 12 inch, Modified
1	Ea	Gate Valve and Box, 8 inch, Modified
1	Ea	Hydrant, Rem

WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
200+58	0.0'	8"x12" REDUCER
200+61	0.0'	12" GV&B
200+68	5.0' R	HYD. ASSEMBLY
200+68	2.5' R	6" HYD. VALVE
200+68	0.0'	6"x12" HYD. TEE
200+76	0.0'	12" – 45° BEND
203+91	0.0' L	6"x12" HYD. TEE
203+91	3.1' R	6" HYD. VALVE
203+91	6.2' R	HYD. ASSEMBLY
207+79	0.0'	6"x12" HYD. TEE
207+79	1.9' R	6" HYD. VALVE
207+79	3.8' R	HYD. ASSEMBLY
207+84	0.0'	12" – 11.25° BEND
207+88	0.0'	12" GV&B
207+94	15.0' R	8" COUPLER
207+94	0.0'	8"x12" TEE
207+94	7.5' R	8" GV&B





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929 Bridgeview South
Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
9/20/16	0030-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40' V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

WATER MAIN PLAN AND PROFILE SHEET

SHEET 19 OF 27

DRAWING PATH: P:\0000_0100\0020\160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 1:52pm

JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

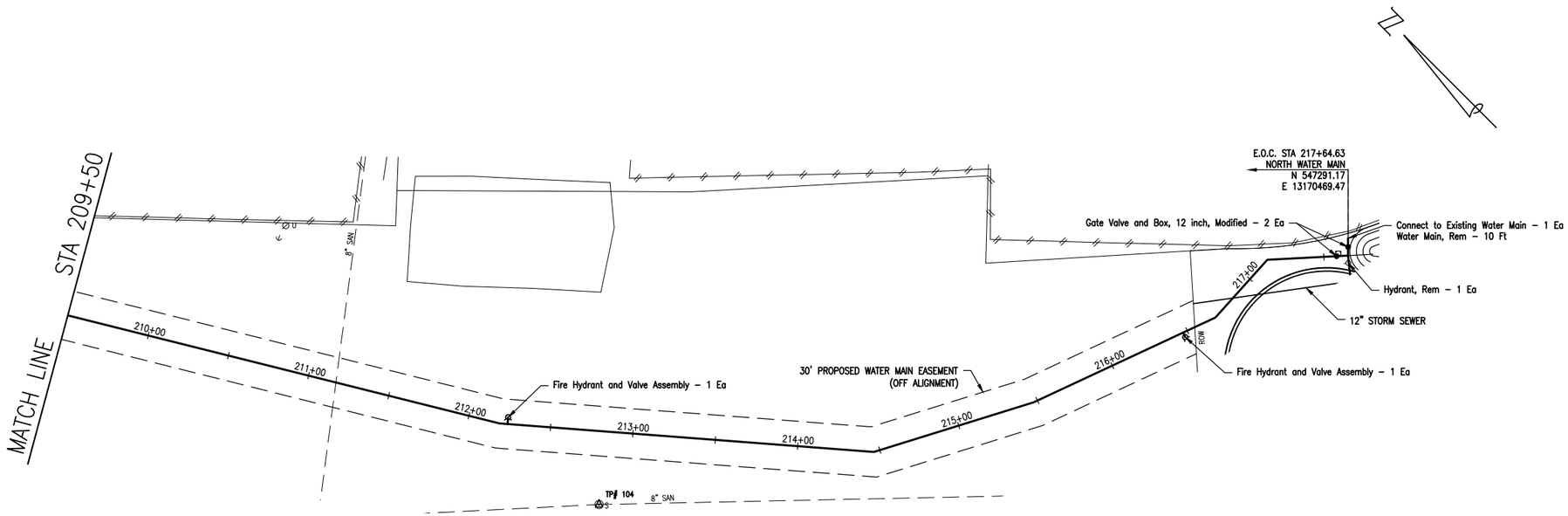
TRAVERSE POINT # 104
N 547504.94
E 13170042.49

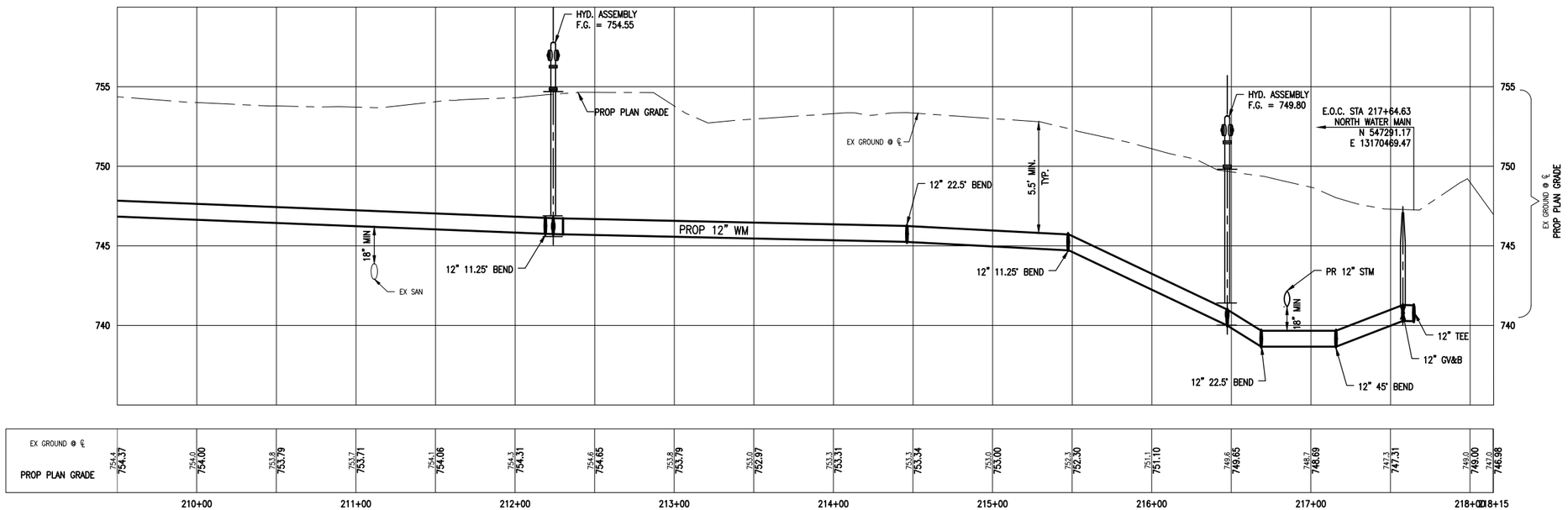
NORTH WATER MAIN

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
825	Ft	Water Main, C900 PVC, 12 inch, Tr Det F, Modified
10	Ft	Water Main, Rem
1	Ea	Connect to Existing Water Main
2	Ea	Fire Hydrant Valve and Assembly
2	Ea	Gate Valve and Box, 12 inch, Modified
1	Ea	Hydrant, Rem

WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
212+19	0.0'	12" – 11.25° BEND
212+24	4.1' L	HYD. ASSEMBLY
212+24	2.1' L	6" HYD. VALVE
212+24	0.0'	6"x12" HYD. TEE
214+46	0.0'	12" – 22.5° BEND
215+47	0.0'	12" – 11.25° BEND
216+47	0.0' L	6"x12" HYD. TEE
216+47	1.5' R	6" HYD. VALVE
216+47	2.9' R	HYD. ASSEMBLY
216+69	0.0'	12" – 22.5° BEND
217+16	0.0'	12" – 45° BEND
217+58	0.0' R	12" GV&B
217+65	10.5' L	6"x12" REDUCER
217+65	0.0' R	12" TEE
217+65	5.2' L	12" GV&B





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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
	0020-154000	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40' V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

WATER MAIN PLAN AND PROFILE SHEET

SHEET 20 OF 27

DRAWING PATH: P:\0000_0100\0020\160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 6:46pm

JOB BENCHMARK # 200
SET SPINDLE IN W FACE OF POWER POLE IN THE SE QUAD OF CHESTNUT AND BENNETT FIELD DRIVE
ELEV 782.315

JOB BENCHMARK # 201
SET BARN SPIKE IN E FACE OF POWER POLE IN SW QUAD OF CHESTNUT AND CLEVELAND
ELEV 784.495

TRAVERSE POINT # 102
N 546569.30
E 13168900.69

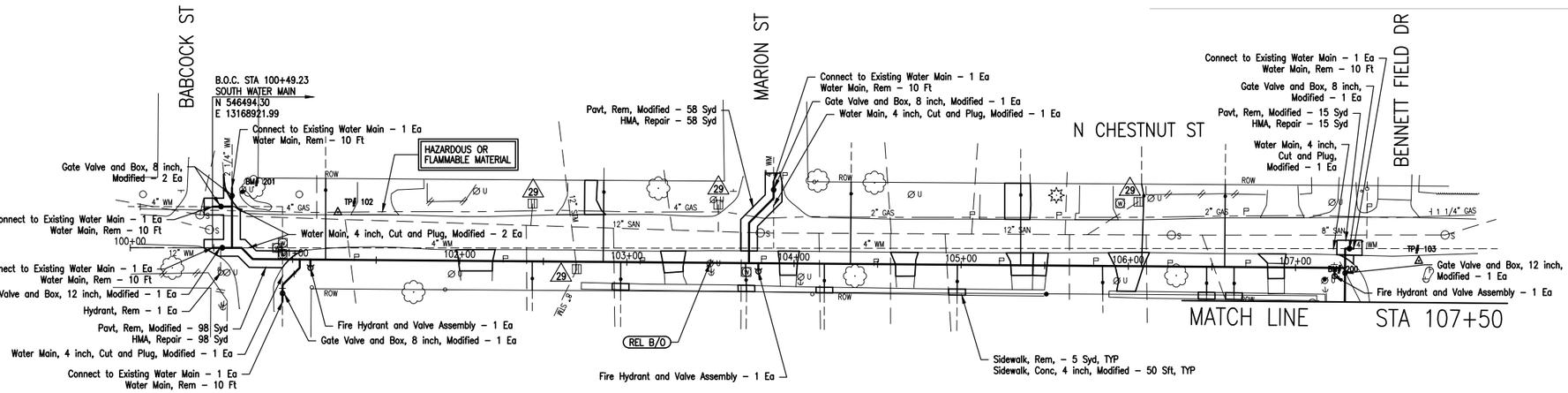
TRAVERSE POINT # 103
N 547216.05
E 13168929.28

DRIVEWAY SCHEDULE					
STATION	OFFSET	EX DRIVE MATERIAL	Driveway, Nonreinf Conc, 6 inch, Modified (SYD)	HMA, Driveway (SYD)	Approach, Cl II, 6 inch, Modified (SYD)
102+10	R	GRAV			30
102+74	L	ASPH		19	
103+78	R	CONC	19		
103+97	R	CONC	18		
104+67	R	CONC	21		
105+33	L	CONC	38		
105+40	R	ASPH/GRAV		21	15
105+99	R	CONC	42		
106+88	R	CONC	19		

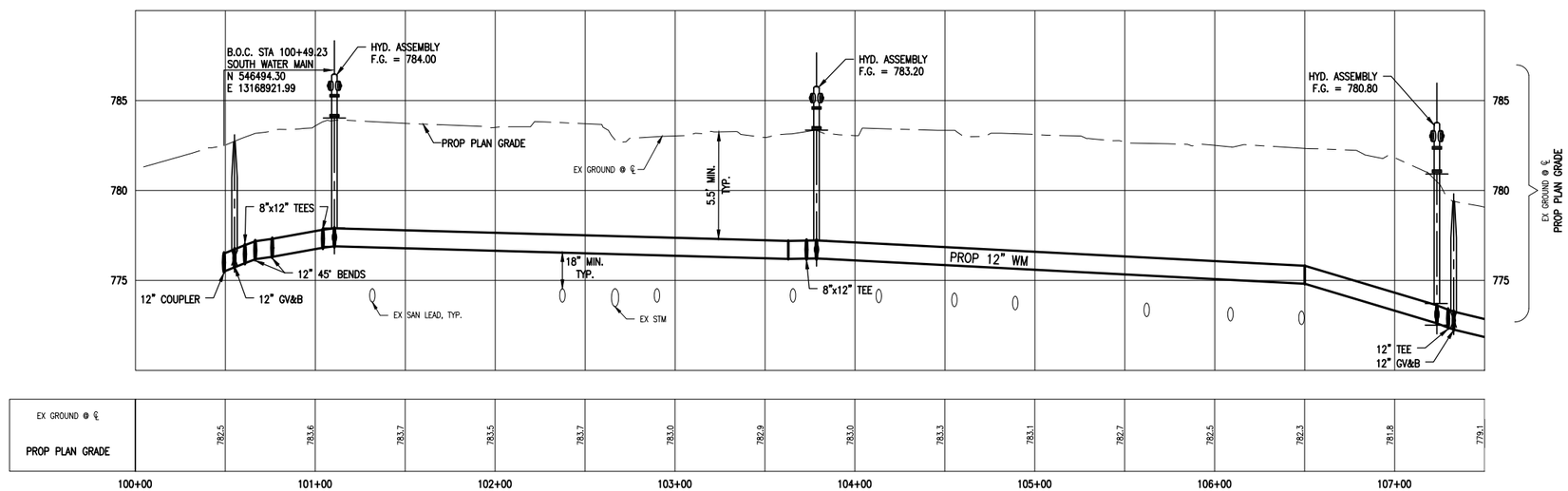
SOUTH WATER MAIN

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
30	Syd	Sidewalk, Rem
240	Syd	Driveway, Rem
171	Syd	Pavt, Rem, Modified
4	Ea	Erosion Control, Inlet Protection, Fabric Drop
43	Syd	Approach, Cl II, 6 inch, Modified
40	Syd	HMA, Driveway
171	Syd	HMA, Repair
157	Syd	Driveway, Nonreinf Conc, 6 inch, Modified
300	Sft	Sidewalk, Conc, 4 inch, Modified
10	Ea	Post, Mailbox
3	Ea	Sign, Type III, Erect, Salv
430	Ft	3/4 inch Copper Service Lead, Type "K", Modified
470	Ft	Water Main, C900 PVC, 12 inch, Tr Det F, Modified
230	Ft	Water Main, C900 PVC, 12 inch, Tr Det G, Modified
115	Ft	Water Main, C900 PVC, 8 inch, Tr Det G, Modified
60	Ft	Water Main, Rem
6	Ea	Connect to Existing Water Main
14	Ea	Curb Box, Stop, 3/4 inch, Corporation Stop and Connection, Modified
3	Ea	Fire Hydrant Valve and Assembly
2	Ea	Gate Valve and Box, 12 inch, Modified
5	Ea	Gate Valve and Box, 8 inch, Modified
1	Ea	Hydrant, Rem
5	Ea	Water Main, 4 inch, Cut and Plug, Modified



WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
100+49	0.0' R	12" COUPLER
100+49	24.6' L	4"x8" REDUCER
100+54	24.6' L	8" GV&B
100+55	0.0' L	12" GV&B
100+61	0.0' L	8"x12" TEE
100+61	24.6' L	8" TEE
100+61	31.1' L	8" GV&B
100+61	36.1' L	2"x8" REDUCER
100+67	0.0'	12" – 45° BEND
100+76	0.0'	12" – 45° BEND
100+94	20.4' R	8" GV&B
100+94	15.4' R	8" – 45° BEND
100+94	25.4' R	4"x8" REDUCER
101+04	0.0' L	8"x12" TEE
101+04	5.0' R	8" – 45° BEND
101+11	0.0' L	6"x12" HYD. TEE
101+11	5.0' R	HYD. ASSEMBLY
101+11	2.5' R	6" HYD. VALVE
103+73	0.0' R	8"x12" TEE
103+73	24.1' L	8" – 45° BEND
103+79	0.0' R	6"x12" HYD. TEE
103+79	5.0' R	HYD. ASSEMBLY
103+79	2.5' R	6" HYD. VALVE
103+87	38.9' L	8" – 45° BEND
103+87	43.9' L	8" GV&B
103+87	48.9' L	4"x8" REDUCER
107+23	0.0' R	6"x12" HYD. TEE
107+23	5.0' R	HYD. ASSEMBLY
107+23	2.5' R	6" HYD. VALVE
107+30	7.7' L	8"x12" REDUCER
107+30	0.0'	12" TEE
107+30	12.6' L	4"x8" REDUCER
107+30	11.8' L	8" GV&B
107+30	11.5' L	8" – 90° BEND
107+33	0.0'	12" GV&B



EX GROUND @ ℄	782.5	783.6	783.7	783.5	783.7	783.0	782.9	783.0	783.3	783.1	782.7	782.5	782.3	781.8	779.1
PROP PLAN GRADE															

100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00

WATER SERVICE LEAD SCHEDULE						
STATION	OFFSET	TYPE	ADDRESS	SIZE	LENGTH	METHOD
101+70	L	LONG	#301	3/4"	49'	BORE
102+43	R	SHORT	#306	3/4"	17'	OPEN CUT
102+86	L	LONG	#321	3/4"	49'	BORE
102+96	R	SHORT	#310	3/4"	17'	OPEN CUT
103+71	R	SHORT	#314	3/4"	17'	OPEN CUT
104+18	R	SHORT	#318	3/4"	17'	OPEN CUT
104+34	L	LONG	#401	3/4"	49'	BORE
104+98	R	SHORT	#322	3/4"	17'	OPEN CUT
105+36	L	LONG	#407	3/4"	49'	BORE
105+84	R	SHORT	#324	3/4"	17'	OPEN CUT
106+08	L	LONG	#409	3/4"	49'	BORE
106+47	R	SHORT	#326	3/4"	17'	OPEN CUT
106+58	L	LONG	#413	3/4"	49'	BORE
106+63	R	SHORT	#330	3/4"	17'	OPEN CUT

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REVISIONS:

DATE
PROJ NUMBER 0000-16-0020
ENG ERS
PROJ MGR AVW
CADD ARP
COUNTY SHIAWASSEE
CITY/VILLAGE/TOWNSHIP CITY OF OWOSSO
H 1"=40'
V 1"=4'
SCALE
HORZ DATUM NAD 83
VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
WATER MAIN PLAN AND PROFILE SHEET

SHEET 21 OF 27

DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 1:52pm

JOB BENCHMARK # 200
SET SPINDLE IN W FACE OF POWER POLE IN THE SE QUAD OF CHESTNUT AND BENNETT FIELD DRIVE
ELEV 782.315

JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

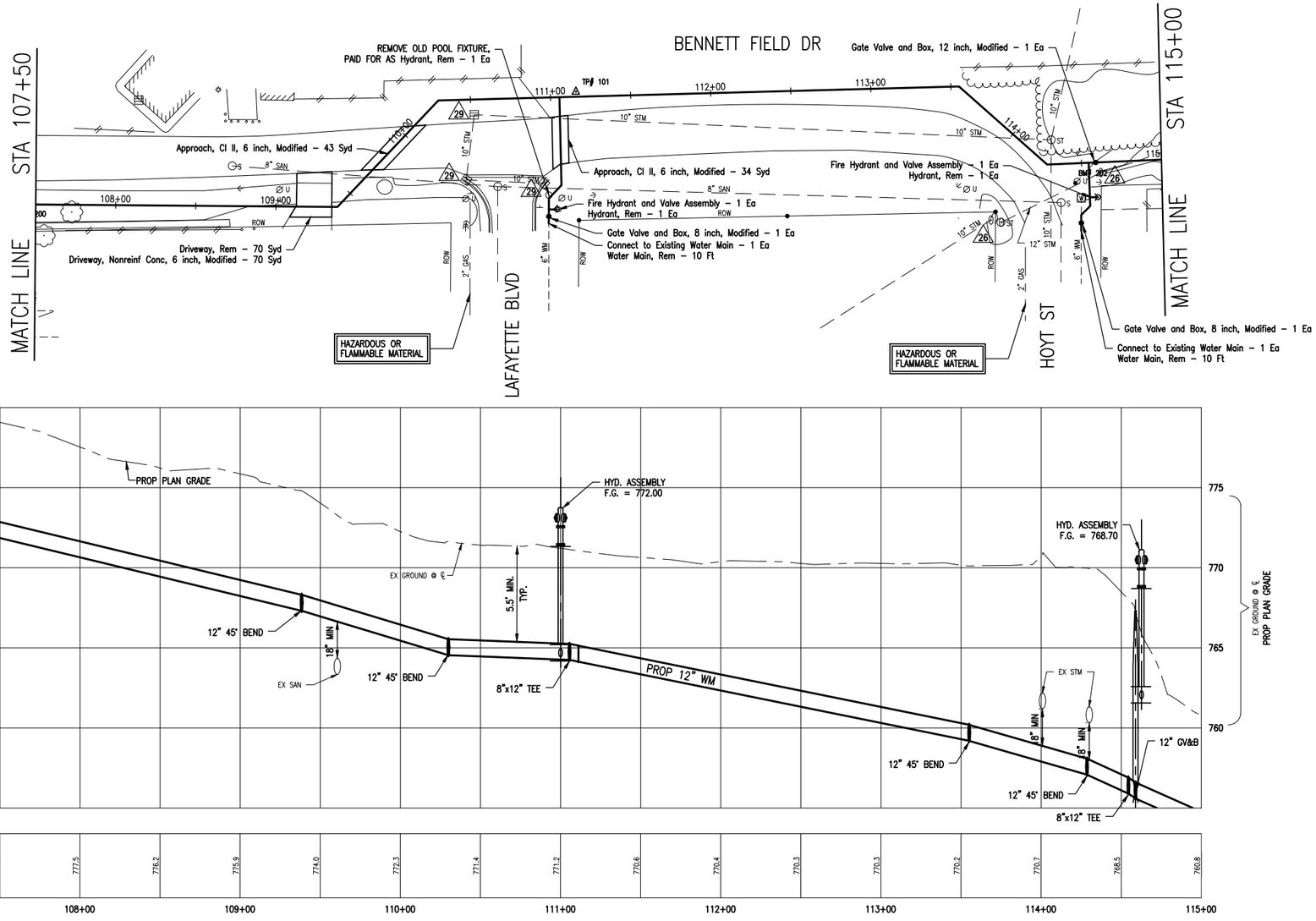
TRAVERSE POINT # 101
N 547242.42
E 13169291.00

