

**LEGEND:**

UG-ELEC-W-O	EX. OH. ELEC. POLE & GUY WIRE
UG-CATV	EX. U.G. CABLE TV & PEDESTAL
UG-COMM	EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
UG-ELEC-C-O	EX. U.G. ELEC. MANHOLE & METER
- - - - -	EX. GAS LINE
⊗	EX. GAS VALVE & GAS LINE MARKER
⊠	EX. TRANSFORMER & IRRIGATION VALVE
- - - - -	EX. WATER MAIN
⊕	EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
⊖	EX. WATER VALVE BOX & SHUTOFF
⊙	EX. SANITARY SEWER
⊗	EX. SANITARY CLEANOUT & MANHOLE
⊕	EX. COMBINED SEWER MANHOLE
- - - - -	EX. STORM SEWER
⊕	EX. CLEANOUT, MANHOLE & CULVERT
⊕	EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
⊕	EX. YARD DRAIN, ROOF DRAIN & DOWNSPOUT
⊕	EX. UNIDENTIFIED STRUCTURE
⊕	EX. MAILBOX, SIGN & GUARD POST
⊕	EX. LIGHT POLE & YARD LIGHT
- - - - -	EX. FENCE
- - - - -	EX. GUARD RAIL
⊕	EX. DEC. TREE, CONIFEROUS TREE & SHRUB
⊕	EX. TREE TAG & TREE LINE
⊕	EX. SPOT ELEVATION
- - - - -	EX. CONTOUR
⊕	EX. WETLAND
⊕	IRON FOUND / SET
⊕	NAIL FOUND / NAIL & CAP SET
⊕	BRASS PLUG SET
⊕	MONUMENT FOUND / SET
⊕	SECTION CORNER FOUND
(R) (M) (C)	RECORDED / MEASURED / CALCULATED

**REFERENCE DRAWINGS:**

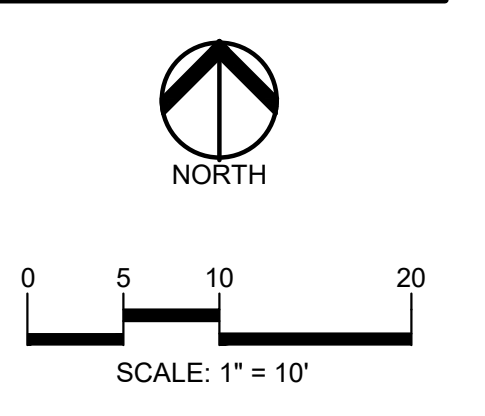
CABLE	CROWN CASTLE MAP, EMAIL DATED 05/15/2024
FIBER OPTIC	CROWN CASTLE MAP, EMAIL DATED 05/15/2024
GAS	DTE GAS COMPANY MAP DATED 05/16/2024
WATER MAIN	DWSD MAP 20-L WATER SYSTEM IMPROVEMENTS, REF. NO. CS-1372, TASK #39, SHEET 7, DWSD EMAIL DATED 05/24/2024
STEAM	STEAM DISTRIBUTION SYSTEM MAP, DET 14-4, DETROIT THERMAL EMAILS DATED 05/15/2024 & 05/23/2024
ELECTRIC	HAVE NOT RECEIVED AS OF 05/22/2024

**BENCHMARKS:**  
(GPS DERIVED - NAVD83)

BM #300  
DIMPLE ON ARROW OF A HYDRANT LOCATED AT THE SOUTHWEST CORNER OF AMSTERDAM STREET & 2ND AVENUE.  
ELEV. - 632.42

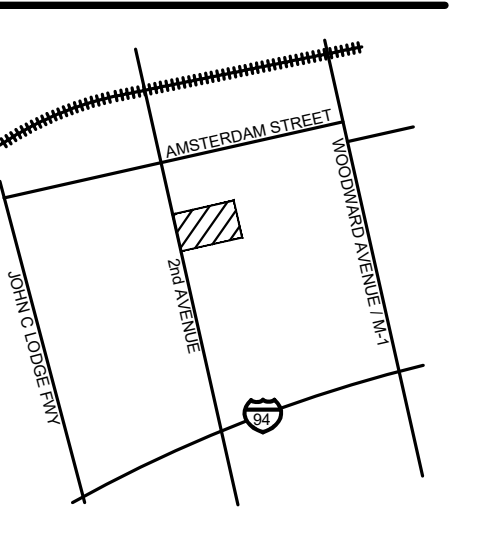
BM #301  
MAG NAIL IN THE WEST FACE OF A CONCRETE LIGHT POLE BASE LOCATED ON THE EAST SIDE OF 2ND AVENUE, APPROX. 49' SOUTHWEST FROM THE NORTHWEST BUILDING CORNER OF CHILDREN'S MUSEUM (6134 2ND AVENUE).  
ELEV. - 630.10

**PEA GROUP**  
t: 844.813.2949  
www.peagroup.com



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

**CAUTION!!**  
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE AS TO ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



**CLIENT**  
**T.K. STUDIOS LLC**  
4430 ANDERSEN DRIVE  
BRIGHTON, MICHIGAN 48114

**PROJECT TITLE**  
**DETROIT CHILDREN'S MUSEUM ENTRANCE**  
6134 2ND AVENUE  
CITY OF DETROIT, WAYNE COUNTY, MICHIGAN

**REVISIONS**


**ORIGINAL ISSUE DATE:**  
JUNE 12, 2024

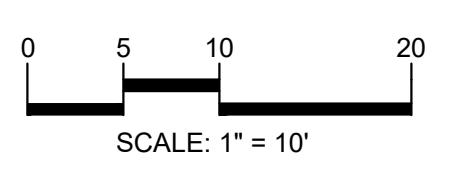
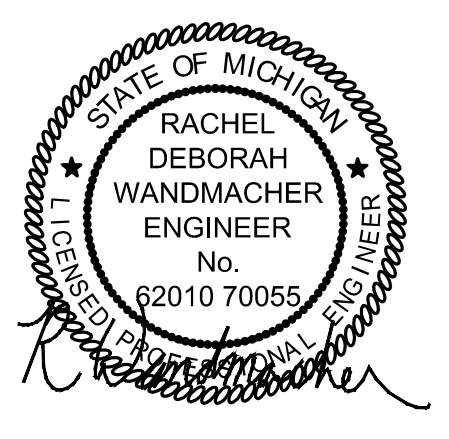
**DRAWING TITLE**  
**TOPOGRAPHIC SURVEY**

PEA JOB NO. 2024-0547  
P.M. BWJ  
DN. RDW  
DES. RDW

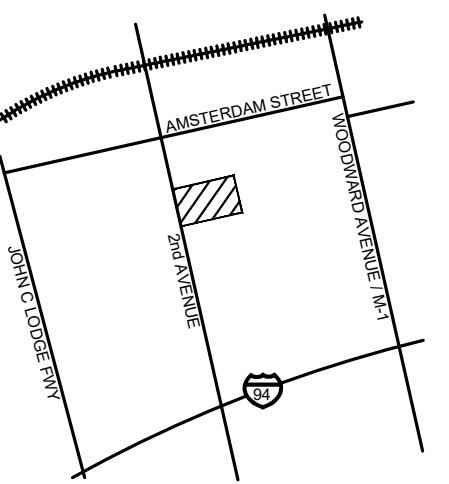
DRAWING NUMBER:  
**C-1.0**

**FLOODPLAIN NOTE:**  
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26163C0280E, DATED 02/02/2012.

\\pea\work\PROJECTS\2024\34\_2024\_TPS\_DETROIT CHILDREN'S MUSEUM ENTRANCE\Drawings\Topographic\Topo.dwg (1/1) DATE: 6/17/2024 BY: Rachel Wandmacher



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**T.K. STUDIOS LLC**  
 4830 ANDERSEN DRIVE  
 BRIGHTON, MICHIGAN 48114

