SECTION 144500 – VEHICLE LIFTS (FOR REFERENCE ONLY)

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Scissors style in-ground lifts.

1.2 RELATED SECTIONS

A. Division 03 – For Cast-In-Place Concrete

B. Division 22 – For Plumbing Systems, Piping, Sleeves, etc.

C. Division 26 – For Electrical Systems, Wiring, Conduit, etc.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Submit drawings showing full layout of all lifts with dimensions and details shown for services and conduits between lifts and the control consoles.

D. Operation and Maintenance Manual: Submit Owner's manual to include system operation, maintenance and troubleshooting, spare part numbers, drawings and schematics.

1.4 QUALITY ASSURANCE

A. Manufacturer qualifications: The lift company selling the product shall possess ISO-9001 certification.

B. Installer qualifications: For warranty validation, installation shall be performed by qualified factory authorized and trained personnel.

C. Product requirements / design standards and certification: The lift shall be certified by a Nationally Recognized Testing Laboratory (NRTL) to the ANSI/ALI ALCTV (current edition) “Standard for Automotive Lifts: Safety Requirements for Construction, Testing, and Validation”.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

A. Manufacturer's Warranty: Lift system shall be warranted for a minimum period of 2 years for parts and 1 year for labor.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design manufacturer: Stertil-Koni USA, Inc., which is located at: 200 Log Canoe Circle; Stevensville, MD 21666; Toll Free Tel: 800-336-6637; Tel: 410-643-9001; Email: lifts@stertil-koni.com; Web: www.stertil-koni.com

2.2 SCISSOR STYLE IN-GROUND LIFTS

A. Scissor style in-ground Lift - ECO60 manufactured by Stertil-Koni USA, Inc.

1. General Description: The lift shall consist of two lifting units in line with the longitudinal axis of the vehicle, each lifting unit so equipped as to engage the axle, suspension, and/or frame as specified herein. One of the two lifting units shall be movable fore and aft to affect variable spacing between lifting mechanisms. The other lifting unit shall be fixed.

2. Lifting Capacity:

    a. Lift shall be capable of raising 60,000 lbs. (27,216 kg), 30,000 lbs. (13,608 kg) each fixed/ 30,000 lbs. (13,608 kg) each movable lifting unit.
    b. Unbalanced Loads, Movable to Fixed: Lift shall be capable of raising 30,000 lbs (13,608 kg) on one unit and 0 lbs (0 kg) on the other unit.

3. Dimensions:

    a. The lifting height shall be no less than 70 inches (1,780 mm) as measured from the point of adapter contact at full rise to the finished floor.
    b. Lifting Rate: 90 seconds; 45 inches (1,140 mm) per minute, minimum.
    c. Maximum depth below finished floor for any structural component or member: 34 inches (864 mm) maximum.
    d. Movable and fixed lifting unit synchronization: 2 inches (51 mm).
    e. Travel range for the movable lifting unit shall be as follows, depending on selected model: ECO 60-13: 156 inches (3,962 mm)

4. Lifting Units:

    a. Lifting units and continuous recess insert shall be completely removable with no lift components or structural framing permanently embedded in the concrete.
    b. Lifting units shall be hydraulically powered, mechanically articulating scissors, complete with a mechanical locking system.
    c. The continuous recess insert (also known as movable pit box) shall be hot dip galvanized. All other steel surfaces shall be

powder coated.

d. By means of a centering link, the lifting unit structure shall articulate symmetrically about the center axis of the lift unit as it raises and lowers.

5. Movable Lifting Unit:

a. The movable lifting unit shall relocate horizontally fore and aft while in the fully retracted position.

b. When the entire continuous recess insert has the covers in place and the lift is operational, it shall form a continuous recess that shall meet the following design and performance criteria:

1) The movable lifting unit shall not be required to recess, or park, in only one "pocketed" location, providing increased productivity in servicing fleet vehicles of varying wheelbases.

2) The movable lifting unit may be recessed below finished floor at any position between the minimum and maximum dimensions of the travel range.

3) The movable lifting unit shall be capable of fore and aft travel while recessed below floor.

c. Maximum depth below finished floor for the continuous recess insert, rear lifting unit or any fixed or movable component shall be 34 inches (864 mm).

d. The continuous recess insert (also known as movable pit box) shall be hot dip galvanized and have an open floor design, mounted off the concrete floor of the trench to allow for the collection, cleaning and drainage of all liquids and solids that accumulate in the trench.

e. The aluminum covers for the movable mechanism shall be anodized structural 6061 aluminum extrusions engineered to accept a 7,500 lb. (3,402 kg) point load on a contact area of 2 x 2 inches (50 x 50 mm) and shall be shaped to include a full-length interlocking hinge. Covers shall fit together tightly and uniformly to promote smooth travel so as to prevent jamming and twisting. The covers shall be able to accept a 13,500 lb. (6,123 kg.) drive over load on a 6 x 9 inch (152 x 228 mm) contact area.

f. The aluminum covers for the movable mechanism shall be attached to UHMW slider blocks for reduced friction and increased longevity. These slider blocks shall keep the covers properly centered at all times. Horizontal grooves in the UHMW sliders shall, together with half-moon shaped guide rails in the end section of the lift's steel box insert, securely guide the covers as they travel in and out of the recess.

g. Transition plates shall be bolted to the continuous recess insert to provide for a flush and smooth transition from the shop floor to the aluminum covers. The transition plates also shall assist the cover travel by holding the covers down so they can't buckle during horizontal travel.

h. The aluminum covers for the movable mechanism shall be flush with the finished floor within a tolerance of less than 1/8 inch. Covers that are lower than the finished floor shall not be acceptable.

i. The movable lifting unit and the covers shall bear on and slide over UHMW surfaces for low friction and minimal maintenance.

j. The hydraulically powered carriage drive shall utilize a rack and gear arrangement on both the left and right sides for smooth and even fore-aft travel without binding.

k. The rack shall be inverted and positioned under the load channel of the movable lifting unit insert where it is protected so as not to collect dirt, grease etc.

l. All hydraulic and compressed air service lines shall be fed from the control console to the movable lifting unit insert through one PVC chase way per lifting unit.

m. All low voltage, intrinsically safe electric service lines shall be fed from the control console to the movable lifting unit insert through one ¾ inch rigid conduit per lifting unit, installed to meet local requirements.