SOUTH WATER MAIN

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
70	Syd	Driveway, Rem
3	Ea	Erosion Control, Inlet Protection, Fabric Drop
100	Ft	Erosion Control, Silt Fence
77	Syd	Approach, Cl II, 6 inch, Modified
70	Syd	Driveway, Nonreinf Conc, 6 inch, Modified
675	Ft	Water Main, C900 PVC, 12 inch, Tr Det F, Modified
75	Ft	Water Main, C900 PVC, 12 inch, Tr Det G, Modified
125	Ft	Water Main, C900 PVC, 8 inch, Tr Det G, Modified
20	Ft	Water Main, Rem
2	Ea	Connect to Existing Water Main
2	Ea	Fire Hydrant Valve and Assembly
1	Ea	Gate Valve and Box, 12 inch, Modified
2	Ea	Gate Valve and Box, 8 inch, Modified
3	Ea	Hydrant, Rem

WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
109+38	0.0'	12" – 45° BEND
110+30	0.0'	12" – 45° BEND
110+97	74.3' R	8" GV&B
110+97	78.6' R	6"x8" REDUCER
110+97	63.0' R	8" – 45° BEND
110+97	69.9' R	6"x8" HYD. TEE
111+00	69.9' R	6" HYD. VALVE
111+02	70.0' R	HYD. ASSEMBLY
111+05	54.9' R	8" – 45° BEND
111+06	0.0' R	8"x12" TEE
113+55	0.0'	12" – 45° BEND
114+29	0.0'	12" – 45° BEND
114+48	42.3' R	6"x8" REDUCER
114+48	37.3' R	8" GV&B
114+49	32.3' R	8" – 45° BEND
114+54	0.0'	8"x12" TEE
114+54	27.0' R	8" – 45° BEND
114+54	21.5' R	6"x8" HYD. TEE
114+57	21.6' R	6" HYD. VALVE
114+59	0.0'	12" GV&B
114+59	21.7' R	HYD. ASSEMBLY



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DRAWING PATH: P:\0000_0100\0002\160202_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160202WM.dwg Jun 30, 2016 - 1:53pm

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
	0003-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H. 1"=40' V. 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
WATER MAIN PLAN AND PROFILE SHEET