PROJECT TITLE  
**DETROIT CHILDREN'S MUSEUM ENTRANCE**  
 6134 2ND AVENUE  
 CITY OF DETROIT, WAYNE COUNTY, MICHIGAN

REVISIONS

NO.	DATE	DESCRIPTION

ORIGINAL ISSUE DATE:  
 JUNE 12, 2024

DRAWING TITLE  
**DEMOLITION PLAN**

PEA JOB NO. 2024-0547  
 P.M. BWJ  
 DN RDW  
 DES. RDW

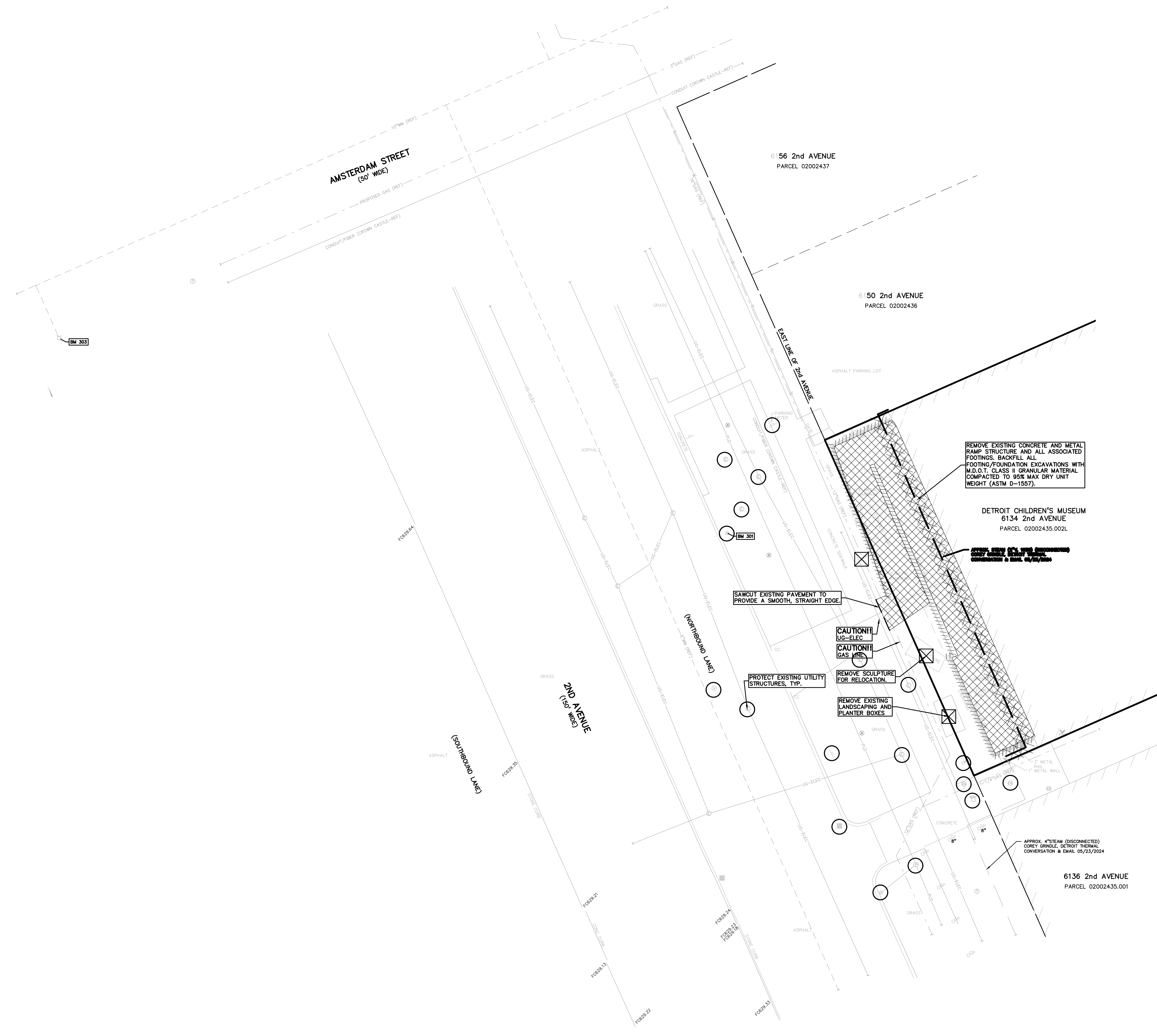
DRAWING NUMBER:  
**C-2.0**

- GENERAL DEMOLITION NOTES:**  
 THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
  - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
  - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
  - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
  - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
  - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
  - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
  - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
  - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
  - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
  - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
  - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

**DEMOLITION LEGEND:**

ITEM TO BE PROTECTED	
ITEM TO BE REMOVED	
CURB/FENCE REMOVAL	
CONCRETE PAVEMENT AND SIDEWALK REMOVAL	
AREA OR ITEMS TO BE REMOVED	
UTILITY REMOVAL	
ABANDON UTILITY	
ASPHALT REMOVAL	
TREE REMOVAL	
SAWCUT LINE	

**STEAM LINE REMOVAL:**  
 CONTACT DETROIT THERMAL TO CONFIRM STEAM LINE STATUS PRIOR TO REMOVALS.



\\pea\c\proj\PROJECTS\2024\34-20247\_P05\_DETROIT CHILDREN'S MUSEUM DEMOLITION.dwg (C:\pea\c\proj\proj\2024\34-20247\_P05\_DETROIT CHILDREN'S MUSEUM DEMOLITION.dwg) DATE: 6/11/2024 BY: Rouse, Mervyn

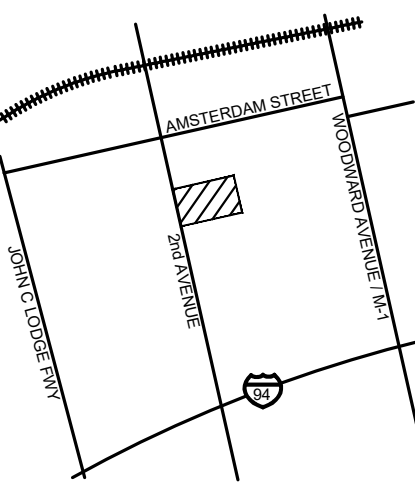




0 5 10 20  
SCALE: 1" = 10'



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PROJECT TITLE  
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**REVISIONS**