6. Fixed Lifting Unit: The fixed lifting unit shall be bolted in place with eight each 7/8 inch (22 mm) stainless steel anchors.

7. Hydraulic System:

a. System shall be comprised of two high pressure, low volume, single acting, 7 inch (178 mm) diameter cylinders, one in each lifting unit.

b. The hydraulic system shall be a power up / gravity down design. Lifts that rely on the power units to run during the lowering cycle shall not be acceptable due to increased power consumption and wear.
c. High pressure seals shall be internal to the cylinder, where they are protected from salt, dirt, etc.
d. Each cylinder shall require no more than 3.5 gallons (13.25 liters) of hydraulic fluid for lifting to full height.
e. Combined, the two cylinders shall only require 7 gallons (26.5 l) of AW 15 hydraulic fluid for lifting to full height.
f. Each cylinder shall have a hose break velocity fuse (safety check valve) integrally mounted to prevent excessive loss of fluid from the cylinder.
g. The hoses shall be of reinforced construction and utilize JIC fittings throughout.
h. The hoses feeding the movable lift carriage shall be supported and contained by a cable carrier to prevent the hoses from dragging or tangling.
i. The lift shall be driven by two individual power units, readily available as an off-the-shelf component.

8. Adapters:

a. The lift system shall include a variety of axle engaging accessory adapters designed to raise heavy vehicles by the axles or frame. Adapters shall be either axle or frame oriented. Spinning adapters shall not be acceptable due to risk of accidental rotation during vehicle spotting and setup.
b. The base adapter shall have at least a five hole pattern that will allow every accessory adapter to be used in the reverse direction, allowing up to eight positions of the accessory adapter on the base adapter.
c. Sliding base adapters shall be restrained to prevent over extension.
d. Bolster and base adapters for all lifting units shall recess below finished floor.
e. Adapter Adjustment: Minimum 13.25 inches (337 mm); Maximum 56 inches (1,422 mm).
f. Bolster Width: 40 inches (1,016 mm) minimum.

9. Controls:

a. The control system shall conform to all current NEC, UL 201 and OSHA codes.
b. The control system shall be PCB operated and continuously monitor all operating functions and safety systems of the lifting units.
c. The control system shall utilize intrinsically safe inclinometers to constantly monitor the elevation of the lifting units to ensure synchronized operation. Exposed string potentiometers shall not be acceptable.
d. The control system shall allow the user to adjust the sensitivity of the electronic synchronization without the use of special tools, within the absolute limits of ANSI/ALI ALCTV standard.
e. The control system shall have the ability to receive regular software updates/upgrades as control system advances become available. All updates/upgrades shall be possible through data transfer without the need for component replacement.

10. Control Elements: On the face of the control console, control elements shall include:

a. "UP" button.
b. "Down" button.
c. “Lock release” button.
d. “Confirm” button
e. A high definition 7 inch (178 mm) LCD screen touch screen. The touch screen shall be specifically designed for a harsh workshop environment. The touch screen shall provide systems information, but operation of the lift shall be initiated by the primary operational buttons. The touch screen shall include a removable micro-SD memory card for storage of user configurable information. The touch screen shall be capable of providing the following functions:

1) “Lifting unit selection” indicator: displays to the operator which lifting units in the lift have been selected for operation. The display illustrates the ability to operate the lifting units singularly, or all lifting units as a synchronized set.

2) “Lifting unit height” indicator: displays to the operator the height of each individual lifting unit. The height indicator shall also provide, on the touch screen, a clear indicator if the lifting unit has been set to stop at a restricted lifting

height.

3) "Lifting units fully lowered" indicator: displays to the operator that all lifting units are fully retracted into the ground to inform the operator that the bay is clear to allow entry and exit by the vehicle.

4) "Error message" indicator: displays to the operator when a fault code has been registered by the control system, the touch screen shall inform the operator of any fault situations being present in the lift. The control system shall have the ability to display error messages including fault description on the screen.

5) One-touch access to the Guide screen: This area of the touch screen provides to the operator Owner information

6) One-touch access to the Information screen: This area of the touch screen provides to the all users:

   i. Owner information
   ii. Contact information for service provider
   iii. Equipment time log including lifting unit run times

7) One-touch access to the Settings screen which displays various options. The settings screen shall allow control of:

   i. Settings screen option (1): authorized users shall have the ability to change the language (English, Spanish, French) displayed on the screen as well as the units of measure for height and weight (imperial or metric units).
   ii. Settings screen option (2): authorized users shall have the ability to retract the mechanical locks during raising for reduced noise, as well as to set a restricted maximum lifting height.
   iii. Access to the Shop and Assistance screens: from the Settings screen, authorized users shall have the ability to control the service settings.

8) One-touch access to the Shop configuration screen options which is PIN protected. The shop configuration screen shall allow adjustment of:

    i. Edit of owner's details: allows the ability to edit the information displayed on the Owner's field.

9) One-touch access to the Assistance configuration screen which displays various options and is PIN protected. The maintenance configuration screen shall allow adjustment of:

    1) Screen 1

        i. Initiation of crush protection which guards against a crushing hazard during lowering when using the optional remote control. This safety system, when enabled, will interrupt lowering as the lift reaches 18 inches (457 mm) above finished floor. At that time, the operator needs to return to the control console and continue the lowering cycle by utilizing the control buttons located on the face of the control console.
        ii. Ability to disable height difference monitoring to aid in trouble shooting. Once initiated, this control system option allows the maintainer to operate the lifting system outside normal safety limits. This system is only for use by the lift system maintainer during repair procedures. This system option will automatically be disabled and the control system returned to default operating parameters after 10 minutes.

