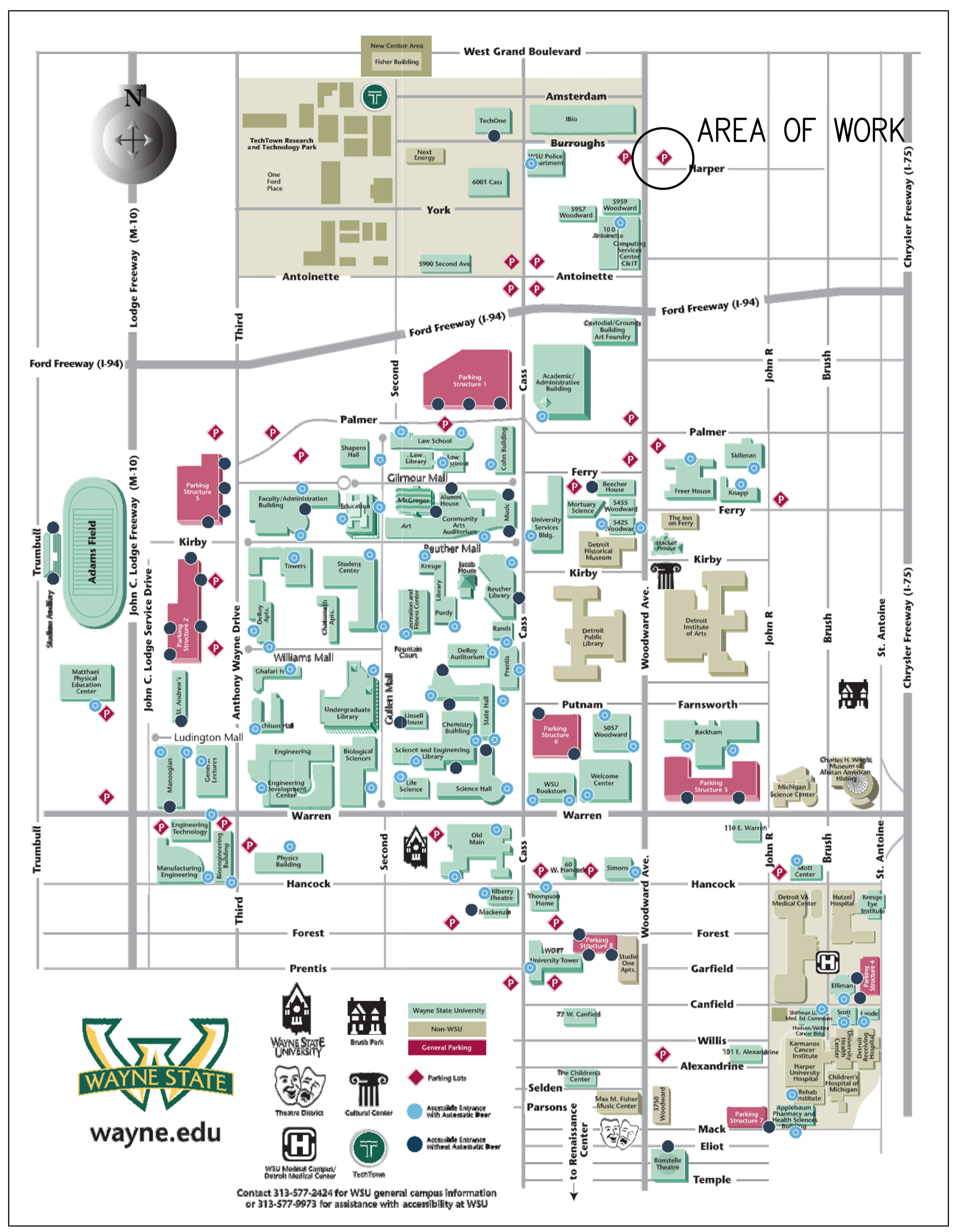
WAYNE STATE UNIVERSITY



Campus Site Map
N.T.S.

IBIO
PARKING LOT 12

6000 WOODWARD AVENUE
DETROIT, MI 48202

PARKING LOT UPGRADES

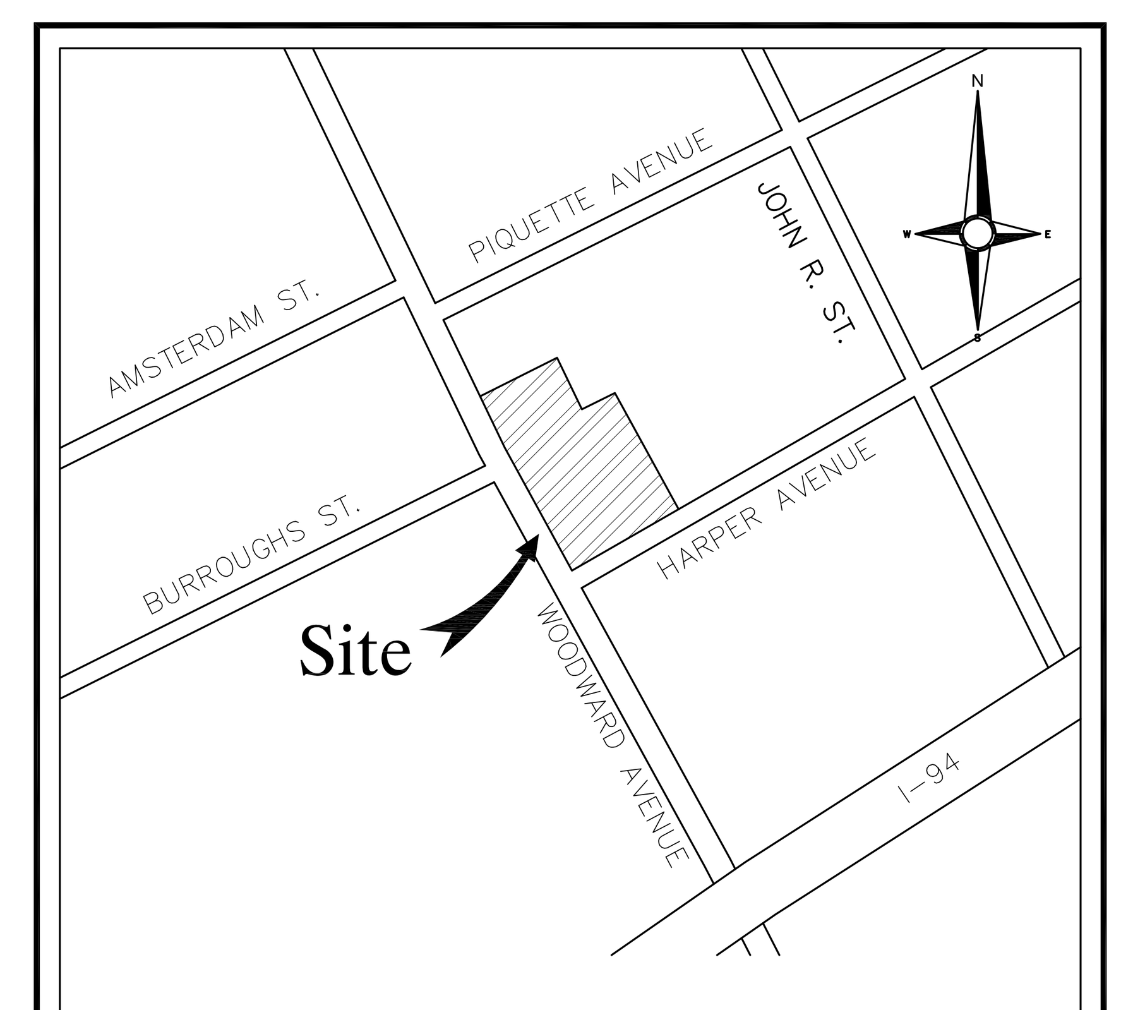
WSU Project Number 211-121168
MEP Project Number 1515-1

BID
AUGUST 25, 2015

SHEET INDEX

SHEET No.	SHEET NAME	OWNER REVIEW 08/17/2015	BID 08/25/2015	<<ISSUE NAME>> <<ISSUE DATE>>	<<ISSUE NAME>> <<ISSUE DATE>>
T-00	TITLE SHEET	●	●	◌	◌
CE-01	CIVIL STANDARD SHEET	●	●	◌	◌
CE-02	SITE REMOVAL PLAN	●	●	◌	◌
CE-03	SITE PLAN	●	●	◌	◌
CE-04	GRADING PLAN	●	●	◌	◌
CE-05	UTILITY PLAN	●	●	◌	◌
CE-06	PROFILE, STORM CALCS & DRAINAGE DISTRICT PLAN	●	●	◌	◌
CE-07	CIVIL DETAIL SHEET	●	●	◌	◌
ES-01	ELECTRICAL SCHEDULES & STANDARDS	●	●	◌	◌
ES-02	ELECTRICAL SITE PLANS	●	●	◌	◌
ES-03	ELECTRICAL DETAILS	●	●	◌	◌
–	SURVEY PLAN BY NOWAK AND FRAUS (REFERENCE ONLY)	●	●	◌	◌
		◌	◌	◌	◌
		◌	◌	◌	◌
		◌	◌	◌	◌

ISSUE LEGEND: ○ PREVIOUS ISSUE ● CURRENT ISSUE ◌ POTENTIAL FUTURE ISSUE



Location Map
N.T.S.

EXCAVATION AND SITE WORK

A. Furnish labor, equipment and materials necessary to complete the removal and disposal of existing pavement in designated areas; excavation of subsoils, to furnish, place and compact backfill where required; and perform all incidental work, complete as shown on the Contract Plans. The work shall include the following items:

1. Removal of existing pavement and subsoils in designated cut areas.
2. Excavation of subgrade soil.
3. Proof-rolling, stabilization and compaction of subgrade.
4. Selection, classification and furnishing of fill materials.
5. Placement and compaction of backfill.
6. Placement and/or grading of base course.
7. Disposal of excess materials

2. SITE CONDITIONS

A. Protect from damage during earthwork operations any structures and utilities designated to remain active, signs, curbs and any other existing site improvements that are not specifically designated for removal.

B. Repair or replace any damages caused by earthwork operations existing in site improvements at no extra cost to the Owner.

3. WORK SCHEDULE AND PHASING

A. The work under this contract is to be performed with the least possible disruption to on site personal. Unobstructed pedestrian access is to be maintained to all on site personal.

B. The work shall be staged to maintain n access within the facility and as directed by the owner and as discussed at the preconstruction meeting and confirmed in writing.

C. The existing on site utilities may not be interrupted.

4. QUALITY ASSURANCE/TESTING

A. The Owner will retain a qualified Engineer as Quality Control (QC) Consultant to provide quality assurance and testing of earthwork operations.

B. Notify the Engineer at least three (3) days before the starting earthwork operations.

C. Submit representative samples of each material proposed for use for fill to the Engineer testing. Individual soil samples should contain at least 30 pounds of material. Do not use material for fill until a sample of that material has been tested and found to comply with the specification requirements.

D. Allow sufficient time during earthwork operations for the Engineer to perform the necessary field tests.

5. ABBREVIATIONS

A. ASTM- American Society for Testing and Materials

B. OSHA- Occupational Safety and Health Administration

C. MDOT- Michigan Department of Transportation

D. AASHTO- American Association of State Highway and Transportation Officials

6. EQUIPMENT

The contractor shall employ equipment that is compatible with the site conditions so as to minimize damage to the existing site areas that are designated to remain. Any damage to the site in non-work areas caused by construction equipment shall be repaired to the Owner's satisfaction at the Contractor's expense.

7. EXCAVATIONMATERIALS

A. Pavement is any structure of existing asphalt, concrete, or aggregate used for vehicular traffic.

B. Subsoil material is any deposit of manmade fill or natural unconsolidated earth materials, other than topsoil.

8. FILL AND BACKFILL MATERIALS

A. Unclassified fill material is sand, gravel, silt or clay or mixtures thereof, obtained from on-site excavation or borrow with a maximum particle size of six (6) inches, and free of organic material, rubbish, wood and other substances subject to decomposition.

B. Granular fill material is that material obtained from on-site excavation or borrows which is a well graded sand and gravel, meeting the requirements of MDOT Class II

C. Free draining filter sand shall consist of material meeting the requirements of MDOT 2NS sand.

D. Salvaged base course aggregate is existing on-site bituminous pavement milled or pulverized in place; or existing base aggregate. Salvaged base course aggregate shall have a maximum particle size of 3 inches and a maximum of 15 percent passing the #200 sieve, and shall be free of clay, topsoil, debris and any other deleterious materials.

E. New base course aggregate is processed material consisting of crushed aggregate which meets the requirements of MDOT 21AA material.

F. Unsuitable fill material is material containing rubbish, sod, wood, organic soils, building debris or other deleterious materials.

9. SOIL EROSION AND SEDIMENTATION CONTROL

A. Install temporary soil erosion and sedimentation controls on the site in accordance with local and State requirements. The controls will serve as a perimeter defense against transporting silt off the site.

B. Establish temporary soil erosion and sedimentation controls in the initial stages of work, before any other earthwork is performed.

C. Inspect soil erosion and sedimentation controls daily during operation. Repair or modify damaged or ineffective portions of the work promptly.

D. Remove temporary soil erosion and sedimentation controls at the conclusion of the project.

10. CONTROL OF WATER

A. At all times during construction, maintain site grading and drainage ditches in such a state that rainfall will drain from the site as rapidly as possible. Avoid local depressions which will accumulate rain water. Channel ground drainage systems to common collections basins.

B. If construction operations are to be conducted below the groundwater level, provide means to lower the groundwater level to the depths required.

C. Keep excavations free from the water while excavating for, or constructing, catch basin, manhole, inlet structures or footing drains. Do not build structures in water, and do not allow water to flow over, or rise upon any concrete until the concrete has set for at least twenty-four (24) hours.

11. REMOVALS

A. The extent of removal work shall be as noted on the contract drawings.

B. Existing asphalt pavement in the designated removal area shall be removed to the level of aggregate base. Remove aggregate from existing pavement in cut area and place in fill areas. Excess aggregate should be removed from site.

C. All spoils and excess materials resulting from demolition, excavation and other environmentally legal manner unless otherwise directed. The cost of removal and disposal of excess material is incidental to the work.

12. EXCAVATION OF SUBSOIL

A. Excavate existing pavement and designated subsoil materials, as defined Subparagraphs 8 of this Sections, within the areas shown on the plans and to the elevations required to comply with Subparagraph 11.

B. The resulting sub grade shall be thoroughly checked for the presence of unsuitable soils or instability.
C. If unsuitable or unstable soils are encountered; such shall be removed by undercutting to a depth of two feet and backfilled with approved backfill material.
D. Excavations shall be performed as required by the contract drawings, and so the requirements of succeeding work can be met. Excavation shall include removal and disposal of soil and other material found.

E. Conditions of bottoms of excavations must be approved by the engineer. If unsatisfactory conditions are disclosed at depths indicated on drawings, excavations shall be modified as directed by the Engineer. Approved changes shall be measure by the Engineer and Contractor and quantities determined therefrom. Prior to placement of new fill or pavement, the sub grade shall be proof rolled using a tandem axle dump truck or other vehicle approved by the Engineer. Any areas that exhibit excessive pumping and yielding during this operation shall be stabilized as directed by the Engineer.
13. Fill and bask fill of soil.
A. Fillsfor filling in low areas, shaping high points and backfilling undercuts shall be suitable material from on-site excavations or from approved off-site sources, and compacted in place. The Engineer shall determine material suitability.
B. Spread the backfill evenly over the compacted subgrade in lifts not exceeding twelve (12) inches in thickness, loose measurement. Within restricted areas, place the backfill in lifts not exceeding eight (8) inches in thickness, loose measurement. Place individual lifts in horizontal layers, as nearly even as practicable, to prevent the thickness lift from exceeding the specified values.
C. Maintain the moisture content of the backfill material during compaction within a range extending from 2 percent below optimum moisture content to 2 percent above optimum moisture content.
D. Compact each lift so as to achieve at least 95 percent of the maximum unit weight.
E. Do not place additional backfill until the previous lift has been tested and found to be in compliance with the specification requirements.
F. Continue filling and compaction operations to the finished levels designated on the plans, so that at completion of compaction operations, the surface of the fill is at all points within one-tenth (0.1) foot of the specified levels.
G. Do not place backfill on frozen material.
H. Do not use frozen materials for backfill.
14. COMPACTION STANDARDS
The terms "maximum unit weight" and "optimum moisture content" used in these Specifications refer to those values as determined by the test strip method for materials containing more than 40

percent retained on the #4 sieve, including processed aggregates and on-site pulverized materials, and by ASTMD1557 for all other materials. (Modified Proctor test).

15. SITE LAYOUT

Contractor shall perform and provide all construction layout and grade controls. The contractor shall install sufficient grade stakes, string lines and other devices so as to produce the proper alignment and slopes.

CAST-IN-PLACE CONCRETE

1. DESCRIPTION OF WORK

A. Provide all labor, materials, tools and equipment necessary to complete the construction of Portland cement concrete pavement, sidewalks, curb-and-gutter and other work shown on the drawings. The work shall include but no necessary be limited to:

1. Designing and testing concrete mixes.
2. Erection of formwork and placement of concrete.
3. Providing isolation, expansion, control and construction joints.
4. Finishing, curing and protecting all concrete work.

2. REFERENCES

A. ASTM C33- Standard Specification for Concrete Aggregates

B. ASTM C94- Standard Specification for Ready-Mixed Concrete

C. ASTM C150- Standard Specifications for Portland Cement

D. ASTM C260- Standard Specifications for Air-Entraining Admixtures

E. ASTM C309- Standard Specification for Liquid Membrane- Forming Compounds Curing Concrete

3. CONCRETE MIX DESIGNS

A. Establish concrete mix design proportions on the basis of the previous field experience or trial mixtures in accordance with ACI 301 and ACI 318.