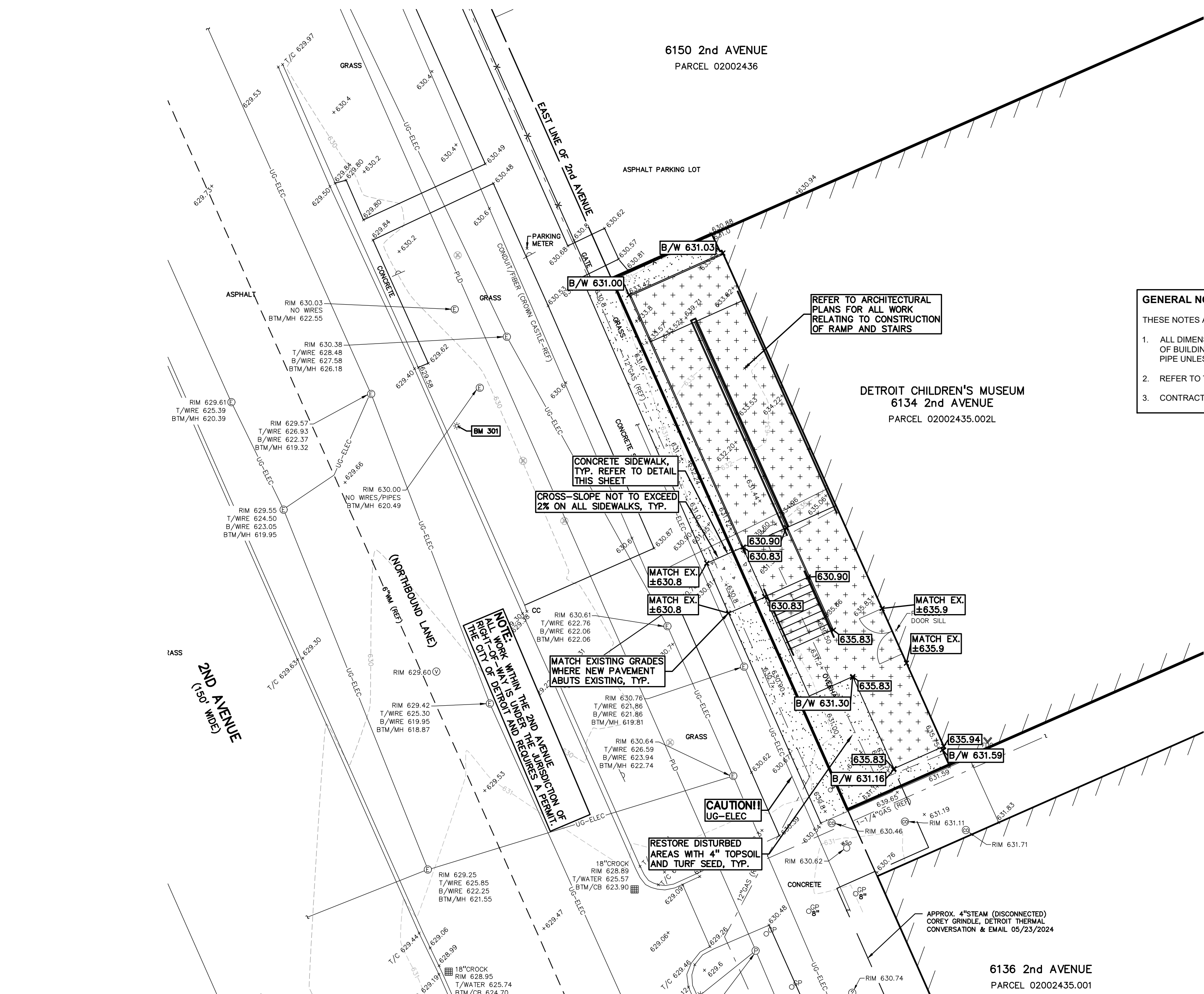
NO.	DATE	DESCRIPTION

ORIGINAL ISSUE DATE:  
JUNE 12, 2024

DRAWING TITLE  
**PAVING AND GRADING PLAN**

PEA JOB NO. 2024-0547  
P.M. BWJ  
DN. RDW  
DES. RDW

DRAWING NUMBER:  
**C-3.0**



**LEGEND:**

	CONCRETE PAVEMENT
	ASPHALT PAVEMENT
	GRAVEL
	WETLAND
	CONCRETE CURB AND GUTTER
	REVERSE GUTTER PAN
	SETBACK LINE
	SIGN LIGHTPOLE
	FENCE GUARD RAIL

**GENERAL NOTES:**  
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

- ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
- REFER TO THIS SHEET FOR ON-SITE PAVING DETAILS.
- CONTRACTOR IS RESPONSIBLE FOR LAWN RESTORATION AND ESTABLISHMENT.

**GRADING LEGEND:**

	EXISTING SPOT ELEVATION
	PROPOSED SPOT ELEVATION
	EXISTING CONTOUR

**EARTHWORK BALANCING NOTE:**  
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

**BENCHMARKS:**  
(GPS DERIVED - NAVD83)

BM #300  
DIMPLE ON ARROW OF A HYDRANT LOCATED AT THE SOUTHWEST CORNER OF AMSTERDAM STREET & 2nd AVENUE.  
ELEV. - 632.42

BM #301  
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ELEV. - 630.10

**GENERAL NOTES:**  
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

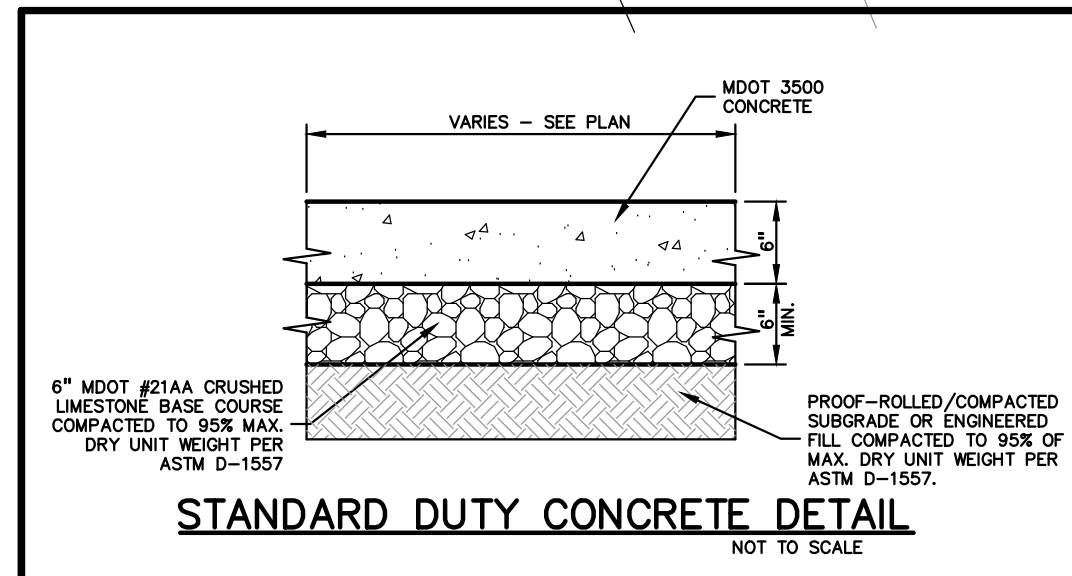
- ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
- THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
- ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY FOR ALL CITY INSPECTION FEES.
- THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
- CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING APPROVALS AND THE MANUAL OF UNIFORM RE-DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
- ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
- ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, CITY AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
- THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE, REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

**PAVING NOTES:**

- IN AREAS WHERE NEW PAVEMENTS ARE BEING CONSTRUCTED, THE TOPSOIL AND SOIL CONTAINING ORGANIC MATTER SHALL BE REMOVED PRIOR TO PAVEMENT CONSTRUCTION.
- REFER TO ARCHITECTURAL PLANS FOR DETAILS OF FROST SLAB AT EXTERIOR BUILDING DOORS.
- CONSTRUCTION TRAFFIC SHOULD BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE INITIAL LIFT THICKNESS COULD BE INCREASED AND PLACEMENT OF THE FINAL LIFT COULD BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM.
- ALL EXPANSION JOINTS AND CONCRETE PAVEMENT JOINTS TO BE SEALED.
- CONCRETE SIDEWALK JOINTING - UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
  - PLACE TRANSVERSE CONTRACTION JOINTS EQUAL TO THE WIDTH OF THE WALK WHEN WIDTH IS LESS THAN 8'
  - PLACE TRANSVERSE AND LONGITUDINAL CONTRACTION JOINTS EQUAL TO 1/2 THE WIDTH OF THE WALK WHEN WIDTH IS EQUAL TO OR GREATER THAN 8'
  - PLACE 1" EXPANSION JOINT WHERE ABUTTING SIDEWALK RAMP AND/OR RADIUS OF INTERSECTION
  - PLACE TRANSVERSE 1/2" EXPANSION JOINT AT MAXIMUM OF 100' SPACING
  - PLACE 1/2" EXPANSION JOINT WHEN ABUTTING A FIXED STRUCTURE, OTHER PAVEMENT (CONCRETE PAVEMENT AND DRIVE APPROACHES), UTILITY STRUCTURES, LIGHT POLE BASES AND COLUMNS

**GENERAL GRADING AND EARTHWORK NOTES:**  
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
- ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
- THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
- ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE CITY PRIOR TO CONSTRUCTION.
- ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
- ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
- THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFOOLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOTEXTILES OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
- SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
- SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
- ANY SUB-GRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.



**CONSTRUCTION MATERIAL SUBMITTALS**  
UNLESS REQUIRED OTHERWISE IN THE PROJECT SPECIFICATIONS, THE CONTRACTOR SHALL ONLY SUBMIT THE FOLLOWING CONSTRUCTION MATERIAL SUBMITTALS, AS APPLICABLE TO THE PLANS, FOR REVIEW BY THE ENGINEER. UNLESS APPROVED IN ADVANCE AND IN WRITING BY THE ENGINEER, ANY MATERIAL SUBMITTALS PROVIDED TO THE ENGINEER FOR REVIEW IN ADDITION TO THIS LIST SHALL BE RETURNED TO THE CONTRACTOR WITHOUT A REVIEW BEING PERFORMED.

- SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
- PAVEMENT AGGREGATE BASE MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
- PAVEMENT UNDERDRAIN MATERIAL AND BACKFILL WITH ALL BACKFILL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
- PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOT REVIEW CHECKLISTS AS SUMMARIZED BELOW AND ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER:
  - 8.1. CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
  - 8.2. SUPERPAVE MIX DESIGN CHECKLIST (FORM 1862)
  - 8.3. MARSHALL MIX DESIGN CHECKLIST (FORM 1849)
- SITE FENCING AND GATES INCLUDING FOOTINGS
- SITE RAILINGS INCLUDING FOOTING OR EMBEDMENTS
- ANY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY STATE FOR THE CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO:
  - RETAINING WALL MATERIAL AND STRUCTURAL CALCULATIONS
  - TRENCH DRAIN MATERIAL AND SHOP DRAWING DEPICTING THE LAYOUT OF THE SYSTEM
  - ANY SPECIALITY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY DO NOT STATE FOR THE CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW BUT THE CONTRACTOR REQUESTS TO BE REVIEWED. THE CONTRACTOR'S REQUEST FOR REVIEW MUST BE IN WRITING AND APPROVED BY THE ENGINEER PRIOR TO SUBMITTING THE INFORMATION.















