



BASIS OF DESIGN

CDB #630-128-005

CONSTRUCTION MAINTENANCE FACILITY

STEVENS ON YARD MAINTENANCE FACILITY

8630 JOLIET ROAD

MCCOOK (COOK COUNTY), ILLINOIS

CDB BUILDING INV. NO. IDOT128-0001, D0139, D0140

CONTRACT: BRIDGING DOCUMENTS

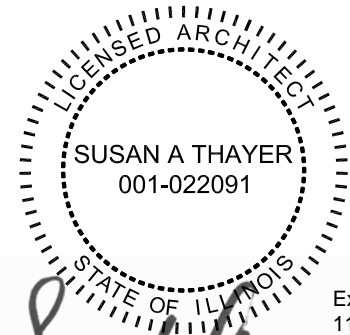
State of Illinois

CAPITAL DEVELOPMENT BOARD

USING AGENCY: ILLINOIS DEPARTMENT OF TRANSPORTATION

BY:

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Exp:
11/30/20

DATE: May 06, 2020

Final Bridging Documents

BASIS OF DESIGN
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State of Illinois
CAPITAL DEVELOPMENT BOARD

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BASIS OF DESIGN FOR

CDB 630-128-005
Construction Maintenance Facility
Stevenson Yard Maintenance Facility
8630 Joliet Road
McCook (Cook County), Illinois

DATE: May 06, 2020

BRIDGING DOCUMENTS

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BASIS OF DESIGN

PART 1 - PROJECT OVERVIEW

- 1.1 **New Facility:** The scope of this project is the final design and construction of a new, approximately 35,230 SF, maintenance facility building (IDOT128-00001) at the IDOT Stevenson Expressway maintenance yard. This facility will include program spaces for vehicle maintenance, vehicle storage, vehicle wash, offices, ready room, restrooms/locker rooms, as well as program spaces for the IDOT Materials Lab. A portion of the existing building will be retained and modified to function as the cold storage for the facility. The new facility is to have a minimum useful life of 50 years and all material and equipment selections shall be made to achieve this level of quality and durability. Also, the existing facility must remain operational throughout the construction of the new facility.
- 1.2 **Existing Facility:** The existing maintenance facility building (D0139) is approximately 22,160 SF, and was constructed of brick and CMU masonry in 1963. The existing materials lab is housed in two temporary trailers on the site that are a minimum of 10 years old. The existing salt dome (D0145) and fuel pump (D0146) are to remain and are not part of this scope of work. The existing cold storage building (D0140), as well as the existing salt ramp will be demolished as part of this scope. A portion of the existing maintenance building will be demolished after the new facility is operational. The existing materials lab trailers will be demolished after the new facility is operational.
- 1.3 **Site Planning & Program:** The existing facility has only one entrance and the access to that entrance is on a shared driveway with a neighboring property. The new site layout provides an additional driveway access, and a betterment option for a third driveway access directly from Joliet Road. The placement of the new facility on the site allows for the operation of the existing facility to fully function while the new facility is under construction. It is also located on the site to allow for pull-through bays to avoid vehicles backing up and potentially damaging property. There are (4) pull-through Maintenance Bays, (20) pull-through Vehicle Storage Bays, and (1) pull-through Wash Bay. The bays are arranged double deep, and for the storage, double wide. This allows for a compact and efficient building footprint and much improved vehicle circulation.
- The management offices, materials lab spaces, and personnel support spaces are all centrally located between the maintenance and storage functions. This arrangement is efficient for systems distribution as well as personnel circulation. While the footprint of these program spaces is compact and efficient, all the desired separations are maintained between the different departments.
- 1.4 The Basis of Design along with the accompanying project manual and drawings constitute a set of Bridging Documents (approximately 25% complete). The Bridging Documents will be used by the Capital Development Board and IDOT to solicit and procure design-build teams for the final engineering and construction of the project. These documents are not intended to document the final requirements of the project.

PART 2 - GENERAL DESIGN CRITERIA

2.1 Applicable Codes and Standards

- A. International Building Code – IBC 2018 Edition
- B. International Existing Building Code – IEBC 2018 Edition
- C. International Fire Code – IFC 2018 Edition
- D. International Property Maintenance Code – IPMC 2015 Edition
- E. National Electrical Code NFPA 70 – NEC Current Edition
- F. Illinois Plumbing Code – IPC Current Edition.
- G. Illinois Environmental Barriers Act - IEBA
- H. Illinois Accessibility Code – IAC
- I. ADA Guidelines – 2010 US ADA Standards for Accessible Design / ANSI 117
- J. International Energy Conservation Code – IECC 2018 Edition
- K. Life Safety Code - NFPA 101 -2015 including the current edition of referenced codes and standards
- L. Office of the State Fire Marshal Administrative Rules
- M. USGBC LEED-2009 NC
- N. IDOT Design and Construction Standards
- O. Illinois Capital Development Board (CDB) Design and Construction Manual
- P. Illinois Capital Development Board (CDB) Standard Documents for Construction.
- Q. Illinois Capital Development Board (CDB) Standard Documents for Design-Build Projects
- R. Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction
- S. Illinois Department of Transportation (IDOT): Bureau of Local Roads and Streets Manual

PART 3 - CIVIL SITE WORK

3.1 Scope

- A. This design basis describes the minimum requirements for the design of civil site work of the Illinois Department of Transportation – Stevenson Maintenance Yard Project in McCook, Illinois. The design basis covers the work of the site such as grading, site pavement, underground sewers, underground utility lines and related facilities, and the work related to finishing the site.

3.2 Industry Codes and Standards

- A. Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction in Illinois, latest edition, including all addenda and recurring special provisions.
- B. Standard Specifications for Water & Sewer Main Construction in Illinois, current Edition.
- C. Illinois Department of Transportation Bureau of Local Roads and Streets Manual, latest edition.

3.3 Government Regulations

- A. Americans with Disabilities Act (ADA) - Americans with Disabilities Act Handbook
- B. Illinois Attorney General – ADA Guidelines
- C. U.S. Environmental Protection Agency (EPA)
- D. Illinois Environmental Protection Agency (IEPA)
- E. EPA 40 CFR – U.S. Environmental Protection Agency Regulations
- F. Metropolitan Water Reclamation District of Greater Chicago (MWRDGC)
- G. Village of McCook
- H. U.S. Army Corps of Engineering (USACE)
- I. Storm Water Management for Construction Activities Discharge Elimination System (NPDES) – National Pollution Permit for General Construction Activity
- J. U.S. Department of Labor Occupational Safety and Health Administration (OSHA) – OSHA29 CFR 1926 – Safety and Health Regulations for Construction

3.4 Site Preparation and Grading

- A. The site preparation activities including clearing and grubbing, stripping, full depth pavement removal, and general site grading, shall be in accordance with the applicable contractor documents and IDOT Standards.
- B. Remediation shall be done in accordance with the environmental report, specifications and exhibits.

- C. Consideration shall be given to matching existing grades.
 - 1. There are structures that are scheduled to remain on site, which limit how much the site can be raised:
 - a. Fuel pump
 - b. Salt dome
 - c. A section of the existing maintenance building, to be used as cold storage.
- D. Excavation, fill, stockpile and disposal areas, and the extent of clearing and grubbing areas shall be defined in the contract documents.
- E. Consideration shall be given to balancing the cut and fill for earthwork with the understanding that remediation is needed.
- F. All demolition shall be defined in the contract documents.
- G. Vehicular traffic detours shall be designed to provide a safe routing and a satisfactory means of controlling traffic.

3.5 Excavation and Backfill

- A. The design of excavation and backfill shall be in accordance with contract documents.
- B. Areas requiring differing levels of compaction shall be noted on the construction drawings and specifications. These areas include structure areas, roadways, paved area subgrades, utility trenches, and general graded areas outside of the work areas.
- C. Subgrade shall be field tested to determine any undercuts required.

3.6 Erosion Control

- A. Since there is potential for outlet storm sewer work near the creek, erosion and sedimentation controls shall be given special consideration in design.
- B. Soil erosion control measures shall be designed to comply with federal, state, and local agency regulations and shall be in accordance with the contract documents.
- C. Erosion control permitting documentation shall be submitted to the owner and technical support for the permits will be provided.
- D. A stormwater pollution prevention plan (SWPPP) shall be drafted according to MWRDGC's guidelines.

3.7 Roads, Paving, and Surfacing

- A. Road and paving shall be in accordance with the contract documents and IDOT Standards.
- B. Area paving and roads shall be designed using materials and methods specified in the IDOT Standards and the contract documents.
- C. Roads

1. Roads and paving shall be in accordance with the contract documents and IDOT Standards.
2. Area paving and roads shall be designed using materials and methods specified in IDOT Standards and the contract documents.
3. Surfacing for the following areas shall be as shown on the drawings: roads, parking lots, and drives.
4. Special consideration should be given to slopes of the site pavement. Since there are existing structures and appurtenances where existing grade needs to be maintained, slopes should be carefully determined to provide proper grades without creating large slopes.
5. Construction drawings shall show all pavement and road requirements including location, elevations, width, thickness of base course and pavement, pavement type, grades, geometry, joint types and locations, shoulder details, curbs, drainage features, and materials.

3.8 Curbs, Gutters, and Walkways

- A. Walkway subbase shall be in accordance with applicable IDOT Standards.
- B. Finished grades shall be shown on the design drawings.
- C. Accessible routes including curbs, gutters, and walkways shall be designed to comply with ADA requirements.

3.9 Sewers

- A. Sewers and drainage systems shall be designed to protect the atmosphere, soil, surface water, and groundwater from contamination and to provide safe, economical collection and flow of all sewage to treatment and/or holding facilities and subsequently to approved disposal.
- B. All utility trenches shall have an engineered barrier complying with the recommendations of the environmental recommendations, to be provided by the Owner.
- C. Existing systems to which new systems will connect shall be reviewed to verify service compatibility and to ensure that sufficient capacity is available to accept the additional flow.
- D. Precast concrete manholes shall be located at a maximum interval of 200' center to center or at every change of direction to facilitate maintenance, inspection, and cleaning.
- E. Manholes, catch basins or cleanouts shall be provided at changes in horizontal direction, diameter of pipe, or invert elevations.
- F. Sanitary / process sewers shall be designed to cross under potable water lines.
- G. Due to grading restrictions and the need to match several existing grades across the site, a small sanitary lift station may need to be considered to tie the new sanitary connection into the sanitary outfall.
- H. A minimum of 18 inches of vertical clearance and 10 feet horizontal clearance shall be provided if sanitary or process sewers run parallel to a potable water line.
- I. If a potable water line crosses a sanitary or process sewer line, one segment of the potable water line pipe shall be centered over the sanitary or process sewer line such that the joints of the

potable water line pipe are equidistant and at least 10 feet horizontally from the sanitary or process sewer line. The potable water line shall cross at least 18 inches above the sanitary or process sewer line. If the specified clearance is unattainable, casing pipe shall be provided, or non-pressure sanitary and process sewer shall be constructed of water main material.

- J. Minimum sanitary pipe sizes shall be 8 inches for main sewers.
- K. Storm sewers shall be designed in accordance with applicable IDOT and/or local standards.
- L. The minimum design velocity of storm sewers shall be 3 feet per second at design capacity.
- M. The minimum design velocity of sanitary sewers shall be 2 feet per second flowing half full at maximum flow rate.
- N. Stormwater detention is required per MWRDGC and an estimated footprint is shown.
- O. All sewer design shall be in accordance with MWRDGC permit requirements and submitted to MWRDGC for permit review. Plans shall be submitted to MWRDGC for review, comment, and permit issuance.
- P. Consideration should be given the storm sewer outfall. The existing outfall should be televised and, if necessary, replaced up to the outfall at the creek. If creek work needs to be done, a US Army Corps of Engineering permit, with MWRDGC's guidance, may need to be obtained for in stream work.
- Q. Due to limited vertical depth from finished grade of the site to the outfall of the creek, a small pump station may need to be considered for the storm sewer if clearances with pavement or other utilities cannot be met.

3.10 Water Service

- A. The water service design, installation, disinfecting and testing shall be coordinated with the Village of McCook.

3.11 Topographic Survey

- A. The topographic survey was completed in October 2018.
- B. Due to site access restrictions from ongoing work at that time, additional topographic survey should be completed. The sanitary outfall area should be investigated further, as should the area near the storm outfall. Due to ongoing Deep Tunnel work, access to the creek area was limited.
- C. It is our understanding that a portion of the property near 53rd Street was sold off by IDOT, and the new property boundary needs to be verified.

3.12 Gas Service

- A. A new gas service is required for the new building. The final design and size should be coordinated with Nicor.

3.13 Electrical Service

- A. A new transformer and electrical service is required for the new building. The final design and sizing should be coordinated with ComEd.

PART 4 - ARCHITECTURAL

4.1 Scope

- A. This section covers the building program spaces, building exterior envelope, interior partitions, interior finishes, casework and miscellaneous components. The building plans have been thoroughly reviewed and approved by IDOT.