B. Concrete mix designs are to be submitted by the Contractor and approved by the QC Consultant.

4. SUBMITTALS

A. Submit five copies of the concrete mix designs with supporting data confirming compliance with the requirements of this specification.

B. Product Data: Submit printed manufacturers' literature for each manufactured item specified, along with test data as required.

C. Submit names of Manufactures/Suppliers for acceptance by the Consultant for the following items:

1. Aggregates
1. Reddy-Mixed Concrete
2. Cement
3. Admixtures
4. Joint Filler
5. Reinforcing Steel
6. Membrane curing, sealing, hardening and dust proofing compounds.

A. Certification for Admixtures: Submit certificate of compatibility of each admixture with all other concrete ingredients and with each applicable concrete surface treatment.
B. Certification for Curing Compounds, Sealers, Hardeners, Dust proofing, etc.: Submit a certificate of compatibility with concrete and with materials to be applied to concrete surface.
1. QUALITY CONTROL
A. The Owner will engage and pay for the services of an independent Quality Control (QC) Consultant who will perform all necessary quality control checks and tests.
B. The QC Consultant will review the mix designs submitted and will determine whether the mix designs meet the requirements of this specification.
C. Contractor shall notify QC Consultant no less than 48 hours prior to placing concrete. Omitted and misplaced reinforcement and embedded items and work not complying with codes or as specified herein or indicated by the plans are the Contractor's responsibility.
D. The QC Consultant will test and check materials, procedures and conditions as the work progresses. Failure to defective work shall not prevent rejection when defect is discovered, nor shall it obligate the Owner for final acceptance. The following tests will be performed at the designated frequency:
1. Secure composite samples in accordance with "Standard Method of Sampling Freshly Mixed Concrete," ASTM C172.
2. Mold and cure a set of four 6" X 12" cylinder specimens for each test required in accordance with "Standard Method of Making and Curing Concrete Test Specimens in the Field," ASTM C31. Additional field-cured cylinders shall be molded and cured as required.
3. Test the specimens in the laboratory in accordance with "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens," ASTM C39. Two specimens shall be tested at 28 days for acceptance, one shall be tested at 7 days for information and one shall be kept as a spare specimen. Field-cured cylinders shall be tested as required.
4. Make one strength test for each 50 cubic yards or fraction thereof for each mix placed in any one day.
5. Determine slump of normal-weight concrete for each strength test in accordance with "Standard Test Method for Slump of Portland Cement Concrete," ASTM C143.
6. Determine total air content of normal-weight concrete for each strength test in accordance with "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method," ASTM D231 or "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method," ASTM C173.

1. Determine temperature, unit weight and yield of concrete for each strength test in accordance with ASTM C138 "Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete."
2. Determine air temperature during each strength test.
A. The Contractor shall provide and maintain for the use of the QC Consultant adequate facilities for proper curing of concrete test specimens on the project site in accordance with "Standard Method of Making and Curing Concrete Test Specimens in the Field," ASTM C31-84.
1. CONCRETE MATERIALS
A. Portland Cement- Type I conforming to ASTM C150 "Standard Specification for Portland Cement"
B. Aggregates- conforming to ASTM C33 " Standard Specification for Concrete Aggregates:"
1. Fine aggregate: clean, sharp, natural sand, free from loam, clay lumps and deleterious substances, within allowable standards.
2. Coarse aggregate: clean, uncoated, graded aggregate containing no clay, mud, loam or foreign matter.
C. Water- shall be lean, potable and free from deleterious materials and shall conform to ASTM C94.
D. Air-entraining Admixture- Provide admixture meeting the requirements of ASTM C260.
E. Water-reducing Admixtures- Provide admixtures meeting the requirements of ASTM C494.
F. Do not use admixtures containing chlorides in any form.
2. CONCRETE MIX PROPERTIES

A. Concrete Mixtures:
1. Concrete pavement: MDOT P1/HE
2. Curb-and-gutter: MDOT P1
3. Compressive Strength:
1. Pavement: Concrete shall achieve a minimum strength of 3000 psi at 3 days Minimum 28-day laboratory compressive strength shall be 3500 psi.
2. Curb-and-gutter: concrete shall achieve a minimum strength of 3000 psi at 7 days Minimum 28-day laboratory compressive strength shall be 3500 psi.
3. Slump: The slump of normal concrete shall not exceed 3 inches.
D. Air content - between 5 - 7 %

LANSCAPING NOTES AND REQUIREMENTS:

1. All materials, scheduling, planting times, maintenance procedures, workmanship including permits and inspections are to meet the City of Detroit requirements and ordinances.

2. All plantings are to be planted as to be in a healthy growing condition at commencement of the establishment period. During the establishment period, the contractor shall be responsible for maintaining plants in a healthy growing condition, which shall include watering, cultivation, weed control, fertilization, pruning, pesticides and fungicides.

3. All plants including replacement trees are to be guaranteed to be in a vigorous growing condition for a period of two years (replacement period) from written approval at the end of the planting period.

4. Excavate all planting; lawn and bed areas between the curb line and building 18" deep and install approved planting soil and/or sandy loam topsoil. For trees and beds install 4" diameter drain tile with filter sock in pea pebble at 2.5'– 3.0' deep and attach to storm sewer system.

5. In all lawn areas, remove debris, disc and till sub grade to 6" deep and install 4" deep of approved topsoil. Do not install sod or seed until grade is approved.

6. The prevention of damage to any utilities or the interruption of utility services, and the prevention of damage or littering onto adjacent property or public streets, sidewalks or other public thoroughfares with dirt, sediment, water, plant material or other miscellaneous debris which constitutes a public nuisance or hazard. All such debris shall be promptly removed.

7. The planting of all trees, shrubs and hedges in a manner which will not interfere with proper maintenance or cause damage to underground and overhead utility lines, public roadways or other public works.

8. All plant materials installed will be certified by the State of Michigan Department of Agriculture to be disease–free and pest–free and not of a species known to carry or be host to destructive pathogens or pests.

9. All plant materials shall be northern nursery grown, No.1 grade, and installed according to accepted planting procedures. All plant materials shall meet current American Association of Nurserymen Standards. They shall be planted according to City of Detroit Planting Detail.

10. Plant materials, except creeping vine type plantings, shall not be located within four (4) feet of the property line.

11. All trees shall have a central leader and a radial branching structure, park grade trees are not acceptable, all shall be balled and burlapped (8&8).

12. Mulch all shrub beds with 4" deep of processed shredded bark and perennial/flower beds with 2" deep of sphagnum peat and work 2" into soil.

13. Crown landscape parking peninsula evenly 6" high above curb.

14. Install steel bed edging 3116" x 5" as indicated per manufacturer recommendations

15. STATEMENT OF INTENT– As part of the submittal, the owner assures that the landscape plantings, materials etc. will be installed and maintained in accordance with the plan.

16. REPLACEMENT PERIOD– Make tree and shrub replacements during the normal growing season and/or as notified by the city of Detroit. Immediately remove dying or dead plants from the site and replace as early as possible.

BITUMIOUS PAVING
1. SECTION INCLUDES
A. Placement of asphalt pavement.
2. RELATED SECTIONS
A. Section 31 2323 (02316)– Fill: Compacted subgrade for paving and backfill
B. Section 09 9000 (09900)– Painting and Coating; Pavement markings
3. REFERENCES
A. ASTM D244– Standard Test Methods and Practices for Emulsified Asphalts; 2004
B. ASTM D692– Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures; 2004
C. ASTM D1073– Standard Specification for Fine Aggregate for Bituminous Paving Mixtures; 2006
D. ASTM D4125– Standard Test Methods for Asphalt Content of Bituminous Mixtures by the Nuclear Method; 2005
E. ASTM D6927– Standard Test method For Marshall Stability and flow of Bituminous Mixtures; 2005
F. Michigan Department of Transportation (MDOT) Standard Specifications for Construction; 2003.
4. SUBMITTALS
A. Prior to beginning the work, submit a two certified copies of proposed mix design for each type of bituminous mixture used on this project.
B. Submit certified batch plant delivery ticket prior to placing each load of materials.
1. QUALITY ASSURANCE
A. Contractor is responsible for his/her own quality control for the production, delivery, and installation of the materials and finished products to meet all specifications. Owner will conduct various testing such as density, extraction, sieve analysis, and applicable tests to assure the quality of the materials and products installed at the project,
B. Obtain materials from same source throughout.
2. ENVIRONMENTAL REQUIREMENTS
A. Do not place asphalt when ambient air or base surface temperature is less than 40F, or surface is wet or frozen.
B. Comply with MDOT 502.03
3. Materials
A. Blended aggregate for Hot–Mixed Asphalt (HMA)
1. Coarse aggregate complying with ASTM D692 and MDOT 902.04.
2. Fine aggregate complying with ASTM D1073 and MDOT 902.10
3. Provide aggregate blend that conforms to the applicable requirements of Table A–Composition of HMA Mixtures and Table B– HMA Mix Design Criteria
4. Provide aggregate blend that has Aggregate Wear Index (AWI) of at least 260.
A. Fine aggregate for HMA Surface Treatments: MDOT 902.11.
B. Asphaltic Binder: MDOT 904
C. Mineral Filler: MDOT 902.12
D. Anti–Foaming Agents: MDOT 904.3A
E. Cut–Back Asphalt: MDOT 904.03B and ASTM D2026 or ASTM D2027 or ASTM D2028
F. Emulsified Asphalt: MDOT 904.03C and ASTM D244

STORM SEWER

1. STANDARDS AND SPECIFICATIONS

A. ALL STORM SEWER AND STORM DRAINAGE SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF DETROIT DEPARTMENT OF WATER AND SEWER, THE WAYNE COUNTY OFFICE OF PUBLIC WORKS STANDARD SPECIFICATIONS, AS APPLICABLE. CONSTRUCTION AND MATERIALS SHALL ALSO CONFORM TO THE APPLICABLE CURRENT ASTM STANDARD SPECIFICATION OR PRACTICE, WHEN REFERENCED.

B. ANY MATERIALS OTHER THAN THOSE LISTED ON THE STANDARD DETAIL SHEETS MUST BE APPROVED IN WRITING BY WSU REPRESENTATIVE. CONTRACTOR MUST SUBMIT THREE COPIES OF SHOP DRAWINGS AND SPECIFICATIONS FOR PROPOSED ALTERNATE MATERIAL TO WSU REPRESENTATIVE FOR REVIEW AS AN APPROVED EQUAL. DETERMINATION OF ACCEPTANCE BY THE WSU REPRESENTATIVE SHALL BE CONSIDERED FINAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REVIEW OF THE PROPOSED ALTERNATE MATERIAL AS AN APPROVED EQUAL.

C. ALL STORM SEWER AND STORM DRAINAGE SYSTEM CONSTRUCTION SHALL HAVE COMPETENT FULL TIME CONSTRUCTION OBSERVATION PROVIDED BY, OR CAUSED TO BE PROVIDED BY WSU REPRESENTATIVE.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL. ALL COSTS FOR LOCATING, SUPPORTING, REMOVING AND REPLACING, RELOCATING OR REPAIRING THESE UTILITIES SHALL BE BORNE BY THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE DEPTH AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES BEFORE ANY WORK IS STARTED. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE DETERMINED BY HAND DIGGING.

2. PRE–CONSTRUCTION REQUIREMENTS

A. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ATEND A PRECONSTRUCTION MEETING AT A TIME AND PLACE AS ARRANGED BY WSU REPRESENTATIVE. THE PROJECT OWNER SHALL NOTIFY AFFECTED UTILITY COMPANIES AND GOVERNMENTAL AGENCIES A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE PRE–CONSTRUCTION MEETING. WSU REPRESENTATIVE SHALL SUBMIT APPROVED PLANS TO ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES A MINIMUM OF TEN (10) DAYS PRIOR TO PRE–CONSTRUCTION MEETING.

B. THE CONTRACTOR SHALL NOTIFY:
- MISS DIG
- THE WSU REPRESENTATIVE
- CITY OF DETROIT, BUILDING DEPARTMENT AND WATER AND SEWER DEPARTMENT.
- THE CONTRACTOR SHALL ALSO NOTIFY REPRESENTATIVES OFANY OTHER FACILITIES, LOCATED IN THE VICINITY OF THE WORK, WHICH ARE NOT PARTICIPANTS OF THE MISS DIG SYSTEM.

3. PIPE MATERIAL

A.ONLY NEW UNDAMAGED STORM SEWER PIPE SHALL BE USED.WSU REPRESENTATIVE HALL HAVE THE RIGHT TO REJECT ANY OR ALL PIPE.

B.TWELVE INCH (12) AND LARGER PIPE SHALL BE REINFORCED CONCRETE CIRCULAR SEWER PIPE WITH MINIMUM WALL THICKNESS B (ASTM C76). SIZE AND CLASS OF PIPE SHALL BE AS INDICATED ON THE PLANS. ALL REINFORCED CONCRETE SEWER PIPE SHALL BE CAST WITH REINFORCING STEEL EXTENDING INTO THE BELL. ALL JOINTS SHALL BE MODIFIED TONGUE AND GROOVE WITH GASKET (ASTM C361). GASKETS SHALL BE SYNTHETIC RUBBER. NATURAL RUBBER GASKETS ARE NOT ACCEPTABLE.

4. DRAINAGE STRUCTURES

A. ALL NEW MANHOLES SHALL BE PRECAST REINFORCED CONCRETE, FLEXIBLE–JOINT TYPE (ASTM C478). THE TOP SECTION SHALL BE A MODIFIED ECCENTRIC CONE SECTION. ALTERNATELY, THE MANHOLE MAY BE CONSTRUCTED WITH A REINFORCED CONCRETE FLAT SLAB COVER (ASTM C478). THE BASE SECTION FOR EIGHT INCH (8") TO SIXTY INCH (60") DIAMETER SEWERS SHALL BE A PRECAST RISER SECTION WITH AN INTEGRAL BASE. JOINTS AND GASKETS SHALL BE MODIFIED TONGUE AND GROOVE (ASTM C443). ALL LIFTING HOLES SHALL BE FILLED WITH A NON–SHRINK TYPE MORTAR COMPOSED OF TYPE IIA CEMENT. NON–SHRINK TYPE MORTAR SHALL BE PRECO OR SEKA SET. NO LIME SHALL BE USED INTHE MORTAR. ALTERNATELY, THE BASE SECTION FOR SEWERS FORTY EIGHT INCHES (48") IN DIAMETER AND LARGER MAY BE A MANHOLE TEE (ASTM C76, CLASS IV MINIMUM).

NOTE: NEW MANHOLES MAY ALSO BE CONSTRUCTED WITH CONCRETE BLOCK AND MDOT TYPE R–2 MORTAR WITH A PRECAST CONCRETE BASE (ASTM C478) OR A POURED CONCRETE BASE (2500 PSI AT 28 DAYS). IF A PRECAST BASE IS USED, PLACE A MINIMUM FOUR INCH (4") SAND OR MDOT 6A CRUSHED STONE SUB–BASE. THE EXTERIOR OF THE CONCRETE BLOCK DRAINAGE STRUCTURE SHALL HAVE A ONE–HALF INCH (1/2") MORTAR CEMENT PLASTER COAT.

B. ALL NEW CATCH BASINS SHALL BE FORTY EIGHT INCH (48") DIAMETER (MINIMUM) PRECAST REINFORCED CONCRETE, FLEXIBLE–JOINT TYPE (ASTM C478). THE TOP SECTION SHALL BE A MODIFIED ECCENTRIC CONE SECTION. THE BASE SECTION SHALL BEA PRECAST RISER SECTION WITH AN INTEGRAL BASE. JOINTS AND GASKETS SHALL BE MODIFIED TONGUE AND GROOVE (ASTM C443). ALL LIFTING HOLES SHALL BE FILLED WITH A NON–SHRINK TYPE MORTAR COMPOSED OF TYPE IIA CEMENT. NON–SHRINK TYPE MORTAR SHALL BE PRECO OR SEKA SET. NO LIME SHALL BE USED IN THE MORTAR. ALL CATCH BASINS SHALL BE CONSTRUCTED WITH A TWO FOOT (2') SUMP (MINIMUM).

NOTE: NEW CATCH BASINS MAY ALSO BE CONSTRUCTED WITH CONCRETE BLOCK AND MDOT TYPE R–2 MORTAR WITH A PRECAST CONCRETE BASE (ASTM C478) OR A POURED CONCRETE BASE (2500 PSI AT 28 DAYS). IF A PRECAST BASE IS USED, PLACE A MINIMUM FOUR INCH (4") SAND OR MDOT 6A CRUSHED STONE SUB–BASE. THE EXTERIOR OF THE CONCRETE BLOCK DRAINAGE STRUCTURE SHALL HAVE A ONE–HALF INCH (1/2") MORTAR CEMENT PLASTER COAT.

C. PIPE PENETRATION JOINTS FOR NEW PRECAST REINFORCED DRAINAGE STRUCTURES SHALL BE A FLEXIBLE WATER–TIGHT JOINT, "KOR–N–SEAL" FOR SEWERS SIX INCH {6") THROUGH THIRTY INCHES (30") IN DIAMETER AND "A–LOK" FOR SEWERS–SIX INCH {36") IN DIAMETER AND LARGER. HOLES FOR PIPES SHALL BE CAST IN THE RISER SECTION SO AS TO PROVIDE A MINIMUM CLEARANCE OF TWO INCHES (2") BETWEEN THE INSIDE BOTTOM OF THE BASE SECTION AND THE OUTSIDE WALL OF THE PIPE. PIPE SHALL NOT EXTEND INTO A MANHOLE BEYOND THE INTERIOR FACE OF THE MANHOLE WALL.