**GENERAL STRUCTURAL NOTES**

- 1. The structural notes are intended to augment the drawings and specifications. Should conflicts exist between the Drawings, Specifications and the Structural notes, the strictest provision shall govern.
2. The Structural drawings form an integral part of Contract Documents, which include Architectural, Structural, Mechanical, Electrical, Civil/Site drawings and Specifications. Contractor shall coordinate the Structural drawings with the requirements shown in the other components of the Contract Documents.
3. Typical details and other sections/details apply to conditions that are similar to the conditions described in the sections/details, even if they are not specifically referenced on the plans.
4. The Contractor shall be responsible for means, methods, sequences and procedures of construction.
5. The structure is designed to be self-supporting and stable after it is fully completed per requirements of Contract Documents. Contractor shall determine erection procedures and sequence, and ensure the safety of the building and its component parts during erection. This includes the addition of temporary bracing, guys or tie-downs if necessary. Contractor shall retain ownership of such material after completion of the project.
6. Construction shall comply fully with the applicable provisions of OSHA and the local Governing Codes, current edition, and all requirements specified in the codes shall be adhered to as if they were called for or shown on the drawings. This shall not be construed to mean that requirements set forth on the drawing may be modified because they are more stringent than the code requirements or because they are not specifically required by code.
7. Governing Building Code - Michigan (International) Building Code 2015. Standards listed in structural note sections refer to the version and effective date identified in the REFERENCED STANDARDS Chapter in the Governing Building Code.
8. Work constructed per these drawings shall be inspected by an Independent Testing Agency retained to ensure compliance with the requirements shown on the Drawings. Special Inspections required by the Governing Building Code, local building department and the Contract Documents shall be performed by a qualified Special Inspector. Project site visits by the Engineer do not constitute or replace inspection.
9. For multi-story Wood construction, flexible joints for architectural, electrical, mechanical, and plumbing work between floors shall be used to eliminate potential issues due to structure movement from wood shrinkage.

**SHORING AND BRACING**

- 1. Contractor shall provide temporary shoring and bracing of existing construction, new construction, and underground utilities as follows:
a. Where shown or noted on the Drawings.
b. Where existing construction is to be altered or disturbed until permanent support is in place.
c. Where existing construction is not undergoing alteration and is to remain undisturbed but is disturbed as a result of the work of this contract.
d. As required for safe erection, installation of new construction, equipment, etc.
e. When needed for Contractor's "means and methods" of construction and other safety related issues.
2. Shoring and bracing shown on the Drawings is conceptual. Contractor shall be responsible for verifying existing conditions, shoring and bracing calculations, methods of installation, transfer of loads through to final load support, and work sequence phasing with new construction.
3. Shoring and bracing shall be performed by a Contractor with minimum 5 years demonstrated experience in similar size and scope of shoring and bracing projects.
4. Shoring and bracing shall be designed by a Professional Engineer registered in the State of the Project with minimum 5 years demonstrated experience in similar size and scope of shoring and bracing projects. Design loads and methods shall conform to applicable codes. Soil and material strengths shall be verified by tests, unless conservative estimates that do not affect deflections and deformations are approved by the Architect/Structural Engineer.
5. Contractor shall submit drawings and calculations sealed and signed by the Contractor's Professional Engineer showing complete design including temporary conditions, final conditions and sequence of work.
6. Before starting work, Contractor shall perform condition survey of the existing building structure, exterior facade and interior finishes, including photographic documentation and submit survey to the Owner for record.
7. During the shoring and bracing operations, Contractor shall:
a. Keep the existing and new construction in a safe condition.
b. Monitor existing and new construction to detect any signs of distress or deformation.
c. Take immediate steps to prevent distress, deformation or damage.
8. Contractor shall continuously monitor the shoring and bracing system. Contractor shall review and ascertain that all field connections are completed according to the Contractor's design and issue approval for inspection of the work by the Testing Agency.
9. After completion of shoring and bracing and completion of work requiring shoring and bracing, Contractor shall repair any damage to the existing and new construction, without any cost to the Owner, and to the satisfaction of the Owner and Architect/Structural Engineer.

**EXISTING CONSTRUCTION**

- 1. Contractor shall visit the site and become familiar with the existing conditions.
2. Existing building dimensions and conditions shown are based upon original drawings or partial survey and have not been completely field verified. The Owner and Architect/Structural Engineer take no responsibility for the accuracy of existing dimensions shown. Contractor shall field measure existing dimensions prior to shop drawing preparation and fabrication.
3. Contractor shall verify conditions covering or affecting the structural work; obtain and verify all dimensions and elevations to ensure the proper strength, fit and location of the structural work; report to the Architect/Structural Engineer any and all conditions/discrepancies which may interfere with or otherwise affect or prevent the proper execution and completion of the new work in compliance with the Construction Documents. All discrepancies shall be fully resolved prior to commencing work.
4. Existing construction not undergoing alteration is to remain undisturbed. Where such construction is disturbed as a result of the operations of this contract, Contractor shall repair or replace as required and to the satisfaction of the Architect/Structural Engineer and Owner's Representative.
5. Contractor shall verify the existence, location and elevation of existing utilities, sewers, drains, etc. in demolition areas before proceeding with the work. All discrepancies shall be documented and reported to the Architect/Structural Engineer and Owner's Representative for resolution.
6. Should uncharted piping or other utilities be encountered during excavation, Contractor shall consult the Architect/Structural Engineer and Owner's Representative for resolution.
7. Contractor shall provide fire watch during field cutting and welding operations, meeting the Owner's requirements.
8. Contractor shall provide temporary protection of existing equipment during execution of work, satisfying the Owner's requirements.
9. Contractor shall provide temporary protection to prevent damage from the weather and vandalism.
10. Contractor shall coordinate work with the Owner's personnel to avoid any interference in their operations.
11. Refer to SHORING AND BRACING notes for additional requirements.

**STRUCTURAL STEEL**

- 1. Design, fabrication and erection of structural steel shall be in accordance with the American Institute of Steel Construction (AISC) 360 Specification for Structural Steel Buildings and the Steel Construction Manual, Allowable Strength Design ASD.
2. Structural steel shall conform to the following ASTM specifications and minimum yield strength:
W-Shapes A992 Fy = 50 ksi
Tubes A500 Gr.B Fy = 46 ksi
Miscellaneous shapes and plates A36 Fy = 36 ksi
3. Anchor rods shall conform to ASTM F1554 Grade 36, unless noted Grade 55 or other on Drawings.
4. Structural steel bolting shall be ASTM A325 type N, 3/4" diameter snug tight except where other size, ASTM A490 N, pre-tensioned or slip-critical type bolts are indicated.
5. Shear connectors shall conform to the requirements of "Structural Welding Code - Steel" of the American Welding Society, ANSI/AWS D1.1, Fu = 65 ksi, as manufactured by Nelson Stud Welding, Div. of TRW, or approved substitute, and welded as per Manufacturer's written instructions.
6. Welding shall be done with appropriate E70 series electrodes compatible with the new and existing steel. Welds and welding procedures shall conform to, and welders shall be qualified in accordance with, the "Structural Welding Code - Steel" of the American Welding Society, ANSI/AWS D1.1.
7. Detailing shall be performed using rational engineering design and standard practice in accordance with the Contract Documents. The typical details shown are approximate only and do not indicate the required number of bolts or weld sizes, unless specifically noted.
8. Fabricator shall be AISC Certified or have an AISC equivalent Quality Assurance program as certified by a qualified independent testing agency.
9. The length, dimension and connection detail from new structural member to existing structures shall be field verified before fabrication. Field modifications to the fabricated member or connection are not allowed without prior approval by the Structural Engineer. Contractor shall submit sketches or shop drawings detailing proposed modifications for approval.
10. Contractor shall install A325 and A490 bolts in accordance with the "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Snug tight condition shall be achieved using an impact wrench, to bring the connected piles into firm contact, except where noted as slip-critical, pre-tensioned or finger tight.
11. Structural steel shall be primed.
12. Contractor shall control erection procedures and sequences with relation to temperature differentials, especially with respect to structural steel framing into concrete walls, beams or columns.
13. Contractor shall provide temporary bracing as required to ensure stability of the structure under full design loads until the permanent bracing is in place. Provide necessary shoring where required during construction.
14. Welding shall be inspected by an AWS Certified Welding Inspector (CWI).
15. Contractor shall schedule work to allow the above testing requirements to be completed.