The proposed building program is broken down as follows:

1. The Maintenance area contains the following rooms and /spaces:
 - a. (4) Maintenance Bays
 - 1) Provide (2) 80,000 LB capacity four post vehicle lifts
 - 2) Bays are open and clear of dividing walls or columns
 - 3) (4) 18'x14' OH doors
 - b. General Shop area
 - c. Common Work Area
 - d. Parts/Tools Room
 - e. Tire Storage
 - 1) Existing tire storage racks are intended to be repurposed from the existing facility, and will be furnished by IDOT
 - f. Mechanics' Room
 - 1) Accommodate (2) workstations
 - g. Small Equipment Room
 - h. Oil / Lube Room
 - i. Mechanical Room
2. The Administration/Office Area contains the following rooms/spaces:
 - a. Vestibule / Main Entry
 - b. Break/Day Room
 - 1) Accommodate up to 40 people, and serve as a conference room as needed
 - c. OP Manager Office
 - d. Lead Workstations
 - 1) Accommodate (4) workstations
 - 2) Accommodate a printer/copier
 - e. Server Room
 - f. Janitor closet
 - g. Unisex Toilet Room
 - h. Men's Locker Room / Toilet Room
 - 1) 3 WC, 3 UR, 3 LAV, 2 hand dryers
 - 2) 1 shower
 - 3) 42 Lockers
 - i. Women's Locker Room / Toilet Room
 - 1) 3 WC, 2 LAV, 1 hand dryer
 - 2) 1 shower
 - 3) 12 Lockers
 - j. Circulation Space
 - k. Water Service / Meter Room

3. Material Lab Area contains the following rooms/spaces:
 - a. Materials Open Office
 - 1) Accommodate (4) workstations
 - 2) Accommodate a printer/copier
 - b. Materials Office
 - 1) Accommodate (2) workstations
 - c. Materials Lab
 - 1) Accommodate IDOT provided EQ as shown on sheet A3-1.
 - d. Shaker Room
 - 1) Sound isolation is required, confirm noise level of equipment and appropriate STC rating
 - e. Materials Storage
 - 1) (1) 10'x10' OH door to exterior / receiving
4. Storage area contains the following rooms/spaces:
 - a. (20) Vehicle storage bays to accommodate equipment as listed and shown on sheet A1-2
 - 1) (10) 26'x14' OH doors
 - 2) Bays are open and clear of dividing walls or columns
 - b. Paint Room, for paint storage only

4.2 Code Analysis

- A. Refer to Life Safety Sheet G-03 in the Drawing Set.

4.3 LEED Waiver

- A. The State of Illinois and the Capital Development Board have a goal that all projects meet the requirements for LEED-SILVER Certification. A preliminary LEED Checklist was completed to outline possible points, but after further review, there were several factors that indicated LEED Certification was not attainable for this project. A LEED Waiver was issued by CDB and is attached in Appendix B.

4.4 Building Envelope Characteristics

- A. Exterior Wall Framing at Vehicle Bays: Insulated CMU up to 8'-6" with Insulated Metal Wall Panels above. CMU and IMP design, style, finishes and thickness shall be determined by the Design-Builder and approved by the using agency. The exterior finishes shall also be coordinated with the pre-engineered building manufacturer.
- B. Exterior Wall Framing at Administration Area: The exterior wall system at the office portion of the building shall be CMU cavity wall construction. The exterior finish of the CMU shall be selected by the Design-Builder and approved by the using agency.
- C. Exterior Glazing: Exterior windows shall be fixed with insulated glazing to meet the energy code. Manually operated roller window shades are to be provided at the interior of all exterior windows.
- D. Exterior Doors and Frames: Pedestrian entry/exit doors and frames shall be insulated hollow metal. Doors shall be provided with vision panels, comprised of 1-inch insulated glass. Automatic operators are not required. Service doors shall be insulated hollow metal.

- E. Flat Roofing System: Roofing system at the flat roof shall be a single ply PVC membrane over insulation. Minimum R-value of roof system design shall meet or exceed International Energy Conservation Code-R-30, Provide walk-way pads at all roof mounted equipment and at roof access door. Provide all parapet wall and equipment curb flashings.
- F. Sloped Roofing System: Roofing system at the Vehicle Bays shall be metal panel with concealed fasteners and coordinated with the pre-engineered metal building manufacturer. Minimum R-value of the roof and skylights are to be provided to meet or exceed the energy code requirements. The design-builder shall perform daylight calculations to confirm the quantity, size and placement of the skylights to meet code. The skylights, snow guards and gutters are to be coordinated with the roofing system and covered under a single warranty.
- G. Existing Exterior Wall & Coping: After partial demolition of the existing maintenance building, the exposed wall and parapet are to be repaired and made weather tight.
- H. Roof Access: Provide roof access via a metal stair and landing on the interior of the maintenance bay to a door through the upper wall of the maintenance bays onto the low flat roof over the administration areas where the equipment is located.

4.5 Interior Rooms:

- A. Interior Partitions shall be nominal 8-inch Concrete Masonry Units/CMU. Refer to sheet G0-3 for locations of required fire separations.
- B. All interior partitions to extend to underside of metal roof deck.
- C. Metal stud furring on the CMU partitions with 5/8" gypsum board shall be at the office areas as indicated on the plans. Gypsum board to stop 6 inches above the ceilings.
- D. Sound attenuation to be provided at the Shaker Room. Confirm the noise level of the equipment and verify the appropriate STC rating.

4.6 Doors and Hardware

- A. All doors shall be provided with architectural hardware appropriate for their function and reviewed with the using agency prior to installation. For door and frame types refer to Door and Frame Schedule on drawings. Include protection plates at all doors. Protection plates shall be provided at kick side of doors.
- B. Provide weather-stripping, threshold, door sweep and rain-cap at all exterior doors. Closers on exterior doors to feature integral spring-cushioned stop.
- C. Fire rated doors shall be code compliant with closers, and latching latchsets/ locksets.
- D. Provide locksets on all doors with a master key system in accordance IDOT Construction Standards.
- E. Rough-ins are to be provided for electrified locksets at doors indicated to receive card-readers as indicated on the electrical plans, however the card-readers will be provided by the using agency.
- F. Provide exit devices on all exterior doors.
- G. Provide exit devices on interior doors leading to exterior egress exits.

- H. All interior hollow metal doors and frames to be formed from sheet steel, minimum with welded corners (no knockdown frames), 16-gauge thickness, grouted solid jambs. Provide reinforcement for finish hardware. Doors shall be 1 3/4" thick units.
- I. All exterior hollow metal doors and frames to be formed from galvanized sheet steel with welded corners (no knockdown frames), minimum 16-gauge thickness, grouted solid jambs. Provide reinforcement for finish hardware. Doors shall be 1 3/4" thick insulated units.

4.7 Locker Room:

- A. The locker rooms shall have 18"x18" metal lockers, provided by using agency and installed by the Design-Builder. Some will be repurposed from the existing facility, and some will be new to match. 20% of the lockers shall meet ADA requirements.
- B. Locker rooms shall have bench type seating, provided by using agency and installed by the Design-Builder. ADA compliant benches shall be provided at the ADA lockers.

4.8 Women's and Men's Toilet Rooms:

- A. Toilet compartments shall be stainless steel. Toilet partition style shall be floor mounted overhead braced. Provide stainless steel hardware and full height mounting brackets.
- B. Provide stainless steel grab bars at accessible toilet compartments.
- C. Provide mirrors and hand dryers at toilet rooms. Install using agency provided accessories: soap dispensers, toilet paper dispensers, coat hooks. No sanitary napkin dispensers are to be provided.

4.9 Break Room / Day Room:

- A. The Break/Day room shall be multi-purpose, and shall accommodate up to 40 occupants. A basic kitchenette is to be provided with plastic laminate cabinets, counter and stainless steel sink (no garbage disposal) as required in 4.10E. Provide outlets for using agency supplied appliances, including: microwave, refrigerator and vending machines.

4.10 Interior Materials of Construction:

- A. Interior Partition Walls: Concrete masonry units, typical. Gypsum board over metal stud furring at office spaces as indicated on drawings. Mold resistant gyp board to be used in wet areas.
- B. Flooring: Provide finish flooring as follows, color selections to be made by using agency.
 - 1. Epoxy Resin Flooring with non-slip broadcast material: Maintenance, Storage and Wash Bays
 - 2. Vinyl Composition Tiles 12" square: Vestibule, Corridor, Offices and Workstations, Break Room, Server Room,
 - 3. Ceramic Tile: Showers, with cove base
 - 4. Sealed Concrete with broom finish: Water Service/Meter Room, Parts/Tool Room, Paint Room, Tire Storage

- C. Interior glazing to be 1/4-inch thick tempered glass, except in rated partitions, provide fire rated glazing.
- D. Paint: All interior walls shall be painted, color selections to be made by using agency.
- E. Architectural Casework
 - 1. Plastic laminate countertops over plastic laminate base cabinets and wall cabinets.
 - 2. AWI premium grade, flush overlay
 - 3. High-pressure decorative laminate, NEMA-LD3
 - 4. Particle board core, urea-formaldehyde free.
 - 5. Provide casework hardware and accessories.
- F. Suspended Ceiling Systems: Acoustic tile panels shall be 24" x 24" x 3/4", square edge. Suspension system shall be heavy duty rated.
- G. Signage-Interior and Exterior: Room signage and specialty signage provided by the using agency.
- H. Exterior vestibules will have roll-up walk off mats provided by the using agency.

PART 5 - STRUCTURAL

5.1 Applicable Standards

- A. American Concrete Institute (ACI)
 - 1. ACI 318-14 Building Code Requirements for Structural Concrete and Commentary
 - 2. ACI 301-16 Specifications for Structural Concrete
- B. American Institute of Steel Construction (AISC)
 - 1. AISC Steel Construction Manual – 14th Edition
 - 2. ANSI/AISC 360-10 Specification for Structural Steel Buildings
 - 3. AISC Code of Standard Practice for Steel Buildings and Bridges
- C. American Society of Civil Engineers (ASCE)
 - 1. ASCE 7-10 Minimum Design Loads for Buildings and Other Structures
- D. American Welding Society (AWS)
 - 1. AWS D1.1, Structural Welding Code
- E. Occupational Safety and Health Administration (OSHA)
 - 1. 29 CFR Part 1910, Subpart D: Walking-Working Surfaces
 - 2. 29 CFR Part 1926, Subpart R: Steel Erection, Subpart P: Excavation
 - 3. OSHA 3124: Stairways and Ladders
- F. Research Council on Structural Connections (RCSC)
 - 1. Specifications for Structural Joints using high-strength Bolts, December 31, 2009.

5.2 Design Criteria

A. Material Specifications

1. Concrete:
 - a. Minimum 28-Day concrete compressive strength $f_c' = 4500$ psi U.N.O.
 - b. Reinforcing bars: ASTM A615, Min. Gr. 60
 - c. Epoxy Coated Reinforcing bars: ASTM A775, Min Gr. 60
 - d. Welded Wire fabric: ASTM A185 (flat sheets)
 - e. Grout: Non-shrink Type, Min. 7-day compressive strength = 5000 psi
2. Steel:
 - a. W, WT Shapes: ASTM A992, Grade 50
 - b. C, MC, L, S, ST, M, H Shapes, Plates & Rounds: ASTM A36
 - c. Structural Shaped HSS Tube: ASTM A500, Grade C, $F_y = 46$ ksi
 - d. Structural Round HSS Tube: ASTM A500, Grade C, $F_y = 42$ ksi
 - e. Structural Round Pipe: ASTM A53, Grade B
 - f. Metal Roof Deck: 1-1/2" x 20 ga wide rib roof deck, galvanized.
3. Fasteners:
 - a. High Strength Bolts: ASTM A325, 3/4" Diameter U.N.O.
 - b. High Strength Nuts: ASTM A563
 - c. Washers: ASTM F436
 - d. Threaded Rods: ASTM A36
 - e. Anchor Rods: ASTM F1554, Grade 55
4. Coatings:
 - a. All steel shapes and plates to be primed and painted. In work and storage areas, two finish coats are required.
 - b. All attachment bolts, nuts, and miscellaneous hardware shall be galvanized.