D. EXISTING PRECAST DRAINAGE STRUCTURES SHALL BE TAPPED WITH THE "KOR–N–SEAL" METHOD, WITH A WATER–TIGHT RUBBER BOOT FOR SEWERS SIX INCH (6") THROUGH FIFTEEN INCH {15") IN DIAMETER. EXISTING BRICK DRAINAGE STRUCTURES, AND TAPS FOR SEWERS EIGHTEEN INCHES (18") IN DIAMETER AND LARGER, SHALL HAVE HOLES DRILLED AT FOUR INCHES (4"} CENTER TO CENTER AROUND THE PERIPHERY OF THE OPENING TO CREATE A PLANE OF WEAKNESS BEFORE BREAKING OUT THE SECTION. NON–SHRINK GROUT, PRECO OR SEKA SET, SHALL BE USED TO SEAL THE OPENING. A CONCRETE COLLAR SHALL BE POURED TWELVE INCHES (12"} AROUND THE PIPE AND EXISTING TWELVE INCH (12") EXTERIOR TO THE DRAINAGE STRUCTURE.

E. THE CONTRACTOR SHALL BE REQUIRED TO RECONSTRUCT ANY DRAINAGE STRUCTURE THAT IS DAMAGED WHILE BEING TAPPED.

F.FIELD TAPS SHALL NOT BE ALLOWED TO THE PIPE SECTION OF MANHOLE TEES. TAPPING OF RISER SECTIONS IS PERMITTED WITH THE WRITTEN AUTHORIZATION OF THE WSU REPRESENTATIVE..

G. GRADE ADJUSTMENTS SHALL BE MADE USING MDOT GRADE S–11CONCRETE BRICKS (ASTM C55) IN FULL MORTAR BED. MORTAR COAT ALL OPEN SPACES AND IRREGULARITIES ON THE INSIDE OF BRICKWORK TO FORM DRAINAGE STRUCTURE INTERIOR. MORTAR COAT ALL OPEN SPACES AND IRREGULARITIES ON THE OUTSIDE OF BRICKWORK. TAPER OUTSIDE MORTAR COAT A MINIMUM OF ONE PERCENT (1%} FROM THE FRAME FLANGE TO THE DRAINAGE STRUCTURE OUTSIDE DIAMETER. BRICKWORK AND MORTAR SHALL NOT OVERHANG BEYOND THE OUTSIDE DIAMETER OF THE DRAINAGE STRUCTURE. MORTAR SHALL BE MOOT TYPE R–2. GRADE ADJUSTMENT SHALL NOT EXCEED SIX INCHES (6").

H. DRAINAGE STRUCTURE FRAMES AND COVERS SHALL BE AS FOLLOWS:
MANHOLES: EJIW 1040 WITH B COVER OR APPROVED EQUAL
CATCH BASIN (YARD TYP) EJIW 1040 WITH TYPE M1, M2 OR TYPE N GRATE OR APPROVED EQUAL.
CATCH BASIN (DITCH TYP) EJIW 1040 WITH TYPE N GRATMOR APPROVED EQUAL.

CONSTRUCTION

A.NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWNSPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.

B.A MINIMUM VERTICAL CLEARANCE OF ONE AND ONE–HALF FEET (1–1/2') MUST BE MAINTAINED BETWEEN THE STORM SEWER AND ANY UTILITIES.

C.VERTICAL TOLERANCES FOR STRUCTURE RIM GRADES SHALL BE:

STRUCTURES IN R.O.W. – 0.00 TO + 0.10 FEET
STRUCTURES IN REAR YARD – 0.00 TO + 0.10 FEET

D. ALL SEWER PIPE AND APPURTENANCES SHALL BE STAKED UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR OR A LICENSED ENGINEER. ALL SIGNIFICANT POINTS OF EACH ELEMENT SHALL BE LOCATED. THIS SHALL INCLUDE BUT NOT BE LIMITED TO ALIGNMENT STAKES, OFFSET STAKES, CENTERLINE STAKES AND BENCHMARK REFERENCES. STAKES SHALL BE MARKED WITH ALIGNMENT AND ELEVATION/GRADE CONTROL. CUT SHEETS SHALL BE PROVIDED TO THE CITY OF DETROIT WATER AND SEWER ENGINEER AND WSU REPRESENTATIVE. NO SEWER SHALL BE LAID WITHOUT STAKES.

PAVEMENT MARKINGS

1. RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to the work specified in this section.

2. SCOPE OF WORK
A. Provide all labor, materials, equipment, supervision, and incidentals necessary to paint parking stripes and pavement markings per Plan Sheet 04.

3. SUBMITTALS
A. The Contractor shall submit the following:
1. Sample color chip
2. Material cut sheets and specifications
3. Standard color chip Specimen No. 13538 of Federal Standard 595A

4. MATERIALS
A. All materials shall meet the Type III requirements of Federal Specification TTP–115F for paints. The Contractor shall verify compatibility with traffic coating system, joints sealant, and all other surface treatments as specified.

5. PAINT
A. Color: The paint shall visually match the color chip No. 13538 (Yellow) of Federal Standard 595A when a wet film of 0.015 inch thickness is applied to a tin panel and let dry for 24 hours. In case of dispute, the color shall be within the green and red tolerance limits when compared with the latest Highway Yellow Tolerance Chart, PR Color No. 1, U.S. Department of Transportation, Federal Highway Administration.
B. Drying Time: The paint shall have no–pick–up maximum drying time of 20 minutes, when tested according to ASTM D711, using a wet film thickness of 0.015 inch and when applied and tested at 77 degrees F.
C. Approved Striping Products:
- "Ultra–Hide Heavy Duty Chlorinated Rubber Traffic Paint, No. 21212 Yellow" by Glidden, Cleveland, OH.
- "Setfast Chlorinated Rubber Traffic Paint, No. TM5129 Yellow" by Sherwin–Williams Company, Cleveland, OH.

6. INSPECTION
A. Inspect surfaces to which paint will be applied. Immediately report, in writing to the Engineer and as required in the General Conditions, conditions detrimental to the proper execution of work.
B. Do not proceed until unsatisfactory conditions are acceptably remedied. Commencement of work implies acceptance of related work.

7. PREPARATION
A. Before commencing work, ensure that work to be painted is in proper condition to receive painting materials. Surfaces shall be clean, dry, smooth, and at proper temperature recommended by paint manufacturer.
B. Do not paint or finish wet or damp surfaces.
C. Clean all surfaces free of adhering foreign matter, dirt and dust.

8. WORK AREAS
A. Store, mix and prepare paints only in areas designated by the Contractor for that purpose.
B. Provide clean cans and buckets required for mixing paints and for receiving rags and other waste materials associated with painting. Clean buckets regularly. At the close of each day's work, remove used rags and other waste materials associated with painting.
C. Take precautions to prevent fire in or around painting materials. Provide and maintain hand fire extinguishers near paint, paint storage, and mixing areas.

9. MIXING
A. Do not intermix materials of different character or different manufacturer.
B. Do not thin material except as recommended by manufacturer.

10. APPLICATION
A. Apply painting and finishing materials in accordance with the manufacturer's directions. Use applicators and techniques best suited for the material and surfaces to which applied. Apply for 15 mils wet thickness.
B. Parking space striping dimensions indicated on the Drawings are nominal dimensions. Tolerances shall be as follows:
1. Parking space length shall equal indicated length 2–inches.
2. Parking space width (or base line dimension) shall equal indicated width ± 2–inches.
3. Extend striping shall extend to within a maximum of 3–inches from walls or other vertical surfaces.
4. A string of parking spaces shall equal indicated dimension 2–inches per run.
5. Stripe width shall equal 4–inches 0.5–inch.

6. CLEANING

A. Immediately upon completion of work, and prior to approval thereof, clean–up paint spots, remove excess materials and equipment, and repair all paint damage to other finishes.

ORNAMENTAL FENCE:
MATERIALS

2.01 MANUFACTURER
The industrial ornamental steel fence system shall conform to Ameristar Aegis II, (**specify Classic, Majestic, Genesis, or Invincible**) (**specify 2-Rail, 3-Rail, or 3-Rail with Rings**) style manufactured by Ameristar Fence Products, Inc. in Tulsa, Oklahoma.
2.02 MATERIAL
A. Steel material for fence framework (i.e. tubular pickets, rails and posts), shall be galvanized prior to forming in accordance with the requirements of ASTM A653/A653M, with minimum yield strength of 50,000 psi (344 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.
B. The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a zinc-rich thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be (specify Black, Bronze, White, or Desert Sand). The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.
C. Material for fence pickets shall be 1" square x 14 Ga. tubing. The cross- sectional shape of the rails shall conform to the manufacturer's ForeRunner design with outside cross-section dimensions of 1.75" square and a minimum thickness of 14 Ga. Picket holes in the ForeRunner rail shall be spaced 4.715" o.c., except for Invincible style 6' long, which shall be, spaced 4.98" o.c. Picket retaining rods shall be 0.125" diameter galvanized steel. Posts shall be a minimum of 2-1/2" square x 12 Ga. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections.

2.03 FABRICATION
A. Pickets, rails and posts shall be precut to specified lengths. ForeRunner rails shall be prepunched to accept pickets. Pickets shall be predrilled to accept retaining rods.
B. Grommets shall be inserted into the prepunched holes in the rails and pickets shall be inserted through the grommets so that predrilled picket holes align with the internal upper raceway of the ForeRunner rails (Note: This can best be accomplished by making an alignment jig). Retaining rods shall be inserted into each ForeRunner rail so that they pass through the predrilled holes in each picket.
C. Completed sections (i.e., panels) shall be capable of supporting a 600 lb. load applied at midspan without permanent deformation. Panels shall be biasable to a 25% change in grade.
D. Swing gates shall be fabricated using AEGIS II panel material and gate ends having the same outside cross-section dimensions as the ForeRunner rail. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined either by welding or by the same retaining rod process used for panel assembly.

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Seal/Registration

PROJECT TITLE

IBIO - LOT 12 PARKING IMPROVEMENTS

6000 Woodward Avenue
Detroit, MI 48202

KEY PLAN

SHEET TITLE

CIVIL STANDARD SHEET

DATE:	ISSUED FOR:
08/25/15	BID
08/17/15	OWNER REVIEW

DRAWN
CHECKED
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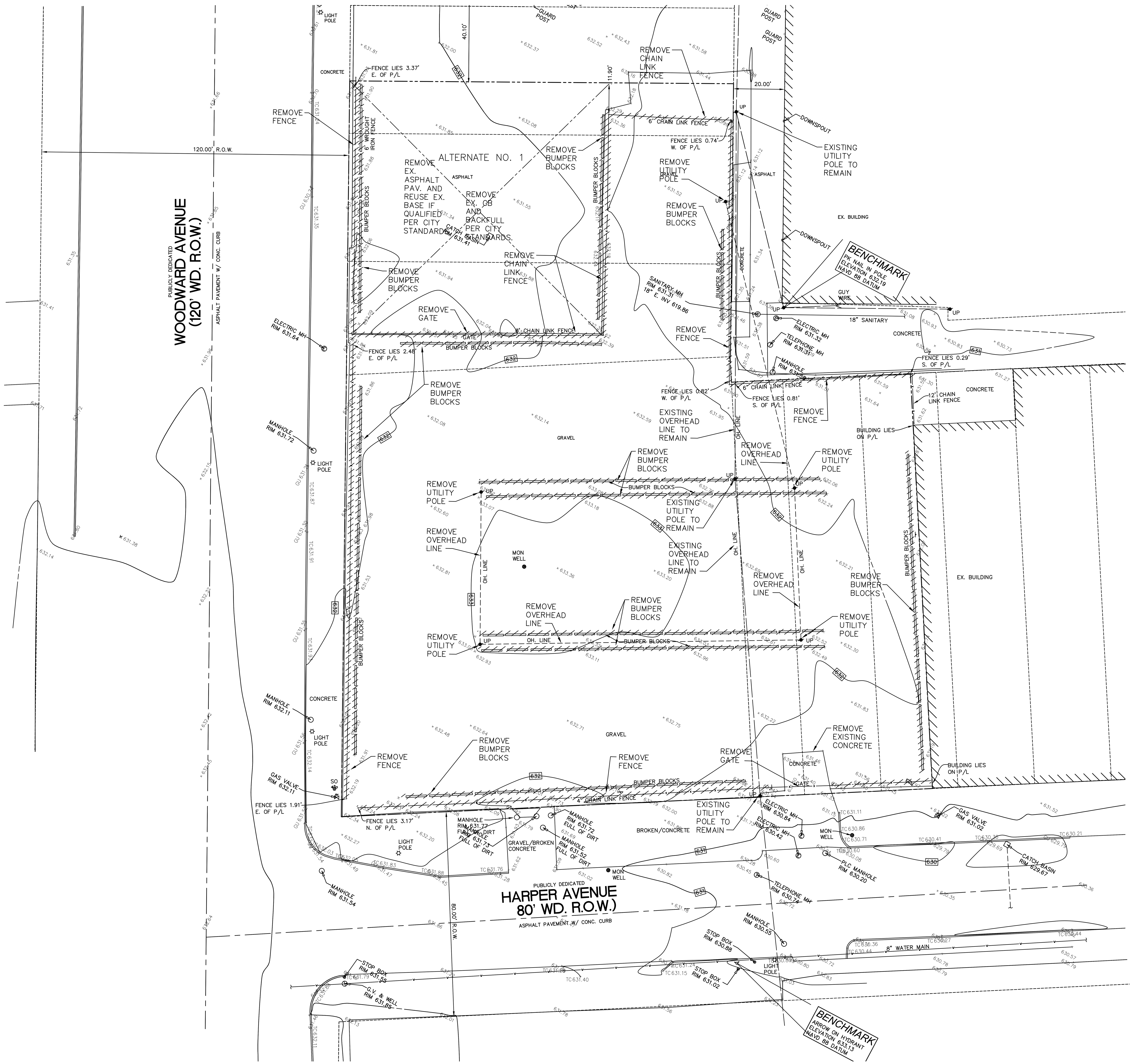
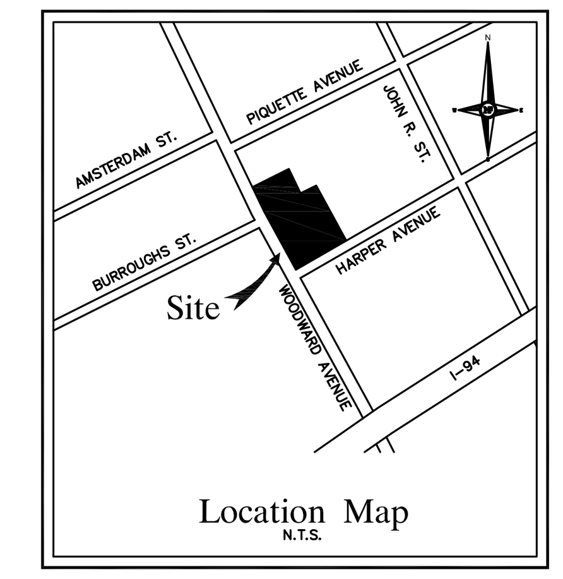
MEP PROJECT NO.
1515-1

SHEET NO.
CE-01



SITE REMOVAL PLAN

SCALE: 1" = 20'-0"



LEGEND

EX.	
	STORM SEWER MANHOLE
	FIRE HYDRANT
	FOUND CAPPED IRON
	FOUND IRON
	SIGN
	LIGHT POLE
	UTILITY POLE
	GATE VALVE
G	GAS MARKERS
OHL	OVERHEAD LINES
T/P	TOP OF PAVEMENT
T/C	TOP OF CURB
T/B	TOP OF BANK
GUT	GUTTER
E/P	EDGE OF PAVEMENT
	TREE LINE
XXX.XX	EXISTING GRADE

GENERAL NOTES:

1. REMOVE ALL EXISTING BUMPER BLOCKS WITHIN PROJECT LIMITS AND DISPOSE OFF SITE .
2. REMOVE ALL EXISTING FENCES WITHIN PROJECT LIMITS AND DISPOSE OUTSIDE.
3. TERMINATE ELECTRIC POWER AND REMOVE OVERHEAD POWER LINES AND UTILITY POLES AS NOTED.

BEFORE YOU DIG CALL MISS DIG 1-800-482-7171

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NOTICE:
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CAUTION!!!

THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

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Seal/Registration

PROJECT TITLE

IBIO - LOT 12 PARKING IMPROVEMENTS

6000 Woodward Avenue
Detroit, MI 48202

KEY PLAN

SHEET TITLE

SITE REMOVAL PLAN

DATE:	ISSUED FOR:
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MEP PROJECT NO.