SHEET 22 OF 27

JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 1317042.49

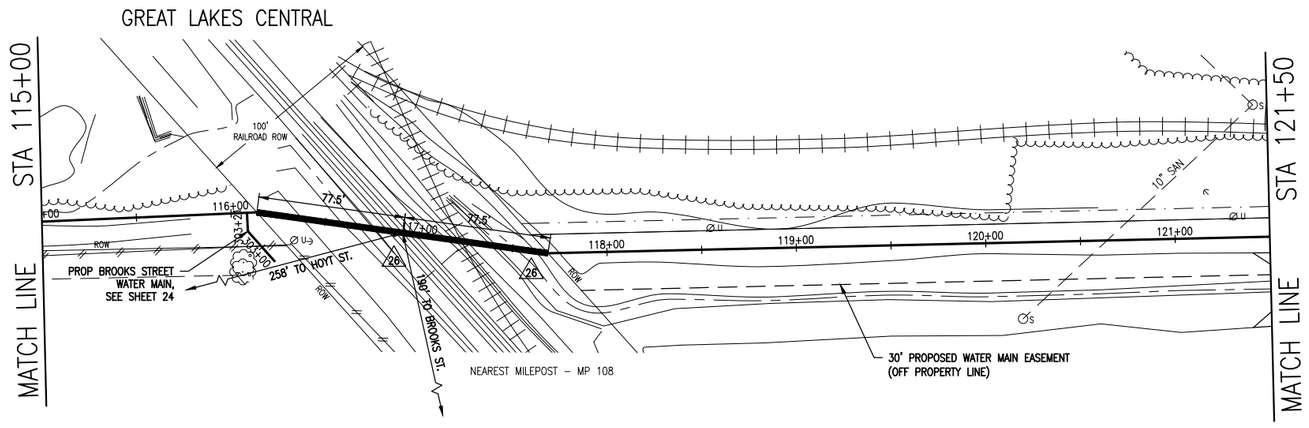
NOTES

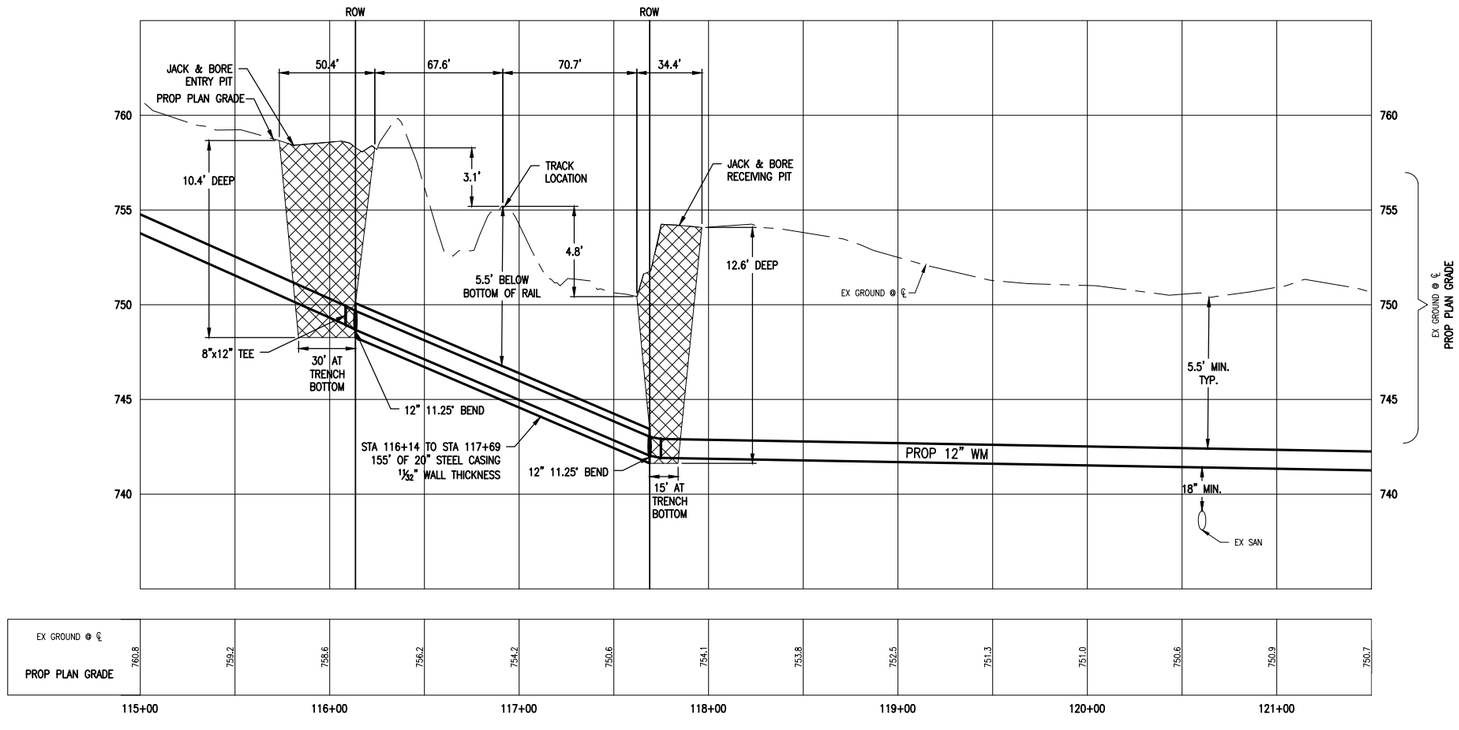
1. THE CONTRACTOR SHALL PROTECT AND RESTORE ALL PROPERTY.
2. THE CONTRACTOR SHALL ABIDE BY ALL REQUIREMENTS OF THE AGENCY HAVING AUTHORITY OVER THE RAILROAD.
3. SHEETING OF THE FRONT FACE OF THE BORE PIT WILL BE REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.
4. WHERE THE METHOD OF INSTALLATION CONSISTS OF PUSHING THE CASING PIPE INTO THE SUB GRADE SECTION WITH A BORING AUGER ROTATING WITHIN THE PIPE TO REMOVE THE SPOIL, THE AUGER SHALL NOT BE ADVANCED MORE THAN ONE-HALF THE DIAMETER OF THE CASING PIPE, WHERE THE AUGER AND CASING ADVANCEMENT IS COORDINATED. WHERE THE AUGER IS ADVANCED SEPARATELY, THE AUGER SHALL NOT PRECEDE THE CASING PIPE.
5. THE CONTRACTOR SHALL NOTIFY THE AGENCY HAVING AUTHORITY OVER THE RAILROAD A MINIMUM OF 72 HOURS PRIOR TO BEGINNING CONSTRUCTION.
6. WOOD SKIDS AND STAINLESS STEEL METAL BANDS MUST BE INSTALLED FOR ALL BORES TO KEEP THE CARRIER PIPE ON LINE AND GRADE. THE MAXIMUM DISTANCE FROM THE INNER DIAMETER OF THE CASING PIPE TO THE OUTSIDE EDGE OF THE SKID SHALL BE 1".
7. THE ENDS OF THE CASING PIPE SHALL BE BULK HEADED WITH AN 8" WATER TIGHT MASONRY BULKHEAD.
8. STEEL CASING SHALL BE EITHER ASTM A53-TYPE E OR S, GRADE B; OR ASTM A139-GRADE B, AND HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI.

SOUTH WATER MAIN

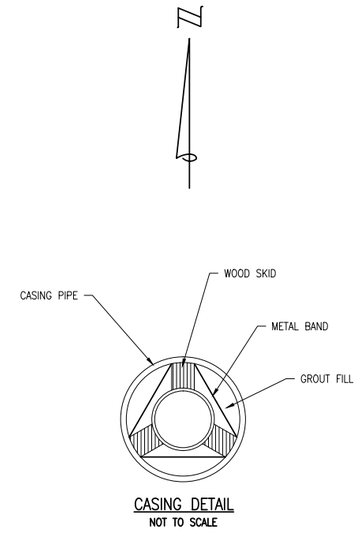
QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
100	Ft	Erosion Control, Silt Fence
155	Ft	Steel Casing Pipe, 20 inch, Jacked in Place
650	Ft	Water Main, C900 PVC, 12 inch, Tr Det F, Modified
24	Hr	Railroad Flag Person





WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
116+08	0.0'	8"x12" TEE
116+14	0.0'	12" – 11.25° BEND
117+69	0.0'	12" – 11.25° BEND



CASING DETAIL
NOT TO SCALE

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORZ DATUM	VERT DATUM
	0030-15-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H:	1"=40'	NAD 83	NGVD 29
							V:	1"=4'		

CITY OF OWOSSO
CARGILL ACCESS ROAD

WATER MAIN PLAN AND PROFILE SHEET

SHEET 23 OF 27

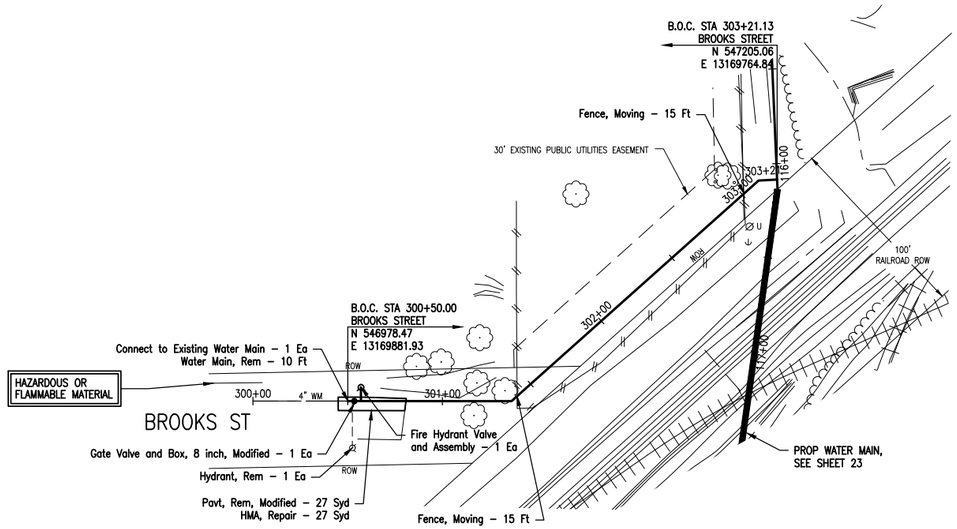
DRAWING PATH: P:\0000_0100\0020160\020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 1:53pm

JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

TRAVERSE POINT # 104
N 547504.94
E 1317042.49

BROOKS STREET

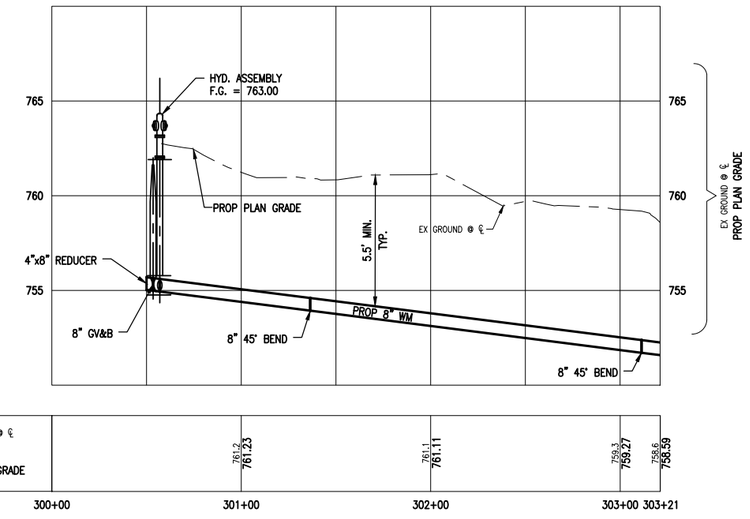


GREAT LAKES CENTRAL

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
27	Syd	Pavt, Rem, Modified
27	Syd	HMA, Repair
30	Ft	Fence, Moving
254	Ft	Water Main, C900 PVC, 8 inch, Tr Det G, Modified
10	Ft	Water Main, Rem
1	Ea	Connect to Existing Water Main
1	Ea	Fire Hydrant Valve and Assembly
1	Ea	Gate Valve and Box, 8 inch, Modified
1	Ea	Hydrant, Rem

WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
300+50	0.0'	4"x8" REDUCER
300+53	0.0'	8" GV&B
300+57	3.6' L	6" HYD. VALVE
300+57	0.0'	6"x8" HYD. TEE
300+57	7.2' L	HYD. ASSEMBLY
301+36	0.0'	8" – 45° BEND
303+11	0.0'	8" – 45° BEND



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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM
	0004-15-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40' V: 1"=4'	NAD 83 VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

WATER MAIN PLAN AND PROFILE SHEET

SHEET 24 OF 27

DRAWING PATH: P:\0000_0100\0020\160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 1:53pm

JOB BENCHMARK # 202
SET BARN SPIKE IN W FACE OF POWER POLE AT THE CORNER OF BENNETT FIELD DRIVE AND HOYT
ELEV 769.582

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

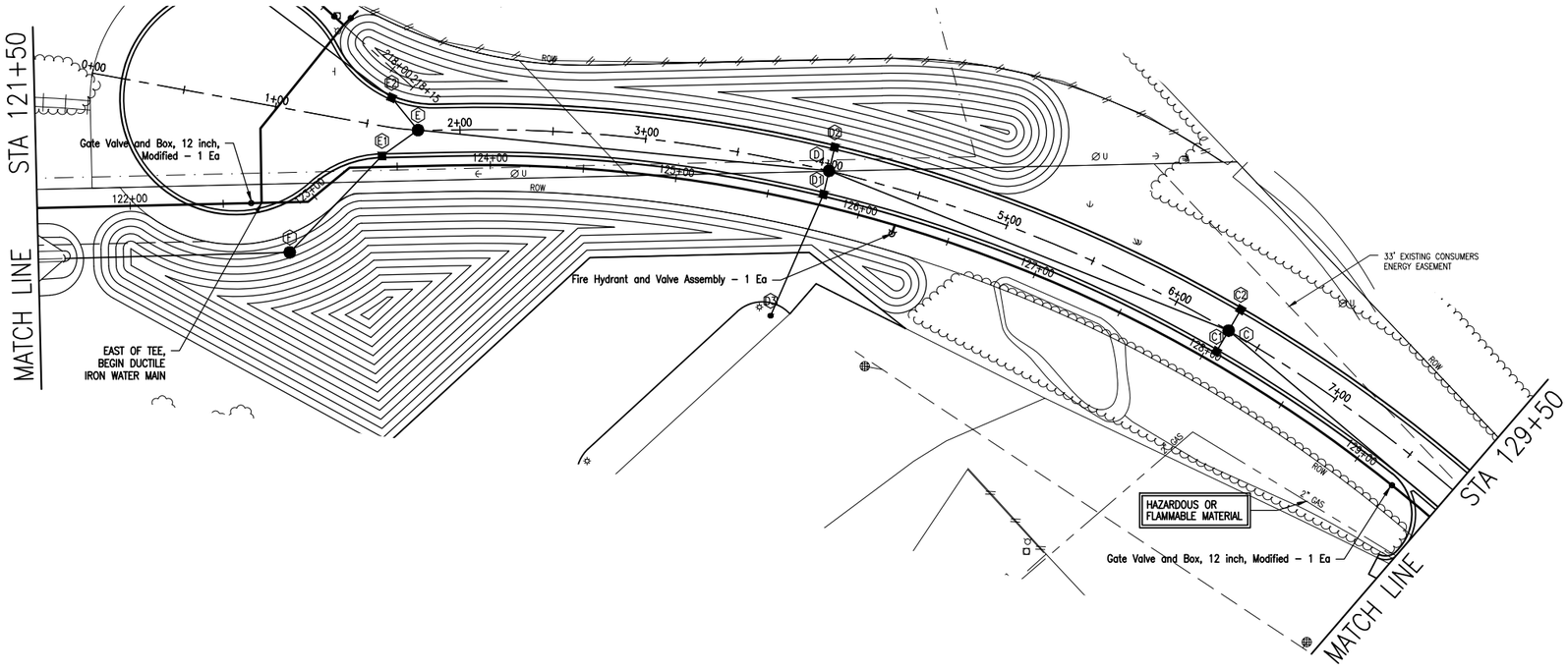
TRAVERSE POINT # 104
N 547504.94
E 1317042.49