5.3 Design Loads

A. Dead Loads

1. Weights of Materials as applicable
2. Concrete: Use density of 145 lbs/cu. ft.
3. Steel: Use density of 490 lbs/cu. ft.
4. Vehicles per vendor supplied data

B. Live Loads (L or L_r)

1. Minimum Roof Live Load L_r 20 psf
2. Slab-on-Grade (garage area) L 250 psf uniform or equipment loads
3. Slab-on-Grade (office area) L 100 psf uniform
4. Offices L 50 psf or Concentrated Load of 2000 lbs
5. Stairs L 100 psf or Concentrated load of 1000 lbs
6. Ladders L 500 lbs
7. Handrails and Guards L:

- a. 50 plf applied in any direction at the top rail
 - b. A concentrated load of 200 lbs applied in any direction at any point along the top
8. Wind Load: (ASCE 7-16, IBC 2018)
- a. Ultimate design wind speed Vult (3-second gust): 120 mph
 - b. Risk Category: II
 - c. Exposure Category: "B"
 - d. Ice Importance Factor, Iw (Wind): 1.0
9. Seismic Load: (ASCE 7-16)
- a. Risk Category: II
 - b. Importance Factor, Ie (Seismic): 1.0
 - c. Site Class: "D"
 - d. Seismic Design Category "B"
 - e. o Ss = 0.167g
 - f. o S1 = 0.020g
 - g. SDS = 1.113g
 - h. o SD1 = 0.293g
 - i. Systems: Steel System Not Specifically Detailed for Seismic Resistance
 - j. Base Shear = TBD
 - k. Analysis Method = Equivalent Lateral Force
10. Snow Load: (ASCE 7-16 and CDB Design and Construction Manual)
- a. Ground Snow Load pg: 30 psf (CDB Design and Construction Manual)
 - b. Ce=1.0
 - c. Ct=1.0
 - d. Risk Category: II
 - e. Importance Factor Is (Snow): 1.0
 - f. Minimum Flat Roof Snow Load = 26 psf
11. Soil Data from geotechnical report prepared by Intertek-PSI, dated October 24, 2019. The geotechnical report is included in the project manual.
- a. $\gamma = 120$ pcf
 - b. Recommended conventional spread/continuous wall footing
 - c. Allowable bearing pressure:
 - 1) 2500 psf continuous footings
 - 2) 3000 psf isolated column footings
 - d. Frost depth 42 inches
12. Load Combinations:
- a. Where strength design is used:
 - 1) ASCE 7-10, Article 2.3.2, Equations 1 through 7 (IBC Eq. 16-1 through 16-7 (1605.2.1))
 - b. Where allowable stress design (working stress design) is used:

- 1) ASCE 7-10, Article 2.4.1, Equations 1 through 8 (IBC Eq. 16-8 through 16-16 (1605.3.1))
 - c. Increases in allowable stress shall not be used with the loads or load combinations given unless it can be demonstrated that such an increase is justified by structural behavior caused by rate or duration of load.
 - d. Roof member deflection: TBD
 - e. Building horizontal deflection: TBD
- C. Roof will consist of 1-1/2" 20-gauge galvanized type "B" roof deck, supported by secondary steel beams or joists at spacing as required.
- D. Slab - on - Grade
 1. Slab on Grade will consist the following:
 - a. Minimum 5" thick reinforced concrete in the Administration area.
 - b. Minimum 8" thick reinforced concrete in the Testing/Lab area.
 2. Slab on grade will lay over at least 12 inches of dense graded crushed limestone (see geotechnical engineering report) and a 15mil minimum vapor barrier.
- E. Foundations
 1. The preferred foundation system for the proposed building is a conventional spread/continuous wall footing. 4 feet min square spread footing and min 2 feet wide wall footing. Bottom of exterior column footings & wall footings will be at 3'-6" below the finish grade elevation.
 2. Top of interior footings will range from 0'-6" to 1'-0" below top of slab.
- F. Lateral Bracing
 1. The building structural lateral framing shall utilize ordinary steel concentrically X-braced frames to resist wind / seismic loads.

PART 6 - HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

6.1 Codes and Standards

- A. The following codes and standards are followed in the design for the mechanical systems in this project. The project is located in the village of McCook. CDB is the authority having jurisdiction.
 1. Mechanical Systems: International Mechanical Code (IMC) – 2012
 2. Mechanical Equipment: IMC – 2012
 3. International Energy Conservation Code (IECC) – 2018

6.2 Outdoor Design Conditions

- A. Outdoor design conditions are based on 2017 ASHRAE climatic design conditions for Chicago, IL and the following:
 1. Project Location: IDOT Stevenson Yard, 8630 Joliet Rd., McCook, IL, 60525.

2. Latitude 41.796639N, Longitude -87.836157W
3. Summer: 92°F dry bulb, 75°F mean coincident wet bulb (ASHRAE 0.4%)
4. Winter: -10°F
5. Climatic zone 5A based on International Energy Conservation Code

6.3 Indoor Design Conditions

- A. For office, break room, locker room, and lab areas, design conditions are as follows:
1. Summer: 75°F
 2. Winter: 70°F
- B. For vehicle storage, maintenance, and wash bay areas, design conditions are as follows:
1. Summer: N/A
 2. Winter: 60°F
- C. No humidity control is used.

6.4 Heat Loss/Gain

- A. Design calculations were performed using Trane Trace and are based on the following assumptions:
1. Lighting load of 1 W/sf, Miscellaneous equipment load of 0.5 W/sf
 2. Occupant Load of 250 BTU/h per person Sensible, and 250 BTU/h per person Latent
 3. R-15 Metal Roof, ASHRAE standard metal frame window (U=0.42), R-11 Exterior Wall Construction

6.5 Ventilation Requirements

- A. Ventilation requirements for various rooms are based on International Mechanical Code, Chapter 4. Certain rooms will be provided with higher ventilation. Table 1 summarizes the code-required ventilation for each space.
- B. Vehicle storage and maintenance areas (indicated with *) are controlled with CO/NO₂ detection systems. In these areas, two airflows are shown. The first airflow is the required minimum airflow when no gas detection alarm is tripped (0.05 CFM/sf). The second airflow is the airflow required when vehicle gas is detected (0.75 CFM/sf).

TABLE 1 VENTILATION REQUIREMENTS				
Room	Area (SF)	People	Room Type	Ventilation Required (CFM)
Op Manager Office	177	1	Office	15
Lead Workstations - 4	458	4	Office	49
Server Closet	56	0	Storage	7
Unisex Toilet	123	0	Toilet Rooms	75
Break/Day Room	917	8	Break Rooms	191
Materials Open Office	283	4	Office	38
Vestibule	133	0	Corridors	8

Materials Office	153	1	Office	13
Materials Lab	393	5	Science Lab	190
Shaker Room	167	1	Science Lab	41
Materials Storage	315	0	Storage	39
Women's Locker Room	469	0	Locker Rooms	118
Men's Locker Room	824	0	Locker Rooms	206
Paint Room	164	0	Storage	20
Water Service / Meter Room	260	0	Storage	32
Corridor	773	0	Corridors	48
Mechanical	387	0	Storage	48
Janitor's Closet	47	0	Storage	6
Storage Bay*	17344	0	Parking Garage	867; 13,008
Oil/Lube Room	325	0	Storage	40
Small Equipment	140	0	Storage	16
Mechanic's Room	159	4	Office	30
Maintenance Bay*	5122	4	Repair Garage	256; 3,842
Tire Storage	427	0	Storage	53
General Shop	745	0	Repair Garage	560
Common Work Area	453	0	Repair Garage	340
Parts/Tool Room	749	0	Storage	90
Wash Bay	1750	0	Repair Garage	1,313

6.6 Mechanical Systems Summary

- A. The building is divided into five main areas and several individual areas. The design provides unitary systems for each of these areas, as described below.
- B. Office, Locker, and Break Areas
 1. A gas fired packaged rooftop unit (RTU-1) provides preheated air or air conditioning through sheet metal ductwork to each zone Variable Air Volume (VAV) box (V-01 to V-08). The VAV boxes have hot water reheat coils to provide additional temperature control to each zone.
 2. The rooftop unit has an outdoor air (OA) section with dampers, economizer section, filters section, return air (RA) section with dampers, gas fired heating section, refrigerant cooling coil, supply fan and condenser unit.
 3. The unit can provide the code required ventilation for all areas by modulating OA and RA dampers and exhaust air (EA) dampers based on differential pressure sensors mounted inside the building.
 4. Supply ductwork is provided throughout the office area and is sized to accommodate heating, cooling and ventilation requirements. Ducted return is used to return air back to the rooftop unit.
 5. Finned Tube radiators are located in perimeter offices to provide additional heat during the winter.
 6. The rooftop unit is provided with an economizer section. The economizer section can provide continuous ventilation and/or full outside air to take advantage of free cooling. Enthalpy control will be used to prevent indoor humidity issues during economizer mode.
 7. Primary heating sources for the office area are two natural gas high efficiency condensing boilers. These boilers are sized to provide built-in redundancy.

8. Copper/steel hot water supply and return piping is piped to VAV boxes, fin-tubes, and unit heaters throughout the building.
9. The hydronic pumps are arranged in primary/secondary configuration system with two systems pumps for lead/lag operation and boiler pumps for primary loop.
10. General exhaust is provided for locker rooms, restrooms, and the Janitor's closet via roof mounted exhaust fans (EF-4, EF-5).

C. Materials Lab

1. The materials lab area is designed with a makeup air unit (MAU-2), which has heating and cooling capabilities. This unit can provide the required ventilation air. This area includes the materials offices, shaker room, materials storage, and materials lab.
2. The makeup air unit has OA section with dampers, filters section, RA section with dampers, gas fired heating section, refrigerant cooling coil, supply fan, and condenser section.
3. The unit can provide the code required ventilation for all areas by modulating OA and RA dampers based on differential pressure sensors mounted inside the building.
4. To capture dust generated in the lab, a dust collection system is included. This unit is ducted to various processes and will be located outside of the building on a concrete pad.
5. The makeup air unit is synchronized with the dust collection system, which will operate based on room pressure sensors and provide necessary makeup air as required.

D. Vehicle Storage Bays

1. The ventilation system consists of a natural gas indirect fired energy recovery unit (HRU-2). The unit is controlled by an automatic CO/NO₂ exhaust detection system. The unit has supply and exhaust systems that are sized to the required ventilation rate of 0.75 CFM/SF. Ductwork is designed with floor-level intakes to capture vehicle gases.
2. The heat recovery unit has an OA section with dampers, filters section, EA section with dampers, energy recovery heat exchanger, gas fired heating section, and supply and exhaust fans.
3. The unit can provide code required ventilation by varying supply and exhaust airflow.
4. The space also has air intake and exhaust louvers with motorized dampers. An exhaust fan (EF-9) will run continuously while the space is occupied and CO/NO₂ is not detected. The fan can provide code-required minimum ventilation.
5. Gas fired infrared tube heaters are included to provide supplemental heat. These units (RTH-3 to 10) are suspended from the structure in each storage bay. The heaters are vented through the walls or roof.
6. The vehicle storage bays are not cooled.

E. Maintenance Bays

1. The ventilation system consists of a natural gas indirect fired energy recovery unit (HRU-1). The unit is controlled by an automatic CO/NO₂ exhaust detection. The unit has supply and exhaust systems that are sized to the required ventilation rate of 0.75 CFM/SF. Ductwork is designed with floor-level intakes to capture vehicle gases.
2. The heat recovery unit has an OA section with dampers, filters section, EA section with dampers, energy recovery heat exchanger, gas fired heating section, and supply and exhaust fans.
3. The unit can provide code required ventilation by varying supply and exhaust airflow.
4. The space also has a vehicle exhaust system (EF-10) with hose reels to capture vehicle exhaust. The exhaust system will run continuously while the space is occupied and no CO/NO₂ status is active. The fan can provide code-required minimum ventilation. Makeup air is provided by two intake louvers with motorized dampers in the General Shop and Common Work Area.

5. Gas fired infrared tube heaters are included to provide supplemental heat. These units (RTH-3 to 10) are suspended from the structure in each storage bay. The heaters are vented through the walls or roof.
6. The vehicle storage bays are not cooled.

F. Wash Bay

1. The Wash Bay is designed with an intake louver and motorized dampers. The louver is sized to provide the required ventilation air. These devices will be utilized when outdoor air temperature is above 55°F.
2. The Wash Bay is also provided with a makeup air unit, which has heating capacity. This unit is capable of providing the required ventilation air. This unit will only be utilized during winter operation when outdoor conditions are below 55°F.
3. The makeup air unit will have OA section with dampers, filters section, gas fired heating section, and a supply fan.
4. The moist air will be exhausted out of the building via ducted exhaust fan (EF-8).
5. The Intake air louver/dampers, makeup air unit, and exhaust fans will be synchronized with the BAS, and will operate via a manual switch.
6. All equipment, ductwork and accessories for Wash Bay will be constructed from corrosion resistant aluminum construction.

G. Independent Areas

1. Several areas in the building operate independently from the five main HVAC units.
2. The Parts/Tools Room and Tire Storage areas each have dedicated intake and exhaust louvers with motorized dampers and exhaust fans (EF-1, EF-2). The exhaust fans operate based on occupancy to provide required ventilation. These rooms are heated by hydronic unit heaters (UH-1, UH-2).
3. The General Shop and Common Work Area each have an air intake louver to provide makeup air for the vehicle exhaust system in the maintenance bays. These rooms are heated by hydronic unit heaters (UH-3, UH-4).
4. The Mechanical Room is served by a dedicated roof-mounted exhaust fan (EF-6) and roof-mounted intake hood (IH-2). The room is heated by a hydronic unit heater (UH-8).
5. The Small Equipment room and Oil/Lube room are served by a joint exhaust system. The system includes an exhaust fan (EF-3) and louver with motorized damper in the Oil/Lube room and an intake hood (IH-1) on the roof above the Small Equipment room. The rooms are connected with a transfer duct. Both rooms are heated with hydronic unit heaters (UH-5, UH-6).
6. The Paint room and Water Service room are served by a joint exhaust system. The system includes a roof-mounted exhaust fan (EF-7) above the Paint room and an intake louver with motorized damper in the Water Service room. The rooms are connected with a transfer duct. Both rooms are heated with hydronic unit heaters (UH-7, UH-9).