1515-1

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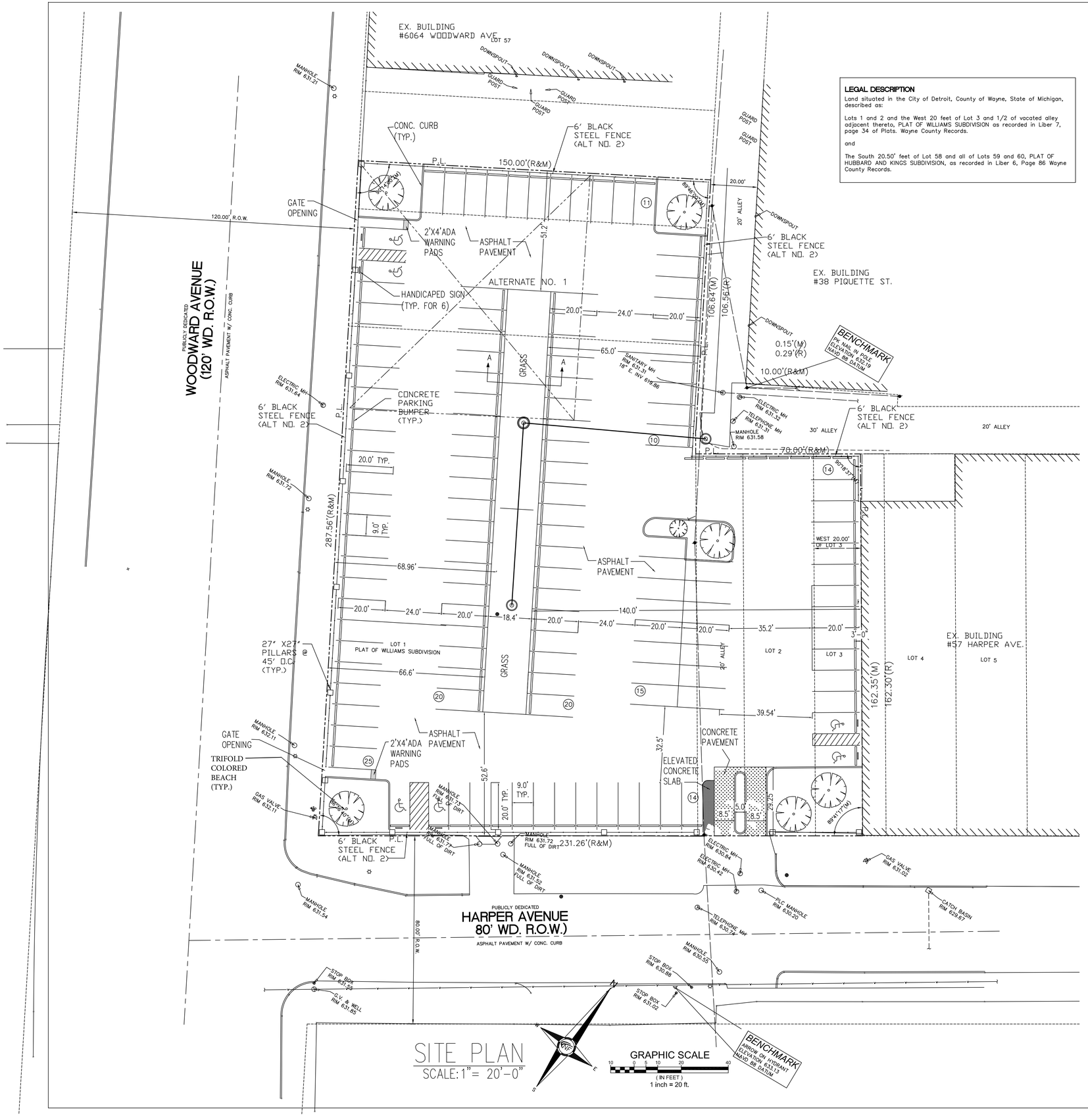
CE-02



LEGAL DESCRIPTION

Land situated in the City of Detroit, County of Wayne, State of Michigan, described as:

Lots 1 and 2 and the West 20 feet of Lot 3 and 1/2 of vacated alley adjacent thereto, PLAT OF WILLIAMS SUBDIVISION as recorded in Liber 7, page 34 of Plats. Wayne County Records.

and

The South 20.50' feet of Lot 58 and all of Lots 59 and 60, PLAT OF HUBBARD AND KINGS SUBDIVISION, as recorded in Liber 6, Page 86 Wayne County Records.

COMMENTS:

1. 129 PARKING SPACES.
2. ALL SURFACE DRAINING WILL FLOW DIRECTLY TO PARTIAL RETENTION AREA.
3. TWO CATCH BASINS ARE PROVIDED IN RETENTION AREA WITH A CONNECTING STORM LINE TO EXISTING LINE AT THE NORTHEAST PART OF THE SITE.
4. PAVEMENT SECTION WILL CONSIST OF 6"OF 21AA CRUSHED LIMESTONE 4"OF BITUMINOUS (ASPHALTIC) PER SECTION SHOWN.
5. RETENTION AREA TO BE LINED WITH GRASS.
6. LANDSCAPING TO BE PROVIDED WITH ISLANDS, CORNERS AS SHOWN, ETC.

GENERAL NOTES

1. CONTRACTOR SHALL CONDUCT WORK IN MANNER THAT AVOIDS INJURY OR DAMAGE TO ADJACENT PROPERTY OR IMPROVEMENTS, BUILDINGS, TREES, SHRUBBERY, POLE LINES, FENCES, GUIDE POSTS, DRAINAGE STRUCTURES, PAVEMENTS, AND OTHER OBJECTS ON OR ADJACENT TO THE WORK SITE, THAT ARE NOT DESIGNATED FOR REMOVAL, SHALL BE PROTECTED FROM INJURY OR DAMAGE. THE CONTRACTOR SHALL PROVIDE AND INSTALL SUITABLE SAFEGUARD TO PROTECT ANY OBJECT FROM INJURY OR DAMAGE.
2. CONTRACTORS SHALL PROTECT EXISTING PAVEMENT AND PAVEMENT EDGES AGAINST DAMAGE OR MARKING FROM EQUIPMENT WITH STEEL TRACKS AND FROM EQUIPMENT LOADED IN EXCESS OF STRENGTH OF PAVEMENT OR PAVEMENT EDGE. CONTRACTOR SHALL RESTORE ANY AREAS AND ROUTES TO THIER ORIGINAL CONDITION BEFORE FINAL ACCEPTANCE OF THE WORK.
3. CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR PROJECT FROM CITY OF DETROIT, DETROIT WATER AND SEWER DEPARTMENT AND OTHER DEPARTMENTS HAVING JURISDICTION OVER WORK.
4. CONTRACTOR SHALL PROVIDE ALL BARRICADES, CONSTRUCTION FENCING, SIGNING, CONES, WARNING FLASHERS, ETC. REQUIRED BY OWNER AND GOVERNMENT ENTITIES TO MAINTAIN A SAFE AND SECURE FACILITY. IT IS CONTRACTOR'S RESPONSIBILITY TO MAINTAIN BARRICADES, FENCING, ETC. TO A CONDITION ACCEPTABLE TO OWNER AND OWNER'S REPRESENTATIVE.
5. CONTRACTOR SHALL BACKFILL ALL EXCAVATIONS, SITE DEPRESSIONS, AND OTHER CONDITIONS AS NECESSARY WITH AGGREGATE FROM EXISTING PAVEMENT COMPACTED TO 95% MODIFIED PROTRACTOR TO ACHIEVE BOTTOM OF BASE GRADE ELEVATIONS. BACKFILL OF SITE SHALL BE PERFORMED IN A CONTROLLED MANNER IN ACCORDANCE WITH CONTRACT SPECIFICATIONS. CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE TO OWNER AND OWNER'S REPRESENTATIVE TO PERFORM CONSTRUCTION INSPECTION AND MATERIALS TESTING OF MATERIAL INSTALLATION.
6. CONTRACTOR SHALL INSTALL NEW ORNAMENTAL FENCING AS DETAILED ON CONSTRUCTION DRAWINGS. ORNAMENTAL FENCE SHALL BE APPROVED BY WAYNE STATE UNIVERSITY.
7. IT IS CONTRACTORS RESPONSIBILITY TO ENSURE PLACEMENT AND COMPACTION OF BACKFILL MATERIALS COMFORM TO CONTRACT SPECIFICATIONS AND CONSTRUCTION DRAWINGS, INCLUDING DENSITIES, THOUGH THE OWNER MAY CHOOSE TO ENGAGE INDEPENDENT MATERIALS TESTING SERVICES DURING THE SITE RESTORATION PHASE OF PROJECT, THIS IN NO WAY ALLEVIATES CONTRACTOR FROM THIS RESPONSIBILITY.
8. CONTRACTOR SHALL PROVIDE OWNER WITH "AS-BUILT" SITE DRAWINGS UPON COMPLETION OF DEMOLITION AND SITE RESTORATION ACTIVITIES.
9. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND TREES TO REMAIN. CONTRACTOR SHALL, AT HIS EXPENSE, REPLACE ANY UTILITY OR STRUCTURE DAMAGED DURING CONSTRUCTION.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELECTRICAL WORK FOR THE PROJECT AND SITE DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, RESTORING AND PROVIDING POWER TO ALL SITE LIGHTING AND PARKING LOT ACCESS EQUIPMENT.

PROJECT ALTERNATES

BASE BID: PAVING/STORM OF EXISTING GRAVEL LOT 12 - INCLUDES GRADING, ASPHALT PAVING, CONCRETE CURBS AND ISLANDS, STORM SEWER CATCH BASINS AND PIPING TO EXISTING DWSD SYSTEM
ALT NO. 1: PAVING/STORM OF EXISTING ASPHALT LOT - INCLUDES GRADING, ASPHALT PAVING AND CONCRETE CURBS AND ISLANDS
ALT NO. 2: 6' BLACK STEEL FENCE AND PIERS
ALT NO. 3: LOT LIGHTING - (SEE ELECTRICAL)
ALT NO. 4: GATES - (SEE ELECTRICAL)
ALT NO. 5: LANDSCAPING/TREES

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KEY PLAN

SHEET TITLE

SITE PLAN

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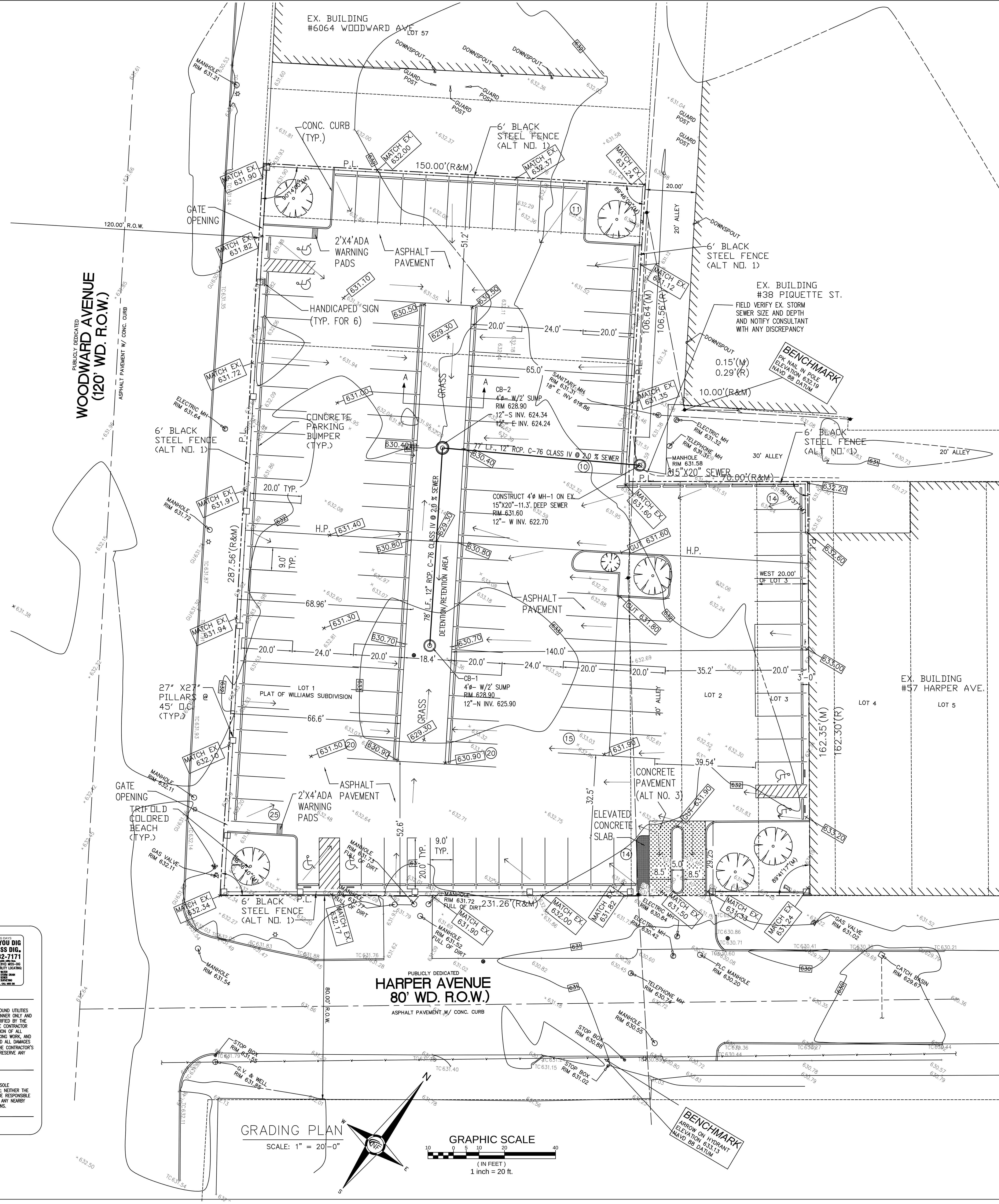

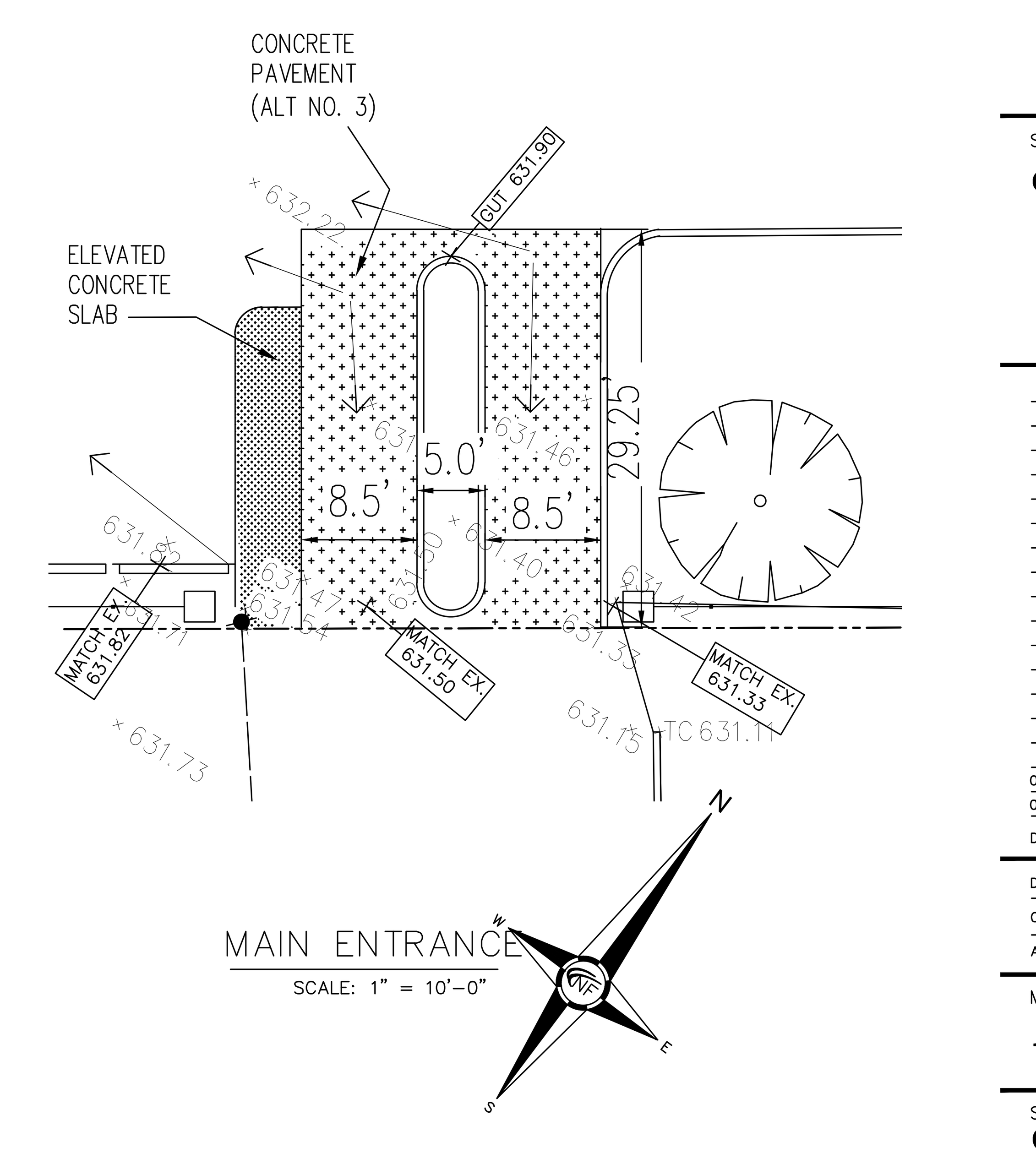

3 WORKING DAYS
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1-800-482-7171
For free location of public utility lines.
ALTERNATE NUMBER (810) MISS-DIG
COLOR CODES FOR UTILITY LOCATING:

Yellow	OIL & GAS	Blue	WATER
Orange	PHONE & CATV	Green	STORM DRAIN
Red	ELECTRIC	Brown	SEWER
		Pink	SURVEYING

IF YOU ARE GOING TO WORK NEAR OVERHEAD WIRES ... CALL MISS DIG

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NOTES:

1. PURPOSE INCLUDES UPGRADE AND IMPROVEMENT OF EXISTING PAVEMENT, FENCING, CURB, AND OTHER SITE FEATURES.
2. CONTRACTOR SHALL PROVIDE NECESSARY TRAFFIC CONTROL AND SIGNAGE TO MAINTAIN ACCESS TO AND WITHIN PROPERTY DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE APPROPRIATE BARRICADES AROUND WORK ARE AS FOR PEDESTRIAN AND VEHICULAR SAFETY.
3. CONTRACTOR SHALL ADHERE TO ALL WAYNE STATE UNIVERSITY, CITY, COUNTY AND STATE ORDINANCES GOVERNING HOURS OFOPERATION.
4. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING UTILITY OWNERS TO HAVE NECESSARY UTILITIES STAKED PRIOR TO STARTING ANY WORK.
5. CONTRACTOR SHALL PROTECT, OR HAVE RELOCATED, ANY UTILITIES INTERFERING WITH CONSTRUCTION.
6. CONTRACTOR SHALL PROVIDE SILT FENCES AND OTHER SOIL EROSION AND SEDIMENTATION CONTROL (SESC) MEASURES AROUND WORK AREA TO COMPLY WITH CITY OF DETROIT REQUIREMENTS. CONTRACTOR SHALL MAINTAIN SESC DEVICES DURING DURATION OF PROJECT AND REMOVE TEMPORARY SESC MEASURES AT COMPLETION OFPROJECT.
7. CONTRACTOR SHALL USE APPROPRIATE CONSTRUCTION METHODS AND EQUIPMENT ANDTAKE NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING STRUCTURES DESIGNATED TO REMAIN. ANY DAMAGE OCCURRING AS A RESULT OF. CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
8. DURING CONSTRUCTION ,CONTRACTOR SHALL MAINTAIN SITE GRADING TO ENSURE STORM WATER WILL DRAIN FROM SITE ADEQUATELY. LOCAL DEPRESSIONS SHALL BE AVOIDED TO PREVENT PONDING. DRAINAGE SHALL BE ROUTED TO A COMMON COLLECTION BASIN ORSYSTEM.
9. CONTRACTOR SHALL PERFORM ALL OTHER DEMOLITION AND/OR REMOVALS AS INDICATED ON THE PLANS. ALL EXCESS MATERIALS ARE TO BE REMOVED FROM SITE AND DISPOSED OF IN AN ENVIRONMENTALLY APPROPRIATE MANNER AS DETERMINED BY WAYNE STATE UNIVERSITY AND CITY OFDETROIT. REMOVAL AND DISPOSAL OF EXCESS MATERIALS WILL BE CONSIDERED INCIDENTAL.
10. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION STAKING, GRADE, AND ALIGNMENT CONTROLS. CONTRACTOR SHALL PROVIDE SUFFICIENT GRADE AND ALIGNMENT REFERENCES BY MEANS OF STAKES, STRINGLINES AND OTHER APPROVEDMEANS.
11. CONTRACTOR IS REQUIRED TO PROVIDE TRAFFIC CONTROL FOR COMPLETION OF CONSTRUCTION IN ACCORDANCE WITH LOCAL, COUNTY AND STATE REQUIREMENTS.
12. ALLWORK SHALL BE DONE IN ACCORDANCE WITH CURRENT STANDARDS, SPECIFICATIONS AND GENERAL CONDITIONS OF WAYNE STATE UNIVERSITY, CITY OF DETROIT, AND OTHER GOVERNING AGENCIES.

NOTES:

1. GRADES ARE PROVIDED FOR INFORMATION ONLY .CONTRACTOR SHALL MATCH EXISTING GRADES AS PRACTICAL AND ELIMINATE ALL EXISTING PAVEMENT DEPRESSIONS AND LOW SPOTS BY RE-GRADING SUBGRADE AND BASE WHERE NECESSARY.
2. STANDARD PARKING SPACE SIZE OF 9'-0"X 20' USED UNLESS NOTED.
3. CONTRACTOR SHALL MATCH GRADES AT EXISTING SAW CUT EDGES, CONCRETE COLLARS, AND STRUCTURES.
4. DIMENSIONS GIVEN FOR CARD READERS AND ACCESS CONTROL GATES ARE TYPICAL. FIELD CONDITIONS MAY WARRANT MODIFICATIONS AND FINAL LOCATIONS. CONTRACTOR TO GET APPROVAL BY WSU.
5. ADA COMPLIANT HANDICAPPED SIGNS TO BE MOUNTED TO FENCE UNLESS CODE REQUIRES OTHERWISE. MINIMUM HEIGHT FROM GROUND ELEVATION TO BOTTOM OF SIGN SHALL BE 48".

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PROJECT TITLE

IBIO - LOT 12 PARKING IMPROVEMENTS

6000 Woodward Avenue
Detroit, MI 48202

KEY PLAN

SHEET TITLE

GRADING PLAN

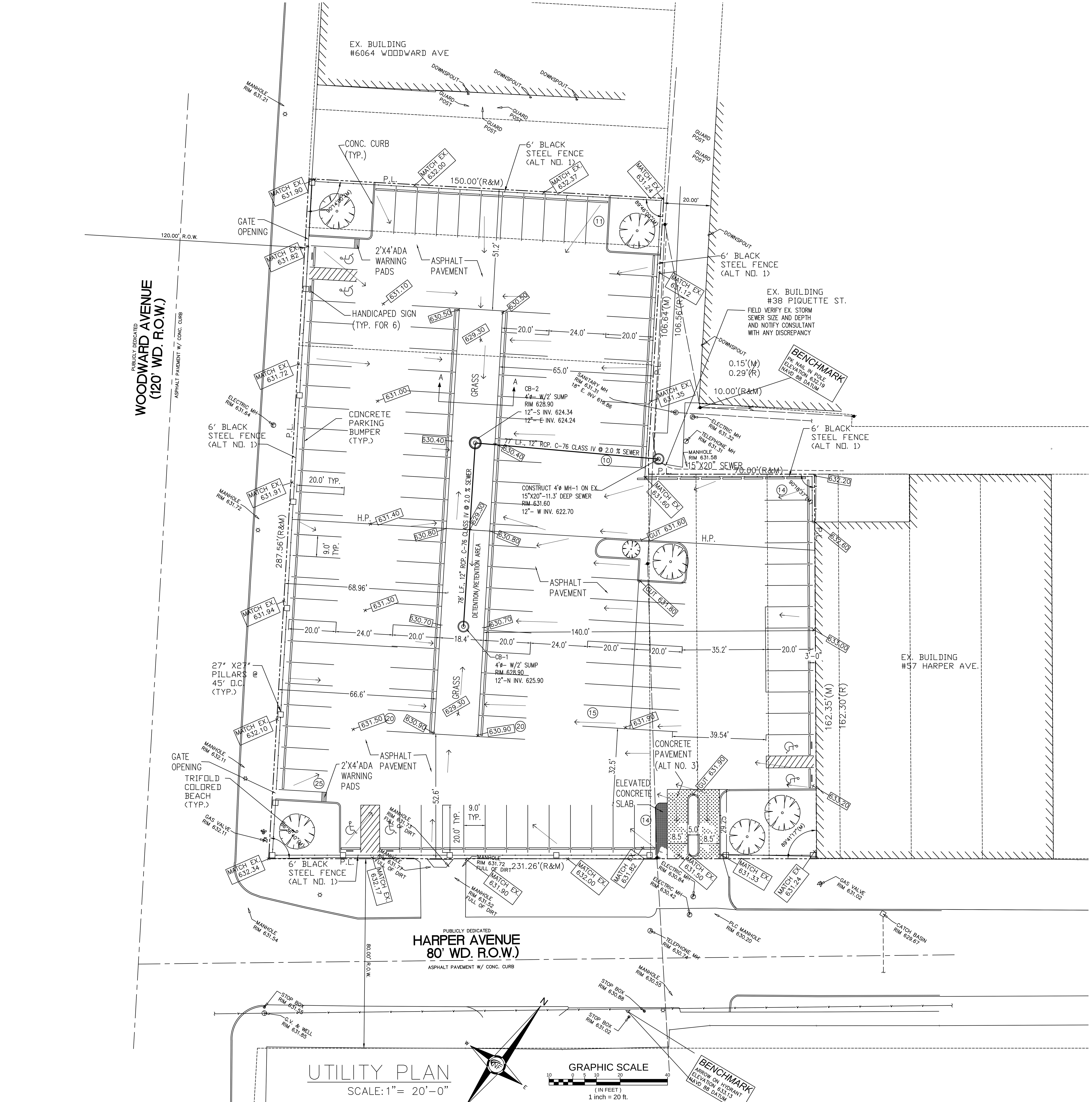
DATE:	ISSUED FOR:
08/25/15	BID
08/17/15	OWNER REVIEW

DRAWN
CHECKED
APPROVED

MEP PROJECT NO.

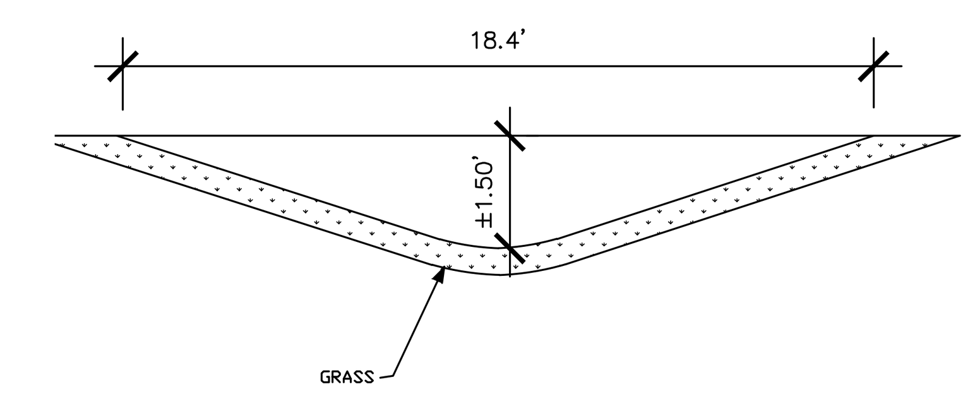
1515-1

SHEET NO.
CE-04



UTILITY PLAN

SCALE: 1"= 20'-0"



SECTION A-A
PARTIAL RETENTION AREA

ESTIMATED QUANTITIES:

STORM SEWER:

DESCRIPTION	QUANTITY	UNITS
12' RCP C-76 CLASS IV SEWER	155	L.F.
4' DIA CATCH BASIN	2	EA.
4' DIA MANHOLE	1	EA.

PAVING:

DESCRIPTION	QUANTITY	UNITS
8" AGGREGATE BASE, 21 AA	48,247	SF
4" ASPHALT PAVEMENT	48,133	EA.
8" CONCRETE PAVEMENT	114	SF
6"CONCRETE CURBT	385	LF
8' CONCRETE PARKING BUMPERS	107	EA.

FENCES:

DESCRIPTION	QUANTITY	UNITS
6' BLACK STEEL FENCE	847	L.F.
27"X27' FENCE PILLARS	14	EA.

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IF YOU ARE GOING TO WORK NEAR OVERHEAD WIRES ... CALL MISS DIG

THE LOCATION OF SELECT UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE MANNER ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK, OF ANY NEARBY STRUCTURES, OR ANY OTHER PERSONS.

WAYNE STATE UNIVERSITY
WSU PROJECT #211-121168

MEP Engineers, LLC
Mechanical|Electrical|Plumbing
ENGINEERING & CONSTRUCTION SERVICES
30403 West 13 Mile Road
Farmington Hills, Michigan 48334
PH: 248.488.9822
FAX: 248.488.9811
www.mepmi.com

Seal/Registration

PROJECT TITLE

IBIO - LOT 12 PARKING IMPROVEMENTS

6000 Woodward Avenue
Detroit, MI 48202

KEY PLAN

SHEET TITLE
UTILITY PLAN

DATE:	ISSUED FOR:
08/25/15	BID
08/17/15	OWNER REVIEW

DRAWN
CHECKED
APPROVED

MEP PROJECT NO.
1515-1

SHEET NO.
CE-05

DRAINAGE CALCULATIONS

FORMULAS AND COEFFICIENTS

WAYNE COUNTY STANDARD REQUIREMENTS, RULES AND DESIGN CRITERIA DRAINAGE IN WAYNE COUNTY WAS USED IN THE DESIGN OF DRAINAGE SYSTEM.

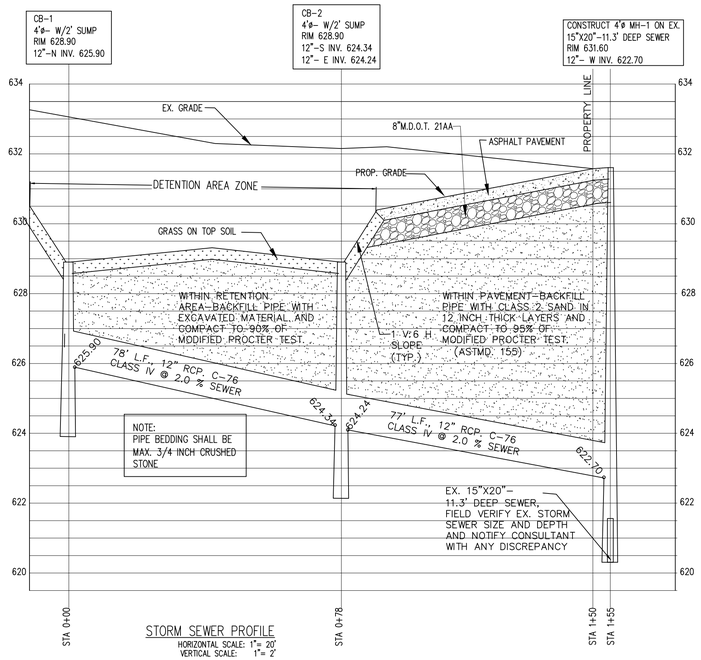
THE FOLLOWING DESIGN PARAMETERS AND EQUATIONS USED IN RUNOFF AND STORM SEWER CALCULATIONS:

- RATIONAL METHOD FOR RUNOFF CALCULATIONS WAS USED Q=CIA.
- THE FOLLOWING COEFFICIENTS OF IMPERVIOUSNESS WAS USED
  C=0.95 FOR PAVEMENT .
  C=0.25 FOR LAWN
- STORM DRAINAGE SYSTEM WAS DESIGNED FOR 10 YEAR STORM.
- THE RAINFALL INTENSITY "I" FORMULA WAS USED IS: I=151.8/(T+19.9).
- MANNING FORMULA WAS USED TO SIZE THE PIPES ($Q = \frac{1.48}{n} A R^{2/3} S^{1/2}$)

  MANNING COEFFICIENT n= 0.013 FOR CONCRETE PIPES (RCP)

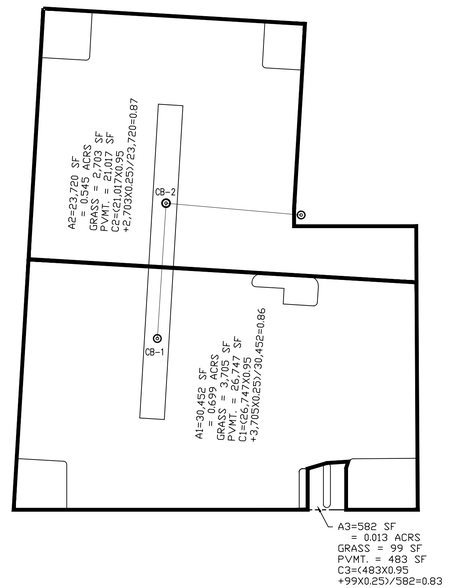
TEN YEAR STORM SEWER CALCULATIONS: I=151.8/(t+19.9)

STORM SEWER LINE		AREA DESIGNATION FOR ADDED AREA	INCREMENT OF AREA (ACRES)	INCREMENT OF AREA (ACRES) ADDED	C FACTOR	EQUIVALENT AREA (AXC)	SUM OF AXC	TIME OF CONCENTRATION (MIN.)	RAINFALL RATE (I) (INCHES/HOUR)	QUANTITY OF RUNOFF (Q=CIA) (CFS)	DIAMETER (INCHES) OF PIPE OUT OF CB	SLOPE % OF HYDRAULIC GRADIENT	LENGTH OF LINE BETWEEN CB'S	MANNING VELOCITY (FPS) FLOWING FULL	TIME (MIN.) OF FLOW TO NEXT MANHOLE	MANNING CAPACITY OF SEWER FLOWING FULL (CFS)	UPPER INVERT ELEV.	LOWER INVERT ELEV.	UPPER STRUCTURE RIM ELEV.
FROM STRUCTURE	TO STRUCTURE																		
CB-1	CB-2	A1	0.699	0.699	0.86	0.601	0601	15.00	4.35	2.61	12"	2.00	78'	6.42	0.20	5.04	625.90	624.34	628.90
CB-2	MH-1	A2	0.545	0.349	0.87	0.474	1.075	15.20	4.32	4.64	12"	2.00	77	6.42	0.02	5.04	524.24	622.70	628.90



STORM SEWER PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'



SITE DIAGRAM OF DRAINAGE DISTRICTS

SCALE 1"= 40'-0"

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KEY PLAN

SHEET TITLE

PROFILE, STORM CALCS & DRAINAGE DISTRICT PLAN

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08/17/15 OWNER REVIEW

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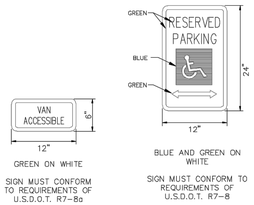


GREEN ON WHITE

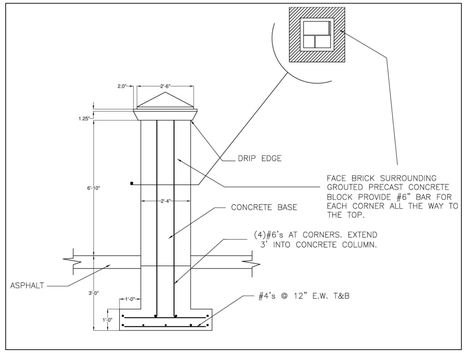
SIGN MUST CONFORM TO REQUIREMENTS OF U.S.D.O.T. R7-8a

BLUE AND GREEN ON WHITE

SIGN MUST CONFORM TO REQUIREMENTS OF U.S.D.O.T. R7-8

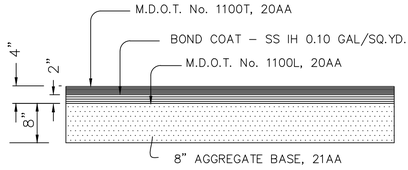
NOTES:
1. SIGNS SHALL BE MOUNTED TO FENCE AS SHOWN ON PLANS A MINIMUM OF 48" FROM GROUND SURFACE. SIGNS SHALL BE LOCATED SO THAT THEY CAN NOT BE OBSCURED BY A VEHICLE PARKED IN THE SPACE.
2. A SIGN SHALL BE LOCATED AT THE END OF EACH HANDICAPPED PARKING SPACE, TURNED TO FACE THE VEHICLE, AND CENTERED ON THE SPACE.

