REQUEST FOR PROPOSALS

River East Recreation Area Improvements – Phase II : Dog Parks
Charter Township of Garfield, Grand Traverse County

Proposals Due:
10:00 AM Tuesday, August 16, 2022

Address Proposals to (Signed and Sealed: Mailed and/or Delivered):

Sealed Bids will be received, by the Charter Township of Garfield, at the Township Offices located at 3848 Veterans Drive, Traverse City, MI 49684, until 10:00 AM local time on August 16, 2022, at which time the Bids received will be publicly opened and read.

Address Proposals Questions to:

Engineer Attention:
Jennifer Hodges, P.E.
Gourdie-Fraser, Inc.
123 West Front Street
Traverse City, MI 49684

Phone: 231-946-5874
Facsimile: 231-946-3703
Email: jennifer@gfa.tc

Scope of Services:

We have been asked by our client, the Charter Township of Garfield to solicit this request to qualified contractors and request a proposal to construct a dog park at River East Recreation Area in Grand Traverse County. The park is to include sidewalks, fencing, gates, watering stations, irrigation, gravel drive, topsoil, seed, and mulch. The park is located near the intersection of Hammond Road and Keystone Road at 2143 N Keystone Road. The park currently consists of a paved drive, pole barn and pavilion. The information contained below are the specific qualifications each contractor must meet in order to provide an accurate proposal. REFER TO ATTACHED DRAWINGS AND SPECIFICATIONS.

Requirements - General:

- Work must comply with all applicable laws, regulations and specifications as identified in this RFP and on the plans.
- Contractor is responsible to obtain all local regulatory permits (including fees) including Grand Traverse County Soil Erosion Control Permit.
- Date of completion to be within 30 days of material delivery as coordinated with the Township Engineer.
- Final location of dog park and sidewalks to be coordinated with the Township and Township Engineer. All construction staking to be provided by Township Engineer.
- All work shall be coordinated with Township and their Engineer (GFA).
- Prospective bidders are strongly encouraged to conduct a site visit prior to bidding.
- Contractor shall demonstrate similar past work experience and provide three (3) references along with bid submittal. References to include scope of work completed, date and contact person.

Terms of Agreement:

General:

- To hold bid open for 60 consecutive calendar days from the bid due date
- To enter into and execute a contract with the Charter Township of Garfield.
- Provide for the services required for the complete construction of the dog park and sidewalk.
- One (1) year warranty, from date of substantial completion against material defect and/or workmanship.

Insurance:

- Contractor will have Worker's Compensation Insurance in limits required by state law and Comprehensive General Liability Insurance coverage in force for all of its operations under this contract.

Bonds:

- The Contractor shall include in the proposal price the cost to provide the following:
  - Maintenance and Guarantee Bond in the amount of 50% of the proposal amount, guarantying for a period of one (1) year from final acceptance of the project work
  - Letter of Surety, licensed to do business in the State of Michigan, stating ability to obtain a Performance Bond, and Labor and Material Bond for 100% of the project amount.

Shop Drawing Submittals:

- Provide four (4) copies of material specification sheets and warranty information to Engineer. Do not proceed until written approval is received.
- Coordinate all work with the Engineer.

Services / materials to be Provided:

Contractor shall provide all equipment and materials as necessary to complete the work outlined above. They shall include, but are not limited to, the following not stated previously:

- Mobilization, demobilization and equipment
- Temporary power supply
- Placing, maintaining and the removal of temporary soil erosion control measures and topsoil (as applicable)
- Clearing, Grubbing and Tree Removal including disposal of materials offsite
- Restoration (including site grading, topsoil, seeding, and mulch) of all disturbed areas
- Final clean-up of the site upon completion
- Irrigation system to be supplied and installed by contractor. Contractor shall utilize Lautner Irrigation and is responsible to coordinate and assist as needed to facilitate installation.

Services / Materials Not To Be Included (Provide by Owner):

- Site accessibility

Contractors Proposal Form:

Bidders are instructed to submit bids for this project on a lump sum basis with adjustments for footage and materials more or less as stated in the Proposal.

All bid items are tax inclusive. All work shall be incompliance with specifications, terms identified in the RFP and applicable laws.

NO.	ITEM DESCRIPTION	EST QTY	ITEM UNIT	UNIT PRICE	ITEM COST
1	Mobilization	1	LS		
2	Clearing & Grubbing	1	LS		
3	Topsoil Removal & Grading	1	LS		
4	5’ Tall Fence	1,150	LF		
5	4” Thick Concrete Sidewalk	2,000	SF		
6	4’ Single Swing Gate	6	EA		
7	8’ Wide Single Swing Gate	3	EA		
8	Watering Station (Including Service Line & Connection)	3	EA		
9	Gravel Surface	1,400	SF		
10	Irrigation System	1	LS	$20,000.00	$20,000.00
11	Topsoil, Seed, & Mulch	1	LS		
TOTAL BID					**$**

_____

Bidders Signature

_____

Printed Name:

_____

Business Name:

_____

Address:

_____

MI Contractor License No.:

_____

Telephone:

Email:

Garfield Township reserves the right to accept or reject any or all proposals.

Engineering
Surveying
Testing &
Operations

123 West Front Street
Traverse City, Michigan 49684
231.946.5874
231.946.3703

TECHNICAL SPECIFICATIONS

RIVER EAST RECREATION AREA IMPROVEMENTS – PHASE II: DOG PARKS

The CHARTER TOWNSHIP of GARFIELD
Grand Traverse County, Michigan

GFA PROJECT NO.: 22070
DATE: JULY 2022

PROJECT SPECIFICATIONS
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RIVER EAST RECREATION AREA IMPROVEMENTS – PHASE II: DOG PARKS

SECTION

SECTION 02230 - SITE CLEARING & DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and grass not indicated for removal.
2. Removing existing trees, shrubs, groundcovers, plants, and grass.
3. Clearing and grubbing.
4. Stripping topsoil.
5. Removing above- and below-grade site improvements.
6. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Cleared materials, including topsoil, shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

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

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

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store where indicated. Coordinate with Owner.

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

D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

E. All trees to be salvaged and shall be marked by Township prior to work commencing.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."

1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction. Property corners or other monuments disturbed shall be replaced at the Contractor’s expense by a registered Land Surveyor.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

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

1. Restore damaged improvements to their original condition, as acceptable to Owner and/or Engineer.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures as indicated on the drawings.

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

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

3.3 DEMOLITION

A. Completely demolish above grade structures and appurtenances to the extent indicated on the drawings. Remove all materials from the site.

B. Completely remove all existing below grade structures which are in the same location as proposed structures to a depth of 3’-0” below bottom of the new structures, unless noted otherwise on the drawings. All below grade structures that are not in the same location as proposed structures and that are exposed or will become exposed after final grading shall be removed to a depth of 1’-0” below finish grade.

3.4 TREE PROTECTION

A. Tree protection zone is the area surrounding individual trees or groups of tree to remain during construction and is defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless indicated otherwise on the drawings.

B. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

C. Do not excavate within tree protection zones.

D. Replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.

3.5 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

1. Arrange with utility companies to shut off indicated utilities.

2. Plug abandoned piping with non-shrink grout.

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

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

3.6 CLEARING AND GRUBBING

A. Remove all trees, stumps, brush and other vegetation to the limits indicated on the plans.

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

1. Place fill material in horizontal layers not exceeding a loose depth of 9 inches and compact each layer to a density equal to adjacent original ground.

3.7 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered (minimum of 4”) in a manner to prevent intermingling with underlying subsoil or other waste materials.

3.8 DISPOSAL

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

1. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 02230

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Drainage course for slabs-on-grade.
   2. Subbase course for concrete walks and pavements.
   3. Subbase and base course.
   4. Excavating and backfilling for utility trenches.

1.2 REFERENCES

A. MDOT – Michigan Department of Transportation "Standard Specifications for Construction"

B. ASTM - American Society of Testing Materials, latest edition.

1.3 DEFINITIONS

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

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

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

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

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

E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

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

   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
   2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

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

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

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

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

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

1.4 PROJECT CONDITIONS

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

B. Protect and preserve all public and private property including vegetation, landscape features, monuments, etc. adjacent & within work area.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

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

B. Satisfactory Soils: MDOT, Class II.

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

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

2. Unsatisfactory soils may be used for Landscaping berms, as per plans and Section 02490.

PART 3 - EXECUTION

3.1 PREPARATION

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

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

C. Protect and maintain erosion and sedimentation controls, which are specified on the drawings.

3.2 EXCAVATION

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

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

3.3 EXCAVATION FOR WALKS AND PAVEMENTS

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

3.4 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit.

1. Clearance: 12 inches each side of pipe or conduit, or as indicated.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material, 4 inches deeper elsewhere, to allow for bedding course.

3.5 SUBGRADE INSPECTION

A. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment a minimum of 2 (two) complete passes, to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

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

1. Fill depressions with compacted satisfactory soils material.

2. Undercut areas not satisfactory for providing support for pavement/structure:

   a. Fill with satisfactory soil material and compact it.

3.6 STORAGE OF SOIL MATERIALS

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

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

2. Provide Soil Erosion Control Measures around stockpiles to prevent migration offsite and erosion of the stockpiles.

3.7 UTILITY TRENCH BACKFILL

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

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings.

D. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

E. Place and compact final backfill of satisfactory soil to final subgrade elevation.

F. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.8 SOIL MOISTURE CONTROL

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

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

B. Moisture-Density Relationships:

1. Cohesive (clays) or granular (Sands) soils – ASTM D1557 (Modified Proctor)

3.9 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 9 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

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

C. Compact soil materials to not less than the following percentages of maximum dry density according to ASTM D 1557:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.10 GRADING

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

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.11 SUBBASE AND BASE COURSES

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

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

1. Shape subbase and base course to required crown elevations and cross-slope grades.
2. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.12 FIELD QUALITY CONTROL

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

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

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

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

3.13 PROTECTION

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

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

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

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

3.14 DISPOSAL OF SURPLUS AND WASTE MATERIALS

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

END OF SECTION 02300

SECTION 02510 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes underground water-distribution piping and related components outside the building.