6.7 Controls Systems

A. Building Automation System

1. Direct Digital controls (DDC) are provided to operate the HVAC system. This system will reside on IDOT's intranet, which can be accessed from other remote locations. No physical workstation will be provided.
2. All mechanical equipment provided as part of this project is specified with open protocol BACnet controls. This equipment will be integrated into the Building Automation System (BAS).
3. This style of controls allows equipment/controllers to be provided from various vendors and integrated into controls provided at the start of construction.

4. The office area is divided into eight zones, each served by one VAV box and thermostat.
5. Controls for infrared heaters in the maintenance and storage bays will be kept simple and connected with one centrally located thermostat.
6. Controls for hydronic unit heaters will be kept simple. Each unit is connected with one thermostat located in the space.

B. CO/NO2 Detection System

1. The maintenance bay, vehicle storage bay and cold storage bays will be provided with CO/NO2 sensors. These controls will be automatic and will be controlled by the BAS.
2. The heat recovery units in these areas will not operate during normal operation, but if CO/NO2 warning limits are reached they will change to 75% capacity. At CO/NO2 alarm levels, units will operate at full capacity and provide the code required ventilation.
3. These units will have built-in OA, EA and SA dampers. These dampers will modulate based on signals received from the BAS.

PART 7 - PLUMBING

7.1 Codes and Standards

- A. Following codes and standards will be followed for the Plumbing systems that are designed as part of this project. The project is located in the Village of McCook. CDB is the authority having jurisdiction.
1. Plumbing Systems: Illinois Plumbing Code – Current Edition
 2. Plumbing Equipment: International Mechanical Code – 2012
 3. International Energy Conservation Code (IECC) – 2018
 4. Natural Gas Systems: International Fuel Gas Code (IFGC) - 2012
 5. Compressed Air Systems: International Mechanical Code – 2012

7.2 Special Conditions

- A. Plumbing systems are required to comply with Illinois Plumbing Code.
- B. All trench drains are required to be routed through building Oil-Water Separator prior to discharging into village sewers.
- C. All process water is required to be isolated from the potable water supply with backflow preventers.

7.3 Domestic Water Systems

- A. The domestic water service enters the southeast side of the building as a combination fire/water service. The incoming water pressure is 55 psi at 2,148 gpm.
- B. The domestic water and fire services separate in the Water Service room, and domestic water serves the building.
- C. A separate cold water supply for the Wash Bay will originate in the water service room. This service is protected with a backflow preventer and labeled as Non-Potable. Hot water in the Wash Bay comes from a gas fired heater with built-in pressure washer.

- D. Water heating is provided with three high efficiency natural gas tankless water heaters (HWH-1 to 3). Fixtures will be provided with local thermostatic mixing valves. The system includes a hot water return piping loop for on-demand hot water at fixtures. The system consists of a pump, expansion tank, and return piping.
- E. Piping associated with domestic water system will be copper with soldered joints.
- F. Process water in storage bays and in wash bays are isolated from potable domestic water with RPZ type backflow preventers. Fixtures served by non-potable water include the Wash Bay, hose bibs, and wall hydrants.

7.4 Sanitary/Vent and Storm Systems

- A. The sanitary sewer connection is on the northwest side of the building.
- B. Piping associated with below grade Sanitary and Vent system will be DWV PVC. Above grade piping will be based on fire rating of the enclosures. Where required, the piping will be cast iron or provided with fire-proof wrap.
- C. All piping is designed according to Illinois Plumbing Code.
- D. Maintenance and Storage Bays are included with heavy-duty trench drains. The sanitary lines from these trench drains are routed to Oil-Water separators.
- E. The Wash Bay is designed with a heavy-duty trench drain. The sanitary line from the trench drain is routed through a catch basin to trap sand and gravel. The Wash Bay sanitary lines are routed through the oil-water separator in the Storage Bays.
- F. Two roof drains catch water on the flat roof above the office and lab areas. These drains are connected to the stormwater system. Two overflow drains are connected to storm piping with a discharge nozzle above grade to indicate when the primary storm drains are clogged.
- G. Piping associated with storm system will be PVC. Above grade piping will be based on fire rating of the enclosures. Where required the piping will be cast iron or provided with fire-proof wrap.

7.5 Natural Gas System

- A. Nicor Gas will provide a low-pressure gas meter to the building. The meter and regulator capacity will be coordinated with Nicor for future installation.
- B. Natural gas piping from meter to apparatus/equipment will be piped with Sch. 40 steel with either threaded or welded fittings.
- C. All piping, fittings, valves and regulators from the gas meter to the boilers, rooftop units, makeup air units, heat recovery units, domestic water heaters, etc. is routed inside the building up to roof mounted equipment. Where possible, piping shall be enclosed in wall cavities or above ceiling. Any exposed piping will be painted.
- D. All exterior gas piping will be painted with corrosion resistant coating.

7.6 Compressed Air System

- A. The Maintenance and Storage Bays have access to compressed air lines. The air compressor is located in the Oil/Lube room. Piping extends into each area and will be easily accessible.
- B. Locations of outlets and piping drops will be coordinated with IDOT staff.
- C. Piping associated with the compressed air system will be Schedule 40 steel with threaded fittings.
- D. The compressed air will also be used for any drive pneumatic pumps for the lube rack distribution system and engine oil collector pumps.
- E. Any other shop equipment such as tire changer, tire balancer etc. will be in the maintenance bay and will be coordinated with IDOT.

7.7 Lubrication System

- A. The lubrication systems for the maintenance bays include double containment lube tanks in the Oil Lube room. The room contains coolant, 10W/30 motor oil, gear lube, hydraulic oil, and 15W/40 motor oil. A waste oil tank located in the room will accept waste oil from the maintenance bays. The waste oil tank will be manually emptied periodically.
- B. Lube piping is routed overhead to a rack in each bay with pull-down hose reel drops.
- C. Piping associated with lubrication oils will be Copper Type K or Sch. 40 steel.

PART 8 - FIRE PROTECTION

8.1 Codes and Standards

- A. The following codes and standards are used in the design for the fire protection. The Village of McCook is the authority having jurisdiction.
- B. Fire Protection Systems: International Building Code – 2012
- C. National Fire Protection Association (NFPA) – 13

8.2 Design Parameters

- A. The incoming water pressure is 55 psi at 2,148 GPM. The fire protection system is designed with these flow characteristics and follow NFPA 13. The service consists of a 4" fire protection line with an RPZ backflow preventer to protect the domestic water.

8.3 Wet Type Fire Protection Systems

- A. The Tire Storage area is the most remote area based on building layout and hazard classification.
- B. Tire Storage area is classified at Extra Hazard Group 1 with design density of 0.3 GPM/SF. The maintenance bay is classified at Ordinary Hazard Group 2 with a design density of 0.2 GPM/SF. The Oil-Lube room is classified at Extra Hazard Group 1.

- C. Piping distribution will use schedule 40 black steel pipe for 2" and smaller and schedule 10 steel for piping 2-1/2" and larger using mechanical grooved pipe fittings and welded/threaded connections.
- D. Sprinkler heads will be fusible link or glass bulb type with upright, pendent or sidewall heads based on ceiling types and sprinkler head locations.
- E. The fire protection riser will be equipped with alarm check valve, flow switch, and local alarm.
- F. A two-way wall mounted fire department connection will be provided at the building. The location of the fire department connection will be coordinated with the Village of McCook Fire Department.

8.4 Dry Type Fire Protection Systems

- A. The Storage Bays and Wash Bay are served by a dry-type sprinkler system. The system dry valve is located in the Water Service room.
- B. The dry pipe system will use Galvanized Steel 40 black steel pipe for 2" and smaller and Galvanized Steel schedule 10 steel for piping 2-1/2" and larger using mechanical grooved pipe fittings and welded/threaded connections.
- C. Sprinkler heads will be fusible link or glass bulb type with upright, pendent or sidewall heads based on ceiling types and sprinkler head locations.
- D. The fire protection riser will be equipped with dry system control valve, air compressor, alarm check valve, flow switch, and local alarm.

PART 9 - ELECTRICAL

9.1 Codes and Standards

- A. The following codes and standards are used in the design of Electrical systems in this project. The Village of McCook is the authority having jurisdiction.
- B. Electrical Systems: National Electric Code (NEC) – 2017
- C. International Energy Conservation Code (IECC) - 2016
- D. National Fire Protection Association (NFPA) – 101 Life Safety Code
- E. NFPA 72: National Fire Alarm and Signaling Code

9.2 Hazardous Locations

- A. The vehicle maintenance and storage bays are designed in accordance with NEC Article 511, Commercial Garages, Repair and Storage. Per 511.3(A) Parking Garages, the bays used for parking or storage shall be permitted to be unclassified and do not require any special installation requirements.
- B. The maintenance bays are assumed to meet the NEC definition of a "Major Repair Garage" defined as "A building or portions of a building where major repairs, such as engine overhauls,

painting, body and fender work, and repairs that require draining of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for offices, parking, or showrooms.”

- C. Per Table 511.3(C), up to 18 inches above floor level of the room (maintenance bay) shall be considered a Class 1 Division 2 Hazardous Area. Any electrical equipment or systems below 18” shall be installed in accordance with Article 501, Class 1 Locations.
- D. Also Per Table 511.3(C), specific areas adjacent to classified locations identified above may be considered unclassified assuming they meet the criteria of identified in the table “Areas adjacent to classified locations where flammable vapors are not likely to be released, such as stock rooms, switchboard rooms, and other similar locations, where mechanically ventilated at a rate of four or more air changes per hour or designed with positive air pressure or where effectively cut off by walls or partitions”

9.3 Power Systems

A. Electrical Power Systems

1. The building will be powered by a new ComEd electrical service. Design calculations found the service size to be 480Y/277 volt three phase 800 amp.
2. Utility power will be provided by a pad mounted transformer. The Concrete pad will be provided by the contractor, and the transformer will be provided by the utility. The utility connection and transformer are located in the southern corner of the site.
3. The service entrance main will be an electronic trip circuit breaker disconnect. The service entrance main and ComEd metering equipment is located on the southwest exterior wall of the building.
4. Feeders will be run underground from the service entrance main to the main distribution equipment, located in the mechanical room.
5. The main distribution panel (MDP) includes circuit breakers utilizing adjustable trip mechanisms to allow proper coordination of the electrical system. This panel is located in the Mechanical room.
6. 480 volt and 208 volt branch panelboards are distributed through the building to allow shorter runs to load equipment. Three branch panelboards are located on the southwestern wall of the storage bays. Remaining branch panelboards are located in the Mechanical room.
7. Common panelboards shall be provided for general power and lighting circuits. Dedicated panelboards shall be provided for mechanical equipment.
8. The building is not provided with a generator but includes a manual transfer switch with integral quick connects for the connection of a portable generator.
9. Existing Salt Dome, Brine Tanks, and fuel pumps to remain shall be connected to the new electrical service.
10. The Cold Storage building is fed from the main distribution panel (MDP) in the Mechanical room. The building is designed with a transformer and panelboard located on the southwest exterior wall of the structure.
11. The entire electrical distribution system is designed with considerations for arc flash safety.
12. Transformers are utilized to supply 208Y/120 volt three phase power for lighting and receptacle loads.
13. Receptacles are distributed through the building to serve equipment, accommodate desks, and allow for maintenance and convenience.
14. A cord reel shall be provided at each vehicle maintenance bay for small tools.
15. All electrical wiring shall be routed in EMT conduits except for Wash Bay. Conduits in Wash Bay will be PVC.

B. Electrical Power for Mechanical Equipment

1. 480-volt power is utilized to serve mechanical equipment and other large load items including vehicle lifts and Lab equipment.
2. Motors starters and disconnects will be provided by the electrical contractor for motors. All starters and disconnects must be provided with code required working clearance space.
3. Materials Lab equipment excluding ovens is fed with 120V power. Ovens are fed with 208V power.

9.4 Lighting Systems

A. Building Lighting Systems

1. In general, all lighting for this project will be LED type lighting fixtures for energy efficiency.
2. Vehicle Storage and Maintenance bays are designed with High bay LED type fixtures that are constructed of durable materials.
3. Office spaces with architectural ceiling have 2'x2' recessed volumetric LED type fixtures.
4. Storage and mechanical spaces are designed with acrylic lensed linear LED type fixtures.
5. The Men's and Women's Locker Rooms, Rest Rooms and other toilet rooms have wall mounted direct/indirect LED lighting above mirrors.
6. The vestibule and break areas are designed with LED can lights.
7. The Wash Bays are designed with water-tight LED type fixtures.
8. Lighting controls are designed in accordance with ASHRAE 90.1 2016 and the International Energy Conservation Code. Controls include occupancy sensors, daylight sensors, and manual controls.