1 HANDICAPPED PARKING SIGNS
NTS

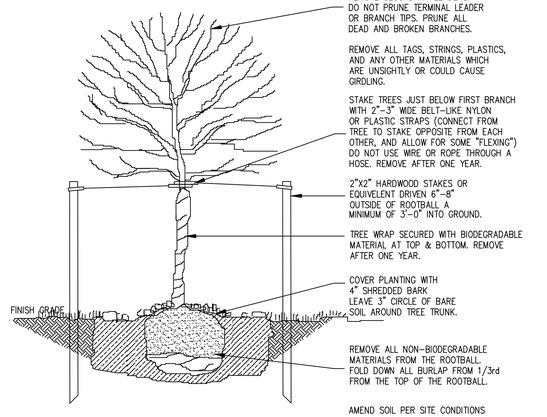


NOTES:
-FOOTING TO EXTEND TO A MINIMUM DEPTH OF 3.5' BELOW EXPOSED FINISHED GRADE-OR DEEPER AS REQUIRED TO REACH SUITABLE BEARING SOIL.
-SUBMIT SHOP DRAWINGS FOR REVIEW.
-CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI@28 DAYS.

3 BRICK PIER DETAIL
NTS

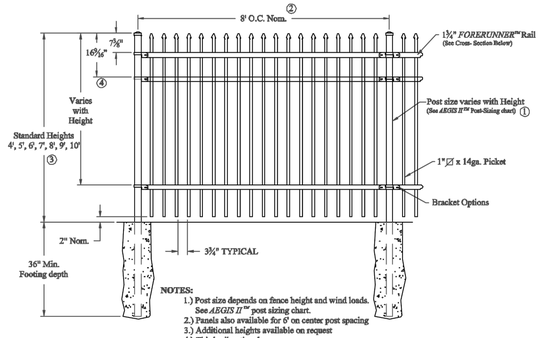


6 4" ASPHALT PAVING SECTION
NTS



NOTE:
TREE SPECIES SHALL BE TRI COLORED BEACH SHALL HAVE MINIMUM 2" TRUNK. THE ROOT BALL EXCAVATION AREA SHOULD EXTEND 1 FOOT BEYOND THE TREES DRIP EDGE. WATERING BAG SHOULD BE USED FOR THE TREES TO BAKE ROOT.

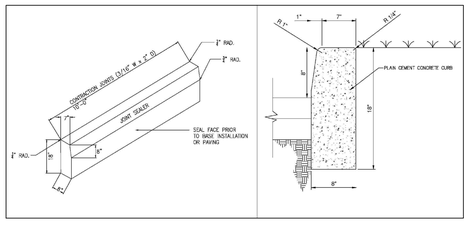
8 TREE PLANTING DETAIL
NTS



2 ORNAMENTAL FENCE
NTS

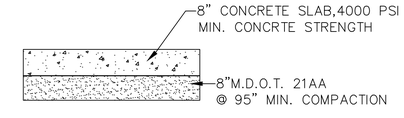
NOTES:

SELECT FENCE STYLE TO MATCH EXISTING WSU FENCE STYLE AND SHALL BE APPROVED BY WAYNE STATE UNIVERSITY

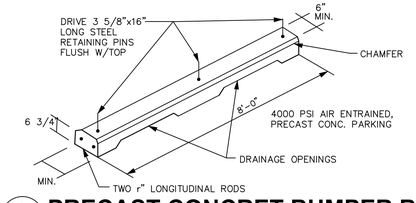


NOTES:
1- 3/4" PREMOLDED EXPANSION JOINT METARIAL SHALL BE PLACED AT 40 FOOT MAXIMUM SPACING TO FULL DEPTH OF CURB. (30 FOOT MAXIMUM FOR EXTRUDED CURB).
2- CURB SHALL BE DOWELED OR PINNED AT INLETS.

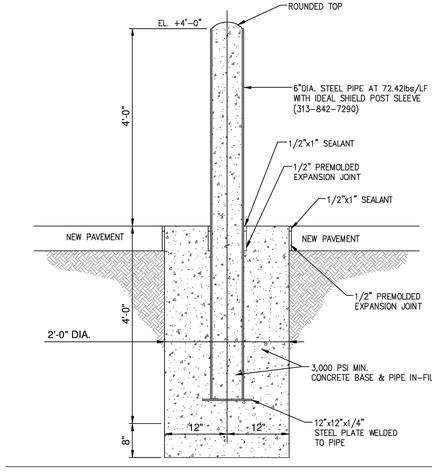
4 CONCRETE CURB
NTS



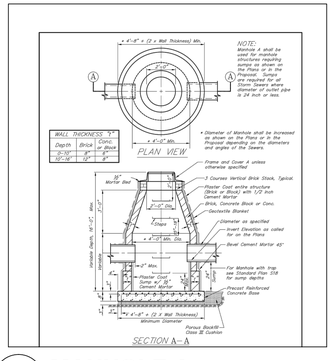
7 CONCRETE PAVEMENT DETAIL
NTS



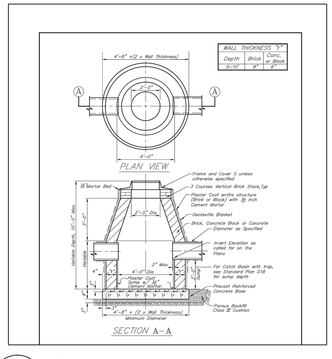
9 PRECAST CONCRETE BUMPER BLOCK
NTS



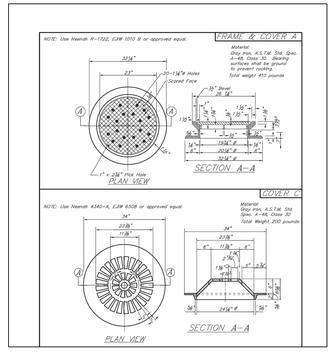
5 CONCRETE BOLLARD
NTS



10 MANHOLE A
NTS



11 CATCH BASIN
NTS



12 FRAME AND COVER A. COVER C
NTS

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IBIO - LOT 12 PARKING IMPROVEMENTS

6000 Woodward Avenue
Detroit, MI 48202

KEY PLAN

SHEET TITLE

CIVIL DETAIL SHEET

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08/17/15 OWNER REVIEW
DATE: ISSUED FOR:

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MEP PROJECT NO.

1515-1

SHEET NO.

CE-07

ELECTRICAL SPECIFICATIONS

GENERAL

1. PROVIDE ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS OR METHODS LISTED, MENTIONED OR SCHEDULED ON DRAWINGS AND/OR HEREIN SPECIFIED OR REQUIRED, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY AND REQUIRED FOR THE COMPLETE AND OPERATING SYSTEMS.

2. OBTAIN AND PAY FOR ALL PERMITS, LICENSES, INSPECTIONS, APPROVALS AND FEES REQUIRED AND INSURE THAT THE ENTIRE ELECTRICAL INSTALLATION CONFORMS TO CODES AND REGULATIONS REQUIRED BY AUTHORITY OR AGENCY HAVING JURISDICTION OVER THE INSTALLATION, ALTERATION OR CONSTRUCTION OF WORK INCLUDED.

3. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (N.E.C.), N.F.P.A., LOCAL AND STATE CODES, ORDINANCES AND REGULATIONS. COMPLY WITH LATEST WSU CONSTRUCTION AND DESIGN STANDARDS. INSTALLATION SHALL MEET NECA 1 AND OTHER APPLICABLE NECA NEIS STANDARDS.

4. ELECTRICAL CONTRACTOR SHALL FURNISH ALL EQUIPMENT UNLESS OTHERWISE INDICATED AND PERFORM ALL ELECTRICAL WORK AS REQUIRED TO COMPLETE NEW WORK AND REVISIONS INDICATED ON PLAN OR AS REQUIRED FOR THE SUCCESSFUL OPERATION OF ELECTRICAL SYSTEMS.

5. THE COMPLETED SYSTEMS SHALL BE FULLY OPERATIONAL. ACCEPTANCE BY THE OWNER SHALL BE A CONDITION OF THE CONTRACT.

6. CONTRACTOR SHALL INCLUDE ALL MISCELLANEOUS ITEMS REQUIRED TO COMPLETE THE WORK, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: MOVING AND RIGGING OF MATERIALS AND EQUIPMENT, ALL HANGERS, SUPPORTS, ANCHORS, EXPANSION MEANS, CONDUIT, WIRE, FITTINGS, SLEEVES, DEVICES AND BOXES.

7. EXCEPT AS OTHERWISE INDICATED ON PLAN OR HEREIN SPECIFIED, ALL MATERIALS USED SHALL BE NEW AND BEAR THE U.L. LABEL WHERE SUCH SERVICE AND LABEL ARE REGULARLY PROVIDED AND BE OF THE APPROPRIATE NEMA STANDARD.

8. CONTRACTOR SHALL NOT SCALE DRAWINGS FOR DIMENSIONS, BUT SHALL CONTACT THE PROJECT ENGINEER FOR ALL DIMENSIONAL DATA. FIELD VERIFY EXISTING DIMENSIONS AND CONDITIONS.

9. SUBMIT ELECTRONIC COPY OF ALL EQUIPMENT SHOP DRAWINGS FOR ALL MAJOR PIECES OF ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
   A. LIGHTING FIXTURES AND POLES
   B. DISCONNECT SWITCHES AND PANEL BOARDS.
   C. WIRING DEVICES, PHOTOCELLS, TIMERS AND CONTACTORS.
   D. ENCLOSURES AND HANDHOLES.

10. ALL WIRING REQUIRED FOR THE CARD READERS, BLUE PHONE AND OTHER COMMUNICATION ROOM SHALL BE BY THE OWNERS IT CONTRACTOR–ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT AND OUTLET BOXES COORDINATED WITH THE OWNERS COMMUNICATION CONTRACTOR. COMPLY WITH WSU C&IT STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE.

11. ON COMPLETION OF WORK, THIS CONTRACTOR SHALL PREPARE "AS–BUILT DRAWINGS". CLEARLY INDICATE ON A SET OF CONTRACT DRAWINGS ALL THE CHANGES MADE DURING CONSTRUCTION, DUE TO FIELD CONDITIONS, ADDENDA, BULLETINS, ETC. DRAWINGS SHALL INDICATE THE INSTALLED LOCATION OF ALL EQUIPMENT, OUTLETS, PANELS, ETC. AND THE INSTALLED CIRCUITING OF ALL DEVICES AND LOADS WITH ACTUAL CIRCUIT NUMBERS USED. CIRCUIT NUMBERS SHOWN ON AS–BUILT DRAWINGS SHALL CORRESPOND WITH REVISED PANEL DIRECTORIES. AS BUILT DRAWINGS SHALL BE DELIVERED TO THE ENGINEER PRIOR TO FINAL PAYMENT. ALL DRAWINGS MUST BE CLEAR AND ACCEPTABLE TO THE PROJECT ENGINEER. REPRODUCIBLE DRAWINGS WILL BE MADE AVAILABLE FROM THE PROJECT ENGINEER FOR USE BY THE ELECTRICAL CONTRACTOR IN PREPARING AS–BUILT DRAWINGS.

12. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL TESTS AND INSPECTIONS NECESSARY TO DETERMINE THAT ALL WIRING AND EQUIPMENT INSTALLED UNDER THIS SPECIFICATION IS IN SATISFACTORY CONDITION AND SHALL BE PERFORMED TO THE SATISFACTION OF THE ELECTRICAL INSPECTOR OF THE LOCAL AUTHORITY AND TO ALL OTHERS HAVING JURISDICTION OVER THE ELECTRICAL WORK.

13. PRIOR TO PROJECT CLOSE OUT, THE ELECTRICAL CONTRACTOR SHALL:

14. COMPLETE ALL PUNCH LIST ITEMS.
   A. CLEAN PROJECT OF DEBRIS, DUST AND DIRT RESULTING FROM THE INSTALLATION OF ELECTRICAL SYSTEMS.
   B. PROVIDE AS–BUILT DRAWINGS AS HEREIN SPECIFIED.
   C. PROVIDE ONE SET OF APPROVED SHOP DRAWINGS FOR ALL SHOP DRAWINGS REQUIRED.
   D. TURN ALL PANEL BOARD KEYS OVER TO THE OWNER.
   E. PROVIDE ALL MANUALS, OPERATING INSTRUCTIONS, ETC. ASSOCIATED WITH ELECTRICAL MATERIALS AND EQUIPMENT. ALL DOCUMENTS TO BE CONTAINED IN A THREE RING BINDER.
   F. PERFORM ALL TESTING TO VERIFY SYSTEMS AND EQUIPMENT IS PROPERLY OPERATING AND INSTALLED.
   G. PROVIDE A CERTIFICATE OF INSPECTION.
   H. PROVIDE GUARANTEE.

BASIC MATERIALS AND METHODS

1. ALL SAW CUTTING OR CORING OF THE PAVEMENT AS REQUIRED FOR THE INSTALLATION OF ELECTRICAL WORK SHALL BE BY THE ELECTRICAL TRADES. .

2. BRANCH CIRCUIT WIRE AND CABLE SHALL BE COPPER WITH 98% CONDUCTIVITY AND SHALL MEET THE TESTS AND STANDARDS SET FORTH BY NEMA, U.L. AND ICEA. WIRE FOR GENERAL USE SHALL BE COPPER, TYPE THHN/THWN, 90 DEGREES C. ALUMINUM WIRE SHALL NOT BE USED. MANUFACTURES: SOUTH WIRE, TRIANGLE, ROME OR CABLE.

3. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.

4. ALL BRANCH CIRCUITS AND POWER WIRING SHALL INCLUDE A SEPARATE INSULATED GREEN GROUND WIRE.

5. ALL WIRING SHALL BE COLORED CODED. PER NEC CODING SCHEME.

6. UNDERGROUND CONDUCT SHALL BE SCHEDULE 40 PVC. MANUFACTURERS: CARLON, ENDOT INDUSTRIES, CAN–TEX. SWEEPS AND EXPOSED CONDUIT SHALL BE RIGID STEEL. MANUFACTURERS: TRIANGLE PWC, WHEATLAND, ALLIEO STEEL CONDUIT.

7. LIQUID–TIGHT FLEXIBLE STEEL CONDUIT FOR CONNECTION TO MOTORS AND SPECIAL EQUIPMENT SHALL BE FLEXIBLE STEEL WITH PVC JACKET AND GROUNDING JUMPER. MANUFACTURERS: AFC, ELECTR@–FLEXCO, 08 GEDNEY.

8. BOXES SHALL BE CAST TYPE SUITABLE FOR OUTDOOR USE, A MINIMUM OF 2 1/2" DEEP AND OF SUFFICIENT SIZE TO ACCOMMODATE THE DEVICES SHOWN, ACCORDING TO N.E.C. REQUIREMENTS. BOXES SHALL BE FLUSH MOUNTED WHERE NECESSARY.

9. ELECTRIC SYSTEM GROUNDING SHALL IN ALL INSTANCES COMPLY WITH THE MINIMUM REQUIREMENTS OF THE N.E.C. METAL ENCLOSURES SHALL BE BONDED TOGETHER AND GROUNDED TO THE BUILDING GROUND SYSTEM.

10. BRANCH CIRCUIT WIRING SHALL BE TERMINATED ON SCREW TERMINAL, WHERE STRANDED WIRING IS REQUIRED, UTILIZE A TWO PRONG STA–KON TYPE TERMINAL CONNECTOR.

11. GROUP AND NEATLY ARRANGE ALL CONDUCTORS IN PULL BOXES, CABINETS AND PANEL BOARDS BY CIRCUITS. GROUP AND BIND ALL CONDUCTORS OF A FEEDER OR BRANCH CIRCUIT TOGETHER WITH NYLON TIES AND IDENTIFY THERE SERVICE.

12. NEATLY ARRANGE ALL BRANCH CIRCUIT WIRES IN PANELS. CUT OFF ALL SURPLUS WIRE AND TIE ALL CONDUCTORS WITH NON–METALLIC TIES.