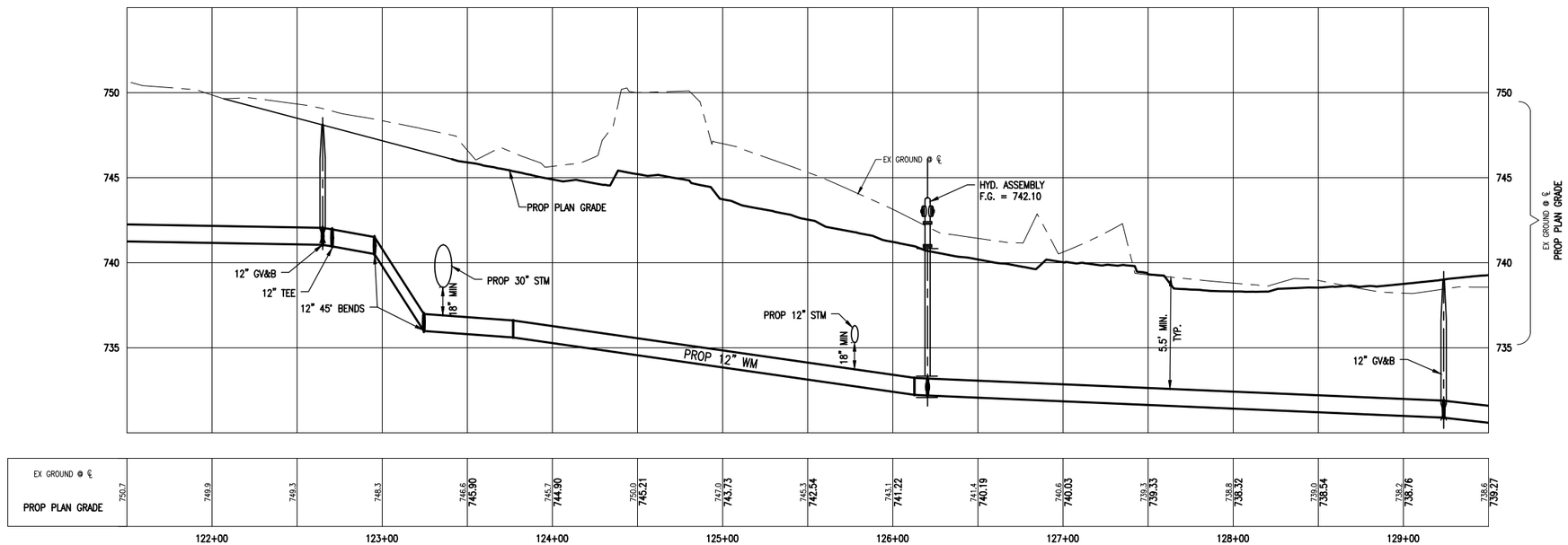
SOUTH WATER MAIN

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
70	Ft	Water Main, C900 PVC, 12 inch, Tr Det F, Modified
162	Ft	Water Main, C900 PVC, 12 inch, Tr Det G, Modified
655	Ft	Water Main, DI, 12 inch, Tr Det F, Modified
25	Ft	Water Main, DI, 12 inch, Tr Det G, Modified
1	Ea	Fire Hydrant Valve and Assembly
2	Ea	Gate Valve and Box, 12 inch, Modified

WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
122+65	0.0'	12" GV&B
122+71	0.0'	12" TEE/DI-PVC UNION
122+71	40.1' L	12" – 45° BEND
122+96	0.0'	12" – 45° BEND
123+24	0.0'	12" – 45° BEND
126+20	0.0' L	6"x12" HYD. TEE
126+20	5.0' R	HYD. ASSEMBLY
126+20	2.5' R	6" HYD. VALVE
129+24	0.0' L	12" GV&B





EX GROUND @ ℄	750.7	749.9	749.3	748.3	746.6	745.90	745.7	744.90	750.0	745.21	747.0	743.73	745.3	742.54	743.1	741.22
PROP PLAN GRADE																

EX GROUND @ ℄	741.4	740.19	740.6	740.03	739.3	739.33	738.8	738.32	739.0	738.54	738.2	738.76	738.6	739.27		
PROP PLAN GRADE																

122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00

Know what's **below.** **Call** before you dig.

OHM
ARCHITECTS ENGINEERS PLANNERS
929 Bridgeview South
Saginaw, MI 48604
P 989.393.4200 | F 734.522.6427
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORZ DATUM	VERT DATUM
	0020-15-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40'	V: 1"=4'	NAD 83	NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD
WATER MAIN PLAN AND PROFILE SHEET

SHEET 25 OF 27

DRAWING PATH: P:\0000_0\0020\0020160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 6:48pm

JOB BENCHMARK # 203
SET BARN SPIKE IN S FACE OF PP IN NW QUAD OF CHIPMAN AND DRIVEWAY TO SONOCO
ELEV 738.149

JOB BENCHMARK # 204
CHISELED 'X' ON NE BOLT OF FLANGE ON FIRE HYDRANT, NE OF NORTH CORNER OF SONOCO
ELEV 742.363

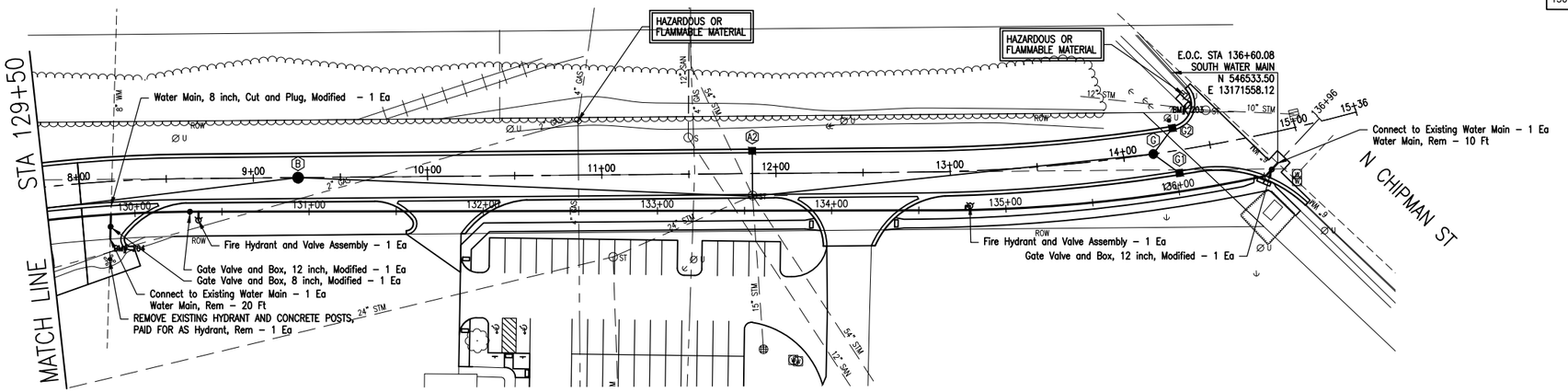
TRAVERSE POINT # 104
N 547504.94
E 13170042.49