B. Site Lighting Systems

1. The exterior of the building has wall mounted LED lighting above vehicle bay doors and at walk doors.
2. The parking lot is lighted with pole mounted LED lighting.
3. The flagpole has ground mounted LED flood lights.

9.5 Fire Alarm System

- A. A new addressable fire alarm system will be installed utilizing ceiling mounted notification devices.
- B. Manual pull stations will be provided at the exterior doors leading out of the building.
- C. Automatic detection devices are included in the design as required by code.
- D. All fire protection valves will be provided with code required flow and tamper switches. These flow and tamper switches will be connected to the fire alarm panel.

9.6 Low Voltage System

- A. Rough ins with communications cabling are included in office spaces and at select locations in the equipment bays. These locations have been coordinated with IDOT to ensure adequate coverage.
- B. All communications devices, equipment, and final connections will be provided by IDOT.

9.7 Security/Card Access System

- A. Rough ins for access control devices including card readers, door contacts and request to exit sensors will be installed at all exterior doors and selected interior doors.
- B. The card access system shall be coordinated with IDOT.

APPENDIX A – Site Access Study

- A. A traffic analysis was conducted to evaluate the existing site access and potential for additional site access drives to be incorporated. This Site Access Study is attached in Appendix A.

APPENDIX B – LEED Waiver

- A. This project will not be pursuing LEED Certification. CDB has issued a LEED Waiver for the project, and it is attached in Appendix B.

APPENDIX C – Proposed Project Cost Budget

- A. The scope basis for this construction estimate is derived from the “Final Bridging Documents” package prepared by Muller & Muller, Ltd. and dated 05/06/2020. Labor costs are based on current union pay rates and are benchmarked against recent contract “buy data” for Chicagoland projects of similar size and scope. Labor productivities of 85% (compared to “book values” and a percentage that is typical for this type of work) are applied. Material costs are derived from RSMeans Q1 2020 data. Quantities are derived from the design drawings and lists developed by staff members at Muller & Muller, Ltd. and its sub-consultants. Due to the preliminary state of the design, some scope and quantities are conceptualized to assure complete and functional building and utility components.
- B. The design-build nature of the CDB’s project delivery approach is factored into the cost. Accordingly, provision is made for the site-specific and home office general requirements costs borne by installing contractors, the general contractor, as well as the associated designers. Also, included overhead costs consist of contractor personnel costs for design, safety, quality assurance, procurement, scheduling, accounting, along with management. A contractor profit factor is also included.
- C. CDB’s Proposed Project Cost Budget is included in APPENDIX C.
- D. The reader’s attention is called to the following Disclaimer:
 - 1. Opinions of Probable Construction Cost: Muller & Muller’s opinions of probable construction cost represent its best judgment as a design professional familiar with the construction industry and are not guarantees by Muller & Muller of actual construction cost. We have no control over material cost, labor methods of construction or bid procedures. Accordingly, Muller & Muller does not warrant or represent that contractor bids will not vary from the Project budget or Muller & Muller’s opinion of probable construction cost. Any opinions of probable construction cost, advice or recommendations provided by Muller & Muller is intended as Architectural Design Services and not to be interpreted as advice regarding municipal financial products or services. Muller & Muller is not acting as a municipal advisor as defined by the Dodd-Frank Act.

APPENDIX D - Preliminary Project Construction Schedule.

- A. Schedule is based on making award to the design build team by 4/1/2020.
- B. Schedule will need to be adjusted based on actual award date to design build contractor.
- C. The schedule duration for completion of design may need to be adjusted based on number of design submissions and design meetings required.
- D. The construction schedule will need to be adjusted based on the time of year actual construction starts and coordination requirements with IDOT.

END OF SECTION

BASIS OF DESIGN

APPENDIX A – Site Access Study



collaborāte / formulāte / innovāte

MEMORANDUM

TO: Susan Thayer, AIA
Muller & Muller, Ltd.
700 North Sangamon Street
Chicago, Illinois 60642

FROM: Andre Ost, P.E., PTOE

DATE: August 5, 2019

SUBJECT: CDB Stevenson IDOT Maintenance Facility – Access Study
8630 Joliet Road
McCook, Illinois

Introduction

The Illinois Department of Transportation (IDOT) is proposing to construct a new 35,230 square foot permanent maintenance facility to replace an existing maintenance facility located on the same site at 8630 Joliet Road in McCook, Cook County, Illinois. as shown on the project location map (Exhibit 1). The new structure is to include offices, ready rooms, restrooms, maintenance bays, wash bays and a new materials lab. GRAEF has prepared this memorandum to evaluate the access of the proposed maintenance facility.

Study Area and Existing Traffic

The new proposed maintenance facility will be located along Joliet Road and is anticipated to be constructed in the year 2020. A conceptual site plan is shown on Exhibit 2. The site plan shown is the current concept iteration dated 7/1/19 and shows a new building with the existing salt dome, existing fuel pump, demolished ramp, and a partially demolished existing maintenance building. The existing maintenance facility will be demolished except for some existing storage bays and the salt dome, both located at the northwest end of the site. Parking is currently proposed at the west end of the site. The proposed CDB Stevenson IDOT Maintenance Facility will serve the same purpose as the existing maintenance facility to provide maintenance service to IDOT maintained roadways.

Joliet Road is a four-lane undivided roadway with a posted speed limit of 45 mph and has an IDOT 5 Year Functional Classification of "Minor Arterial" at the study area. At the study area, Joliet Road is designated as US-66. According to the Illinois Department of Transportation (IDOT) the year 2018 Average Annual Daily Traffic (AADT) for Joliet Road was 12,500 vehicles per day (vpd).

Approximately 1000 ft northeast of the project site is an interchange for Illinois Route 171 (IL 171) which provides direct access to the Stevenson Expressway (I-55) located about 3,500 ft east of the IL 171 interchange with Joliet Road. The existing roadway geometrics are shown on Exhibit 2.

In November of 2018, GRAEF conducted intersection turning movement traffic counts during the weekday morning (6:00am to 9:00am) and weekday evening (3:00pm to 6:00pm) peak periods at the following intersections: the existing shared driveway located just north of the existing maintenance building along Joliet Road and at Joliet Road and 53rd Street.

Based on the traffic counts, the weekday morning peak traffic hour was identified to be 7:15am to 8:15am and the weekday evening peak traffic hour was identified to be 4:30pm to 5:30pm. The traffic count data is included in Appendix A.

Recommendations

The proposed CDB Stevenson IDOT Maintenance Facility will replace the existing IDOT Maintenance Facility located at the same site. Currently, the site has access to Joliet Road via a shared driveway shared with the development located immediately northwest of the site, Illinois Auto Central, at 8646 Joliet Road and the existing IDOT materials yard located northeast of the proposed maintenance facility location. Because the proposed facility will be similar in use to the existing facility, no new traffic operational issues are expected with the construction of the proposed facility and the existing shared driveway to Joliet Road will continue to provide adequate access to the site.

Conclusion

The Illinois Department of Transportation (IDOT) is proposing to construct a new 35,230 square foot permanent maintenance facility to replace an existing maintenance facility located at the existing site at 8630 Joliet Road in McCook, Cook County, Illinois. Because the proposed maintenance facility will be similar in use to the existing maintenance facility, no new traffic operational issues are expected with the construction of the new facility and the existing shared driveway to Joliet Road will continue to be the only access point to the site.

Exhibits

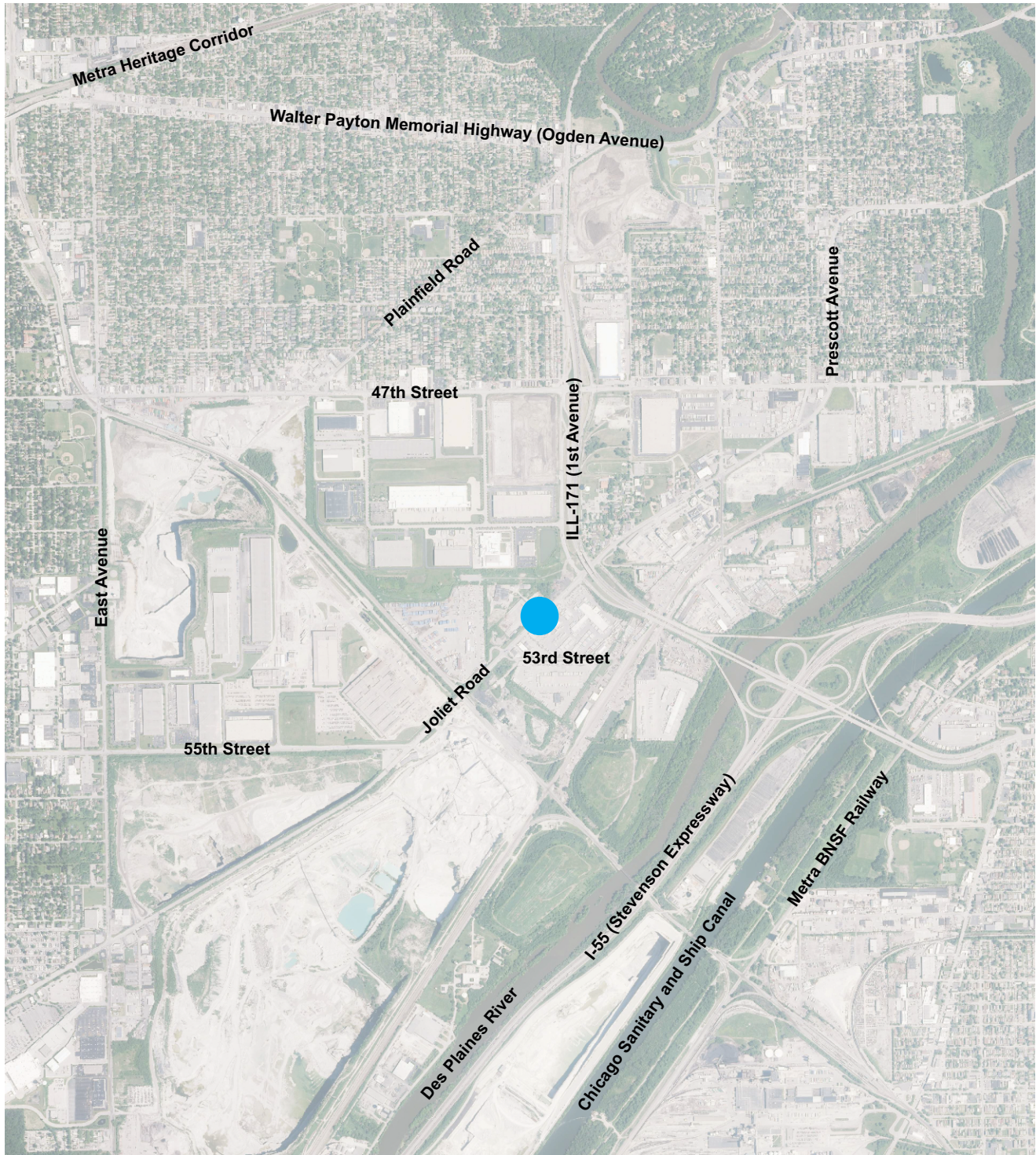
Exhibit 1	Project Location Map
Exhibit 2	Conceptual Site Plan

Appendix

Appendix A	Intersection Traffic Counts
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NORTH
NOT TO SCALE