**POST-INSTALLED ANCHORS**

- 1. Post-installed anchors include all mechanical and adhesive anchors noted on Construction Documents. All post-installed anchors shall conform to AC193 for mechanical anchors and AC308 for adhesive anchors.
2. Use only code approved anchors with valid ICC-ESR Evaluation Report for use in base material shown on the Construction Documents. Submit ICC-ESR Evaluation Report to Structural Engineer and Special Inspection Agent for approval.
3. Installer of post-installed anchors shall be trained by anchor Manufacturer.
4. Clean existing concrete surface to solid structural concrete. Grind smooth for full steel contact and to prevent gaps between steel and concrete. Alternatively, provide non-shrink grout in voids between steel and base material.
5. Drill smaller diameter pilot hole in existing concrete and check for existing reinforcing. Do not cut or damage existing reinforcing.
6. If existing reinforcing is found, shift hole to avoid existing reinforcing. Submit location of new hole to Structural Engineer for review.
7. Install mechanical anchors and adhesive anchors in strict accordance with Manufacturer's written recommendations and procedure detailed in ICC-ESR Evaluation Report.
8. Special Inspections are required for all mechanical and adhesive anchors. Inspect and test post-installed anchors as specified in ICC-ESR Evaluation Report.
9. Adhesive for rebar and anchors in concrete has been designed based on cracked concrete and seismic applications as applicable, in accordance with ACI 308.4 and ICC-ES AC308. Design adhesive bond strength shall be based on ACI 308.4 Temperature Category A with installation into dry holes, using a cartridge drill bit into cracked concrete that has been cured for at least 21 days.
10. The following anchors are approved. Submittals for alternative equal anchors will be reviewed by Structural Engineer and approved at their discretion.

Table with 4 columns: Anchor Type, Approved Anchor, ICC-ESR Report No., Base Material. Rows include Screw Anchors (Hilti Kwik HUS-EZ), Adhesive Anchors (Hilti HIT-HY200 SAFESET, Hilti HIT-HY70 + HAS/REBAR, Hilti HIT-HY70 + HAS/REBAR), and Grouted Masonry (Hollow Masonry, Grouted Masonry).

Note: Refer to plan notes, details and/or schedules for diameter of anchor rods or size of rebar used and the embed depth required for post-installed anchors.

**FOOTINGS AND FOUNDATIONS**

- 1. Contractor shall verify all conditions, including underground utilities and field measurements at job site and report any discrepancies to Owner's Representative.
2. Provide necessary sheeting, shoring, bracing, etc. as required during excavations to protect sides of excavations.
3. Comply fully with requirements of OSHA and other regulatory agencies for safety provisions.
4. Top of spread footing elevations noted on plan are minimum elevations. In all cases, footings are to bear on undisturbed natural soils or engineered fill having a minimum net allowable bearing capacity of 2,000 psf.
5. Sides of foundations shall be formed. All concrete surfaces shall be maintained smooth and vertical. Slope sides of excavations as approved by the Geotechnical Engineer, and clean up sloughing before and during concrete placement. If existing soil conditions warrant earth forming, Geotechnical Engineer shall make recommendations for specific preparation and procedure to follow.
6. Where footing steps are necessary, they shall be no steeper than one vertical to two horizontal unless noted otherwise.
7. Footings shall be centered under columns and walls unless specifically detailed otherwise on the Drawings.
8. No footings or slabs shall be placed on or against sub-grade containing free water, frost or ice. Should water or frost, however slight, enter a footing excavation after sub-grade approval, the sub-grade shall be re-inspected by the Geotechnical Engineer/Testing Laboratory after removal of water or frost.
9. The Contractor shall provide all necessary measures to prevent any frost or ice from penetrating any footing or slab sub-grade before and after placing of concrete until the full building enclosure is completed and heated.
10. Excavated material shall be legally disposed of off the Owner's property or stored at the site or used for backfilling operations as required in accordance with the Geotechnical Engineer's recommendations and Project Specification requirements.
11. Contractor shall furnish all required de-watering equipment to maintain a dry excavation until backfill is complete.
12. Where new footings are adjacent or abut existing foundations, carefully hand excavate and determine bottom of existing foundation. If different than anticipated, adjust new foundations to match existing. In no case shall the new footing be lower than the existing without protection against undermining such as underpinning or shoring.
13. Foundation bearing soils shall be inspected by a qualified Geotechnical Engineer. The testing shall include, but not be limited to, identification of soils at and below the foundation bearing level, and the allowable bearing capacity of these soils.
14. A Geotechnical Engineer registered in the State of the Project shall inspect the condition and assure the adequacy of all subgrades, fills, backfills before placement of foundations, footings, slabs and walls. They shall submit reports to the Architect/Engineer describing their investigations, including any non-conforming work.
15. The design of foundations, retaining walls, and slab on grade is based on assumed nominal design values for the area and is required to be field verified prior to construction to ensure safety and stability. No information is available at the time of construction document issuance which might indicate the presence of fills, organics, or other deleterious geotechnical conditions which may require significant earthwork/foundation operations to resolve. In order to understand the geotechnical conditions present, a thorough geotechnical evaluation of the site is must be performed. The Design team takes no liability/responsibility for any changes which might occur as a result of the to be furnished geotechnical evaluation report.
16. Refer to the geotechnical and civil engineers for site preparation works.
17. Geotechnical engineer is required to evaluate the local bearing capacity of the soils prior to placement of the concrete foundations.
23. Tie embeds securely in place prior to placing concrete.
24. Curing of concrete surfaces shall conform to ACI 308.1 "Specification for Curing Concrete" and ACI 308R "Guide to Curing Concrete".
25. Prior to placing concrete adjacent to existing concrete, mechanically roughen, then thoroughly clean and de-grease existing concrete surfaces. Apply epoxy bonding agent prior to placing fresh concrete. Bonding agent shall be "Sika Armatis 110 EpoCam" by Sika Corporation, or approved equal. Follow all Manufacturer's instructions for surface preparation, mixing, and application.
26. Non-shrink grout shall conform to ASTM C1107. Grout shall be premixed, non-shrink, non-catalyzed natural aggregate grout with a minimum 7-day compressive strength of 7,000 psi plastic, 6,000 psi flowable, and 5,000 psi fluid consistency.

**BACKFILLING**

- 1. Do not place backfill against foundation walls - designed as supported at top and bottom - until basement level and first floor slabs are in place. Shore and/or brace walls as required if backfilling operations are to be carried out prior to placement of floor slabs.
2. Place backfill against basement retaining walls - designed as cantilevered - after concrete has attained design strength and before lower level and first floor slabs are in place.
3. Where backfill is to be placed on both sides of foundation walls, provide a balanced backfill against foundation walls to eliminate lateral load effects, or provide necessary temporary lateral support to the top of the wall until permanent support is installed.
4. Backfill material shall consist of clean, well grade granular soils, free of organic material, silt and clay, or as specified in the Project Specifications.
5. Backfill material shall be compacted to 95% of maximum density, as determined by the Modified Proctor Method (ASTM D1557), in lifts not exceeding 6 inches.