13. GENEROUSLY SIZE ALL JUNCTION BOXES TO ALLOW PLENTY OF VOLUME FOR SPLICES AND FUTURE MAINTENANCE AND MODIFICATIONS. JUNCTION BOX VOLUMES REQUIRED BY THE NEC ARE MINIMUM AND IN MANY CASES INADEQUATE FOR THE LIFE CYCLE OF THE FACILITY. PROVIDE LARGER JUNCTION BOXES THAN REQUIRED BY CODE WHERE REQUIRED TO FACILITATE FUTURE MAINTENANCE AND OPERATIONS.

14. ALL RECEPTACLES SHALL BE LABELED WITH THE PANEL AND CIRCUIT SERVING THE RECEPTACLE. LABEL ALL RECEPTACLE COVERS AS TO THE PANEL BOARD AND CIRCUIT NUMBER IT FEEDS. LABELING SHALL BE ACCOMPLISHED WITH A LABELING MACHINE SIMILAR TO A BRADY ID PRO.

15. NAMEPLATES SHALL BE PROVIDED ON ALL PANELBOARDS, LIGHTING CONTROLLERS, DISCONNECT SWITCHES, ETC. NAMEPLATES SHALL BE ENGRAVED LAMICOID TYPE WITH BLACK LETTERS ON A WHITE BACKGROUND. THE USE OF DYMO LABELS ARE NOT ACCEPTABLE. LABEL ALL PANEL BOARDS (NEW AND EXISTING SERVING THE AREA OF RENOVATION) AS TO ITS TITLE, FEEDER SOURCE AND VOLTAGE AND PHASING. NAMEPLATES SHALL BE ENGRAVED LAMICOID TYPE WITH BLACK LETTERS ON A WHITE BACKGROUND, PANEL LABELS SHALL BE WITH ¢"HIGH LETTERS.

16. PANLBOARDS SHALL BE PROVIDED WITH TYPED CIRCUIT DIRECTORIES. DIRECTORIES SHALL INDICATE LOAD SERVED FOR ALL CIRCUIT BREAKERS.

PANELBOARD (ALT NO. 3)

PANELBOARD SHALL COMPLY WITH NEMA PB.1, INSTALLATION SHALL COMPLY WITH NECA 407. BUSSING SHALL BE COPPER OF SIZE INDICATED. MAIN SHALL BE SIZE AND TYPE INDICATED. BRANCH BREAKERS SHALL BE PLUG–IN TYPE OF SIZE AND POLES INDICATED. ENCLOSURE SHALL BE NEMA 250 TYPE 3R AND LOCKABLE. MANUFACTURERS: EATON/CUTLER–HAMMER, GENERAL ELECTRIC OR SQUARE D.

LIGHTING CONTROL PANEL (ALT NO. 3)

PANEL SHALL CONTAIN LIGHTING CONTACTORS, TIMER AND PHOTO CONTROLLER IN LOCKABLE NEMA 3R ENCLOSURE. LIGHTING CONTACTORS SHALL BE 2 POLE, 600V, 30A WITH 120V ELECTRICALLY HELD COIL. MANUFACTURERS: AUTOMATIC SWITCH CO., EATON/CUTLER–HAMMER, HUBBELL LIGHTING, SIEMENS OR SQUARE D. TIMER AND PHOTO CONTROLLER SHALL BE 120/277V OPERATION. MANUFACTURERS; INTERMATIC INC., PARAGON ELECTRIC OR TORK.

HANDHOLE (ALT NO. 4)

5' X 5' X 4' DEEP INTERIOR PRECAST CONCRETE. CONCRETE SHALL BE 4500PSI @ 28DAYS. ASTM A615 GRADE 60 REINFORCING STEEL. AASHTO HS 20 WHEEL LOADING. ROUND CAST IRON COVER WITH "COMMUNICATIONS". MANUFACTURERS: PRECAST HANDHOLE – ADVANCE CONCRETE PRODUCTS, CAST IRON COVER – EAST JORDAN IRON WORKS.

LIGHTING REQUIREMENTS

1. ALL NEW LIGHTING FIXTURES SHALL BE UL LISTED, COMPLETE IN EVERY DETAIL, PROPERLY WIRED AND CONNECTED WITH CONDUITS SUPPLYING SAME. ALL FIXTURES SHALL BE COMPLETE WITH LAMPS, BALLASTS AND ALL RELATED ACCESSORIES AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.
2. REFER TO THE LIGHTING FIXTURE SCHEDULE SHOWN ON ELECTRICAL DRAWINGS FOR A COMPLETE DESCRIPTION OF ALL LIGHTING FIXTURES.
3. ALL LIGHTING FIXTURES SHALL COMPLY WITH ALL REQUIREMENTS OF STATE AND LOCAL CODES AND THE N.E.C.
4. LAMPS SHALL BE LED.

PROJECT ALTERNATES

BASE BID: PAVING/STORM OF EXISTING GRAVEL LOT 12 (SEE CIVIL – NO ELECTRICAL)
ALT NO. 1: PAVING/STORM OF EXISTING ASPHALT LOT (SEE CIVIL – NO ELECTRICAL)
ALT NO. 2: 6' BLACK STEEL FENCE AND PIERS (SEE CIVIL – NO ELECTRICAL)
ALT NO. 3: LOT LIGHTING – INCLUDES THREE TYPE 'F1' AND ONE TYPE 'F2' POLES, FIXTURES AND UNDERGROUND WIRE AND CONDUIT, INCOMING DTE SERVICE WITH PANELBOARD, LIGHTING CONTROL PANEL AND INTERCONNECTING WIRING, UNDERGROUND CONDUITS FOR FUTURE CHARGING STATIONS, CAMERAS AND GUARD HOUSE.
ALT NO. 4: GATES – INCLUDES COMMUNICATOINS CABINET, UNDERGROUND POWER AND CONDUITS FOR CARD READERS, GATE ARMS AND BLUE PHONE, CONDUIT TO AND HANDHOLE FOR FUTURE WOODWARD FIBER CROSSING.
ALT NO. 5: LANDSCAPING/TREES (SEE CIVIL – NO ELECTRICAL)

EXTERIOR LIGHTING FIXTURES SCHEDULE

TYPE	FIXTURE DESCRIPTION	LAMP	VOLTAGE	MANUFACTURER AND MODEL NUMBER
F1 ALT NO. 3	LED PARKING LOT LIGHT FIXTURE, UL WET LOCATION, TYPE V MEDIUM DISTRIBUTION, ARM MOUNTED; UP TO 4 FIXTURES PER POLE BRONZE FINISH, FUSED. POLE: 35' ROUND, 5" DIAMETER, NON-TAPERED, BRONZE, STEEL.	240 LEDs (350mA)	240V	CREE EDGE SERIES. ARE- EDG-5M-DL-24-E-UL-BZ-350-F POLE: KW RSP SERIES.
F2 ALT NO. 3	LED ENTRY/ EXIT LIGHT FIXTURE, UL WET LOCATION, TYPE V MEDIUM DISTRIBUTION, ARM MOUNTED; SINGLE FIXTURE PER POLE, BRONZE FINISH, FUSED. POLE: 12' ROUND, 4" DIAMETER, NON- TAPERED, BRONZE, STEEL.	120 LEDs (350mA)	240V	CREE EDGE SERIES. ARE- EDG-5M-DL-12-E-UL-BZ-350-F POLE: KW RSP SERIES.

Panel Designation: PP-L12 (ALT NO. 3) **Main:** 100A BREAKER **P-P Voltage:** 240
Panel Location: IBio Parking Lot 12 **Bussing:** 100A 100% **Neutral** **P-N Voltage:** 120
Fed From: DTE Pole **Ground Bus:** STANDARD **Wiring:** 1 PHASE, 3 WIRE
Feeder Size: 3#6, 1#6G **Mounting:** SURFACE **Min SC Interrupting Rating:** 10kA

Remarks	Light Load	Recept Load	Mech Load	Equip Load	OC Prot	CKT	L 1		L 2	CKT	OC Prot	Equip Load	Mech Load	Recept Load	Light Load	Remarks
Entry Card Readers (ALT NO. 4)				100	20	1	X			2	20				1110	Parking Lot Lighting
Exit Card Readers (ALT NO. 4)				100	20	3			X	4	20				1110	
Entry Credit Card Reader (ALT NO. 4)				150	20	5	X			6	40	3500				Clipper Creek Charging Station
Exit Credit Card Reader (ALT NO. 4)				150	20	7			X	8	40	3500				(Future)
Entry Arm Gate (ALT NO. 4)			500		20	9	X			10	40	3500				Clipper Creek Charging Station
Exit Arm Gate (ALT NO. 4)			500		20	11			X	12	40	3500				(Future)
Guard House	50	180	1000		30	13	X			14	40	3500				Clipper Creek Charging Station
(Future)	50	180	1000		30	15			X	16	40	3500				(Future)
Blue Phone (Future)	100				20	17	X			18	40	3500				Clipper Creek Charging Station
Space					--	19			X	20	40	3500				(Future)
Space					--	21	X			22	--					Space
Space					--	23			X	24	--					Space

WAYNE STATE UNIVERSITY
WSU PROJECT #211–121168

MEP Engineers, LLC
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PH: 248.488.9822
FAX: 248.488.9811
www.mepmi.com

Seal/Registration

PROJECT TITLE

IBIO - LOT 12 PARKING IMPROVEMENTS

6000 Woodward Avenue
Detroit, MI 48202

KEY PLAN

SHEET TITLE

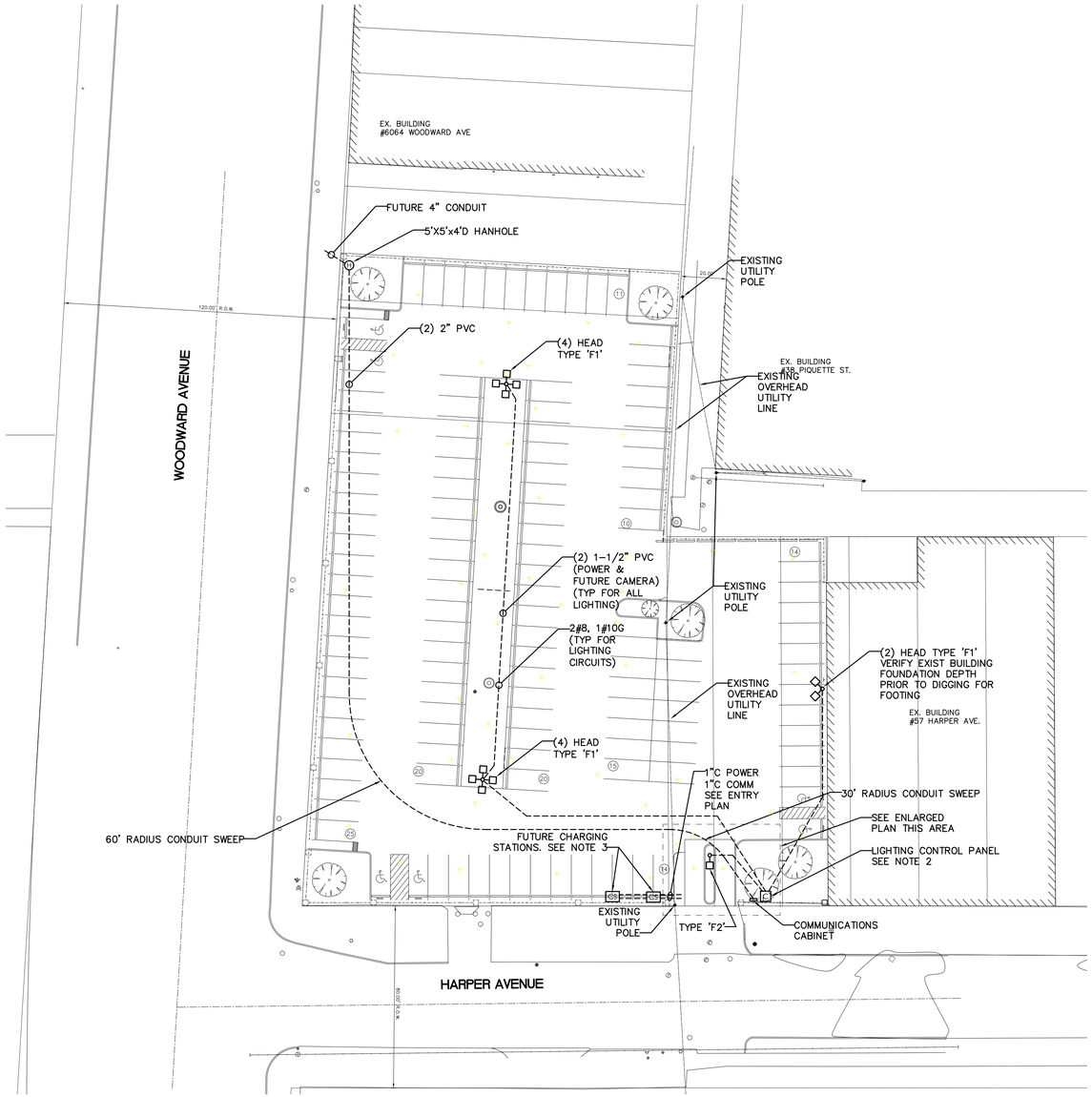
ELECTRICAL SCHEDULES & STANDARDS

08/25/15 BID
08/17/15 OWNER REVIEW
DATE: ISSUED FOR:

DRAWN S.P.P–K.
CHECKED S.P.P–K.
APPROVED S.M.

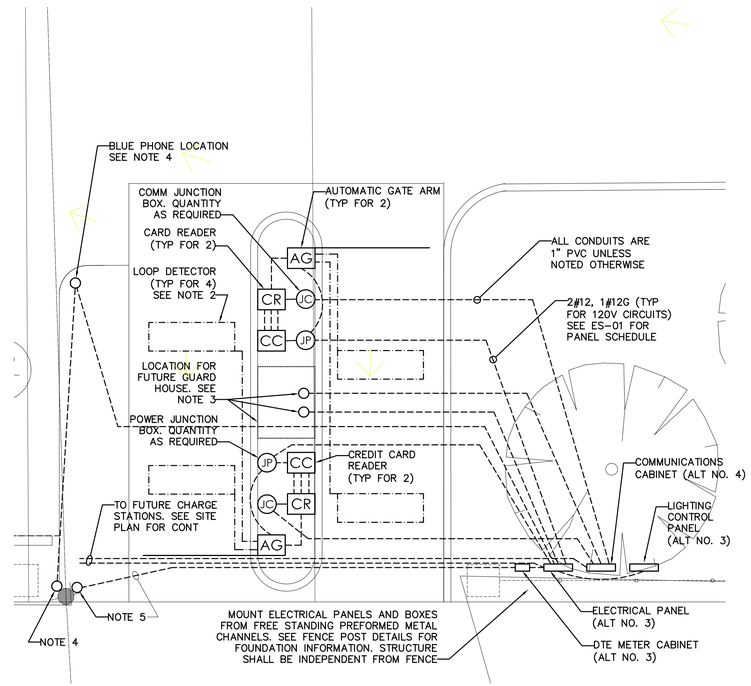
MEP PROJECT NO.
1515-1

SHEET NO.
ES-01



1 ELECTRICAL SITE PLAN
SCALE: 1" = 30'

GRAPHIC SCALE
15 0 7.5 15 30 60
(IN FEET)
1 inch = 30 ft.



2 ENTRY PLAN
SCALE: 1" = 5'

GRAPHIC SCALE
2.5 0 1.25 2.5 5 10
(IN FEET)
1 inch = 5 ft.

NOTES:

1. SEE SHEET ES-01 FOR ELECTRICAL SPECIFICATIONS AND SCHEDULES
2. SEE SHEET ES-03 FOR ELECTRICAL DETAILS AND WIRING DIAGRAMS
3. PROVIDE CONDUIT STUB-UPS ONLY AT LOCATIONS FOR FUTURE 'CLIPPER CREEK' VEHICLE CHARGING STATIONS AND GUARD HOUSE. ONE POWER AND ONE COMMUNICATIONS.
4. PROVIDE POWER AND COMMUNICATIONS CONDUITS FOR FUTURE BLUE EMERGENCY PHONE. POWER CONDUIT SHALL RUN TO POWER PANEL AND COMMUNICATIONS CONDUIT SHALL RUN TO BASE OF EXISTING UTILITY POLE.
5. PROVIDE 2" RIGID STEEL CONDUIT UP UTILITY POLE AND 2" PVC TO METER BOX AND PANELBOARD FOR DTE SERVICE. PROVIDE 3#2, 1#6G. FINAL CONNECTION AT POLE AND METER TO BE PROVIDED BY DTE.

