# SPECIFICATIONS

# FOR

Bid No. 18-11

## *Elevator Upgrades at the Neshaminy High School*

*Neshaminy School District*
*2001 Old Lincoln Highway*
*Langhorne, PA 19047*

January 20, 2017

Prepared by

CONSOLIDATED ENGINEERS
1022 James Drive
Leesport, PA 19533

Phone: 610-916-1600
FAX: 610-916-1610

CE Project No. 15-2447-1

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# SCHEDULE OF DRAWINGS

| DRAWING NUMBER | DRAWING NAME |
|---|---|
| A-1 | Elevator Upgrade – Plans, Details, and Notes |
| E-1 | Partial Lower Level Floor Plan – Lower level<br>Lighting Plan – Elevator Machine Room Power Plan |
| M-1 | Partial Lower Level Floor Plan – Mechanical<br>Details and Notes |

SECTION 00030 - ADVERTISEMENT FOR BIDS

The Board of Directors of the Neshaminy School District is soliciting bids for:

Elevator Upgrades at Neshaminy High School, Bid No. 18-11.

Sealed proposals will be received by Mr. Joseph Rischow, Purchasing Supervisor, until 10:00 a.m., prevailing time Thursday February 16, 2017. At that time & place sealed proposals will be publicly opened and read in the Purchasing Department of the Neshaminy School District at 2001 Old Lincoln Highway, Langhorne, Pennsylvania. The District will not be responsible for late delivery of mail and no bid will be accepted after 10:00 a.m.

A mandatory pre-bid meeting will be held on Thursday February 2, 2017, 10:00am, at the High School Campus Purchasing Office Conference Room, located at 2001 Old Lincoln Highway, Langhorne, PA 19047.

Each bid shall be accompanied by a certified check, a cashier's check or the bid of an approved Surety Company, in an amount of not less than 10% of the amount of the proposal. Check or bond shall be drawn in favor of the Neshaminy School District.

Bid documents are at the Neshaminy School District Site at www.neshaminy.org. Click on the bid tab and look for bid#18-11

Site visits or Technical questions pertaining to the bid specifications should be directed to Tim Trzaska or Jerry Rutledge at (215) 809-6250. Questions regarding Division 1 on the specifications should be directed via email to jrischow@neshaminy.k12.pa.us.

The School District reserves the right to waive any informality in bids, or to reject any or all proposals, and to make the award in the best interest of the School District.

Mr. Joseph Rischow
Purchasing Supervisor

END OF SECTION 00030

# BUREAU OF LABOR LAW COMPLIANCE
# PREVAILING WAGES PROJECT RATES

| | |
|---|---|
| Project Name: | Neshaniny High School Elevator Upgrades |
| Awarding Agency: | Neshaminy School Disctrict |
| Contract Award Date: | 3/10/2017 |
| Serial Number: | 17-00366 |
| Project Classification: | Building |
| Determination Date: | 1/18/2017 |
| Assigned Field Office: | Philadelphia |
| Field Office Phone Number: | (215)560-1858 |
| Toll Free Phone Number: | |
| Project County: | Bucks County |