**CAST-IN-PLACE CONCRETE**

- 1. Concrete structural framing has been designed by the Ultimate Strength Method per ACI 318 "Building Code Requirements for Structural Concrete".
2. Concrete work shall conform to the requirements of ACI 301, "Specifications for Structural Concrete for Buildings", and ACI 318 "Building Code Requirements for Structural Concrete" except as modified by Structural requirements noted on the Drawings.
3. All concrete work shall conform to ACI 201.2R, "Guide to Durable Concrete". Parking structures shall also conform to ACI 302.1R, "Guide for the Design and Construction of Durable Concrete Parking Structures".
4. Cement shall conform to ASTM C150 "Specification for Portland Cement" type I or III.
5. Concrete aggregates shall conform to ASTM C33 "Specification for Concrete Aggregates".
6. Reinforcing steel shall conform to ASTM A615 grade 60.
7. Reinforcement shall be fabricated and erected according to the ACI standards: "Details and Detailing of Concrete Reinforcement", ACI 315 and "Guide to Presenting Reinforcing Steel Design Details", ACI 315R.
8. Welded wire fabric shall be furnished in flat sheets (rolls not permitted) and shall conform to ASTM A1064 and have a minimum side and end lap of 8 inches.
9. Welding of reinforcing steel is prohibited unless specifically detailed. Welding where detailed shall conform to AWS D1.4 specification.
10. Concrete shall have a minimum 28-day compressive strength as follows:
Foundations: 4,000 psi
Slab-on-grade: 3,500 psi
11. Exterior concrete, and interior concrete subjected to freeze/thaw cycles, salt, etc., including walls, shall be air-entrained 6% +/- 1%.
12. Concrete shall be normal weight, unless indicated otherwise.
13. Contractor shall comply with ACI 301 and ACI 306.1 for cold weather concrete placement and shall protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
14. Contractor shall comply with ACI 301 and ACI 305.1 for hot weather concrete placement.
15. The approved materials and mix design shall be fully documented and reviewed by the Testing Agency for full compliance. Responsibility for obtaining the required design strength is the Contractor's responsibility.
16. Use of calcium chloride, chloride ions, or other salts in concrete is not permitted.
17. Contractor shall tie reinforcing steel securely in place prior to placing concrete and provide sufficient supports to maintain the position of reinforcing within specified tolerances during all construction activities. Inserting dowels into wet concrete is not permitted.
18. Concrete exposed to the freeze thaw and outside the building envelope shall be air entrained per ACI requirements - 6% +/-Minimum lap splice shall be Class B per ACI 318.
19. Reinforcing steel shall be placed with the following concrete cover and tolerances unless noted otherwise:
A. Concrete cast against earth (not formed): 3"
B. Formed concrete exposed to earth or weather:
a. #5 bars or smaller: 1 1/2"
b. #6 thru #18 bars: 2"
C. Formed concrete not exposed to earth or weather:
a. Slabs, joists, and walls, #11 bars or smaller: 3/4"
b. Slabs, joists, and walls, #14 bars or larger: 1 1/2"
c. Beams, columns, pedestals, and tension ties: 1 1/2"
D. Clearance between parallel bars in a horizontal layer shall not be less than the bar diameter, 1", or 4/3 d agg, whichever is greater.
E. Clearance between parallel bars in two or more horizontal layers, shall not be less than 1" between layers.
F. Clearance between longitudinal bars in columns, pedestals, struts, and boundary elements in walls shall not be less than 1.5 times the bar diameter, 1 1/2", or 4/3 d agg, whichever is greater.
G. Maximum deviation from these requirements shall be:
+3/8" for sections with dimensions of 8" or less
+1/2" for sections with dimensions over 8"
23. Tie embeds securely in place prior to placing concrete.
24. Curing of concrete surfaces shall conform to ACI 308.1 "Specification for Curing Concrete" and ACI 308R "Guide to Curing Concrete".
25. Prior to placing concrete adjacent to existing concrete, mechanically roughen, then thoroughly clean and de-grease existing concrete surfaces. Apply epoxy bonding agent prior to placing fresh concrete. Bonding agent shall be "Sika Armatis 110 EpoCam" by Sika Corporation, or approved equal. Follow all Manufacturer's instructions for surface preparation, mixing, and application.
26. Non-shrink grout shall conform to ASTM C1107. Grout shall be premixed, non-shrink, non-catalyzed natural aggregate grout with a minimum 7-day compressive strength of 7,000 psi plastic, 6,000 psi flowable, and 5,000 psi fluid consistency.

**DETROIT CHILDREN'S MUSEUM - RAMP REVOLUTION**

6134 2nd AVE, DETROIT, MI 48202

PROJECT DESIGNER

4430 ANDERSEN BRIGHTON, MI 48114 248-202-2724



STRUCTURAL ENGINEER

Metropolitan Structural Engineers & Associates Inc. 422 N. Alameda Ave. Royal Oak, MI 48067 Alexander@msj-amb.net 248-561-2035

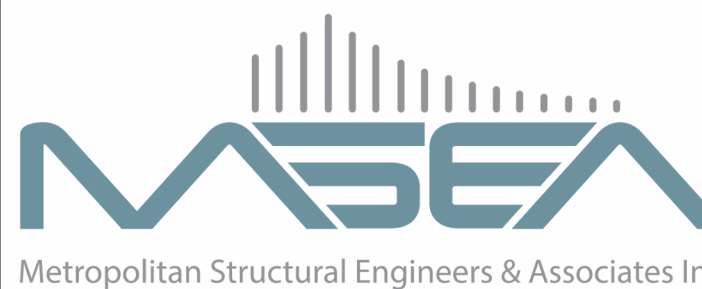


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KEY PLAN



GRAPHIC SCALE

MSEA INC. PROJECT NO.

23-1087

SHEET TITLE

**STRUCTURAL GENERAL NOTES**

SHEET NO.

S001



ABBREVIATIONS table listing various construction abbreviations such as APPX APPROXIMATE, ARCH ARCHITECTURAL, BF BRACED FRAME, etc.

Note: This structure is designed for the following live loads, in addition to the lateral loads and snow-imposed dead loads self-weight of the structure. Where applicable, the live loads are reduced in accordance with the provisions of the Building Code.

TABLES: BUILDING OCCUPANCY CATEGORY, LEVELS, CONCRETE RAMP, and SNOW CRITERIA tables.

TABLE: WIND CRITERIA table showing wind speed (V = 115 Mph) and exposure category (B).

TABLE: SEISMIC CRITERIA table showing seismic importance factor (Is = 1.0) and seismic acceleration parameter (Sa = 0.094g).

STATEMENT OF SPECIAL INSPECTIONS

- 1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE 2015 MICHIGAN INTERNATIONAL BUILDING CODE CHAPTER 17 AND AS MODIFIED HEREIN.
- 2. DESIGNATIONS:
  - SI SPECIAL INSPECTOR QUALIFIED WITH DEMONSTRATED COMPETENCE DOCUMENTED BY CERTIFICATIONS FROM RECOGNIZED AGENCIES SUCH AS AWS, ACI, MASTORY INSTITUTE OF MICHIGAN (MIIM), ETC., AS SUBMITTED AND APPROVED BY THE BUILDING OFFICIAL. SPECIAL INSPECTOR MAY BE A FIRM WITH MULTIPLE SPECIALISTS AND A PROJECT MANAGER PROVIDING REPORTS.
  - TA TESTING AGENCY QUALIFIED TO TEST AND INSPECT MATERIALS AND ASSEMBLIES. TESTING AGENCY SHALL BE UNDER THE SUPERVISION OF THE SPECIAL INSPECTOR.
  - CE GEOTECHNICAL ENGINEER WHO PROVIDED THE ORIGINAL PROJECT GEOTECHNICAL SOIL INVESTIGATION REPORT.
  - SE SPECIALTY ENGINEER RESPONSIBLE FOR DESIGNING ASSEMBLIES SUCH AS PRECAST CONCRETE, STEEL JOISTS, COLD FORMED FRAMING ASSEMBLIES, ETC. SPECIALTY ENGINEER SHALL PROVIDE OBSERVATION OF FABRICATED AND INSTALLED ITEMS OF THEIR DESIGN IN ADDITION TO THE SPECIAL INSPECTION.
- 3. TA & CE AND SE SHALL SUBMIT RECORDS OF THE INSPECTION RESULTS TO THE SI. THE SI SHALL COMPLETE AND SUBMIT INSPECTION RECORDS TO THE ARCHITECT/ENGINEER AND BUILDING OFFICIAL. RECORDS SHALL INCLUDE STATEMENTS OF TESTS, WHETHER INSTALLED/FABRICATED ITEM COMPLIES WITH CONTRACT DOCUMENTS, REMEDIAL WORK PERFORMED, RETESTS.
- 4. SI SHALL PROVIDE A DAILY REPORT A MAXIMUM OF 24 HOURS AFTER THE END OF EACH WORK DAY TO THE ENGINEER OF RECORD. FORMAL REPORTS OF COMPLIANCE OR NON-COMPLIANCE SHALL BE PROVIDED TO THE SI. THE SI SHALL COMPLETE AND SUBMIT INSPECTION RECORDS TO THE ARCHITECT/ENGINEER AND BUILDING OFFICIAL AND SUBMIT RECORDS TO THE SI. TA & CE SHALL BE ENGAGED BY THE OWNER IN COMPLIANCE WITH THE MICHIGAN INTERNATIONAL BUILDING CODE.
- 5. WHERE FABRICATION OF STRUCTURAL, LOAD BEARING OR LATERAL LOAD RESISTING MEMBERS OR ASSEMBLIES IS BEING CONDUCTED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTIONS OF THE FABRICATOR ITEMS SHALL BE PERFORMED DURING FABRICATION. SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE FABRICATOR MAINTAINS APPROVED DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND THE GOVERNING BUILDING CODE. APPROVAL SHALL BE BASED FROM REVIEW OF FABRICATION AND QUALITY CONTROL PROCEDURES AND PERIODIC INSPECTION OF FABRICATION PRACTICES BY THE BUILDING OFFICIAL.
- 7. REFER TO SPECIAL INSPECTION SCHEDULES AND GENERAL STRUCTURAL NOTES FOR ADDITIONAL QUALITY CONTROL TESTING AND INSPECTIONS.