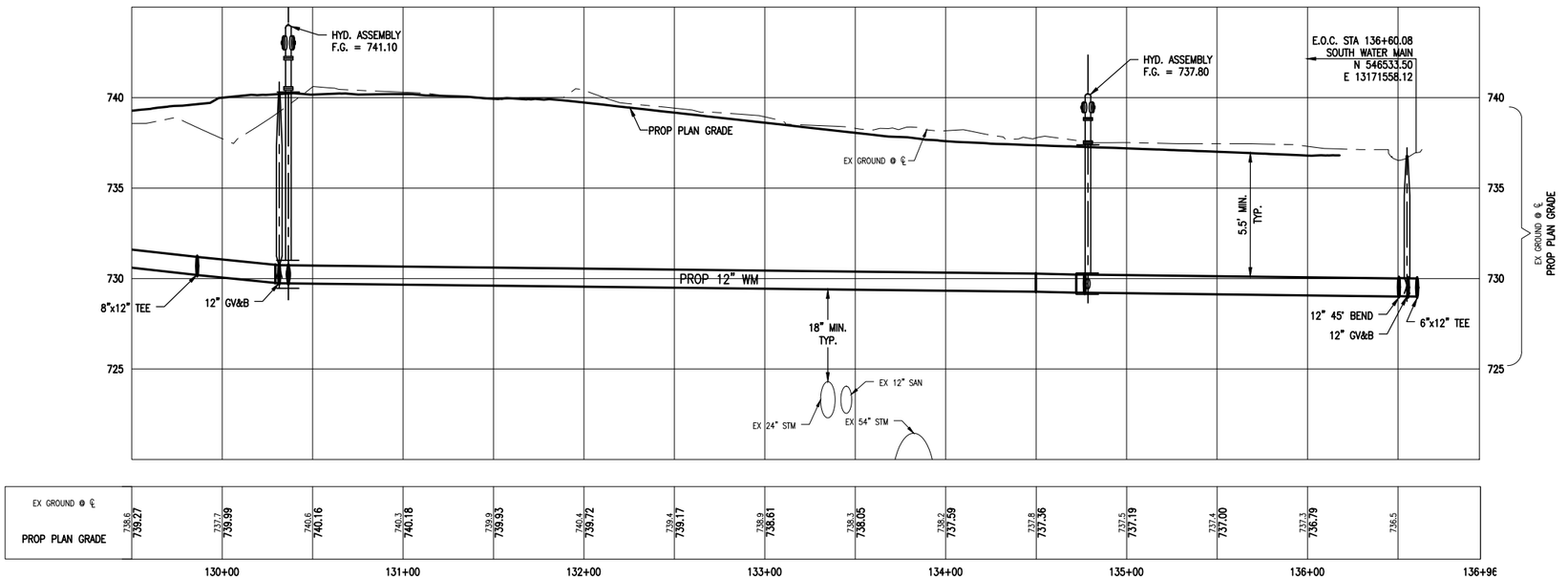
SOUTH WATER MAIN

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
460	Ft	Water Main, DI, 12 inch, Tr Det F, Modified
250	Ft	Water Main, DI, 12 inch, Tr Det G, Modified
14	Ft	Water Main, DI, 8 inch, Tr Det G, Modified
30	Ft	Water Main, Rem
2	Ea	Connect to Existing Water Main
2	Ea	Fire Hydrant Valve and Assembly
2	Ea	Gate Valve and Box, 12 inch, Modified
1	Ea	Gate Valve and Box, 8 inch, Modified
1	Ea	Hydrant, Rem
1	Ea	Water Main, 8 inch, Cut and Plug, Modified

WATER MAIN FITTING SCHEDULE		
STATION	OFFSET	FITTING
129+85	14.0' R	8" COUPLER
129+86	0.0'	8"x12" TEE
129+86	7.0' R	8" GV&B
130+32	0.0' L	12" GV&B
130+36	4.9' R	HYD. ASSEMBLY
130+37	0.0'	6"x12" HYD. TEE
130+37	2.4' R	6" HYD. VALVE
134+77	0.0'	6"x12" HYD. TEE
134+77	2.5' L	6" HYD. VALVE
134+79	2.4' L	HYD. ASSEMBLY
136+51	0.0'	12" – 45° BEND
136+56	0.0'	12" GV&B
136+61	0.0'	6"x12" TEE





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Saginaw, MI 48604
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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM
	0020-154000	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H: 1"=40' V: 1"=4'	NAD 83 VERT DATUM NGVD 29

CITY OF OWOSSO
CARGILL ACCESS ROAD

WATER MAIN PLAN AND PROFILE SHEET

SHEET 26 OF 27

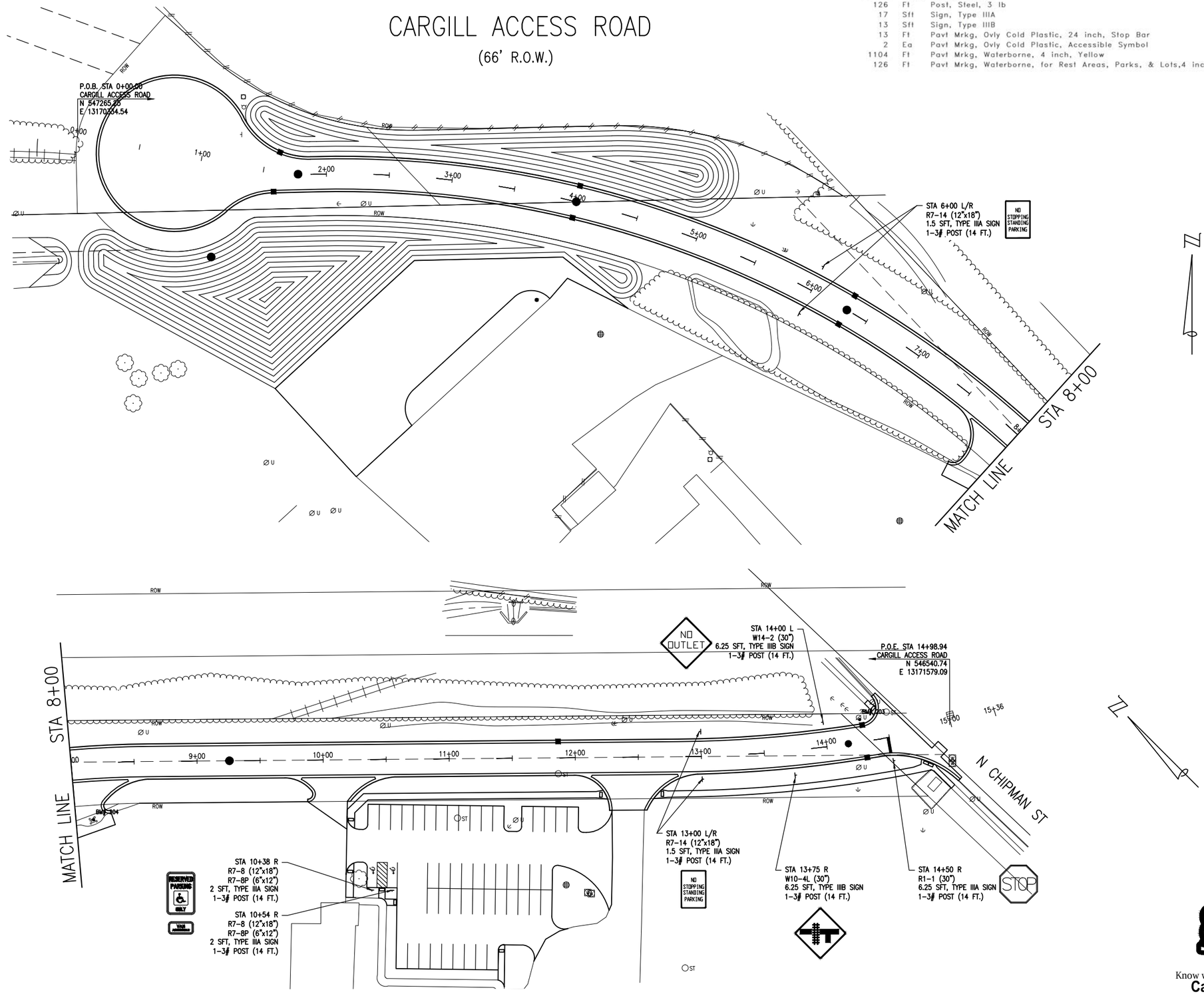
DRAWING PATH: P:\0000_0100\0020160020_Owosso_Cargill_Project\Drawings\Civil\Plans_Const\160020WM.dwg Jun 30, 2016 - 1:54pm

CARGILL ACCESS ROAD

(66' R.O.W.)

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
126	Ft	Post, Steel, 3 lb
17	Sft	Sign, Type IIIA
13	Sft	Sign, Type IIIB
13	Ft	Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar
2	Ea	Pavt Mrkg, Ovly Cold Plastic, Accessible Symbol
1104	Ft	Pavt Mrkg, Waterborne, 4 inch, Yellow
126	Ft	Pavt Mrkg, Waterborne, for Rest Areas, Parks, & Lots,4 inch, Blue



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Saginaw, MI 48604
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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORIZ DATUM	VERT DATUM
	0000-16-0020	ERS	AVW	ARP	SHIAWASSEE	CITY OF OWOSSO	H	1"=40'	NAD 83	NGVD 29
							V	1"=4'		

CITY OF OWOSSO
CARGILL ACCESS ROAD
PAVEMENT MARKING AND SIGNING SHEET

SHEET 27 OF 27