1.2 SUBMITTALS

A. Product Data: For the following:

3. Water service leads, and associated appurtenances

1.3 RELATED SECTIONS

A. 2300- Earthwork

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. NSF Compliance:

1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-PW" on piping.

2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water. Include marking "NSF-PW" on piping.

1.5 PROJECT CONDITIONS

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

1. Notify Engineer 48 hours in advance of proposed utility interruptions

2. Do not proceed with utility interruptions without Engineer's written permission

1.6 COORDINATION

A. Coordinate connection to water main with Owner.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. PVC, AWWA Pipe: HDPE DR 9. Water Service Leads, 2” and smaller

1. NSF 61/14 Approved, with minimum working pressure of 200 psi. The exterior wall print line of all pipe shall bear the NSF-PW identification.

2.2 CORPORATION VALVES AND CURB STOPS

A. Manufacturers:

1. Ford Meter Box Company, Inc. (The).
2. Mueller Company

B. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine and AWWA C900 Pipe.

1. Service Saddle: Copper or bronze alloy with seal and AWWA C800, threaded outlet for corporation valve.
2. Corporation Valve: One-inch and two-inch corporation stops shall be Mueller or Ford for plastic. All corporation stops to be compression fittings. Corporation stops shall be in the "open" position after the service connection is complete.

C. Curb Valves: Comply with AWWA C800. Mueller or Ford oriseal curb valves series 15201 or equal. Curb stops shall be of the quarter turn, positive shut-off type.

D. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes with tar base enamel. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over curb valve, and approximately 3-inch-diameter barrel.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Water-Main Connection: Tap water main according to requirements of this specification and of size and location if indicated on the drawings.

B. Make connections with tapping machine according to the following:

1. Install tapping sleeve and tapping valve according to MSS SP-60.

2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.

3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.

4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.

C. Install DR 9 PVC piping according to AWWA C605.

D. Bury piping with depth of cover over top at least 6 feet.

E. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports in combination according to the details on the plans. All anchoring methods shall be used when pipe joints are less than 10-feet apart.

3.3 JOINT CONSTRUCTION

A. Make pipe joints according to the following:

1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600.

2. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
3. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure.
    a. Retainer glands are to be used with all mechanical joints.

3.4 ANCHORAGE INSTALLATION

A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following, but must comply with the details located on the plans:

1. Concrete thrust blocks.

2. Locking mechanical joints.

3. Set-screw mechanical retainer glands.

4. Bolted flanged joints.

5. Heat-fused joints.

6. Pipe clamps and tie rods.

B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:

1. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.

3.5 CONNECTIONS

A. Piping installation requirements are specified in Division 2 "Earthwork". Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect water-distribution piping to interior domestic water piping.

3.6 ACCEPTANCE TESTING

A. The water main shall be flushed clean of sand and debris.

B. All water main shall be tested for leaks by hydrostatic test method and shall conform to AWWA C605 for plastic water main

1. The water main or sections thereof shall be tested by the Contractor in the presence of the Engineer and all leaks shall be made tight to meet the requirements below. The Contractor shall furnish all piping, bulkheads, pumps, gauges and other equipment required to carry out the test and shall obtain Engineer's approval of same prior to testing.
2. The section of main to be tested shall be slowly filled with water at least 24 hours prior to starting the test. Expel air through corporation stops installed at high points in line. The Contractor shall make arrangements with the operation/maintenance personnel for obtaining water for testing. All water used shall be metered and quantities reported to the operation/maintenance personnel.
3. At the start of testing, the main shall be pumped up to a pressure of 150 psi and the test period shall start immediately thereafter. Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section. The line shall then be maintained under this test pressure for a continuous period of two hours by pumping water into the line at frequent intervals. The test pressure shall not vary by more than $\pm$5 psi for the duration of the test. The volume of water so added shall be measured and considered to represent the leakage from the line under test during the intervals. All water service leads shall be tested with the mainline pipe. Conform to AWWA standards.
4. Testing allowance: No pipe installation will be accepted if the amount of makeup water is greater than that determined by the following formula:

   In inch-pound units,

   $$L=\frac{SD\sqrt{P}}{148{,}000}$$

   Where:

   L=Testing allowance (makeup water), in gallons per hour
   S=Length of pipe tested, in feet
   D=Nominal diameter of the pipe, in inches
   P=average test pressure during the hydrostatic test, in pounds per square inch (gauge)

   Hydrostatic testing allowance per 1,000 ft of pipeline-gph
   Test Pressure=150 psi

Nominal Pipe diameter	Maximum Leakage Gallons Per Hour Per 1,000 Feet of Pipeline
4”	0.33
6”	0.50
8”	0.66
10”	0.83
12”	0.99
14”	1.16
16”	1.32
18”	1.49

5. In the event that the leakage exceeds the specified amount, the joints in the line shall be carefully inspected for leaks and repaired where necessary. Any pipes or special casting found to be cracked shall be removed and replaced with new pieces by the Contractor. No repair clamps or bell clamps can be utilized for repairs on new construction. After this work has been done, the tests shall be repeated. Final acceptance of the lines will not be made until satisfactory tests have been passed.
6. Water service leads installed with mainline pipe will be included in the water main pressure test. Installed water service leads shall have a riser (extension of water service) placed at the downstream side of the curb box. For flushing, testing, and sampling, once all tests are completed, this riser must be removed or buried 6' below grade.
7. Not more than 1,000 LF of water main shall be tested at one time.
8. If the pipeline under test contains sections of various diameters, the testing allowance will be the sum of the testing allowance for each size.
9. Where there is a considerable elevation difference in the section of water main being tested, the test pressure shall average 150 psi over the length of main, but shall be not less than 140 psi at the highest elevation.
10. All main line valves and hydrant lead valves within the test section shall remain open during the pressure test.
11. After completion of the two-hour pressure test, each valve shall be checked against test pressure.

C. Disinfect water-distribution piping as according to AWWA C651:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.

2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:

   a. Fill system or part of system with water/chlorine solution containing at least 25 ppm of chlorine; isolate and allow to stand for 24 hours.

   b. Two consecutively passing bacteriological analysis tests shall be conducted in two 24 hour periods from the initial 24 hour chlorination

c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system. Repeat procedure if biological examination shows evidence of contamination.

d. A 3-foot physical gap between existing and new water mains shall be maintained until the successful biological tests are obtained.

e. Engineer shall be notified 24 hours prior to connection to existing water main.

END OF SECTION 02510

SECTION 02821 - CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Chain-Link Fences: Industrial.
2. Gates: horizontal slide.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for site excavation, fill, and backfill where chain-link fences and gates are located.
2. Division 3 Section "Cast-in-Place Concrete" for concrete.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Minimum Post Size and Maximum Spacing for Wind Velocity Pressure: Determine based on mesh size and pattern specified, and on the following minimum design wind pressures and according to CLFMI WLG 2445:

a. Wind Speed: 90 mph.
b. Fence Height: 6 feet.
c. Line Post Group: IA, ASTM F 1043, Schedule 40 steel pipe.
d. Wind Exposure Category: C.

2. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.

B. Lightning Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.

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

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.
1. For gate and gate supports include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

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

1. Engineering Responsibility: Preparation of data for chain-link fences and gates, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

1.6 PROJECT CONDITIONS

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

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

1. Notify Engineer no fewer than two (2) days in advance of proposed interruption of utility services.
2. Do not proceed with interruption of utility services without Engineer's written permission.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: 5 feet. Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:

1. Steel Wire Fabric: Metallic-coated wire with a diameter of 0.120 inches.

a. Mesh Size**:** 2 inches.
b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied after weaving.

2.2 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for single swing style gate types.
1. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1184 for materials and protective coatings.

B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 1184 and the following:

1. Gate Fabric Height: 5 feet.
Gate Opening Width: 4 feet

2. Frame Members:

a. Tubular Steel: Size as required.

3. Bracing Members:

a. Tubular Steel: Size as required.

C. Frame Corner Construction:

1. Welded frame with panels assembled with bolted or riveted corner fittings and 5/16-inch diameter, adjustable truss rods for panels 5-feet wide or wider.

D. Hardware: Latches permitting operation from both sides of gate, locking devices, hangers, roller assemblies, and stops fabricated from galvanized steel. Fabricate latches with integral eye openings for padlocking, padlock accessible from both sides of gate.

2.3 FITTINGS

A. General: Comply with ASTM F 626.

2.4 CAST-IN-PLACE CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94/C 94M.
   1. Concrete Mixes: Normal-weight concrete air entrained with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

B. Materials: Dry-packaged concrete mix complying with ASTM C 387 for normal-weight concrete mixed with potable water according to manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.

   1. Do not begin installation before final grading is completed, unless otherwise permitted by Engineer.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Indicate locations of utilities, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

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

   1. Install fencing as indicated on drawings.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil.

B. Post Setting: Set posts in concrete into firm, undisturbed soil.

   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Concealed Concrete: Top 2 inches below grade to allow covering with surface material.

C. Line Posts: Space line posts uniformly at 10 feet o.c.

D. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at midheight of fabric 6 feet or higher, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

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

F. Bottom Rails: Install, spanning between posts.

3.5 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

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

B. Lubricate hardware and other moving parts.

3.7 DEMONSTRATION

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

END OF SECTION 02821

SECTION 02910 - RESTORATION AND CLEANUP

PART 1 - GENERAL

1.01 SCOPE OF WORK

Under this item, the Contractor shall restore all lawns, trees, gardens, landscape plantings, trails, fences, signs, water courses and sand, gravel, dirt, property markers (such as concrete monuments, irons, stakes, pipes, etc.), mailboxes and other items which may be damaged during the course of construction. All replacement and cleanup work will be considered incidental to the project.