# BUREAU OF LABOR LAW COMPLIANCE
# PREVAILING WAGES PROJECT RATES

| Project: 17-00366 - Building | Effective Date | Expiration Date | Hourly Rate | Fringe Benefits | Total |
|---|---|---|---|---|---|
| Asbestos & Insulation Workers | 5/1/2016 | | $46.25 | $32.89 | $79.14 |
| Boilermaker (Commercial, Institutional, and Minor Repair Work) | 3/1/2018 | | $29.52 | $18.22 | $47.74 |
| Boilermaker (Commercial, Institutional, and Minor Repair Work) | 3/1/2017 | | $28.52 | $18.22 | $46.74 |
| Boilermaker (Commercial, Institutional, and Minor Repair Work) | 3/1/2016 | | $27.52 | $18.22 | $45.74 |
| Boilermakers | 1/1/2018 | | $46.26 | $33.36 | $79.62 |
| Boilermakers | 1/1/2017 | | $44.26 | $33.36 | $77.62 |
| Boilermakers | 1/1/2016 | | $42.26 | $33.36 | $75.62 |
| Bricklayer | 5/1/2018 | | $43.73 | $26.78 | $70.51 |
| Bricklayer | 5/1/2019 | | $46.48 | $26.78 | $73.26 |
| Bricklayer | 5/1/2016 | | $38.48 | $26.78 | $65.26 |
| Bricklayer | 5/1/2017 | | $40.98 | $26.78 | $67.76 |
| Carpenter - Chief of Party (Surveying & Layout) | 5/1/2017 | | $46.11 | $26.54 | $72.65 |
| Carpenter - Chief of Party (Surveying & Layout) | 5/1/2016 | | $44.56 | $26.54 | $71.10 |
| Carpenter - Instrument Person (Surveying & Layout) | 5/1/2016 | | $38.75 | $26.54 | $65.29 |
| Carpenter - Instrument Person (Surveying & Layout) | 5/1/2017 | | $40.10 | $26.54 | $66.64 |
| Carpenter - Rodman (Surveying & Layout) | 5/1/2017 | | $20.05 | $19.26 | $39.31 |
| Carpenter - Rodman (Surveying & Layout) | 5/1/2016 | | $19.38 | $19.26 | $38.64 |
| Carpenters | 5/1/2016 | | $39.50 | $25.79 | $65.29 |
| Carpenters | 5/1/2017 | | $40.85 | $25.79 | $66.64 |
| Cement Masons | 5/1/2016 | | $35.15 | $31.21 | $66.36 |
| Cement Masons | 5/1/2017 | | $37.00 | $31.21 | $68.21 |
| DockBuilder/Pile Drivers (Building, Heavy & Highway) | 5/1/2014 | | $40.55 | $30.62 | $71.17 |
| DockBuilder/Pile Drivers Divers (Building Heavy & Highway) | 5/1/2016 | | $43.45 | $31.82 | $75.27 |
| Drapery Installers | 5/1/2009 | | $31.09 | $21.34 | $52.43 |
| Drywall Finisher | 5/1/2016 | | $36.48 | $26.38 | $62.86 |
| Electric Lineman | 5/30/2016 | | $54.56 | $22.61 | $77.17 |
| Electricians & Telecommunications Installation Technician | 5/2/2016 | | $54.52 | $35.22 | $89.74 |
| Electricians & Telecommunications Installation Technician | 4/29/2014 | | $51.02 | $32.72 | $83.74 |
| Electricians & Telecommunications Installation Technician | 5/3/2015 | | $52.85 | $33.89 | $86.74 |
| Electricians & Telecommunications Installation Technician | 4/29/2013 | | $49.65 | $32.09 | $81.74 |
| Elevator Constructor | 1/1/2016 | | $52.79 | $30.29 | $83.08 |
| Floor Layer | 5/1/2016 | | $41.86 | $27.06 | $68.92 |
| Floor Layer | 5/1/2017 | | $43.26 | $27.06 | $70.32 |
| Glazier | 5/1/2017 | | $42.18 | $30.92 | $73.10 |
| Glazier | 5/1/2016 | | $41.28 | $29.92 | $71.20 |
| Iron Workers | 7/1/2017 | | $46.20 | $31.26 | $77.46 |
| Iron Workers | 1/1/2017 | | $46.20 | $31.26 | $77.46 |
| Iron Workers | 7/1/2016 | | $46.54 | $32.29 | $78.83 |
| Iron Workers | 7/1/2017 | | $46.20 | $31.26 | $77.46 |