    2) Screen 2

        i. Ability to view lift system run time to properly plan for lift system maintenance.
        ii. Ability to view individual lifting unit motor run time to properly plan for lift system

maintenance.

3) Screen 6: This screen shall allow back up of the operating system.

4) Screen 7: This screen shall display operating system information.

f. The enclosure for electrical control components shall be IP 54 rated.
g. The control console shall be equipped with a main power disconnect switch which interrupts all incoming power. Main power disconnect shall be lock-out capable.
h. Control console access panels shall have key-hole slots and recessed handles for easy removal and installation.
i. The control system shall automatically prohibit horizontal movement of the movable lifting unit when raised above 12 inches (305 mm) above finished floor. This parameter shall be user programmable without the use of special tools.
j. The lift, when fitted with the proper electrical motors, shall operate at the following voltages: 208/230V (3 phase), 460V (3 phase), 575V (3 phase)

11. Safety Devices:

a. Each lifting unit shall be equipped with double lock jaw, gravity engaged, mechanical locks with the first lock position engaging at a minimum height of 18 inches (457 mm).
b. Number of Mechanical Lock Stops: 12, minimum.
c. Vertical height spacing between each lock stop: 6 inches (152 mm), maximum.
d. The mechanical locks shall be made of high strength T-1 steel.
e. All push buttons shall be of momentary contact, dead man type.

12. Automatic Wheel Base Positioning: The control system shall be equipped with an AWBP (automatic wheel base positioning) system that allows the operator to program an infinite number of wheelbase positions into the control system for reduced set up times. The AWBP system shall be controlled via the 7 inch (178 mm) color touch screen to allow the operator to select and program vehicle wheel bases. The AWBP system

shall allow the operator to store wheel base positions by vehicle brand and year or license plate for ease of use and safety to avoid selection of the incorrect vehicle. Once a vehicle has been selected, the movable lifting unit shall travel to the pre-programmed position without interruptions or stops.

13. Wired Remote Control:

    a. The lift shall be equipped with an ergonomic industrial remote control, rated for use in NEC Class 1, Div. 2, hazardous locations.
    b. Remote control shall be connected to the control console through a multi-conductor cable with military-style DIN connector. Standard cable length shall be 35 feet. (10.6 m)
    c. Remote control shall allow full function control of the lift, with the following:

        1) Push/Pull E-Stop Button
        2) Push buttons for Lift Raise, Lower and Unlock
        3) Selector button for synchronized (group) or single operation
        4) Push buttons for hydraulic movable carriage drive

    d. Remote control shall be equipped with an emergency E-Stop button that de-energizes power to all outputs of the PCB. Re-activation of the control system requires resetting the E-Stop and re-energizing the control system.
    e. The control box shall have a provision to disable operation of the remote control during lowering when the bolster is below 18 inches (457 mm) above finished floor.

14. Optional: HOME Beacon Stack Light: The lift shall be equipped with an external HOME beacon stack light. This beacon light shall turn green when all lifting units are fully retraced to inform the operator that the bay is clear to allow entry and exit by the vehicle. When one or more lifting units are not fully lowered the beacon light shall turn red to inform the operator that the bay is not clear and it is not safe to move the vehicle into or out of the bay. The beacon light shall have the option to be mounted in a remote location (e.g. by the bay door) for optimum visibility.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

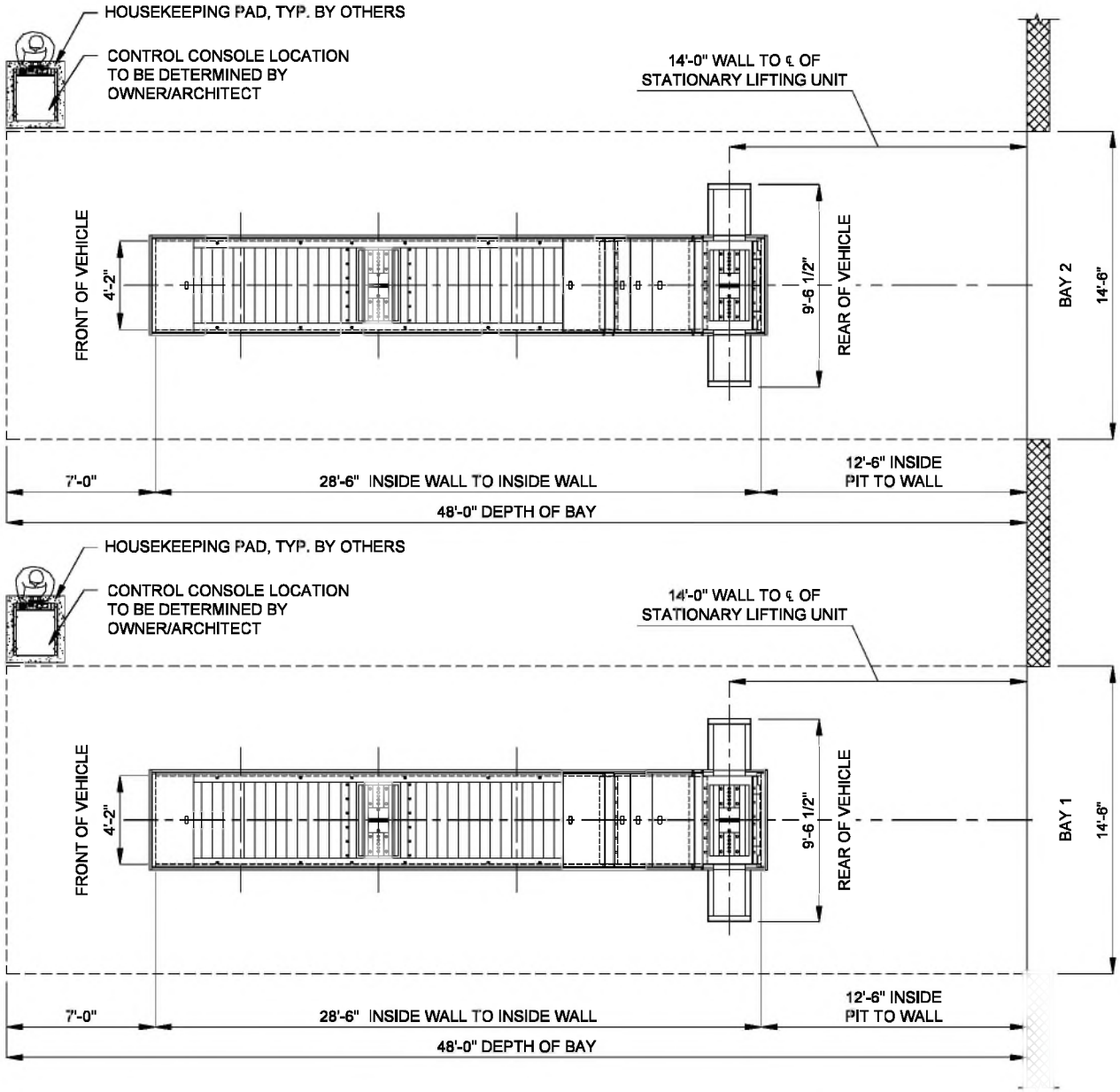
A. Install in accordance with manufacturer's instructions. Test for proper operation, and re-test if necessary until satisfactory results are obtained.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before substantial completion.