All restoration work shall attempt to return the existing facilities to their original condition. Substitutions, such as gravel instead of grass, will not be allowable, unless shown on the plans.

The Contractor shall pay special attention to the requirements of Act 451, "Soil Erosion and Sedimentation Control". In all construction work the Contractor shall take all precautions necessary to prevent erosion and to conform to the requirements of Act 451. Should erosion occur within the guarantee period, regrade and reseed the disturbed area at no additional cost to the Owner.

Replacement and cleanup operations shall follow immediately behind the construction work. The Contractor shall make every effort to keep the job site clean and free of trash and miscellaneous building materials. The Contractor shall pay special attention in order to restore commercial signs, fences, etc. and to patch and repair pavement, driveways, and sidewalks immediately after the construction work. In the event that replacement and cleanup work does not proceed in a satisfactory manner, the Owner may withhold periodic payments or close the construction area until such time as the replacement and cleanup is satisfactory. An exception may be made if there are physical limitations which do not allow for immediate replacement and cleanup.

PART 2 - MATERIALS AND EXECUTION

2.01 GRASS AREA

Grass areas shall be considered as two types: open fields or ditches not adjacent to established lawns. The plans specifically call for Type 2 mixtures. If there is a question as to which mixture to use, the Engineer shall make the final decision.

Terraces, lawns, ditches, open fields and other grassy areas shall be topsoiled, fertilized, seeded and mulched in such a manner that a grass approximately equal in type and density of the original is obtained. Slopes between 1:3 and 1:2 shall be sodded and staked or receive seed with mulch blankets.

A. Topsoil: Topsoil furnished shall consist of dark brown or black loam, clay loam, silt loam, or sandy loam surface of fertile, friable humus soil of mineral origin, not including peat or muck. Soil shall be free of stones, roots, sticks and any other extraneous materials. All topsoil furnished shall be approved by the Engineer. All areas shall be topsoiled to a depth of four (4) inches.

B. Seeding and Fertilizing: Areas to be seeded and fertilized shall be carefully raked to even surfaces and all stones, sticks and other debris removed.

The area to be seeded shall be fertilized with agricultural fertilizer 12-12-12 analysis, Davco or Agrico or equal, applied on the prepared surface at the rate of 20 pounds per 1,000 square feet. Fertilizer shall be harrowed or raked into the soil to a depth of not less than one (1) inch.

Seeds shall be furnished in durable bags. On each bag of seed, the vendor shall attach a tag giving name, lot number, net weight of contents, purity and germination. All seed shall be thoroughly mixed and sown in a method which will ensure uniform distribution. Seeding during high winds or inclement weather will not be permitted. All seed is to be raked in and compacted. The seed shall be sown at the rate of five (5) pounds per 1,000 feet. The seeding mixtures shall be composed of certified seed of the purity, germination and proportions by weight as specified in the following table:

SEEDS			MIXTURES	
Kind	Minimum Purity	Minimum Germination	Type 1	Type 2
Perennial Rye Grass	98%	90%	20%	50%
Kentucky Blue Grass	90%	75%	60%	15%
Creeping Red Fescue	98%	80%	20%	35%

C. Mulching: Immediately after seeding all seeded areas, Type 2 shall be mulched with unweathered small grain straw or hay spread uniformly at a rate of 100 pounds per 100 square feet (two tons per acre).

D. Mulching Anchoring: All mulch shall be anchored using one of the following methods. The Contractor may use either method unless otherwise shown on the plans.

1. Method "A": The straw mulch shall be anchored by applying one of the following asphalt products at the rate shown. The asphalt may be blown on with the mulch or sprayed on immediately after the mulch is spread.

Asphalt Product	Application Rate
Liquid Asphalt R.C. 1, 2 or 3; M.C. 2 or 3	0.10 Gal. per S.Y.
Emulsified Asphalt R.S. 1 or 2; M.S. 2; or S.S. 1	0.04 Gal. per S.Y.

2. Method "B": A "Terra-Tak" mulch binder may be used in lieu of asphalt. Mixing and application shall be done in accordance with the manufacturer's recommendations.

3. Method "C": In areas with slopes greater than 10% or where shown on the plans, the Contractor shall place mulch netting or excelsior blanket mulch.

   a. Mulch Netting: Mulch shall be anchored by the use of mulch netting. The light weight fibrous netting shall be properly placed over the mulch and

secured to the ground using wire staples, spaced per manufacturer's recommendations.

b. Excelsior Blanket Mulch: An excelsior blanket shall be used in lieu of other mulch. The excelsior blanket shall be a consistent thickness of evenly distributed wood excelsior fibers, 80% of which are six (6) inches or more in length. The top side of the blanket shall be covered with a coarse net of twisted Kraft paper or biodegradable extruded plastic mesh. Ends and sides shall be securely butted and stapled with U-shaped wire staples of a size and length suited to the soil conditions.

2.02 DITCHES

Ditches which have been grassed and maintained shall be restored to their original shape, condition, line and grade.

Ditches in which culverts or drain tile have been installed shall have the same tile replaced, if in good condition, or a tile satisfactory to the Engineer installed in its place at the original line and grade.

Catch basins, if encountered, shall be repaired/replaced if damaged.

2.03 FENCE REPLACEMENT

A. Fences shall be replaced equal to and of the same type as existing.

B. Salvaged material, if approved by the Engineer, may be used for replacement.

2.04 SIGNS AND STRUCTURES

Signs or other structures which must be removed by the Contractor in order for work to proceed shall be replaced and reconstructed to original condition. It is very important that replacement follow immediately behind the construction work.

2.05 TREES AND SHRUBS

Existing trees and shrubs that are disturbed during construction shall be replaced at no additional cost to the contract. The size and type of replacement shall be approved by the Owner and/or Engineer prior to replacement.

2.06 OTHER DEBRIS

The Contractor shall remove, at his own expense from the site, any and all broken pipe, bricks, blocks, lumps of concrete, broken machinery, cans, containers and other trash and debris.

End of Section 02910

SECTION 03300 – CAST IN PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

The work under this section shall include all materials, labor, and equipment necessary to achieve a finished product, including but not limited to the items in these specifications and those shown on the working drawings.

1.02 QUALITY ASSURANCE

A. Codes and Standards: All procedures and materials under this section, where not specifically stated, shall be in accordance with standards and recommendations of the American Concrete Institute's Building Code Requirements for reinforced concrete (ACI 318, latest edition).

B. Concrete Testing Service: All acceptance testing shall be performed by concrete field testing technicians certified by the American Concrete Institute. All acceptance testing shall be paid for by the Owner.

C. Concrete Quality: One set of four test cylinders shall be made for each day's placement, or every 50 cubic yards of concrete placed in a day. Samples shall be obtained according to ASTM C172 and C31 (latest edition) and tested according to ASTM C39 (latest edition). One cylinder shall be broken at seven (7) days with two (2) cylinders to be broken at the 28th day. One (1) cylinder shall be held in reserve. Concrete sampling and testing shall be performed by an independent testing company and paid for by the Owner.

D. Test Results: Will be reported in writing to the Engineer and concrete producer within 24 hours after tests are made.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: Portland Cement shall conform to "Standard Specifications for Portland Cement" (ASTM C150 - latest edition), or "Specifications for Air-Entrained Portland Cement" (ASTM C175 - latest edition) and shall be Types I, III, or IIIa.

B. Aggregates: Concrete aggregates shall conform to "Standard Specifications for Concrete Aggregates" (ASTM C33 - latest edition). Fine aggregate shall be clean, sharp, natural sand free from loam, clay, or lumps or other deleterious substances. Coarse aggregate shall be clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter. Coarse aggregate shall be washed gravel either natural or crushed. Use of pit or bank-run gravel is not permitted. Maximum coarse aggregate size for all members less than eight (8) inches in thickness shall be three quarters of an inch (⅓"). For members with thicknesses greater than or equal to eight (8) inches, the maximum coarse aggregate size shall be one and one half inches (1-½").

C. Mixing Water: All water used in concrete shall be from a potable water.

D. Admixtures: Air-entraining admixtures shall conform to "Standard Specifications for Air-Entrained Admixtures for Concrete" (ASTM C260 -latest edition).

2.02 REINFORCEMENT MATERIALS

A. Reinforcement Bars: All reinforcing bars shall be deformed, grade 60 as defined by: (ASTM A615, A616, or A617 - latest editions).

B. Welded Wire Fabric: Welded wire fabric for concrete reinforcement shall conform to: (ASTM A185 - latest edition).

C. Before fabrication or placement of any reinforcing steel, the Contractor shall submit to the Engineer for approval six (6) sets of shop drawings showing in detail all methods of placement, size, lengths, bends and quantity of bars which will be required. The drawings shall be approved in writing by the Contracting Officer within ten (10) working days of receiving such. The Contractor shall not fabricate or place any reinforcing steel until this approval is obtained.

2.03 BITUMINOUS JOINT FILLER

Resilient, non-extruding type premolded bituminous composition, complying with ASTM D944, AASHTO M33, and FS HH-F-341, Type III.

2.04 CONCRETE MIX DESIGN

A. Proportion mixes by either laboratory trial batch or field experience method, complying with ACI 211.1 and Act 301.

1. Submit written reports of each proposed mix for each class of concrete to Engineer at least thirty (30) days prior to start of work. Do not begin concrete production until mixes have been reviewed by the Engineer.

2. Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and reviewed by the Engineer.

B. Use air-entraining admixture in all concrete which will be exposed to freezing and thawing, providing not less than 5% nor more than 7% entrained air, and from 2% to 4% for other concrete.