SPECIAL INSPECTION REQUIREMENTS - CONCRETE CONSTRUCTION

Table with 5 columns: INSPECTION TASK, INSPECTION FREQUENCY (CONTINUOUS/PERIODIC), REFERENCED STANDARD, IBC REFERENCE, RESPONSIBLE AGENT.

SPECIAL INSPECTION REQUIREMENTS - POST-INSTALLED ANCHORS

Table with 4 columns: INSPECTION TASK, REFERENCED STANDARD, IBC REFERENCE, RESPONSIBLE AGENT.

SPECIAL INSPECTION REQUIREMENTS - SOILS AND FOUNDATIONS

Table with 5 columns: INSPECTION TASK, INSPECTION FREQUENCY (CONTINUOUS/PERIODIC), REFERENCED STANDARD, IBC REFERENCE, RESPONSIBLE AGENT.

SPECIAL INSPECTION REQUIREMENTS - STEEL CONSTRUCTION

Table with 5 columns: INSPECTION TASK, INSPECTION FREQUENCY (CONTINUOUS/PERIODIC), REFERENCED STANDARD, IBC REFERENCE, RESPONSIBLE AGENT.

CONCRETE REINFORCING BAR DEVELOPMENT LENGTH SCHEDULE (4000 PSI, 5000 PSI, AND 6000 PSI)

Table showing development length requirements for beams, columns, and walls in tension and compression.

DEVELOPMENT LENGTHS/HOOKS

- 1. BEAM BARS SPACED AT NOT LESS THAN 3 BAR DIA. CDC.
- 2. COLUMN BARS SPACED AT NOT LESS THAN 4 BAR DIA. CDC.
- 3. REINFORCING BARS ARE CLASSIFIED AS TOP BARS WHEN MORE THAN 12" OF CONCRETE IS CAST BENEATH RESPECTIVE REINFORCING BAR.
- 4. COMPRESSION DEVELOPMENT IS PERMISSIBLE ONLY WHERE SPECIFICALLY NOTED ON THE DRAWINGS, DETAILS OR SCHEDULES.
- 5. TENSION DEVELOPMENT SHALL BE USED IN ALL BEAMS, SLABS AND WALLS (UN.L.O.)
- 6. DEVELOPMENT LENGTH OF INDIVIDUAL BARS WITHIN A BUNDLE IN TENSION OR COMPRESSION, SHALL BE THAT FOR THE INDIVIDUAL BAR, INCREASED 20% FOR THREE-BAR BUNDLES, AND 30% FOR FOUR-BAR BUNDLES.

CONCRETE REINFORCING BAR LAP SPICE SCHEDULE (4000 PSI, 5000 PSI, AND 6000 PSI)

Table showing lap splice requirements for beams, columns, and walls in tension and compression.

LAP SPICE NOTES

- 1. BEAM BARS SPACED AT NOT LESS THAN 3 BAR DIA. CDC.
- 2. COLUMN BARS SPACED AT NOT LESS THAN 4 BAR DIA. CDC.
- 3. REINFORCING BARS ARE CLASSIFIED AS TOP BARS WHEN MORE THAN 12" OF CONCRETE IS CAST BENEATH RESPECTIVE REINFORCING BAR.
- 4. COMPRESSION SPLICES ARE PERMISSIBLE ONLY WHERE SPECIFICALLY NOTED ON THE DRAWINGS, DETAILS OR SCHEDULES.
- 5. TENSION SPLICES SHALL BE USED IN ALL BEAMS, SLABS AND WALLS (UN.L.O.)
- 6. WELDING LAPPING LARGER BAR WITH SPLICE BAR, LAP LENGTH OF LARGER BAR SHALL GOVERN RESPECTIVE SPLICE.
- 7. LAP SPICE LENGTH OF INDIVIDUAL BARS WITHIN A BUNDLE IN TENSION OR COMPRESSION, SHALL BE THAT FOR THE INDIVIDUAL BAR, INCREASED 20% FOR THREE-BAR BUNDLES, AND 30% FOR FOUR-BAR BUNDLES.

CONCRETE REINFORCING BAR TENSION HOOK SCHEDULE (4000 PSI, 5000 PSI, AND 6000 PSI)

Table showing tension hook requirements for beams, columns, and walls.

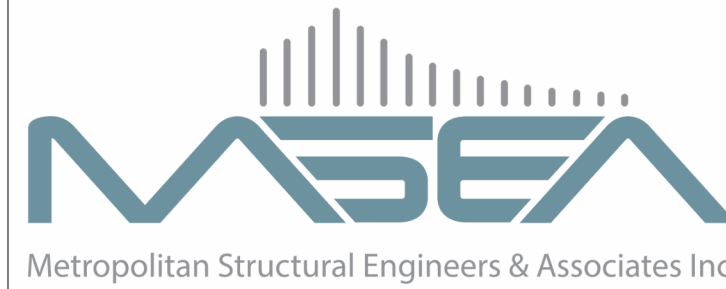
DETROIT CHILDREN'S MUSEUM - RAMP REVOLUTION

6134 2nd AVE, DETROIT, MI 48202

PROJECT DESIGNER: 4330 ANDERSEN BRIGHTON, MI 48114



STRUCTURAL ENGINEER: Metropolitan Structural Engineers & Associates Inc. 422 N. Alameda Ave. Royal Oak, MI 48067



Metropolitan Structural Engineers & Associates Inc.

Table with 3 columns: SNO, DRAWING ISSUED, DATE. Row 1: 1, Permit & Construction, 11/07/2024.

KEY PLAN



GRAPHIC SCALE

MSEA INC. PROJECT NO.

23-1087

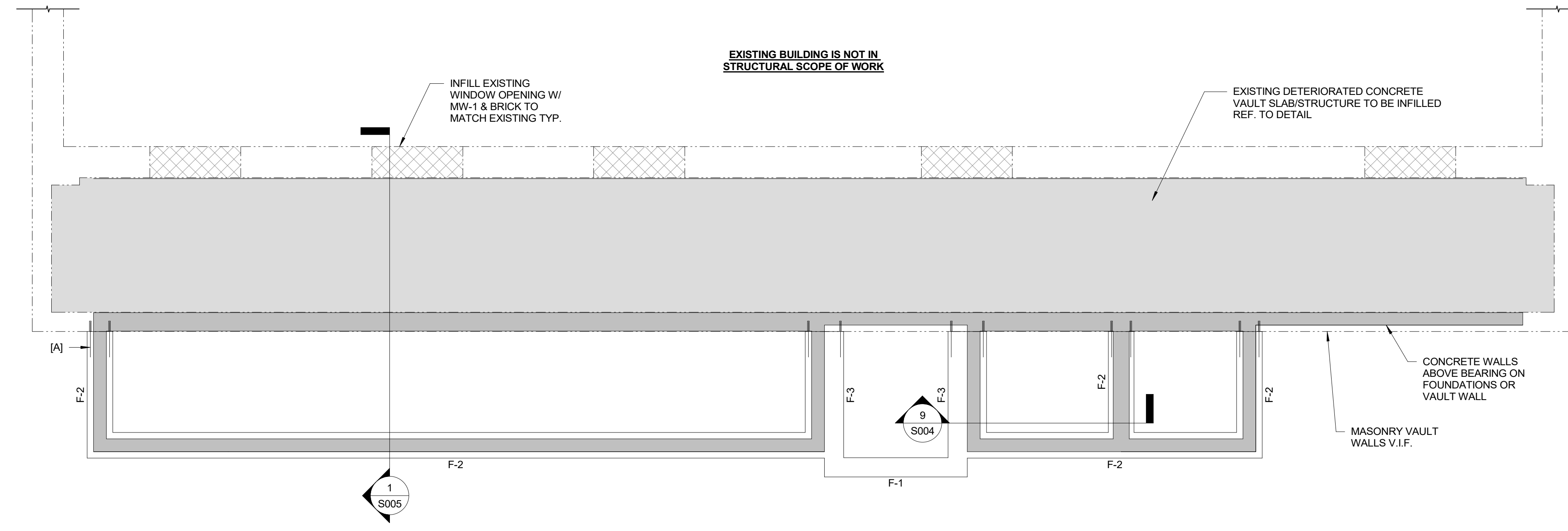
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STRUCTURAL DESIGN CRITERIA