END OF SECTION 144500



IN BAY PLAN

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PRINT NAME:	P03	SKU-2023-0728A-ADM-P02	8/7/2023	ADM	
DATE:					DESCRIPTION: ECO 60-13 RH 120-276 (CP)
					SKU-2023-0202A-ADM-P03

STERTIL-KONI USA, INC.
200 LOG CANOE CIRCLE, STEVENSVILLE, MD 21666
TEL. 800-336-6637

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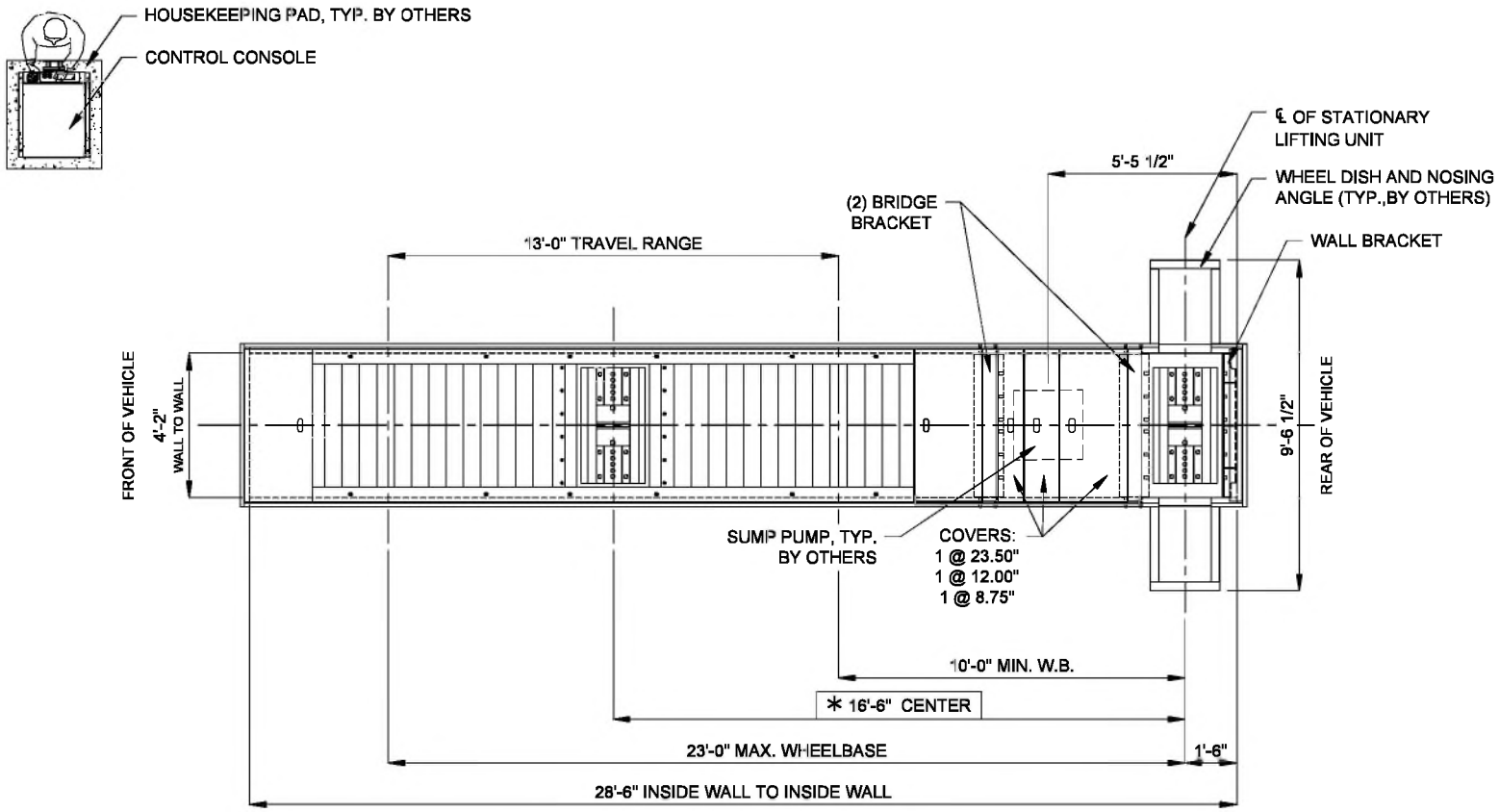
CHECKED BY	TMK	2/2/2023	SHEET 1 OF 7