C. Design the mix to produce standard-weight concrete consisting of portland cement, aggregate, water and specified admixture to produce the following properties:

1. Compressive Strength:
   a. Sidewalks and curbs: 4,000 psi minimum at 28 days.
   b. Concrete pads: 4000 psi minimum at 28 days

2. Slump Range:
   a. 1" to 3" for reinforced foundation systems; 1" to 4" for all other concrete.

3. Water Cement Ratio:
   a. The maximum water-cement ratio shall be in accordance with ACI 301 except as follows:
      1) For thin sections (railings, curbs, sills, ledges, ornamental work) and sections with less than one inch (1") cover over steel, maximum water-cement ratio for severe weathering area shall be 0.45.
      2) For all other structures in severe weathering areas, maximum water-cement ratio shall be 0.50.

PART 3 - EXECUTION

3.01 FORMING, MIXING, AND PLACING CONCRETE

A. Preparation of Equipment and Place of Deposit

1. Before placement, all equipment for mixing and transporting the concrete shall be cleaned, and all debris and ice shall be removed from the places to be occupied by the concrete. Forms shall be thoroughly wetted (except in freezing weather) or oiled, and masonry filler units that will be in contact with concrete shall be well drenched (except in freezing weather). The reinforcement shall be thoroughly cleaned of ice, dirt, loose rust and mill scale, or other coatings.

2. Water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Engineer. All latents and other unsound material shall be removed from hardened concrete before additional concrete is added.

B. Mixing

1. Ready mixed concrete shall be mixed and delivered in accordance with "Standard Specification for Ready Mixed Concrete (ASTM C94 - latest edition). Mixing and transporting equipment shall be capable of providing concrete which meets the ASTM C94 requirements for uniformity.

2. For job mixed concrete, the mixer shall be rotated at a speed recommended by the manufacturer. If mixer performance tests are not made, each batch of one cubic yard (1 cy) or less shall be mixed for at least 1 minute after all materials are in the mixer. The mixing time shall be increased 15 seconds for each additional cubic yard or fraction thereof. The entire batch shall be discharged before the mixer is recharged.

C. Conveying

1. Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent separation or loss of materials.

2. Equipment for chuting, pumping, and pneumatically conveying concrete shall be of such size and design as to ensure a practically continuous flow of concrete at the delivery end without separation of materials practically continuous flow of concrete at the delivery end without separation of materials.

D. Placing

1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Concrete shall be placed at such a rate that it is at all times plastic and flows readily between bars. No concrete contaminated by foreign material shall be used, nor shall retempered concrete be used unless approved by the Engineer.

2. When placing is started, it shall be carried on as a continuous operation until placement of the panel or section is completed. When construction joints are necessary, they shall be made in accordance with Article H-7: Construction Joints.

3. All concrete shall be thoroughly consolidated during placement. It shall be thoroughly worked around reinforcement and embedded fixtures and into the corners of the forms.

E. Curing

1. Concrete shall be kept moist for at least 5 days after placement. High-early-strength concretes, however, shall be kept moist for at least the first 2 days when concrete and air temperatures are above 50 F.; longer periods of curing shall be required when temperatures are below 50 F. If provisions are made for sufficient damp curing of the concrete to develop compressive strengths equal to those of Types I (Normal) and Ia, Portland-type cements that conform to "Standard Specifications for Blended Hydraulic Cements" (ASTM C595 - latest edition) may be used.

2. In lieu of keeping the surface of slabs continually wet, the Contractor may elect to use a chemical curing and hardening compound such as "Demicon Cure-Hard", "One-Kote" or equal, providing the surfaces are treated in strict accordance with the manufacturer's stated directions.

F. Cold-Weather Requirements

1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. No frozen materials or materials containing snow or ice shall be used.

2. All reinforcement, forms, fillers, and ground with which the concrete is to come in contact shall be free from snow and ice. All concrete placed in forms shall have a temperature of 50 F or higher after placement. Adequate means shall be provided for maintaining this temperature for three (3) days. When high-early-strength concrete is used, a temperature of at least 50 F shall be maintained for two (2) days. In either case, additional time necessary to ensure proper curing of the concrete shall be provided as directed by the Engineer. The housing, covering, or other protection used in curing shall remain intact at least 24 hours after artificial heating is discontinued. No dependence shall be placed on salt or other chemicals for the prevention of freezing.

G. Hot-Weather Requirements

1. In hot weather, suitable precautions shall be taken to avoid drying of the concrete prior to finishing operations. Use of windbreaks, sunshades, fog sprays, or other devices shall be provided as directed by the Engineer.

2. Concrete deposited in hot weather shall not have a placing temperature that will cause difficulty from loss of slump, flash set, or cold joints. Concrete temperature shall be maintained at less than 90 F unless higher temperatures are permitted by the Engineer.

H. Forms and Details of Construction

1. Forms shall conform to shapes, lines, and dimensions of the members as called for on the plans, and shall be sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape.

2. Removal of Forms: Forms shall be removed in such a manner as to ensure the complete safety of the structure. In no case shall supporting forms or shoring be removed until members have acquired sufficient strength to support their weight and imposed loads safety.

3. Cleaning and Bending Reinforcement: At the time concrete is placed, metal reinforcement shall be free from loose, thick rust, mill scale, or other coatings that will destroy or reduce the bond. All bars shall be bent cold, unless otherwise permitted by the Contracting Officer. No bars partially embedded in concrete shall be field bent except as shown on the plans or as specifically permitted by the Engineer.

4. Placing Reinforcement: Metal reinforcement shall be accurately placed according to the plans and adequately secured in position by concrete, metal, or other approved chairs, spaces, or ties.

5. Splices in Reinforcement: No splices in reinforcement shall be made except as shown on the plans, or as specified, or as authorized by the Engineer. All welding shall conform to the American Welding Society's "Reinforcing Steel Welding Code" (AWS D12.1 - latest edition), unless authorized by the Engineer.

6. Concrete Protection for Reinforcement

a. Reinforcement shall be protected by the thickness of concrete indicated in the plans. Where not otherwise shown, the thickness of concrete over the reinforcement shall be as follows:

1) Where concrete is deposited against the ground without the use of forms - not less than three inches (3").

2) Where concrete is exposed to weather or ground but placed in forms - not less than two inches (2") for bars larger than No. 5 and one and one half inches (1½") for No. 5 bars or smaller.

3) In slabs and walls not exposed to ground or weather - not less than three quarters of an inch (¾").

4) In beams, girders, and columns not exposed to ground or weather - not less than one and one half inches (1½").

5) In all cases, at least equal to the diameter of the bars.

b. Exposed reinforcing bars intended for bonding with future extensions shall be protected from corrosion by concrete or other adequate covering.

7. Joints

a. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect.

b. Provide Keyways at least one and one half inches (1½") deep in construction joints in walls, slabs, and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

c. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints.

d. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.

e. Contraction (Control) Joints in Slabs-on-Ground: Construct contraction joints in slabs-on-ground to form panels of patterns as shown. Use inserts 1/8" to 1/4" wide x 1/4 of slab depth, unless otherwise indicated.

Contraction joints may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.

3.02 CONCRETE FINISHES

A. Surface Treatment After Removal of Forms: Immediately following the removal of forms, all form ties shall be cut off at a depth of at least one half of an inch (½") beneath the surface of the concrete. The resulting holes shall be pointed up with cement mortar. Any undesirable fins or other project-ions on the surface shall be carefully removed and offsets leveled. Honeycombed or damaged places shall be immediately saturated with water and repaired by filling with a concrete or mortar of the same composition as was used in the surface. After making the necessary repairs, the surface shall be finished with a wood float so as to be free from streaks, discolorations or other imperfections. Plastering will not be permitted. The use of a steel trowel to finish surfaces will likewise not be permitted.

B. Finish of Exposed Concrete Surfaces: Where shown on drawings, when exposed to view in the completed work, shall be finished in the following manner: All work set forth in the paragraph immediately above shall first be done. Oil and rust stains shall be completely removed from all exposed surfaces. After the defects have been repaired, dampen surface and apply Thoroseal at a rate of 2 lbs. per square yard minimum with tampico fiber brush or sponge to achieve a uniform finish. Color used shall be white. Thoroseal shall be mixed to a batter consistency and must not be applied in temperature below 40 F or when temperature is expected to fall below 40 F within 24 hours.

C. Slab Finishes: Interior concrete slabs shall have a steel trowel finish. Exterior sidewalks shall have a lightly broomed finish perpendicular to the direction of traffic. Finishing shall be performed only in accordance with the provisions of ACI 302, "Recommended Practice for Concrete Floor and Slab Construction".

3.03 PLACING CONDUIT, PIPES, ETC.

A. Placement: All conduit, pipes, ducts and similar items shall be placed so as not to weaken the construction. The Contractor shall call the Engineer's attention to any such interference; failing in this, the Contractor shall replace at his own expense any concrete ordered removed to remedy the weakness.

End of Section 03300

727 WEST FRONT • TRAVERSE CITY, MICHIGAN 49684 • (231) 947-1639 • FAX (231) 947-7133

PROPOSAL

DATE: 5/12/2022

BILLING LOCATION	SERVICE LOCATION
NAME: Garfield Township	NAME: Garfield Township - River East Park
ADDRESS: 3848 Veterans Dr.	ADDRESS: 2143 Keystone Rd.
Traverse City, Mi. 49686	Traverse City, Mi. 49685
CONTACT PERSON: Derek Morton	PHONE: 231-225-3158 CELL:
EMAIL:	dmorton@garfieldtwp.com

	FIXED SPRAY	1	CONTROLLER Hunter ProC ID
	FIXED SPRAY	1	MODULE 16 Station Module
	MPR ROTATORS	795'	FT. CONTROL WIRE 18/10 UI/UA Control Wire
58	GEAR DRIVEN ROTOR Toro T5P	795'	14 GAUGE WIRE White
	GEAR DRIVEN ROTOR	720'	FT. MAIN LINE 1 1/4" 160# NSF PVC Piping
	TRICKLE EMITTERS	By Others	BACKFLOW PREVENTER
	1/2" TRICKLE TUBE		PUMP & FITTINGS
	PRV, FILTER AND VALVE BOX		FT. INTAKE FILTER, CHECK VALVE, & STAKES
	HOSE BIBS	x	OTHER Miscellaneous Fittings
15	1" ELECTRIC VALVE Toro 205T		OTHER
15	VALVE BOXES 6"		OTHER

Installation Price* $17,145.00

*Includes Labor and Materials

NOTES: Warranty: 5 years on all products and 1 year installation labor.