LEGEND

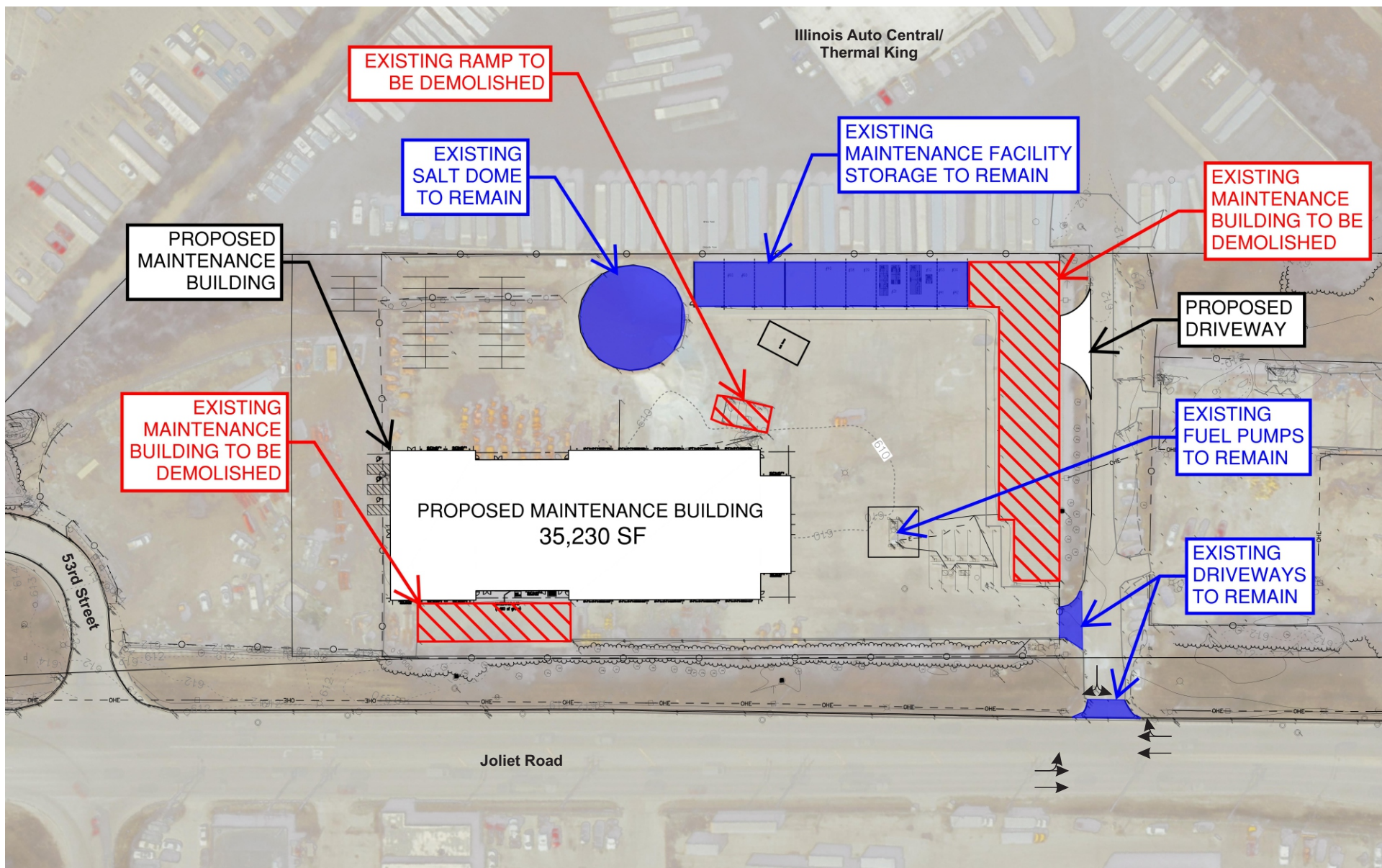


PROJECT LOCATION





NORTH
NOT TO SCALE



Appendix A

Intersection Traffic Counts



US-66 (Joliet Rd) & IDOT Driveway
 Weekday AM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & IDOT Driveway AM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	US-66 (Joliet Rd) From North						From East						US-66 (Joliet Rd) From South					IDOT Driveway From West					Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total			
06:00 AM	0	0	160	3	0	163	0	0	0	0	0	0	0	7	197	0	204	0	1	0	0	1	0	368	368
06:15 AM	0	0	218	7	0	225	0	0	0	0	0	0	0	6	254	0	260	0	0	0	2	2	0	487	487
06:30 AM	0	0	274	5	0	279	0	0	0	0	0	0	0	2	250	0	252	0	1	0	0	1	0	532	532
06:45 AM	0	0	289	4	0	293	0	0	0	0	0	0	0	2	265	0	267	0	1	0	1	2	0	562	562
Total	0	0	941	19	0	960	0	0	0	0	0	0	0	17	966	0	983	0	3	0	3	6	0	1949	1949
07:00 AM	0	0	249	0	0	249	0	0	0	0	0	0	0	3	290	0	293	0	3	0	1	4	0	546	546
07:15 AM	0	0	283	0	0	283	0	0	0	0	0	0	0	3	272	0	275	0	3	0	0	3	0	561	561
07:30 AM	0	0	365	3	0	368	0	0	0	0	0	0	0	1	287	0	288	0	0	0	3	3	0	659	659
07:45 AM	0	0	370	0	0	370	0	0	0	0	0	0	0	2	285	0	287	0	3	0	0	3	0	660	660
Total	0	0	1267	3	0	1270	0	0	0	0	0	0	0	9	1134	0	1143	0	9	0	4	13	0	2426	2426
08:00 AM	0	0	290	3	0	293	0	0	0	0	1	0	0	1	283	0	284	0	1	0	0	1	1	578	579
08:15 AM	0	0	259	1	0	260	0	0	0	0	0	0	0	1	228	0	229	0	1	0	3	4	0	493	493
08:30 AM	0	0	270	2	0	272	0	0	0	0	0	0	0	0	229	0	229	0	4	0	0	4	0	505	505
08:45 AM	0	0	241	4	0	245	0	0	0	0	0	0	0	1	230	0	231	0	0	0	2	2	0	478	478
Total	0	0	1060	10	0	1070	0	0	0	0	1	0	0	3	970	0	973	0	6	0	5	11	1	2054	2055
Grand Total	0	0	3268	32	0	3300	0	0	0	0	1	0	0	29	3070	0	3099	0	18	0	12	30	1	6429	6430
Apprch %	0	0	99	1			0	0	0	0			0	0.9	99.1	0		0	60	0	40				
Total %	0	0	50.8	0.5		51.3	0	0	0	0		0	0	0.5	47.8	0	48.2	0	0.3	0	0.2	0.5	0	100	
Cars	0	0	2860	27		2887	0	0	0	0		0	0	22	2559	0	2581	0	7	0	7	14	0	0	5482
% Cars	0	0	87.5	84.4		87.5	0	0	0	0		0	0	75.9	83.4	0	83.3	0	38.9	0	58.3	46.7	0	0	85.3
Heavy Vehicles	0	0	408	5		413	0	0	0	0		1	0	7	511	0	518	0	11	0	5	16	0	0	948
% Heavy Vehicles	0	0	12.5	15.6		12.5	0	0	0	0		100	0	24.1	16.6	0	16.7	0	61.1	0	41.7	53.3	0	0	14.7



US-66 (Joliet Rd) & IDOT Driveway
 Weekday AM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & IDOT Driveway AM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Heavy Vehicles

Start Time	US-66 (Joliet Rd) From North						From East						US-66 (Joliet Rd) From South					IDOT Driveway From West					Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total			
06:00 AM	0	0	37	0	0	37	0	0	0	0	0	0	0	3	33	0	36	0	1	0	0	1	0	74	74
06:15 AM	0	0	34	1	0	35	0	0	0	0	0	0	0	0	62	0	62	0	0	0	2	2	0	99	99
06:30 AM	0	0	33	0	0	33	0	0	0	0	0	0	0	0	52	0	52	0	1	0	0	1	0	86	86
06:45 AM	0	0	28	0	0	28	0	0	0	0	0	0	0	0	40	0	40	0	0	0	0	0	0	68	68
Total	0	0	132	1	0	133	0	0	0	0	0	0	0	3	187	0	190	0	2	0	2	4	0	327	327
07:00 AM	0	0	26	0	0	26	0	0	0	0	0	0	0	0	41	0	41	0	1	0	0	1	0	68	68
07:15 AM	0	0	28	0	0	28	0	0	0	0	0	0	0	1	43	0	44	0	2	0	0	2	0	74	74
07:30 AM	0	0	33	1	0	34	0	0	0	0	0	0	0	0	35	0	35	0	0	0	2	2	0	71	71
07:45 AM	0	0	36	0	0	36	0	0	0	0	0	0	0	2	33	0	35	0	2	0	0	2	0	73	73
Total	0	0	123	1	0	124	0	0	0	0	0	0	0	3	152	0	155	0	5	0	2	7	0	286	286
08:00 AM	0	0	40	1	0	41	0	0	0	0	1	0	0	0	38	0	38	0	1	0	0	1	1	80	81
08:15 AM	0	0	43	1	0	44	0	0	0	0	0	0	0	1	35	0	36	0	1	0	1	2	0	82	82
08:30 AM	0	0	36	1	0	37	0	0	0	0	0	0	0	0	43	0	43	0	2	0	0	2	0	82	82
08:45 AM	0	0	34	0	0	34	0	0	0	0	0	0	0	0	56	0	56	0	0	0	0	0	0	90	90
Total	0	0	153	3	0	156	0	0	0	0	1	0	0	1	172	0	173	0	4	0	1	5	1	334	335
Grand Total	0	0	408	5	0	413	0	0	0	0	1	0	0	7	511	0	518	0	11	0	5	16	1	947	948
Apprch %	0	0	98.8	1.2			0	0	0	0			0	1.4	98.6	0		0	68.8	0	31.2				
Total %	0	0	43.1	0.5		43.6	0	0	0	0		0	0	0.7	54	0	54.7	0	1.2	0	0.5	1.7	0.1	99.9	



US-66 (Joliet Rd) & IDOT Driveway
 Weekday PM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & IDOT Driveway PM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	US-66 (Joliet Rd) From North						From East						US-66 (Joliet Rd) From South					IDOT Driveway From West					Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total			
03:00 PM	0	0	286	3	0	289	0	0	0	0	0	0	0	3	305	0	308	0	3	0	1	4	0	601	601
03:15 PM	0	0	321	1	0	322	0	0	0	0	0	0	0	1	330	0	331	0	6	0	3	9	0	662	662
03:30 PM	0	0	415	3	0	418	0	0	0	0	0	0	0	2	385	0	387	0	10	0	6	16	0	821	821
03:45 PM	0	0	387	1	0	388	0	0	0	0	0	0	0	0	401	0	401	0	2	0	4	6	0	795	795
Total	0	0	1409	8	0	1417	0	0	0	0	0	0	0	6	1421	0	1427	0	21	0	14	35	0	2879	2879
04:00 PM	0	0	396	2	0	398	0	0	0	0	0	0	0	0	433	0	433	0	3	0	1	4	0	835	835
04:15 PM	0	0	392	1	0	393	0	0	0	0	0	0	0	0	389	0	389	0	1	0	3	4	0	786	786
04:30 PM	0	0	396	0	0	396	0	0	0	0	0	0	0	0	421	0	421	0	4	0	3	7	0	824	824
04:45 PM	0	0	509	1	0	510	0	0	0	0	0	0	0	2	386	0	388	0	2	0	1	3	0	901	901
Total	0	0	1693	4	0	1697	0	0	0	0	0	0	0	2	1629	0	1631	0	10	0	8	18	0	3346	3346
05:00 PM	0	0	432	0	0	432	0	0	0	0	0	0	0	0	397	0	397	0	1	0	2	3	0	832	832
05:15 PM	0	0	416	0	0	416	0	0	0	0	0	0	1	1	409	0	411	0	0	0	1	1	0	828	828
05:30 PM	0	0	401	0	0	401	0	0	0	0	0	0	0	0	401	0	401	0	0	0	0	0	0	802	802
05:45 PM	0	0	399	0	0	399	0	0	0	0	0	0	0	0	398	0	398	0	1	0	0	1	0	798	798
Total	0	0	1648	0	0	1648	0	0	0	0	0	0	1	1	1605	0	1607	0	2	0	3	5	0	3260	3260
Grand Total	0	0	4750	12	0	4762	0	0	0	0	0	0	1	9	4655	0	4665	0	33	0	25	58	0	9485	9485
Apprch %	0	0	99.7	0.3			0	0	0	0			0	0.2	99.8	0		0	56.9	0	43.1				
Total %	0	0	50.1	0.1		50.2	0	0	0	0		0	0	0.1	49.1	0	49.2	0	0.3	0	0.3	0.6	0	100	
Cars	0	0	4500	7		4507	0	0	0	0		0	1	7	4422	0	4430	0	24	0	21	45	0	0	8982
% Cars	0	0	94.7	58.3		94.6	0	0	0	0		0	100	77.8	95	0	95	0	72.7	0	84	77.6	0	0	94.7
Heavy Vehicles	0	0	250	5		255	0	0	0	0		0	0	2	233	0	235	0	9	0	4	13	0	0	503
% Heavy Vehicles	0	0	5.3	41.7		5.4	0	0	0	0		0	0	22.2	5	0	5	0	27.3	0	16	22.4	0	0	5.3



US-66 (Joliet Rd) & IDOT Driveway
 Weekday PM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & IDOT Driveway PM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Heavy Vehicles

Start Time	US-66 (Joliet Rd) From North						From East						US-66 (Joliet Rd) From South					IDOT Driveway From West					Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total			
03:00 PM	0	0	21	1	0	22	0	0	0	0	0	0	0	1	27	0	28	0	0	0	1	1	0	51	51
03:15 PM	0	0	16	1	0	17	0	0	0	0	0	0	0	0	25	0	25	0	4	0	0	4	0	46	46
03:30 PM	0	0	18	1	0	19	0	0	0	0	0	0	0	0	24	0	24	0	2	0	0	2	0	45	45
03:45 PM	0	0	24	0	0	24	0	0	0	0	0	0	0	0	28	0	28	0	0	0	0	0	0	52	52
Total	0	0	79	3	0	82	0	0	0	0	0	0	0	1	104	0	105	0	6	0	1	7	0	194	194
04:00 PM	0	0	28	1	0	29	0	0	0	0	0	0	0	0	26	0	26	0	1	0	0	1	0	56	56
04:15 PM	0	0	24	0	0	24	0	0	0	0	0	0	0	0	16	0	16	0	0	0	1	1	0	41	41
04:30 PM	0	0	26	0	0	26	0	0	0	0	0	0	0	0	13	0	13	0	0	0	1	1	0	40	40
04:45 PM	0	0	19	1	0	20	0	0	0	0	0	0	0	1	15	0	16	0	0	0	0	0	0	36	36
Total	0	0	97	2	0	99	0	0	0	0	0	0	0	1	70	0	71	0	1	0	2	3	0	173	173
05:00 PM	0	0	22	0	0	22	0	0	0	0	0	0	0	0	10	0	10	0	1	0	1	2	0	34	34
05:15 PM	0	0	11	0	0	11	0	0	0	0	0	0	0	0	18	0	18	0	0	0	0	0	0	29	29
05:30 PM	0	0	25	0	0	25	0	0	0	0	0	0	0	0	15	0	15	0	0	0	0	0	0	40	40
05:45 PM	0	0	16	0	0	16	0	0	0	0	0	0	0	0	16	0	16	0	1	0	0	1	0	33	33
Total	0	0	74	0	0	74	0	0	0	0	0	0	0	0	59	0	59	0	2	0	1	3	0	136	136
Grand Total	0	0	250	5	0	255	0	0	0	0	0	0	0	2	233	0	235	0	9	0	4	13	0	503	503
Apprch %	0	0	98	2			0	0	0	0			0	0.9	99.1	0		0	69.2	0	30.8				
Total %	0	0	49.7	1		50.7	0	0	0	0		0	0	0.4	46.3	0	46.7	0	1.8	0	0.8	2.6	0	100	