* CONTROL DIMENSION:
℄ OF STATIONARY LIFTING UNIT TO
℄ OF MOVABLE LIFTING UNIT

ECO PLAN

NOT FOR CONSTRUCTION

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SIGNATURE:	P01	SKU-2023-0728A-ADM-P00	8/2/2023	ADM	
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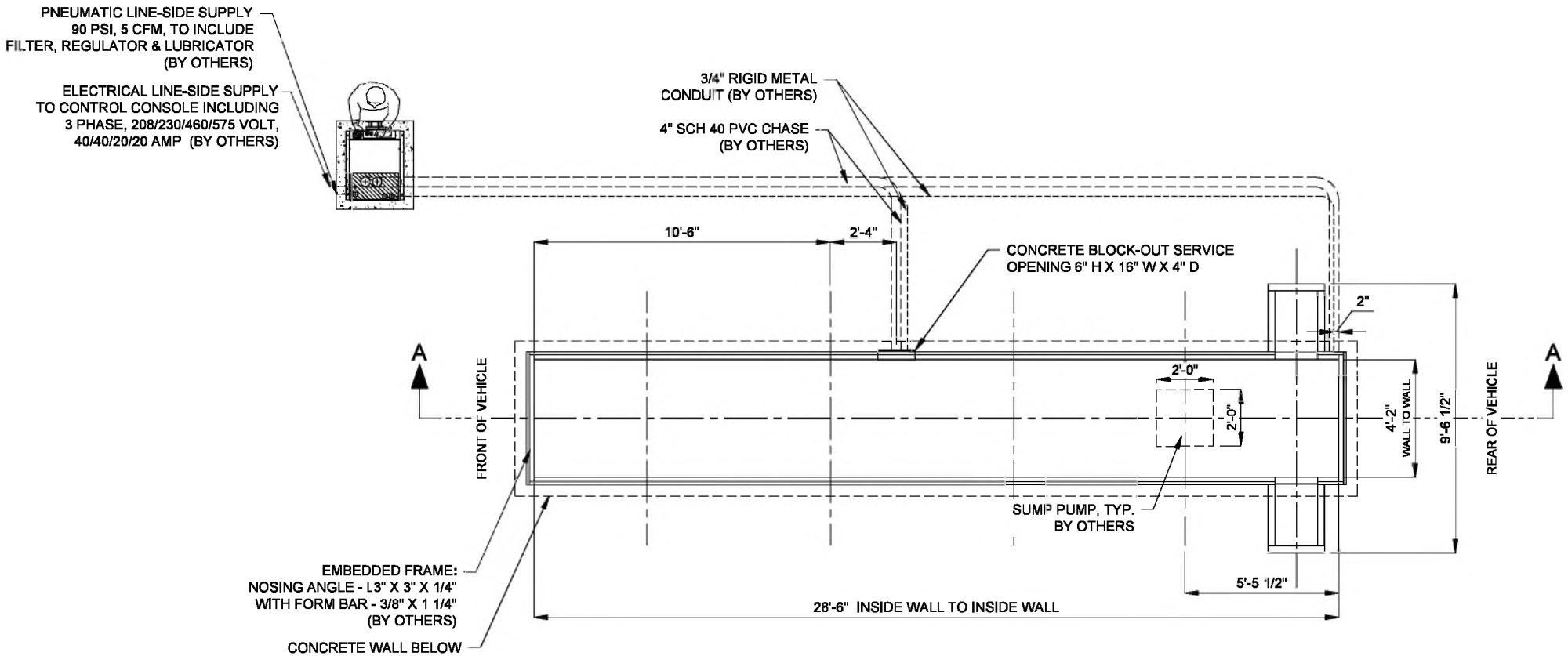

PIT & CONDUIT PLAN

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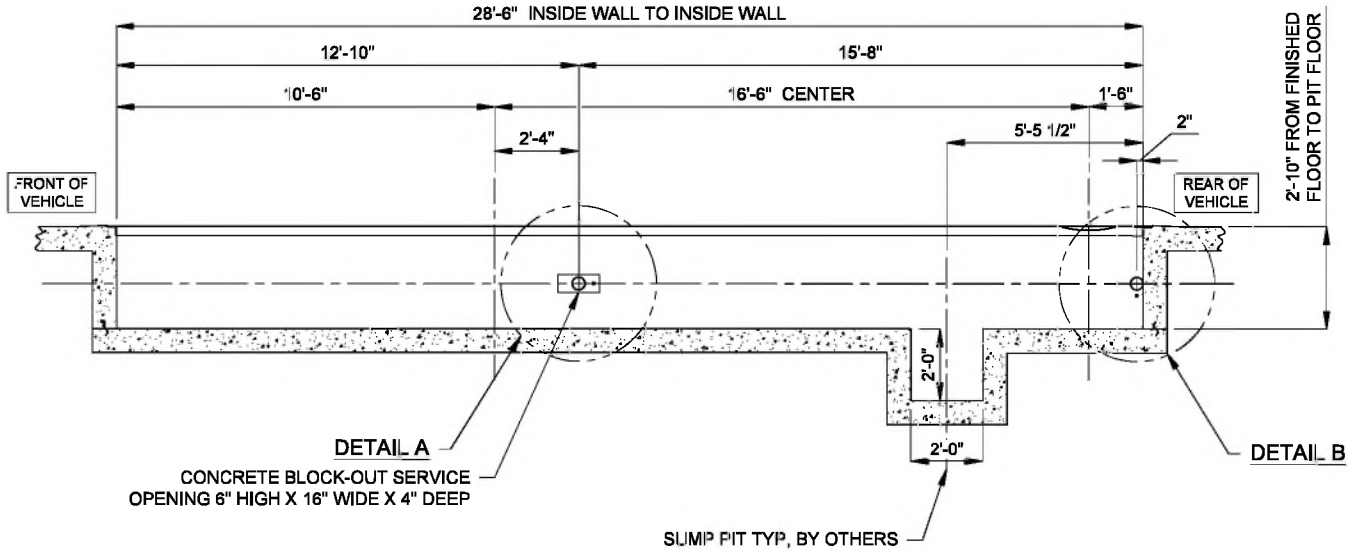
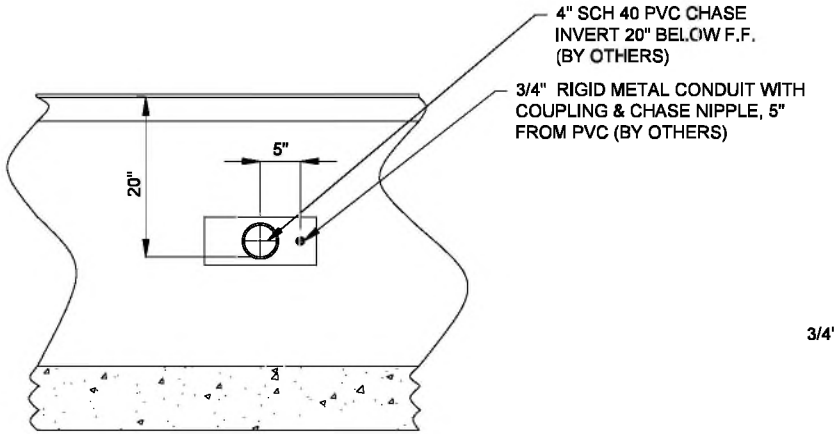
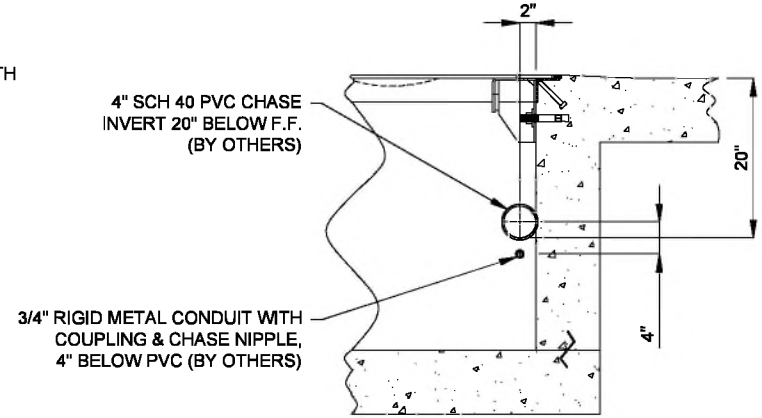