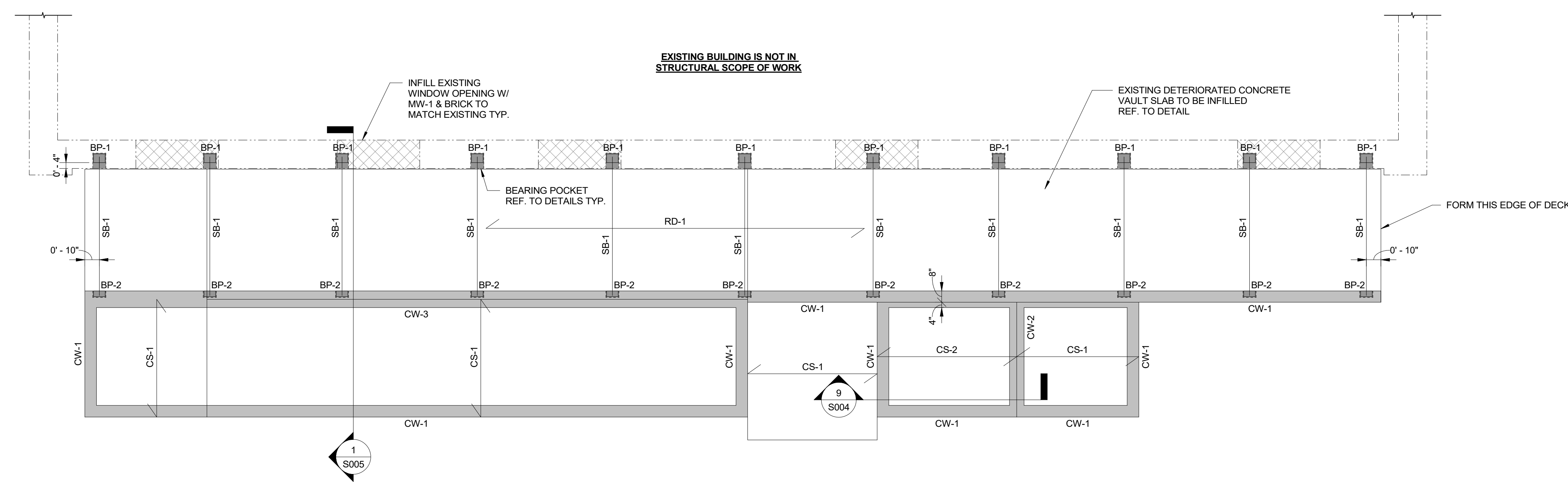
SHEET NO.

S002





① FOUNDATION PLAN  
1/4" = 1'-0"



② SLAB FRAMING PLAN  
1/4" = 1'-0"

**STRUCTURAL PLAN NOTES:**

1. VERIFY IN FIELD ALL CONDITIONS PRIOR TO PROCEEDING WITH NEW WORK, NOTIFY A/E TEAM IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED.
2. COORDINATE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS TO ENSURE THE DESIGN INTENT IS SATISFACTORILY IMPLEMENTED.
3. PROVIDE TEMPORARY SUPPORT, SHORING, AND FORMING AS REQUIRED DURING CONSTRUCTION.
4. FOUNDATIONS ARE DESIGNED TO BEAR ON NATIVE UNDISTURBED NATURAL SOILS OR ENGINEERED FILLS HAVING A MINIMUM NET ALLOWABLE SOIL BEARING CAPACITY OF 1500PSF, V.I.F.
5. DO NOT DIG BELOW OR UNDERMINE EXISTING FOUNDATIONS.
6. PROVIDE TEMPORARY SUPPORT, SHORING, AND FORMING AS REQUIRED DURING CONSTRUCTION.
7. PROVIDE CONSTRUCTION JOINTS AT SLAB TO RAMP TRANSITIONS.
8. DO NOT REMOVE ANY TEMPORARY SUPPORTS UNTIL FINAL STRUCTURE IS COMPLETELY INSTALLED.
9. REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS. FOUNDATIONS ARE REQUIRED TO BE APPROXIMATELY CENTERED ON FOUNDATIONS.
10. PROVIDE CONTROL JOINTS IN CONCRETE WALLS AT 8'-0" O.C. MAX.
11. REFER TO STANDARD DETAILS, GENERAL NOTES, SPECIAL INSPECTIONS, AND DESIGN CRITERIA FOR ADDITIONAL INFORMATION/REQUIREMENTS.

**STRUCTURAL DESIGNATIONS:**

- CW-1: CONCRETE WALL - 8" THICK REINFORCED W/ #5 BARS @ 12" O.C. EACH WAY EACH FACE
- CW-2: CONCRETE WALL - 10" THICK REINFORCED W/ #5 BARS @ 12" O.C. EACH WAY EACH FACE
- CW-3: CONCRETE WALL - 12" THICK REINFORCED W/ #5 BARS @ 12" O.C. EACH WAY EACH FACE
- CS-1: CONCRETE SLAB - 6" THICK REINFORCED W/ #5 @ 12" O.C. EACH WAY CENTER
- CS-2: CONCRETE STAIR - REFER TO DETAIL FOR REINFORCEMENT REQUIREMENTS
- RD-1: RAMP DECK - 2C-20GA CONFORM DECK + 4" NORMAL WT. CONCRETE (6" TOTAL DEPTH) REINFORCE W/ 4x4-W2.9xW2.9 WWF DRAPED PER MANUFACTURERS REQUIREMENTS + #5 @ 12" O.C. BOTTOM ORIENTED IN THE SPAN DIRECTION OF THE SLAB
- MW-1: MASONRY WALL - 16" CMU REINFORCE W/ #5 @ 24" O.C. MAX., DOWEL TO EXISTING JAMB, HEAD, & SILL W/ #5 DOWELS @ 24" O.C. MAX., PROVIDE BRICK TO MATCH EXISTING
- BP-1: STEEL BEARING PLATE - 8"x6"x3/8" GALVANIZED + 1/2" HD STUD 4" LONG GROUT POCKET SOLID USING NON-SHRINK GROUT W/ CORROSION INHIBITOR
- BP-2: STEEL BEARING PLATE - 8"x4"x3/8" GALVANIZED + 1/2" HD STUD 4" LONG GROUT POCKET SOLID USING NON-SHRINK GROUT W/ CORROSION INHIBITOR
- SB-1: STEEL BEAM - W8x10
- F-1: CONCRETE FOUNDATION - 12"x34" MIN. (WxHeight) REINFORCED W/ (2) #5 BARS LONG. T&B GRADE = -4'-4"  
TOP OF FOOTING = -5'-0"  
BOTTOM OF FOOTING = -7'-10" MIN.
- F-2: CONCRETE FOUNDATION - 16"x34" MIN. (WxHeight) REINFORCED W/ (2) #5 BARS LONG. T&B GRADE = -4'-4"  
TOP OF FOOTING = -5'-0"  
BOTTOM OF FOOTING = -7'-10" MIN.
- F-3: CONCRETE FOUNDATION - 24"x34" MIN. (WxHeight) REINFORCED W/ (3) #5 BARS LONG. T&B GRADE = -4'-4"  
TOP OF FOOTING = -5'-0"  
BOTTOM OF FOOTING = -7'-10" MIN.
- [A]: DOWEL CONCRETE FOUNDATION TO EXISTING MASONRY WALL W/ (2) #5 BARS @ 16" O.C. SET IN HILTI HIT-HY 270 ADHESIVE, 6" EMBED., 16" PROJECTION.

REV.	DESCRIPTION	DATE
1	Permit & Construction	11/07/2024

KEY PLAN



GRAPHIC SCALE  
MSEA INC. PROJECT NO.  
23-1087

**STRUCTURAL FRAMING PLANS**

SHEET NO.  
**S003**