*Water Requirements: 10 gpm @ 50 psi

**Sleeving to be done by others

***Lautner Irrigation point of connection after the backflow preventer

****All mainline piping is outside of the Dog Park Area

SPRINKLER SYSTEM PURCHASE AGREEMENT

1. Lautner Irrigation, Inc. (the contractor) agrees to install and/or supply the property located at the address of the owner shown above an underground irrigation system in accordance with product specifications and is to supply all work and materials thereof.
2. The owner agrees therefore, the sum total of $17,145.00 including applicable tax, for full installation.

50% DOWN, BALANCE DUE UPON COMPLETION.

3. Lautner Irrigation, Inc. further agrees as follows
   A) Installation will be in accordance with local ordinances and plumbing codes
   B) Installation will be supervised by authorized irrigation technicians
4. Owner Agrees:
   A) To pay any increase in charges resulting from a change in the scope of the job, including options and upgrades.
   B) To be responsible for properly locating privately owned utility lines (e.g. - private electrical, phone, TV dish or antenna, LP gas, septic systems and fields, storm water drains, underground dog fence, ect.) with at least 4 feet apart markings - one (1) foot on either side of utility line. Time spent locating utility lines by the contractor will revert to a time and material charge.
   C) That if unknown adverse ground conditions are encountered (e.g. large rocks or stumps, ect.) that portion of the job shall revert to a time and and material charge.
   D) If boring under driveways is required, the contractor is not responsible for possible damages incurred.
   E) If work is required to existing system/equipment, that portion of the job shall revert to a time and material charge.
   F) To be responsible for accurately locating all property boundaries and that the contractor shall be held harmless for any claims, including those by third parties
   G) To be responsible for materials placed in any right-of-way.
   H) Any sleeving installed by others must be accurately located and/or exposed. If the contractor has to locate and/or bore, that portion of the job shall revert to a time and material charge.

I HAVE READ, UNDERSTAND, AND AGREE TO THE TERMS OF THIS PROPOSAL/PURCHASE AGREEMENT

This proposal is subject to change after 30 days from above date.

OWNERS:

AJ Otto, CLD, Vice President
REPRESENTATIVE

X
DATE

X
DATE

*SEE BACK FOR WARRANTY INFORMATION

PRODUCT WARRANTY INFORMATION

TORO

(PRODUCT WARRANTY FROM DATE OF INSTALL)

5 YEAR WARRANTY

570Z FIXED SPRAYS, S-800 SERIES ROTORS, T5 ROTORS, TR-70P & XT ROTORS, 2001 SERIES ROTORS, 640 SERIES ROTORS, TPV ELECTRIC VALVES, P220 SERIES ELECTRIC VALVES, TMC-212 CONTROLLERS, TMC-424 CONTROLLERS, CUSTOM COMMAND CONTROLLERS, TWRS/FS WIRELESS RAIN SENSOR.

RAINBIRD

(PRODUCT WARRANTY FROM DATE OF INSTALL)

5 YEAR WARRANTY

3500 SERIES MID-RANGE ROTORS, 5000 SERIES ROTORS, ALL RAINBIRD VALVES, ALL RAINBIRD CONTROLLERS

K-RAIN

(PRODUCT WARRANTY FROM DATE OF INSTALL)

3 YEAR WARRANTY

K1 MID-RANGE ROTORS, K2 PRO ROTORS, K-7001 ELECTRIC VALVES

WEATHERMATIC

(PRODUCT WARRANTY FROM DATE OF INSTALL)

2 YEAR WARRANTY

SMARTLINE CONTROLLERS

HUNTER

(PRODUCT WARRANTY FROM DATE OF MANUFACTURE)

2 YEAR WARRANTY

PGP ROTORS, SRC CONTROLLERS, PRO-C CONTROLLERS

5 YEAR WARRANTY

I-20 ROTORS, I-25 ROTORS, ICC CONTROLLERS

PUMPS

1 YEAR WARRANTY

MUNRO PUMPS, STA-RITE & BERKLEY PUMPS

2 YEAR WARRANTY

MUNRO & K-RAIN PUMP START RELAYS

OILCREEK

50 YEAR WARRANTY

ALL OILCREEK PIPING

CRESLINE

25 YEAR WARRANTY

ALL CRESLINE PIPING

MAXI-JET

1 YEAR WARRANTY

ALL MAXI-JET PRODUCTS

NETAFIM

7 YEAR WARRANTY

TECHLINE & BLANK PRODUCTS

PLANS PREPARED FOR:
GARFIELD TOWNSHIP
RIVER EAST RECREATION AREA IMPROVEMENTS - PHASE II : DOG PARKS

CLIENT / AGENCY

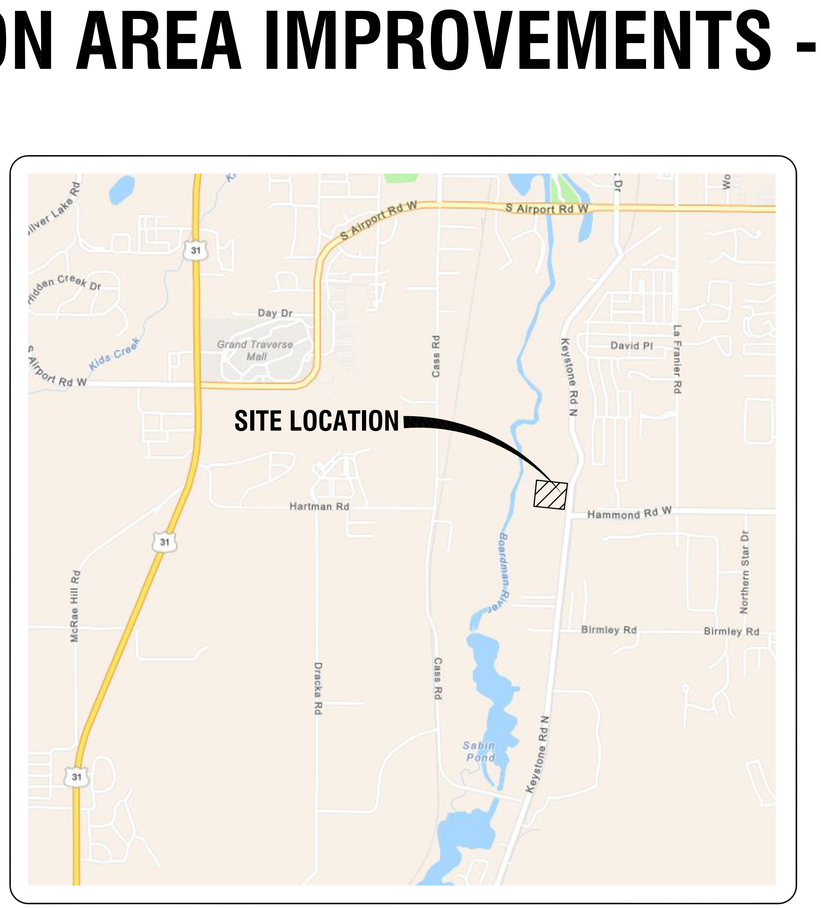
GARFIELD TOWNSHIP
3848 VETERANS DRIVE
TRAVERSE CITY, MI 49684
231-941-1620

ENGINEER

ENGINEERING
SURVEYING
TESTING & OPERATIONS

123 West Front Street
Traverse City, MI 49684

http://gfa.tc
231.946.5874 (p)
231.946.3703 (f)



LOCATION MAP

GARFIELD TOWNSHIP, GRAND TRAVERSE COUNTY, MICHIGAN
NOT TO SCALE

SHEET INDEX

ISSUED: 7-22-22
(FOR BIDS)

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

PUBLIC AGENCIES AND UTILITIES

PUBLIC AGENCIES

CHARTER TOWNSHIP OF GARFIELD
Telephone: 231.941.1620

GRAND TRAVERSE COUNTY D.P.W.
Telephone: 231.922.4896

GRAND TRAVERSE COUNTY ROAD COMMISSION
Telephone: 231.922.4848

GRAND TRAVERSE COUNTY SOIL EROSION
SEDIMENTATION CONTROL DEPT.
Telephone: 231.995.6042

GRAND TRAVERSE COUNTY DRAIN COMMISSION
Telephone: 231.922.4807

MICHIGAN DEPARTMENT OF TRANSPORTATION (M.D.O.T.)
Telephone: 231.941.1986

UTILITY AGENCIES

CHERRYLAND ELECTRIC COOPERATIVE
Telephone: 231.943.8377

CONSUMERS ENERGY
Telephone: 231.929.6242

TRAVERSE CITY LIGHT & POWER
Telephone: 231.922.4942

DTE ENERGY
Telephone: 231.592.3244

CHARTER COMMUNICATIONS
Telephone: 231.929.7012

AT&T MICHIGAN
Telephone: 231.941.2707

EMERGENCY SERVICES

EMERGENCY CALLS
911

EMERGENCY AMBULANCE SERVICE
911

POLICE AGENCIES
EMERGENCY SERVICE: **911**
City of Traverse City: Telephone: 231.941.2300
Grand Traverse County Sheriff: Telephone: 231.941.2225
Michigan State Police: Telephone: 231.946.4646

FIRE DEPARTMENTS
EMERGENCY SERVICE: **911**
City of Traverse City: Telephone: 231.941.2340
Grand Traverse County: Telephone: 231.941.2238