SECTION A - A LOOKING TOWARD CONTROL CONSOLE
(CONSOLE NOT SHOWN)



DETAIL A



DETAIL B

ELEVATION DETAILS

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PRINT NAME:	P03	SKU-2023-0728A-ADM-P02	8/7/2023	ADM	
DATE:					DESCRIPTION: ECO 60-13 RH 120-276 (CP)
					SKU-2023-0202A-ADM-P03

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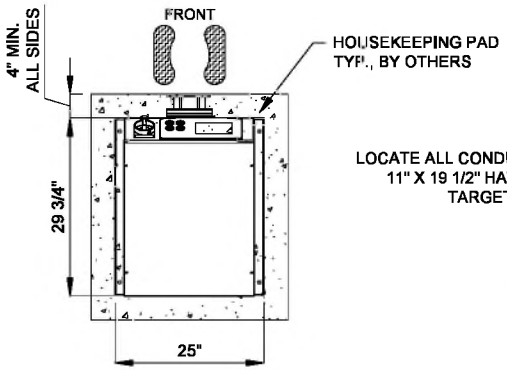
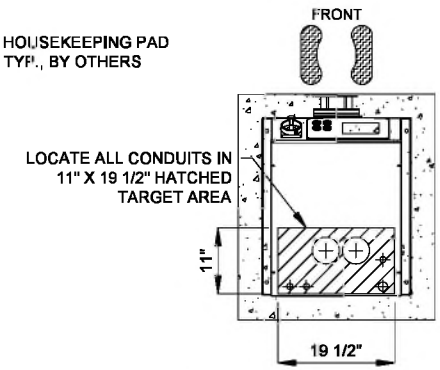
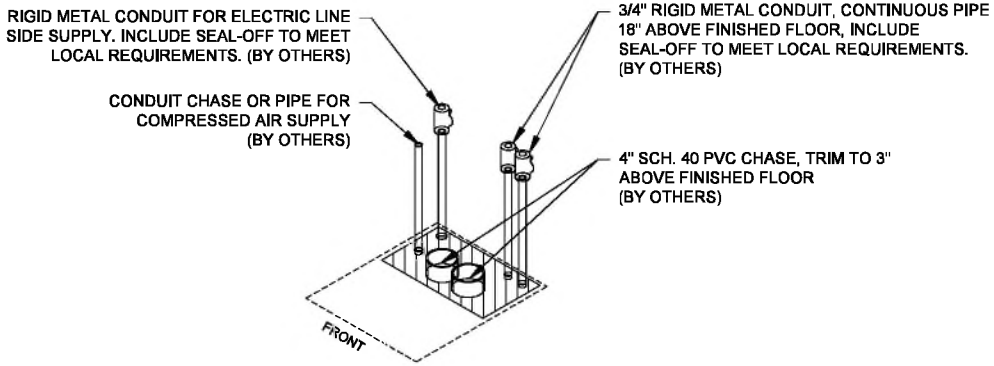