US-66 (Joliet Rd) & 53rd St
 Weekday AM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & 53rd AM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	(US-66) Joliet Rd From North						53rd St From East						(US-66) Joliet Rd From South						Driveway From West						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
06:00 AM	0	7	151	6	0	164	0	7	0	6	0	13	0	2	198	5	0	205	0	8	0	1	0	9	0	391	391
06:15 AM	0	7	195	11	0	213	0	5	0	14	0	19	0	3	235	5	0	243	0	8	0	0	0	8	0	483	483
06:30 AM	0	6	257	7	0	270	0	4	0	19	0	23	0	4	227	8	0	239	0	7	0	2	0	9	0	541	541
06:45 AM	0	6	265	15	0	286	0	1	0	7	0	8	0	2	252	6	0	260	0	6	0	4	0	10	0	564	564
Total	0	26	868	39	0	933	0	17	0	46	0	63	0	11	912	24	0	947	0	29	0	7	0	36	0	1979	1979
07:00 AM	0	4	238	7	0	249	0	5	1	10	0	16	0	4	267	7	0	278	0	8	0	4	0	12	0	555	555
07:15 AM	0	8	273	3	0	284	0	0	0	7	0	7	0	5	264	4	0	273	0	5	0	3	0	8	0	572	572
07:30 AM	0	15	344	5	0	364	0	0	0	5	0	5	0	5	283	3	0	291	0	4	0	4	0	8	0	668	668
07:45 AM	0	13	350	5	0	368	0	2	0	7	0	9	0	0	269	10	0	279	0	8	0	1	0	9	0	665	665
Total	0	40	1205	20	0	1265	0	7	1	29	0	37	0	14	1083	24	0	1121	0	25	0	12	0	37	0	2460	2460
08:00 AM	0	9	278	7	0	294	0	2	0	9	1	11	0	3	269	3	0	275	0	4	0	2	0	6	1	586	587
08:15 AM	0	7	247	6	0	260	0	1	0	8	0	9	0	4	219	4	0	227	0	4	0	2	0	6	0	502	502
08:30 AM	0	11	248	10	0	269	0	2	0	13	0	15	0	2	205	1	0	208	0	10	0	2	0	12	0	504	504
08:45 AM	0	7	223	10	0	240	0	4	0	16	0	20	0	2	202	3	0	207	0	14	0	1	0	15	0	482	482
Total	0	34	996	33	0	1063	0	9	0	46	1	55	0	11	895	11	0	917	0	32	0	7	0	39	1	2074	2075
Grand Total	0	100	3069	92	0	3261	0	33	1	121	1	155	0	36	2890	59	0	2985	0	86	0	26	0	112	1	6513	6514
Apprch %	0	3.1	94.1	2.8			0	21.3	0.6	78.1			0	1.2	96.8	2			0	76.8	0	23.2					
Total %	0	1.5	47.1	1.4		50.1	0	0.5	0	1.9		2.4	0	0.6	44.4	0.9		45.8	0	1.3	0	0.4		1.7	0	100	
Cars	0	54	2732	62		2848	0	6	1	18		25	0	24	2571	44		2639	0	16	0	9		25	0	0	5537
% Cars	0	54	89	67.4		87.3	0	18.2	100	14.9		16	0	66.7	89	74.6		88.4	0	18.6	0	34.6		22.3	0	0	85
Heavy Vehicles	0	46	337	30		413	0	27	0	103		131	0	12	319	15		346	0	70	0	17		87	0	0	977
% Heavy Vehicles	0	46	11	32.6		12.7	0	81.8	0	85.1	100	84	0	33.3	11	25.4		11.6	0	81.4	0	65.4		77.7	0	0	15



US-66 (Joliet Rd) & 53rd St
 Weekday AM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & 53rd AM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Heavy Vehicles

Start Time	(US-66) Joliet Rd From North						53rd St From East						(US-66) Joliet Rd From South						Driveway From West						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
06:00 AM	0	2	35	1	0	38	0	7	0	6	0	13	0	1	20	0	0	21	0	5	0	1	0	6	0	78	78
06:15 AM	0	3	29	1	0	33	0	4	0	12	0	16	0	0	37	1	0	38	0	8	0	0	0	8	0	95	95
06:30 AM	0	2	29	4	0	35	0	3	0	19	0	22	0	1	29	0	0	30	0	6	0	2	0	8	0	95	95
06:45 AM	0	4	22	2	0	28	0	1	0	7	0	8	0	0	25	0	0	25	0	6	0	1	0	7	0	68	68
Total	0	11	115	8	0	134	0	15	0	44	0	59	0	2	111	1	0	114	0	25	0	4	0	29	0	336	336
07:00 AM	0	1	21	2	0	24	0	5	0	9	0	14	0	1	23	3	0	27	0	7	0	2	0	9	0	74	74
07:15 AM	0	4	23	0	0	27	0	0	0	7	0	7	0	2	29	1	0	32	0	4	0	2	0	6	0	72	72
07:30 AM	0	8	30	2	0	40	0	0	0	5	0	5	0	4	25	0	0	29	0	3	0	3	0	6	0	80	80
07:45 AM	0	6	28	2	0	36	0	2	0	5	0	7	0	0	26	6	0	32	0	6	0	1	0	7	0	82	82
Total	0	19	102	6	0	127	0	7	0	26	0	33	0	7	103	10	0	120	0	20	0	8	0	28	0	308	308
08:00 AM	0	5	31	6	0	42	0	1	0	8	1	9	0	0	26	0	0	26	0	4	0	2	0	6	1	83	84
08:15 AM	0	4	35	3	0	42	0	0	0	5	0	5	0	2	23	2	0	27	0	3	0	1	0	4	0	78	78
08:30 AM	0	5	28	4	0	37	0	0	0	8	0	8	0	0	26	0	0	26	0	8	0	1	0	9	0	80	80
08:45 AM	0	2	26	3	0	31	0	4	0	12	0	16	0	1	30	2	0	33	0	10	0	1	0	11	0	91	91
Total	0	16	120	16	0	152	0	5	0	33	1	38	0	3	105	4	0	112	0	25	0	5	0	30	1	332	333
Grand Total	0	46	337	30	0	413	0	27	0	103	1	130	0	12	319	15	0	346	0	70	0	17	0	87	1	976	977
Apprch %	0	11.1	81.6	7.3			0	20.8	0	79.2			0	3.5	92.2	4.3			0	80.5	0	19.5					
Total %	0	4.7	34.5	3.1		42.3	0	2.8	0	10.6		13.3	0	1.2	32.7	1.5		35.5	0	7.2	0	1.7		8.9	0.1	99.9	



US-66 (Joliet Rd) & 53rd St
 Weekday PM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & 53rd PM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	US-66 (Joliet Rd) From North						53rd St From East						US-66 (Joliet Rd) From South						Driveway From West						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
03:00 PM	0	6	272	7	0	285	0	1	0	4	0	5	0	2	307	5	0	314	0	8	0	4	0	12	0	616	616
03:15 PM	0	10	301	4	0	315	0	3	0	6	0	9	0	3	316	13	0	332	0	5	0	7	0	12	0	668	668
03:30 PM	0	8	400	5	0	413	0	8	0	12	0	20	0	1	370	10	0	381	0	8	0	3	0	11	0	825	825
03:45 PM	0	6	378	5	0	389	0	2	0	15	0	17	0	1	369	8	0	378	0	7	0	2	0	9	0	793	793
Total	0	30	1351	21	0	1402	0	14	0	37	0	51	0	7	1362	36	0	1405	0	28	0	16	0	44	0	2902	2902
04:00 PM	0	7	370	6	0	383	0	5	0	13	0	18	0	2	444	8	0	454	0	7	0	2	0	9	0	864	864
04:15 PM	0	9	374	6	0	389	0	0	0	5	0	5	0	5	378	5	0	388	0	6	0	8	0	14	0	796	796
04:30 PM	0	6	379	0	0	385	0	10	0	7	0	17	0	3	411	9	0	423	0	4	0	3	0	7	0	832	832
04:45 PM	0	9	497	7	0	513	0	5	0	12	0	17	0	0	384	10	0	394	0	1	0	4	0	5	0	929	929
Total	0	31	1620	19	0	1670	0	20	0	37	0	57	0	10	1617	32	0	1659	0	18	0	17	0	35	0	3421	3421
05:00 PM	0	6	415	10	0	431	0	9	0	13	0	22	0	0	387	13	0	400	0	3	0	2	0	5	0	858	858
05:15 PM	0	6	411	1	0	418	0	3	0	10	0	13	0	4	401	6	0	411	0	6	0	7	0	13	0	855	855
05:30 PM	0	8	368	6	0	382	0	6	0	9	0	15	0	1	410	4	0	415	0	2	0	4	0	6	0	818	818
05:45 PM	0	6	385	1	0	392	0	9	0	8	0	17	0	3	374	4	0	381	0	6	0	2	0	8	0	798	798
Total	0	26	1579	18	0	1623	0	27	0	40	0	67	0	8	1572	27	0	1607	0	17	0	15	0	32	0	3329	3329
Grand Total	0	87	4550	58	0	4695	0	61	0	114	0	175	0	25	4551	95	0	4671	0	63	0	48	0	111	0	9652	9652
Apprch %	0	1.9	96.9	1.2			0	34.9	0	65.1			0	0.5	97.4	2			0	56.8	0	43.2					
Total %	0	0.9	47.1	0.6		48.6	0	0.6	0	1.2		1.8	0	0.3	47.2	1		48.4	0	0.7	0	0.5		1.2	0	100	
Cars	0	35	4399	14		4448	0	56	0	91		147	0	13	4368	35		4416	0	34	0	32		66	0	0	9077
% Cars	0	40.2	96.7	24.1	0	94.7	0	91.8	0	79.8	0	84	0	52	96	36.8	0	94.5	0	54	0	66.7	0	59.5	0	0	94
Heavy Vehicles	0	52	151	44		247	0	5	0	23		28	0	12	183	60		255	0	29	0	16		45	0	0	575
% Heavy Vehicles	0	59.8	3.3	75.9	0	5.3	0	8.2	0	20.2	0	16	0	48	4	63.2	0	5.5	0	46	0	33.3	0	40.5	0	0	6



US-66 (Joliet Rd) & 53rd St
 Weekday PM Peak Traffic Count
 McCook, IL
 2018-3006

File Name : Joliet & 53rd PM
 Site Code :
 Start Date : 11/13/2018
 Page No : 1

Groups Printed- Heavy Vehicles

Start Time	US-66 (Joliet Rd) From North						53rd St From East						US-66 (Joliet Rd) From South						Driveway From West						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
03:00 PM	0	4	13	5	0	22	0	0	0	1	0	1	0	1	25	3	0	29	0	2	0	2	0	4	0	56	56
03:15 PM	0	3	9	3	0	15	0	3	0	1	0	4	0	1	20	8	0	29	0	3	0	0	0	3	0	51	51
03:30 PM	0	2	14	3	0	19	0	0	0	2	0	2	0	0	18	1	0	19	0	2	0	3	0	5	0	45	45
03:45 PM	0	2	17	4	0	23	0	0	0	4	0	4	0	0	19	5	0	24	0	4	0	0	0	4	0	55	55
Total	0	11	53	15	0	79	0	3	0	8	0	11	0	2	82	17	0	101	0	11	0	5	0	16	0	207	207
04:00 PM	0	5	21	3	0	29	0	0	0	5	0	5	0	1	17	3	0	21	0	3	0	0	0	3	0	58	58
04:15 PM	0	6	14	6	0	26	0	0	0	0	0	0	0	4	12	4	0	20	0	3	0	2	0	5	0	51	51
04:30 PM	0	4	18	0	0	22	0	0	0	0	0	0	0	0	10	5	0	15	0	3	0	2	0	5	0	42	42
04:45 PM	0	5	9	5	0	19	0	0	0	4	0	4	0	0	15	7	0	22	0	1	0	1	0	2	0	47	47
Total	0	20	62	14	0	96	0	0	0	9	0	9	0	5	54	19	0	78	0	10	0	5	0	15	0	198	198
05:00 PM	0	5	9	8	0	22	0	0	0	1	0	1	0	0	8	11	0	19	0	1	0	1	0	2	0	44	44
05:15 PM	0	3	9	1	0	13	0	1	0	2	0	3	0	2	15	5	0	22	0	3	0	3	0	6	0	44	44
05:30 PM	0	7	12	5	0	24	0	0	0	3	0	3	0	1	13	4	0	18	0	0	0	2	0	2	0	47	47
05:45 PM	0	6	6	1	0	13	0	1	0	0	0	1	0	2	11	4	0	17	0	4	0	0	0	4	0	35	35
Total	0	21	36	15	0	72	0	2	0	6	0	8	0	5	47	24	0	76	0	8	0	6	0	14	0	170	170
Grand Total	0	52	151	44	0	247	0	5	0	23	0	28	0	12	183	60	0	255	0	29	0	16	0	45	0	575	575
Apprch %	0	21.1	61.1	17.8			0	17.9	0	82.1			0	4.7	71.8	23.5			0	64.4	0	35.6					
Total %	0	9	26.3	7.7		43	0	0.9	0	4		4.9	0	2.1	31.8	10.4		44.3	0	5	0	2.8		7.8	0	100	