MISS DIG
Telephone: 1.800.482.7171

GARFIELD TOWNSHIP : RIVER EAST PARK IMPROVEMENTS - PHASE II : DOG PARKS

GFA JOB#
22070

SHEET #
1.1

LEGEND

Survey Legend

Existing | Proposed

- Lot Line
- Property Line
- Right–Of–Way Line
- Right–Of–Way Centerline
- Physical Centerline
- Easement
- Benchmark
- Set GPS Point
- Found Iron
- Set Iron
- Found Monument
- Monument Box
- Section Corner
- Quarter Corner
- Top of Water

Paving Legend

Existing | Proposed

- Concrete
- Asphalt
- Gravel
- Brick
- Wood
- Railroad
- Pavement Markings
- Curb
- Sidewalk
- Two–track / Trail
- Concrete
- Asphalt
- Gravel
- Brick

Storm Water and Grading Legend

Existing | Proposed

- Storm Sewer / Culvert
- Major Contour (100)
- Minor Contour (100)
- Silt Fence
- Round Catch Basin
- Square Catch Basin
- Storm Manhole
- End Section
- Soil Boring
- Clearing & Grubbing Limits

Watermain Legend

Existing | Proposed

- Watermain
- Water Meter
- Water Valve
- Curb Stop
- Hydrant
- Well
- Spigot
- Sprinkler

Miscellaneous Legend

Existing | Proposed

- Building
- Minor Building Structure
- Fence
- Rip–Rap
- Guardrail
- Sign
- Sheet Pile
- Trees / Brush
- Landscaping
- Edge of Water
- Ditch
- Wetlands
- Building
- Sign
- Parking Meter
- Stump
- Mailbox
- Post
- Tank Cover
- Trees (As Noted)

Grading Legend

- XXX.XX — Existing Grade
- XXX.XX BC / XXX.XX G — Proposed Back of Curb Elev. / Proposed Gutter Elev.
- XXX.XX TA — Proposed Top of Asphalt Elev.
- XXX.XX TW — Proposed Top of Concrete Elev.
- XXX.XX FF — Proposed Finish Floor Elev.
- XXX.XX TG — Proposed Top of Gravel Elev.
- XXX.XX I.E. — Proposed Culvert Invert
- XXX.XX D.I. — Proposed Ditch Invert
- XXX.XX — Proposed Ground Elev.
- XXX.XX HP — Proposed High Point
- XXX.XX LP — Proposed Low Point
- Proposed Drainage Arrow
- H.P. — Proposed High Point Breakline

Electric & Gas Legend

Existing | Proposed

- GAS — Gas Main
- Pipeline
- OHE — Overhead Electric
- UGE — Underground Electric
- OHT — Overhead Telephone
- UGT — Underground Telephone
- CATV — Cable Television
- FOPT — Fiber Optic
- Gas Meter
- Electric Meter
- Utility Pole
- Guy Wire
- Satellite Dish
- Light
- Fiber Optic Marker
- Light Pole
- Guy Pole
- Electric Manhole
- Telephone Manhole
- Monitor Well
- Miss Dig Flag

GENERAL NOTES

1. ALL ELEVATIONS ARE BASED ON NAVD88 DATUM REFERENCE TO THE MDOT CORS.
2. SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO: PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION, PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.
3. THE LOCATION OF EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRIC CONDUITS, SEWERS AND WATER LINES, OF RECORD ARE SHOWN ON THE PLANS. THE INFORMATION SHOWN IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER, NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND MISS DIG AND REQUEST THAT THEY STAKE OUT THE LOCATIONS OF THE UTILITIES IN QUESTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITIES WITH THE UTILITY PROVIDER. COST OF REPAIR FOR ANY DAMAGED UTILITY LINES THAT IS PROPERLY STAKED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING THE FURNISHING AND USE OF SAFEGUARDS, SAFETY DEVICES AND PROTECTION EQUIPMENT. THE CONTRACTOR SHALL TAKE ANY NECESSARY PRECAUTIONS TO PROTECT THE LIFE AND HEALTH OF EMPLOYEES AND THE PUBLIC IN THE PERFORMANCE OF THE WORK.
5. FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, 1974, THE CONTRACTOR SHALL DIAL 1–800–482–7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.
6. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING ANY WORK.
7. EXISTING PROPERTY CORNERS ARE IDENTIFIED ON THE PLANS. IF A PROPERTY CORNER IS DISTURBED DURING CONSTRUCTION IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE BY A PROFESSIONAL LAND SURVEYOR.
8. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT TO ANY MAILBOXES DISTURBED DURING CONSTRUCTION AND SHALL NOT INTERFERE WITH MAIL SERVICE. ALL DISTURBED MAILBOXES SHALL BE PLACED IN ORIGINAL LOCATION AND AT AN ELEVATION DETERMINED BY THE POSTAL SERVICE.
9. LOCAL TRAFFIC SHALL BE MAINTAINED AT ALL TIMES.
10. CONTRACTOR SHALL RESTORE ALL LAWNS, LANDSCAPE PLANTINGS, SIDEWALKS, COMMERCIAL SIGNS, ETC., AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
11. CONTRACTOR SHALL PROVIDE ADEQUATE SUPPORT FOR UTILITY POLES AS NECESSARY. CONTRACTOR SHALL CONSULT WITH THE UTILITY COMPANY PRIOR TO ANY DISTURBANCE OF UTILITY POLE OR ANCHORING SYSTEM.

SOIL EROSION AND STORM WATER CONTROL NOTES

1. THE CONTRACTOR IS ADVISED THAT ALL SOIL EROSION MEASURES AND STORM WATER FACILITIES SHALL BE CONSTRUCTED AT THE EARLIEST FEASIBLE SCHEDULE. NO OTHER CONSTRUCTION ACTIVITIES SHALL PROCEED WHICH DO NOT PHYSICALLY DRAIN TO THESE FACILITIES UNLESS ADDITIONAL TEMPORARY FACILITIES ARE INSTALLED. PRIOR TO ACCEPTANCE OF THE PROJECT AS COMPLETE, ALL PERMANENT STORM WATER FACILITIES USED DURING CONSTRUCTION SHALL BE RESTORED TO OPERATE IN THEIR DESIGNED CONDITION AT NO ADDITIONAL COST TO THE PROJECT.
2. THE CONTRACTOR SHALL PROVIDE TEMPORARY SOIL EROSION CONTROL MEASURES PER P.A. 451 AS AMENDED. WITH THE USE OF SILT FENCE AND OTHER TEMPORARY MEASURES THE CONTRACTOR SHALL PROTECT THE ADJACENT AREA FROM ACCELERATED EROSION AND SEDIMENTATION FLOWS RESULTING FROM CONSTRUCTION. THE CONTRACTOR SHALL INSTALL ADDITIONAL TEMPORARY AND PERMANENT SOIL EROSION CONTROL MEASURES, IF DIRECTED BY THE ENGINEER OR SOIL EROSION CONTROL OFFICER, AT NO ADDITIONAL COST TO THE PROJECT
3. INSTALLATION AND MAINTENANCE OF TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. SHOULD ADDITIONAL SOIL EROSION CONTROL MEASURES BE DETERMINED TO BE NECESSARY BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER THEY SHALL BE IN PLACE NO LATER THAN 24 HOURS FROM THE TIME OF NOTIFICATION TO THE GENERAL CONTRACTOR FOR THE PROJECT. IF NOT PLACED IN 24 HOURS OR LESS ALL ON SITE CONSTRUCTION WILL BE HALTED UNTIL SUCH MEASURES ARE INSTALLED AND APPROVED BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER.
5. ALL DISTURBED NON–HARD SURFACE AREAS UNLESS IDENTIFIED OTHERWISE ON THE PLANS SHALL BE STABILIZED WITH TOPSOIL, SEEDED, FERTILIZED AND MULCHED. DISTURBED AREAS SHALL BE TOP SOILED TO A DEPTH NOT LESS THAN FOUR (4) INCHES. SLOPES WHICH ARE BETWEEN 3:1 AND 2:1 GRADE SHALL BE SODDED AND STAKED OR RECEIVE SEEDING IN COMBINATION WITH DOUBLE NET, BIODEGRADABLE EROSION CONTROL BLANKET (EXCEL CS–3 OR EQUAL). IN NO CASE SHALL CONSTRUCTED SLOPES IN EXCESS OF 1–1/2:1 BE ALLOWED ON THE PROJECT. CONSTRUCTED SLOPES SHALL NOT EXCEED 2:1 UNLESS SPECIFICALLY APPROVED BY THE ENGINEER, IN WHICH CASE, SLOPES BETWEEN 2:1 AND 1–1/2:1 GRADE SHALL RECEIVE SEEDING IN COMBINATION WITH DOUBLE NET, BIODEGRADABLE EROSION CONTROL BLANKET (EXCEL CC–4 OR EQUAL). ALL SLOPES GREATER THAN 3:1 GRADE AND SUBJECT TO CONCENTRATED FLOWS SHALL RECEIVE PERMANENT TURF REINFORCING MATTING (EXCEL PP5–10 OR EQUAL). INSTALLATION OF EROSION CONTROL BLANKETS AND TURF REINFORCING MATS SHALL BE PER MANUFACTURER'S INSTRUCTIONS. STORM WATER CHANNELS AND BASINS SHALL BE TREATED ACCORDING TO THE DESIGNATION ON THE PLANS AND DETAILS.
6. CONTRACTOR SHALL STABILIZE DISTURBED EARTH IMMEDIATELY UPON ESTABLISHMENT OF FINAL GRADE AND SHALL BE SOLELY RESPONSIBLE FOR ESTABLISHMENT OF A HEALTHY STAND OF GRASS PRIOR TO THE ONSET OF COLD WEATHER..