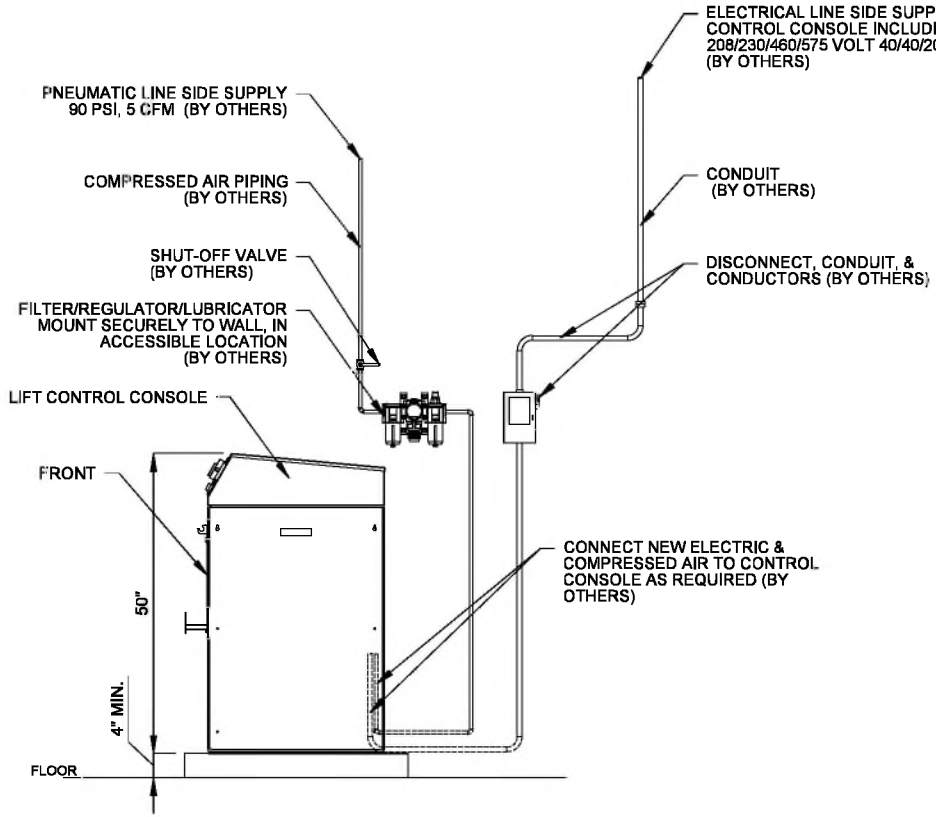
CONTROL CONSOLE



INTERNAL CONDUITS



ISOMETRIC VIEW OF CONDUITS AT CONTROL CONSOLE



AIR & ELECTRICAL SERVICES AT CONSOLE

ebright CONTROL CONSOLE DETAILS

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PRINT NAME:	P03	SKU-2023-0728A-ADM-P02	8/7/2023	ADM
DATE:				

PROJECT: Highland CSD, NY

LIFT INSTALLER: Hoffman Services

DESCRIPTION: ECO 60-13 RH 120-276 (CP)

SKU-2023-0202A-ADM-P03

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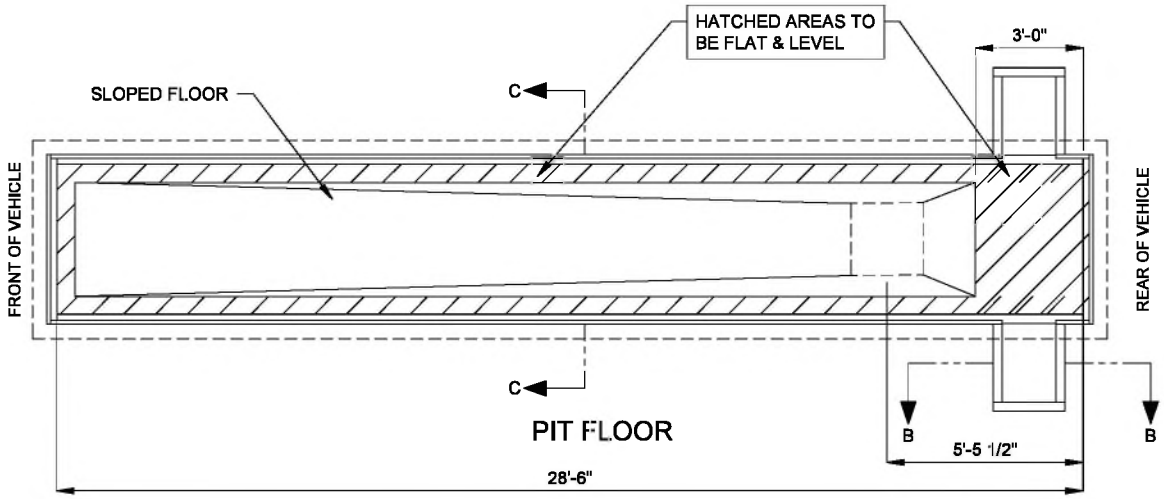
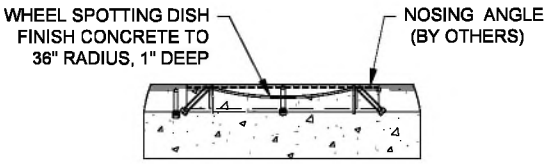
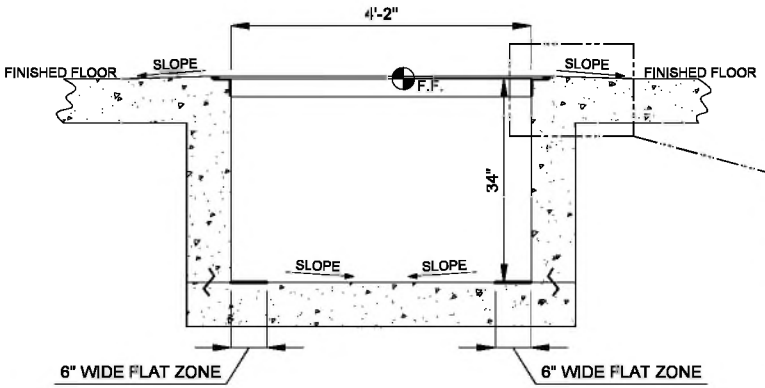