BASIS OF DESIGN

APPENDIX B – LEED Waiver



CDB M E M O R A N D U M

TO: Mohammad Haq, CDB Project Manager

FROM: Lisa Hennigh, P.E., Administrator of Professional Services

DATE: August 28, 2019

RE: LEED Waiver Request for CDB Project # 630-128-005
IDOT Stevenson Maintenance Facility, McCook, IL

With the information that has been provided, CDB agrees, for this project that the Green Building Act does not apply. This is based on several factors but most importantly, the comfort conditioned space of the building which is under 10,000 square feet. The majority of the building space is vehicular storage bays, a wash bay, and maintenance bays. The comfort conditioned office space is approximately 5,900 square feet which is under the 10,000 square foot requirement in the Green Building Act. Also considered was IDOT's statement that this is a financial burden to the project which is already over budget; and the MEP consultant's comments that the prerequisite for minimum energy performance could not be met.

Information received for this project regarding the LEED Waiver Request included the following:

An initial Green Building Waiver Request dated April 15, 2019 from Susan Thayer at Muller & Muller, Ltd. which was marked to show that the Green Building Act could not be met because it is an unreasonable financial burden to the project and because it would impair the principle function of the building. A letter from Sean Carver with IDOT stating that the new building's energy loads were process driven and so reducing the energy consumption of the building is not applicable. It also stated that the project was over budget and there was not additional funding to cover the LEED certification. A letter from Ms. Thayer to Mohammad Haq giving several reasons why the project could not meet the LEED requirements including the 24-hour operation of the building, the building function and the financial burden to the project.

A conference call was held on June 26th with CDB, IDOT, the A/E and their MEP consultant. During the call it was stated by the MEP consultant that the LEED Prerequisite for Minimum Energy Performance could not be met. The operations of the building would not allow for this.

After the call, the LEED checklist showing what credits could be met and a conceptual floor plan for the building were also received.

cc: Andrea Bauer, CDB - Regional Manager
Susan Thayer, Muller & Muller - Project Manager
Sean Carver, IDOT - Chief of Capital Improvements

BASIS OF DESIGN

APPENDIX C – Proposed Project Cost Budget

State of Illinois
CAPITAL DEVELOPMENT BOARD

**PROPOSED PROJECT
COST BUDGET**

FOR CDB USE ONLY	
Name:	
Project No:	
Contract No:	
C.F. Locale	Design Phase

CDB PROJECT NUMBER:	630-128-005	DATE PREPARED:	5/6/2020
BLDG. INVENTORY NO:	D0139	PROJECT STATUS:	Final Bridging Documents
PROJECT:	Stevenson IDOT Maintenance Facility	GSF:	35,230 NSF:
LOCATION:	8630 Joliet Rd, McCook, IL 60525	SITE ACREAGE:	4.3
A/E:	Muller & Muller, Ltd.	PREPARED BY:	Susan Thayer
CDB PROJECT MANAGER:	Mohammed Haq		

1.	LAND ACQUISITION COST	
2.	MOVABLE EQUIPMENT	
3.	ART-IN ARCHITECTURE	
4.	OTHER	
5.	A/E Basic Service Fee	\$186,500.00
6.	Additional Services	\$153,420.00
7.	Construction Admin. Fee	\$10,100.00
8.	On-Site Representative	\$65,000.00
9.	Subtotal (1 thru 8)	\$415,020.00
10.	A/E REIMBURSABLES	
a.	Subsoil Investigation	
b.	Design Ph. Material Testing	\$32,500.00
c.	Construction Ph Material Test	
d.	Printing	
e.		
f.		
g.		
h.		
i.		
11.	Subtotal (10a thru 10i)	\$32,500.00
12.	TOTAL (9 plus 11)	\$447,520.00

RECAP OF CONSTRUCTION COSTS (Base Bid)
(From Page 2 Worksheet)

TRADE ESTIMATES (Column H)	
General	\$8,857,284.00
Plumbing	\$301,800.00
Heating	\$978,500.00
Ventilating	\$0.00
Electrical	\$1,596,500.00
Asbestos	\$0.00
Sprinkler	\$257,500.00
Soil Remediation	\$875,500.00
	\$0.00
	\$0.00
Contingency (Column D Total)	\$1,248,978.40
13. TOTAL BASE BID BUDGET	\$14,116,062.40
(Trade estimates plus contingency)	\$14,116,062.40

14. TOTAL BUDGET (12 plus 13)	\$14,563,582.40
15. Total Project Funds	\$15,000,000.00
(From Project Scope)	
16. Available Funds for Construction (15 minus 12)	\$14,552,480.00
17. Alternates (Total from Page 2)	\$85,000.00
18. Base Bid plus Alternates (13 plus 17)	\$14,201,062.40

Worksheets

TRADE	A Building (Base Bid Estimate)	B Site Work (Base Bid Estimate)	C Subtotal (A + B)	D Contingency (Cx10%)	E Alternates	F Subtotal (C+E)	G CAF (Fx3%) Round up to next \$100	H Subtotal (C+G)	I Total (D+ F +G)	J I/GSF
General	\$6,471,784.00	\$2,125,000.00	\$8,596,784.00	859,678.40	\$85,000.00	\$8,681,784.00	\$260,500.00	\$8,857,284.00	\$9,801,962.40	\$278.23
Plumbing	\$293,000.00		\$293,000.00	29,300.00	\$0.00	\$293,000.00	\$8,800.00	\$301,800.00	\$331,100.00	\$9.40
Heating	\$950,000.00		\$950,000.00	95,000.00	\$0.00	\$950,000.00	\$28,500.00	\$978,500.00	\$1,073,500.00	\$30.47
Ventilating			\$0.00	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Electrical	\$1,250,000.00	\$300,000.00	\$1,550,000.00	155,000.00	\$0.00	\$1,550,000.00	\$46,500.00	\$1,596,500.00	\$1,751,500.00	\$49.72
Asbestos			\$0.00	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Sprinkler	\$250,000.00		\$250,000.00	25,000.00	\$0.00	\$250,000.00	\$7,500.00	\$257,500.00	\$282,500.00	\$8.02
Soil Rem.		\$850,000.00	\$850,000.00	85,000.00	\$0.00	\$850,000.00	\$25,500.00	\$875,500.00	\$960,500.00	\$27.26
			\$0.00	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
			\$0.00	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Column Totals	\$9,214,784.00	\$3,275,000.00	\$12,489,784.00	\$1,248,978.40	\$85,000.00	\$12,574,784.00	\$377,300.00	\$12,867,084.00	\$14,201,062.40	\$403.10

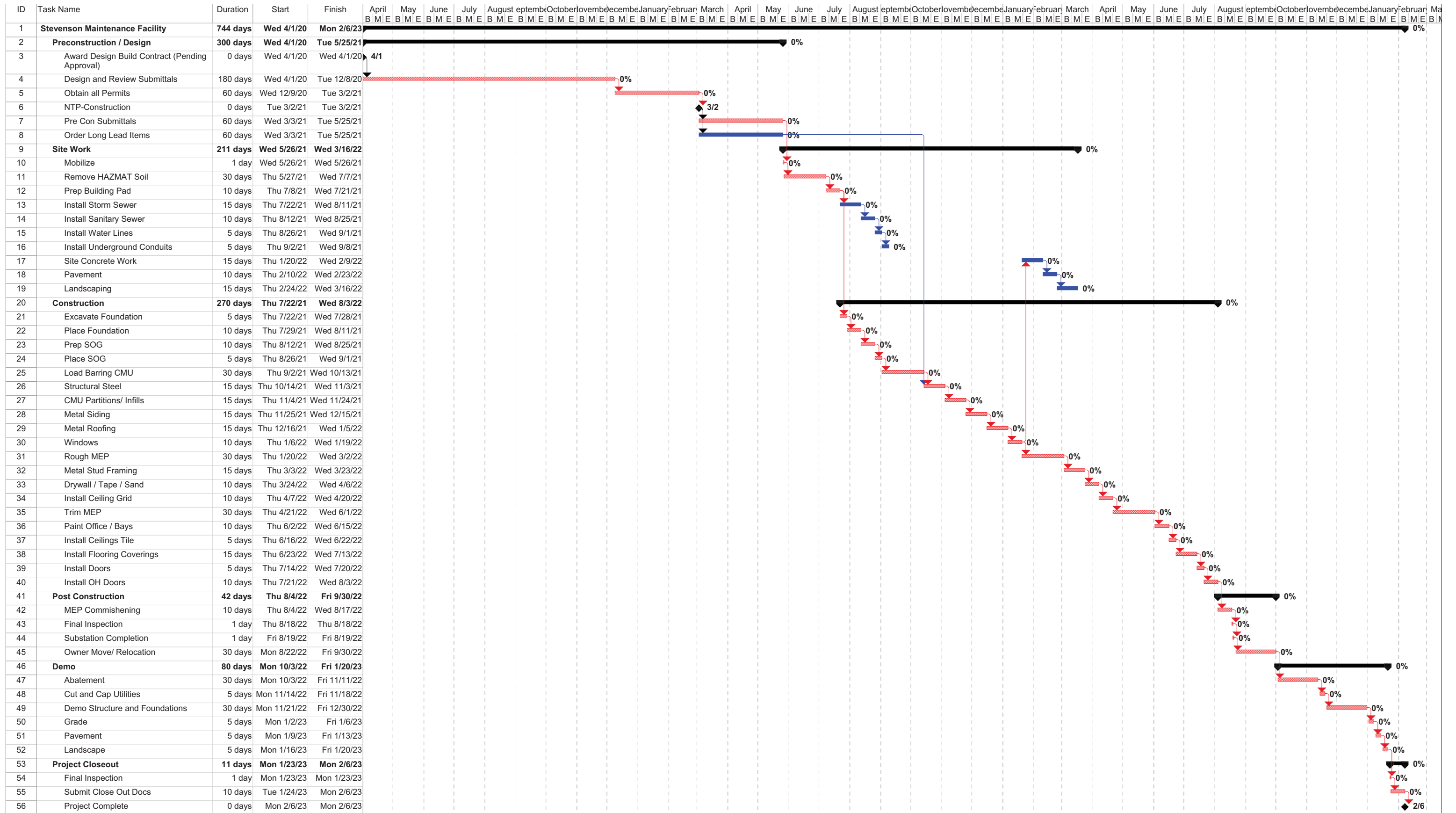
TRADE	Alternate #1	Alternate #2	Alternate #3	Alternate #4	Alternate #5	Alternate #6	Alternate #7	Alternate #8	Totals
General	\$85,000.00								\$85,000.00
Plumbing									\$0.00
Heating									\$0.00
Ventilating									\$0.00
Electrical									\$0.00
Asbestos									\$0.00
Sprinkler									\$0.00
									\$0.00
									\$0.00
									\$0.00
Column Totals	\$85,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$85,000.00

E-MAIL THIS FORM

This form may be submitted to CDB electronically. Attach a completed form to an e-mail addressed to the CDB Project Manager. All CDB e-mail addresses are available on our website.

BASIS OF DESIGN

APPENDIX D – Preliminary Project Construction Schedule



Project: Stevenson Maintenance Facili Date: Tue 10/29/19	Critical		Split		Baseline Milestone		Project Summary		Inactive Summary		Manual Summary		External Milestone	
	Critical Split		Task Progress		Milestone		External Tasks		Manual Task		Start-only		Deadline	
	Critical Progress		Baseline		Summary Progress		External Milestone		Duration-only		Finish-only			
	Task		Baseline Split		Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

The dates listed in this construction schedule are for overall construction phase durations and are dependent on the date of award to the Design-Builder, the duration of their design phase, as well as the time of year construction commences.