SURVEY NOTES

1. THIS IS NOT INTENDED OR REPRESENTED TO BE A LAND SURVEY. NO PROPERTY CORNERS WERE SET AS PART OF THIS TOPOGRAPHIC SURVEY.
2. NO CHECK OF TITLE RELATIVE TO OWNERSHIP, GAPS, OVERLAPS, OR OCCUPATION HAS BEEN PERFORMED AS PART OF THIS TOPOGRAPHIC SURVEY.
3. THE SURVEYOR HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.
4. BASIS OF BEARING = MICHIGAN STATE PLANE COORDINATE SYSTEM CENTRAL ZONE – NAD83 (2011) REFERENCED TO THE MDOT CORS
5. BASIS OF ELEVATION = NAVD88 DATUM REFERENCED TO THE MDOT CORS

CONSTRUCTION SCHEDULE

1. ALL WORK TO BE PERFORMED INCLUDING FACILITY ACCESS AND EQUIPMENT STORAGE SHALL BE COORDINATED WITH THE TOWNSHIP.
2. CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULED TO THE OWNER FOR APPROVAL PRIOR TO BEGINNING WORK.
3. THE CONTRACTOR SHALL PROPERLY SECURE THE SITE DAILY WITHIN THE VICINITY OF THE PROPOSED WORK TO ENSURE SAFETY OF THE PUBLIC AND ACCESS IS PROHIBITED.
4. ALL WORK SHALL BE PERFORMED WITHIN THE CONFINES OF PROPERTY OWNED BY THE TOWNSHIP.
5. ALL LOCATIONS FOR STORAGE/MOBILIZATION/STAGING SHALL BE COORDINATED WITH THE TOWNSHIP PRIOR TO BEGINNING WORK.

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231.946.5874 (p)
231.946.3703 (f)
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SURVEYING
TESTING & OPERATIONS
123 West Front Street
Traverse City, MI 49684

REV#	DATE	DRN	DESC
A	6-17-22	SJG	FOR BIDS

GARFIELD TOWNSHIP
RIVER EAST PARK IMPROVEMENTS - PHASE I
LEGEND & NOTES
SECTION 23, TOWN 27 NORTH, RANGE 11 WEST
GARFIELD TOWNSHIP, GRAND TRAVERSE COUNTY, MICHIGAN

P.M.: JENNIFER HODGES, PE
DR.: SJG CKD.: JAH
JOB NO.: 22070
1.2

Benchmark

SET CONTROL POINT NEAR NORTH WEST CORNER OF CLEARING

ELEVATION = 643.89 (NAVD88)

Demolition Notes

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE AND DUST CONTROL AND TRAFFIC CONTROL IN ACCORDANCE WITH THE LOCAL CODES.
2. ALL DEBRIS INCLUDING TREES, SHRUBS, STUMPS, ROOTS, ORGANICS, SOIL, ROCKS, ECT. SHALL BE REMOVED IN THEIR ENTIRETY FROM THE SITE. CONTRACTOR SHALL STRIP EXISTING TOPSOIL TO A DEPTH OF 4" AND GRADE. COSTS FOR TRANSPORT AND DISPOSAL SHALL BE PROVIDED BY THE CONTRACTOR.
3. ALL DEMOLITION, REMOVAL AND SALVAGING SHALL BE BY THE CONTRACTOR UNLESS OTHERWISE NOTED. CLEARING LIMITS TO INCLUDE ALL TREES / SHRUBS UP TO THE BUILDING.
4. TREES NOT IDENTIFIED FOR REMOVAL SHALL BE PROTECTED BY THE CONTRACTOR DURING CONSTRUCTION.
5. ALL WORK INCLUDING THE STORING OF MATERIALS AND STAGING SHALL REMAIN WITHIN THE CONFINES OF THE THE PROPERTY LIMITS. LOCATIONS SHALL BE COORDINATED WITH TOWNSHIP STAFF TO NOT DISRUPT PARK ACCESS AND USE.
6. ANY DAMAGE TO THE EXISTING INFRASTRUCTURE OUTSIDE THE DEMOLITION LIMITS SHALL BE REPAIRED AND/OR RESTORED TO EXISTING OR BETTER CONDITIONS AT THE CONTRACTORS EXPENSE.

N
W E
GRAPHIC SCALE: 1 inch = 30 feet
0 15 30 60 90

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231.946.3703 (f)
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SURVEYING
TESTING & OPERATIONS
123 West Front Street
Traverse City, MI 49684

REV#	DATE	DRN	CHK
A	6-17-22	SJG	FGB/BDS

GARFIELD TOWNSHIP
RIVER EAST PARK IMPROVEMENTS - PHASE II : DOG PARKS
EXISTING CONDITIONS & DEMOLITION PLAN
SECTION 23, TOWN 27 NORTH, RANGE 11 WEST
GARFIELD TOWNSHIP, GRAND TRAVERSE COUNTY, MICHIGAN

P.M.: JENNIFER HODGES, PE
DR.: SJG | CHK.: JAH
JOB NO.: 22070
2.1

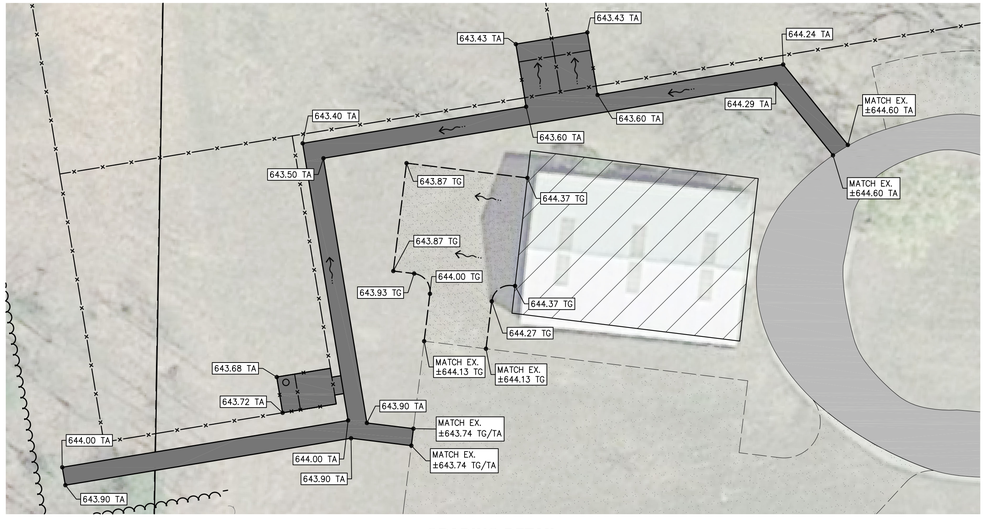
T:\PROJECTS\22070\DWG\ENG\22070_EG.DWG, 6/7/2022 8:00 AM, ABELANGER

Construction Notes

1. 4" THICK CONCRETE WALK (SEE DETAIL ON SHEET 4.1)
2. 5' TALL BLACK VINYL-COATED STEEL CHAIN LINK FENCE (TYP. WHERE SHOWN) (SEE DETAIL ON SHEET 4.1)
3. DOUBLE GATE STAGING AREA FOR ENTRANCE/EXIT (SEE DETAIL ON SHEET 4.1)
4. DOG-ON-IT-PARKS 7214 DELUXE DOG WATERING STATION (INSTALL PER MANUFACTURERS INSTRUCTIONS)
5. GRAVEL SURFACE (SEE DETAIL ON SHEET 4.1)
6. 1/2" WATER SERVICE LEAD (SEE DETAIL ON SHEET 4.1)
7. 8' SINGLE SWING GATE (LOCATION TO BE COORDINATED WITH OWNER) (SEE DETAIL ON SHEET 4.1)

SITE PLAN

SCALE: 1" = 30'



GRADING DETAIL

SCALE: 1" = 20'

General Construction Notes

1. DEVELOPMENT OF THIS SITE SHALL BE IN ACCORDANCE WITH STATE, COUNTY AND TOWNSHIP REQUIREMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LOCAL COUNTY & TOWNSHIP PERMITS AND INSPECTION FEES, INCLUDING BUILDING & SOIL EROSION.
3. PRIOR TO CONSTRUCTION, STAKING TO BE PROVIDED BY OWNER.
4. DOG PARK AREA SHALL BE GRADED TO MAINTAIN EXISTING TOPOGRAPHY.
5. ALL DISTURBED NON-HARD SURFACE AREAS SHALL BE RESTORED WITH NEW SCREENED TOPSOIL, SEED AND MULCH. TOPSOIL SHALL BE AT A DEPTH NOT LESS THAN 4 INCHES.
6. CONTRACTOR TO PROTECT TREES FLAGGED FOR MARKING BY THE TOWNSHIP. SEE TREE PROTECTION DETAIL ON SHEET 4.1.
7. CONTRACTOR SHALL COORDINATE WITH OWNER ON FINAL DOG PARK AMENITIES AND INSTALLATION LOCATIONS. APPROVED EQUALS DUE TO MATERIAL SHORTAGES OR LEAD TIMES SHALL BE CONSIDERED IF APPROVED BY THE OWNER.
8. SPOT GRADES ARE APPROXIMATE. CONTRACTOR TO ENSURE DRAINAGE IS DIRECTED AWAY FROM INFRASTRUCTURE.
9. CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL AND COORDINATE WITH LAUTNER FOR BELOW GROUND IRRIGATION SYSTEM WITHIN DOGPARK. CONTACT INFORMATION: 231-947-1637.
10. SIGNS, WASTE RECEPTACLES AND SEATING TO BE PROVIDED BY THE TOWNSHIP.
11. EXPANSION JOINTS TO BE UTILIZED AS NECESSARY. SIDEWALK CONSTRUCTED COMPLIANT WITH ADA BARRIER-FREE REQUIREMENT.S