PROJECT ALTERNATES

BASE BID:	PAVING/STORM OF EXISTING GRAVEL LOT 12 (SEE CIVIL – NO ELECTRICAL)
ALT NO. 1:	PAVING/STORM OF EXISTING ASPHALT LOT (SEE CIVIL – NO ELECTRICAL)
ALT NO. 2:	6' BLACK STEEL FENCE AND PIERS (SEE CIVIL – NO ELECTRICAL)
ALT NO. 3:	LOT LIGHTING – INCLUDES THREE TYPE 'F1' AND ONE TYPE 'F2' POLES, FIXTURES AND UNDERGROUND WIRE AND CONDUIT, INCOMING DTE SERVICE WITH PANELBOARD, LIGHTING CONTROL PANEL AND INTERCONNECTING WIRING, UNDERGROUND CONDUITS FOR FUTURE CHARGING STATIONS, CAMERAS AND GUARD HOUSE.
ALT NO. 4:	GATES – INCLUDES COMMUNICATOINS CABINET, UNDERGROUND POWER AND CONDUITS FOR CARD READERS, GATE ARMS AND BLUE PHONE, CONDUIT TO AND HANDHOLE FOR FUTURE WOODWARD FIBER CROSSING.
ALT NO. 5:	LANDSCAPING/TREES (SEE CIVIL – NO ELECTRICAL)

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SHEET TITLE

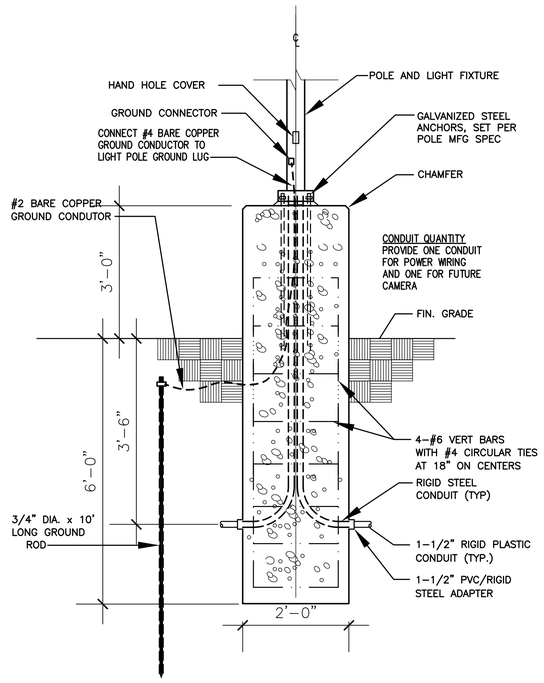
ELECTRICAL SITE PLAN

DATE:	ISSUED FOR:
08/25/15	BID
08/17/15	OWNER REVEW

DRAWN S.P.P-K.
CHECKED S.P.P-K.
APPROVED S.M.

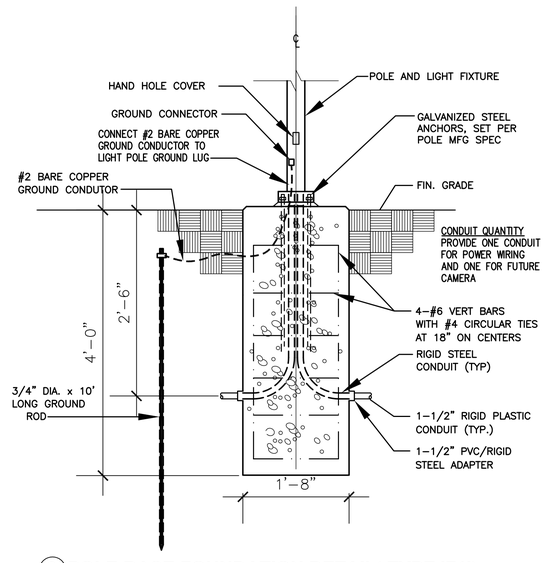
MEP PROJECT NO.
1515-1

SHEET NO.
ES-02



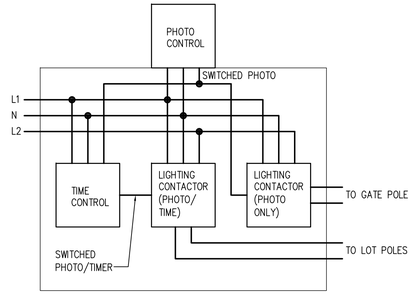
1 POLE BASE FOUNDATION DETAIL(TYPE 'F1')

NOT TO SCALE
(ALT NO. 3)



2 POLE BASE FOUNDATION DETAIL(TYPE 'F1')

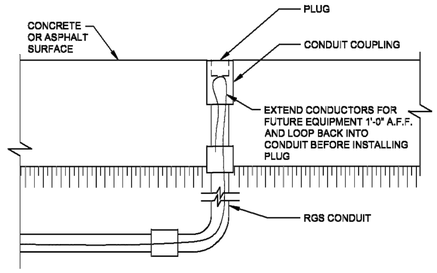
NOT TO SCALE
(ALT NO. 3)



3 LIGHTING CONTROL PANEL

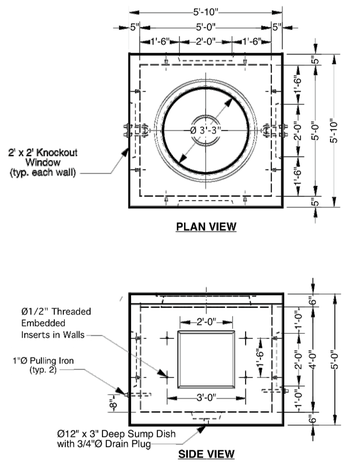
NOT TO SCALE
(ALT NO. 3)

PROVIDE NEMA 3R CABINET FOR LIGHTING CONTROL TIMERS, PHOTOCELLS AND CONTACTORS. ONE CONTACTOR SHALL BE PHOTOCONTROL ONLY AND ONE CONTACTOR SHALL BE PHOTOCONTROL WITH TIMER OVERRIDE.



4 DETAIL FOR FUTURE CONDUIT STUB-UP

NOT TO SCALE
(ALT NO. 3 & 4)



All Concrete Shall Have A 28 Day Compressive Strength Of 4500 PSI.

Reinforcing Steel Shall Comply With ASTM A615 Grade 60 Rebar.
Bar Bending And Placement Shall Comply With The Latest ACI Standards.

Standard Structural Design Based On AASHTO HS 20 Wheel Loading.

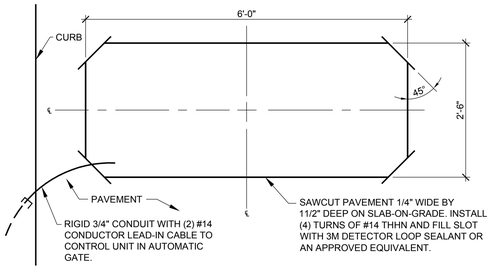
1" Ø Butyl Rubber Rope Mastic Is Provided For Placement In Top Seam.

- Options -
Cast Iron Heavy Duty Frames & Covers
Galvanized Steel Hardware
6", 12" And 24" High Grade Adjustment Rings
Custom Openings

Approximate Weight Total: ± 9,500 Lbs.
Bottom Section : ± 7,500 Lbs. Roof: ± 2,000 Lbs.

5 HANDHOLE DETAIL

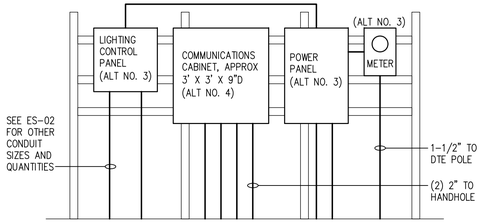
NOT TO SCALE
(ALT NO. 4)



NOTES:
A. VERIFY SIZE OF LOOP, SIZE OF WIRE AND NUMBER OF TURNS WITH DETECTOR SUPPLIER BEFORE INSTALLATION; LOOP WIRE TO BE CONTINUOUS WITHOUT SPLICES.
B. LEAD-IN (FEEDER) CABLE RUNS ARE LIMITED TO 100 FEET.
C. LOOP AND LEAD-IN CABLE SHALL BE LOCATED AT LEAST 18" FROM ANY ELECTRICAL POWER SERVICE OR RUNS, AND STEEL REINFORCING IF POSSIBLE.
D. LEAD-IN CABLE SHALL BE IN SEPARATE CONDUIT BETWEEN LOOP AND DETECTOR. IT MUST NOT SHARE CONDUIT WITH OTHER WIRING OR LEADS FROM OTHER LOOPS.
E. LOOP WIRE SHALL BE #14 THHN SINGLE CONDUCTOR STRANDED WIRE.
F. LEAD-IN (FEEDER) CABLE SHALL HAVE TWO #14, 600 VOLT, INSULATED, STRANDED CONDUCTORS WITH AN OVERALL MYLAR/ALUMINUM SHIELD AND DRAIN WIRE. THE JACKET SHALL BE HIGHLY MOISTURE-AND WEATHER-RESISTANT BLACK POLYETHYLENE.
G. COORDINATE INSTALLATION WITH GENERAL CONTRACTOR.

6 DETECTOR LOOP DETAIL

NOT TO SCALE
(ALT NO. 4)



7 ELECTRICAL PANEL MOUNTING

NOT TO SCALE
(ALT NO. 3 & 4)

PROVIDE 1-5/8" PREFORMED METAL CHANNELS FOR ELECTRICAL PANEL SUPPORT STRUCTURE. PROVIDE DOUBLE CHANNELS FOR VERTICAL AND SINGLE FOR HORIZONTAL. FOOTINGS FOR VERTICAL CHANNELS SHALL BE MINIMUM 36" DEEP TO MATCH FENCE POST DETAIL ON SHEET CE-07.

NOTES:

1. SEE SHEET ES-01 FOR ELECTRICAL SPECIFICATIONS AND SCHEDULES
2. SEE SHEET ES-02 FOR ELECTRICAL SITE PLAN
3. REFER TO WSU "CONSTRUCTION AND DESIGN STANDARDS" AND C&IT "STANDARDS FOR COMMUNICATION INFRASTRUCTURE".

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KEY PLAN

SHEET TITLE

ELECTRICAL DETAILS

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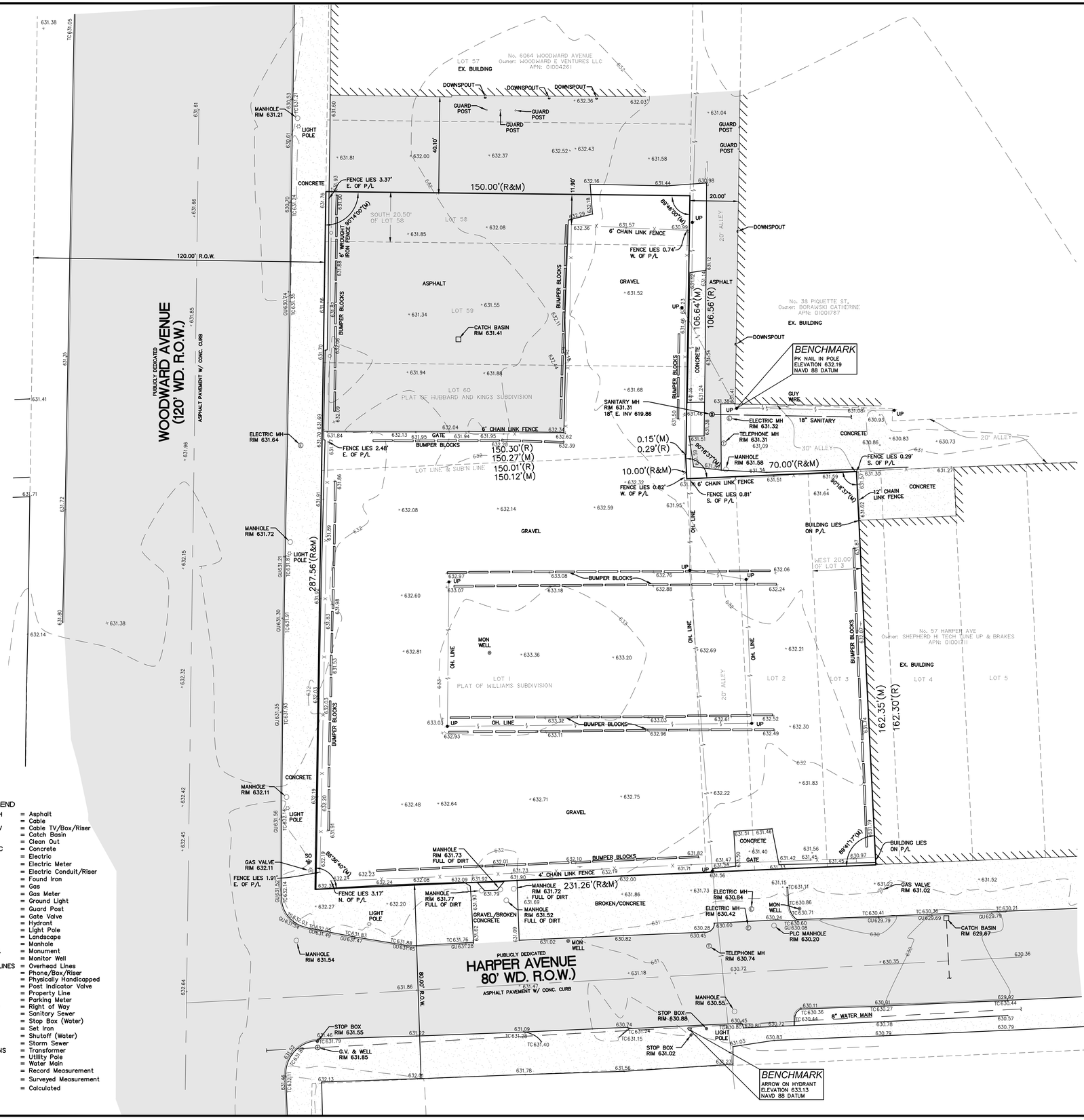
CHECKED S.P.P-K.
APPROVED S.M.

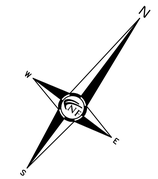
MEP PROJECT NO.

1515-1

SHEET NO.

ES-03





Location Map
N.T.S.

LEGEND

ASPH	=	Asphalt
C	=	Cable
CATV	=	Cable TV/Box/Riser
CB	=	Catch Basin
CO	=	Clean Out
CONC	=	Concrete
E	=	Electric
EM	=	Electric Meter
EC	=	Electric Conduit/Riser
F.I.	=	Found Iron
G	=	Gas
GM	=	Gas Meter
GL	=	Ground Light
GP	=	Guard Post
GV	=	Gate Valve
HYD	=	Hydrant
LP	=	Light Pole
L/S	=	Landscape
MH	=	Manhole
MON.	=	Monument
MW	=	Monitor Well
OH LINES	=	Overhead Lines
P	=	Phone/Box/Riser
PH	=	Physically Handicapped
PIV	=	Post Indicator Valve
P/L	=	Property Line
PM	=	Parking Meter
ROW	=	Right of Way
SAN	=	Sanitary Sewer
SB	=	Stop Box (Water)
S.I.	=	Set Iron
SO	=	Shutoff (Water)
STM	=	Storm Sewer
TRANS	=	Transformer
UP	=	Utility Pole
WM	=	Water Main
(R)	=	Record Measurement
(M)	=	Surveyed Measurement
(C)	=	Calculated

LEGAL DESCRIPTION

Land situated in the City of Detroit, County of Wayne, State of Michigan, described as:

Lots 1 and 2 and the West 20 feet of Lot 3 and 1/2 of vacated alley adjacent thereto, PLAT OF WILLIAMS SUBDIVISION as recorded in Liber 7, page 34 of Plats, Wayne County Records.

and

The South 20.50' feet of Lot 58 and all of Lots 59 and 60, PLAT OF HUBBARD AND KINGS SUBDIVISION, as recorded in Liber 6, Page 86 Wayne County Records.

TITLE NOTES

This survey may not show all easements of record unless an updatted Title Search, Commitment or Policy is furnished to the surveyor.

FLOOD HAZARD NOTE

The Property described on this survey does not lie within a Special Flood Hazard Area as defined by the Federal Emergency Management Agency; the property lies within Zone X of the Flood Insurance Rate Map identified as Map No. 26163C0028E bearing an effective date of 2-2-2012

SITE DATA

Gross Land Area: 54,737 Square Feet or 1.25 Acres.
Zoned: B-4 (General Business District)
Building Setbacks:
Front= None
Sides= None
Rear= None

Max. Building Height permitted: None

Total Parking: 0 spaces including 0 barrier free spaces.

The above setback & height requirements were obtained from the City of Detroit Zoning Ordinance.

A surveyor cannot make a certification on the basis of an interpretation or opinion of another party. The building setback lines are not platted hereon. A zoning endorsement letter should be obtained from City of Detroit to insure conformity as well as make a final determination of the required building setback requirements.

SURVEY NOTES

There was no observable evidence of current earth moving work, building construction or building additions.

There are no known proposed changes in street right-of-way lines available from the controlling jurisdiction.

There was no observable evidence of recent street or sidewalk construction or repairs.

There was no observable evidence of site use as a solid waste dump, sump or sanitary landfill.

CEMETERY NOTE

There was no observable evidence of cemeteries or burial grounds within the subject property.

UTILITY NOTE

All utilities are underground unless otherwise noted.

The utilities shown on this survey were determined by field observation. All locations are approximate. The location of any other underground services which may exist can only be depicted if a Utility Plan is furnished to the surveyor.

SURVEYOR'S CERTIFICATION

To:

Wayne State University

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1, 2, 3, 4, 5, 6(a), 6(b), 7(a), 7(b1), 7(c), 8, 9, 11(a), 13, 14, 16, 17, & 18 of Table A thereof.

The field work was completed on 05-19-2015.

Kevin Navaroli, P.S.
No 53503
Dated: 06-15-2015

STATE OF MICHIGAN
KEVIN NAVAROLI
PROFESSIONAL SURVEYOR
No. 53503
LICENSED PROFESSIONAL SURVEYOR

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342
TEL. (248) 332-7931
FAX. (248) 332-8257
EMAIL: rfraus@nowakfraus.com

PROJECT
Parking Lot

PROJECT LOCATION
No. 6000
Woodward Avenue
City of Detroit
Wayne County, MI

SHEET
Boundary/Topographic
ALTA/ACSM
Land Title Survey

REVISIONS

DRAWN BY:
D.MCCONKEY

DESIGNED BY:
-

APPROVED BY:
RJF/K.N.

EMAIL:
rfraus@nowakfraus.com

DATE:
June 15, 2015

SCALE: 1" = 20'
20 10 0 10 20 30

NFE JOB NO.
I598

SHEET NO.
1 of 1