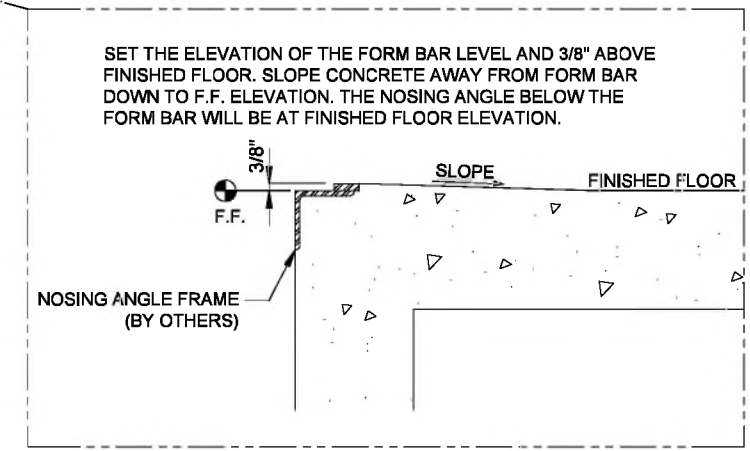
PIT FLOOR



SECTION B - B
THROUGH WHEEL DISH



SECTION C - C
THROUGH PIT WALLS



NOSING ANGLE DETAIL

PIT DETAILS

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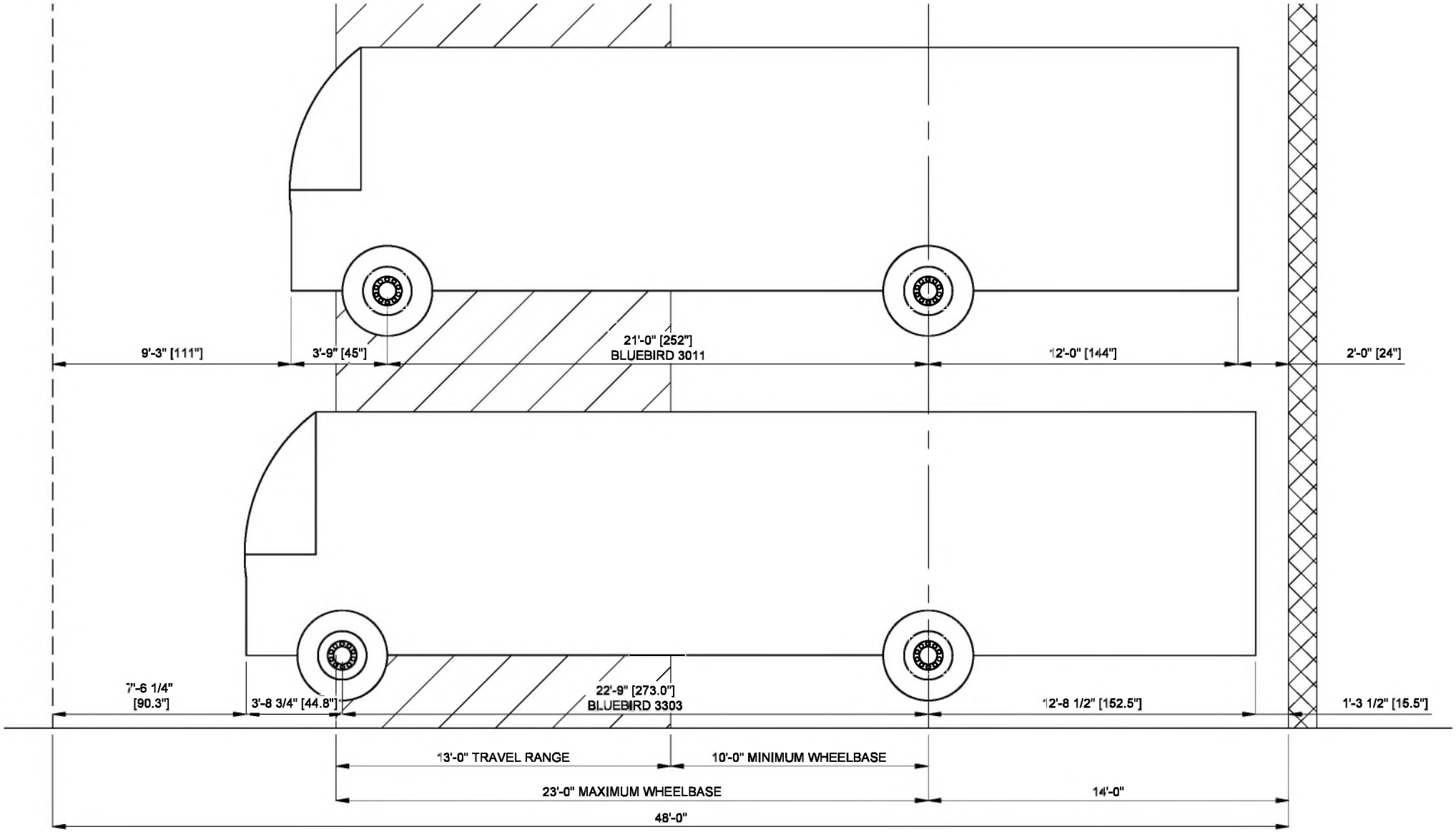
DRAWN BY	ADM	2/2/2023	NOT TO SCALE
CHECKED BY	TMK	2/2/2023	SHEET 6 OF 7



VEHICLE DIAGRAM

NOT FOR CONSTRUCTION

APPROVED BY:

SIGNATURE:

PRINT NAME:

DATE:

REVISIONS			
P01	SKU-2023-0728A-ADM-P00	8/2/2023	ADM
P02	SKU-2023-0728A-ADM-P01	8/4/2023	ADM
P03	SKU-2023-0728A-ADM-P02	8/7/2023	ADM

PROJECT: Highland CSD, NY

LIFT INSTALLER: Hoffman Services

DESCRIPTION: ECO 60-13 RH 120-276 (CP)

SKU-2023-0202A-ADM-P03

STERTIL-KONI USA, INC.
200 LOG CANOE CIRCLE, STEVENSVILLE, MD 21666
TEL. 800-336-6637

DRAWN BY	ADM	2/2/2023	NOT TO SCALE
CHECKED BY	TMK	2/2/2023	SHEET 7 OF 7