Benchmark

SET CONTROL POINT NEAR NORTH WEST CORNER OF CLEARING

ELEVATION = 643.89 (NAVD88)

T:\PROJECTS\22070\DWG\22070_ELDWG.RVT 6/7/2022 7:55 AM ABE.HAGER

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Traverse City, MI 49684
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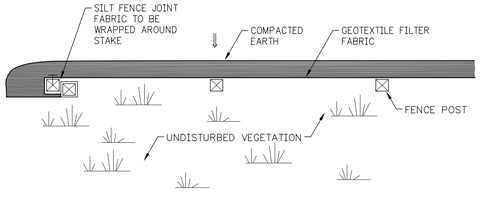
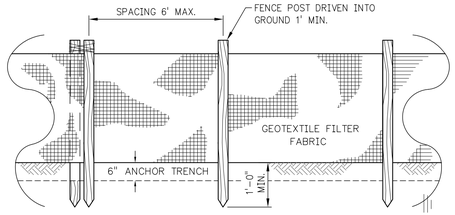
REV#	DATE	DRN	DESC
A	6-17-22	SJG	FOR BIDS

GARFIELD TOWNSHIP
RIVER EAST PARK IMPROVEMENTS - PHASE II : DOG PARKS
SITE PLAN
SECTION 23, TOWN 27 NORTH, RANGE 11 WEST
GARFIELD TOWNSHIP, GRAND TRAVERSE COUNTY, MICHIGAN

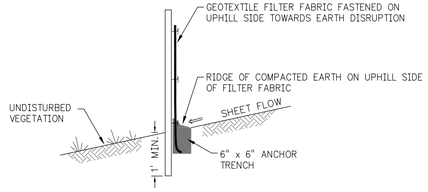
P.M.: JENNIFER HODGES, PE
DR.: SJG
CHK.: JAH
JOB NO.: 22070
3.1



PLAN VIEW



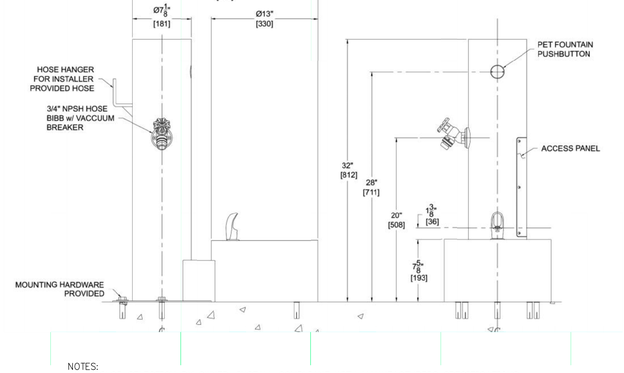
FRONT ELEVATION



SECTION VIEW

SILT FENCE DETAIL

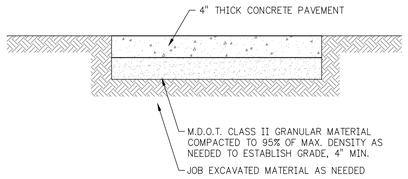
NOT TO SCALE



NOTES:
1. COLOR SELECTION BY OWNER. INSTALL COMPLIANT WITH MANUFACTURERS SPECIFICATIONS.
2. FROST FREE VALVES TO BE PROVIDED

DOG-ON-IT PARKS 7214 DELUXE WATERING STATION

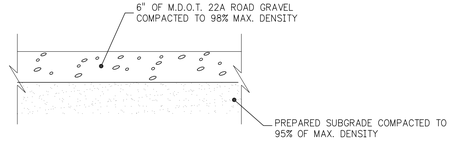
NO SCALE



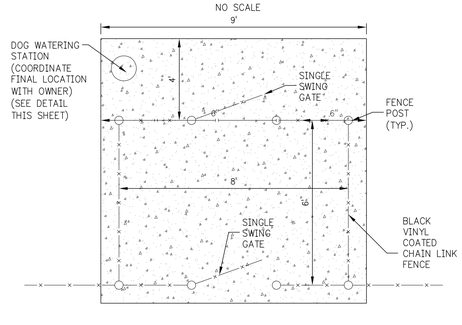
NOTE:
SAWCUT OR TOOL WALK IN SQUARE PATTERN. PROVIDE EXPANSION JOINTS AT ALL SPRING POINTS AND PERMANENT STRUCTURES WITH MAX. SPACING OF FOUR TIMES WALK WIDTH.

STANDARD CONCRETE WALK DETAIL

NO SCALE

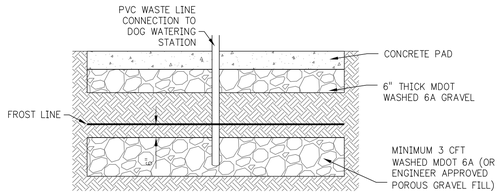


GRAVEL DRIVE DETAIL



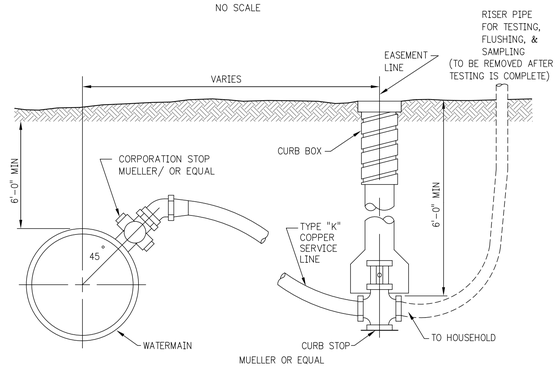
DOUBLE GATE STAGING AREA DETAIL

NO SCALE



DOG WATERING STATION FRENCH DRAIN

NO SCALE

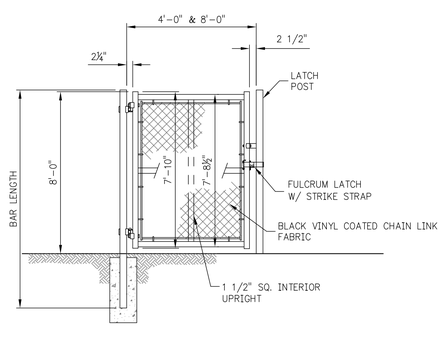


NOTE:
ALL 2" BLOWOFFS AT WATERMAIN STUBS TO BE LOCATED BY ENGINEER/FIELD REPRESENTATIVE.

SERVICE CONNECTION DETAIL

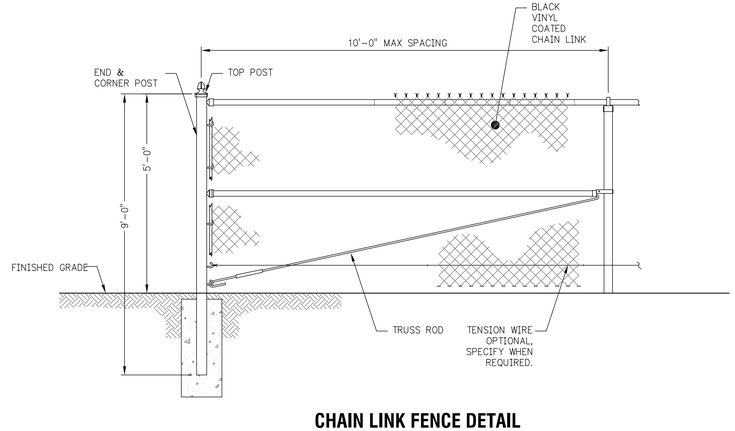
NO SCALE

GATE PLAN



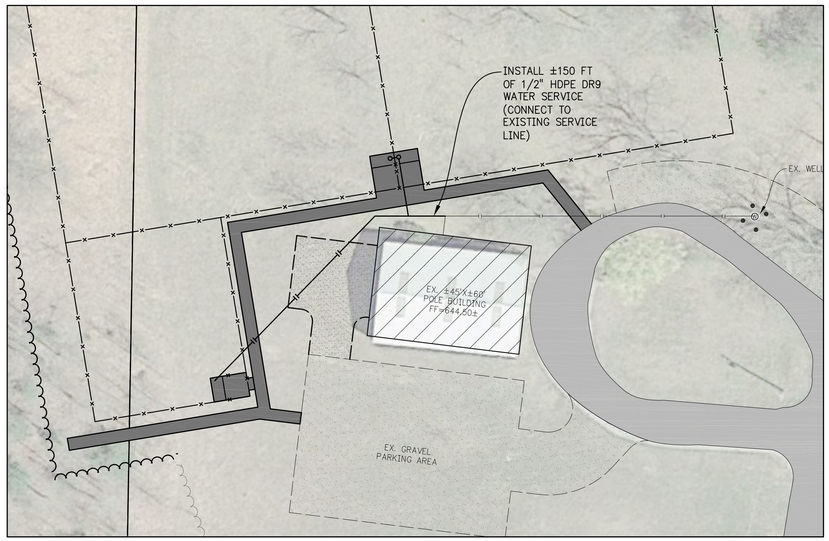
SINGLE SWING GATE DETAIL

NO SCALE



CHAIN LINK FENCE DETAIL

NO SCALE



UTILITY CONNECTIONS FOR PET FOUNDATIONS

SCALE: 1" = 30'

http://gfa.tc
231.946.5874 (p)
231.946.3703 (f)

ENGINEERING
SURVEYING
TESTING & OPERATIONS

123 West Front Street
Traverse City, MI 49684

REV#	DATE	DRN	FOR BIDS
A	6-17-22	SJG	

GARFIELD TOWNSHIP
RIVER EAST PARK IMPROVEMENTS - PHASE II : DOG PARKS
CONSTRUCTION DETAILS
SECTION 23, TOWN 27 NORTH, RANGE 11 WEST
GARFIELD TOWNSHIP, GRAND TRAVERSE COUNTY, MICHIGAN

P.M.: JENNIFER HODGES, PE
DR.: SJG | CKD.: JAH
JOB NO.: 22070

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