# BUREAU OF LABOR LAW COMPLIANCE
# PREVAILING WAGES PROJECT RATES

| Project: 17-00366 - Building | Effective Date | Expiration Date | Hourly Rate | Fringe Benefits | Total |
|---|---|---|---|---|---|
| Iron Workers - Reinforcing Steel Mesh - Rebar | 7/1/2015 | | $41.91 | $20.25 | $62.16 |
| Iron Workers - Reinforcing Steel Mesh - Rebar | 7/1/2016 | | $44.55 | $32.38 | $76.93 |
| Iron Workers - Reinforcing Steel Mesh - Rebar | 7/1/2018 | | $44.55 | $35.20 | $79.75 |
| Iron Workers - Reinforcing Steel Mesh - Rebar | 1/1/2017 | | $44.55 | $32.55 | $77.10 |
| Laborers (Class 01 - See notes) | 5/1/2016 | | $27.60 | $24.95 | $52.55 |
| Laborers (Class 02 - See notes) | 5/1/2016 | | $29.30 | $25.35 | $54.65 |
| Laborers (Class 03 - See notes) | 5/1/2016 | | $27.87 | $24.95 | $52.82 |
| Laborers (Class 04 - See notes) | 5/1/2015 | | $26.97 | $24.85 | $51.82 |
| Laborers (Class 05 - See notes) | 5/1/2015 | | $26.90 | $24.85 | $51.75 |
| Landscape Laborer | 5/1/2015 | | $20.71 | $22.48 | $43.19 |
| Landscape Laborer | 4/1/2016 | | $21.61 | $22.83 | $44.44 |
| Landscape Laborer | 5/1/2014 | | $19.76 | $22.18 | $41.94 |
| Marble Finisher | 5/1/2017 | | $35.55 | $24.17 | $59.72 |
| Marble Finisher | 5/1/2019 | | $39.75 | $24.17 | $63.92 |
| Marble Finisher | 5/1/2018 | | $37.55 | $24.17 | $61.72 |
| Marble Finisher | 5/1/2016 | | $33.55 | $24.17 | $57.72 |
| Marble Mason | 5/1/2017 | | $40.36 | $26.99 | $67.35 |
| Marble Mason | 5/1/2019 | | $45.86 | $26.99 | $72.85 |
| Marble Mason | 5/1/2018 | | $43.11 | $26.99 | $70.10 |
| Marble Mason | 5/1/2016 | | $37.86 | $26.99 | $64.85 |
| Millwright | 7/1/2016 | | $39.91 | $31.19 | $71.10 |
| Operators Class 01 - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $44.09 | $27.07 | $71.16 |
| Operators Class 01a - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $47.10 | $27.95 | $75.05 |
| Operators Class 02 - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $43.84 | $27.00 | $70.84 |
| Operators Class 02a - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $46.84 | $27.89 | $74.73 |
| Operators Class 03 - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $39.76 | $25.79 | $65.55 |
| Operators Class 04 - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $39.46 | $25.70 | $65.16 |
| Operators Class 05 - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $37.74 | $25.19 | $62.93 |
| Operators Class 06 - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $36.75 | $24.90 | $61.65 |
| Operators Class 07 (A) - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $52.91 | $31.45 | $84.36 |
| Operators Class 07 (B) - See Notes (Building, Heavy, Highway) | 5/1/2016 | | $52.61 | $31.37 | $83.98 |
| Painters Class 1 (see notes) | 5/1/2016 | | $36.80 | $25.48 | $62.28 |
| Painters Class 2 (see notes) | 2/1/2016 | | $52.10 | $25.41 | $77.51 |
| Painters Class 2 (see notes) | 5/1/2016 | | $52.10 | $25.41 | $77.51 |
| Painters Class 3 (see notes) | 5/1/2015 | | $36.41 | $24.50 | $60.91 |
| Painters Class 3 (see notes) | 5/1/2016 | | $37.18 | $25.48 | $62.66 |
| Plasterers | 5/1/2017 | | $36.92 | $29.33 | $66.25 |
| Plasterers | 5/1/2016 | | $36.92 | $28.33 | $65.25 |

# BUREAU OF LABOR LAW COMPLIANCE
# PREVAILING WAGES PROJECT RATES

| Project: 17-00366 - Building | Effective Date | Expiration Date | Hourly Rate | Fringe Benefits | Total |
|---|---|---|---|---|---|
| Plumbers | 5/1/2016 | | $49.23 | $31.76 | $80.99 |
| Pointers, Caulkers, Cleaners | 5/1/2018 | | $45.01 | $25.69 | $70.70 |
| Pointers, Caulkers, Cleaners | 5/1/2017 | | $42.26 | $25.69 | $67.95 |
| Pointers, Caulkers, Cleaners | 5/1/2016 | | $39.76 | $25.69 | $65.45 |
| Pointers, Caulkers, Cleaners | 5/1/2019 | | $47.76 | $25.69 | $73.45 |
| Roofers (Composition) | 5/1/2016 | | $35.15 | $29.19 | $64.34 |
| Roofers (Shingle) | 5/1/2016 | | $25.70 | $19.17 | $44.87 |
| Roofers (Slate & Tile) | 5/1/2016 | | $28.70 | $19.17 | $47.87 |
| Sheet Metal Workers | 11/1/2016 | | $45.32 | $37.36 | $82.68 |
| Sheet Metal Workers (Building, Heavy, Highway) | 5/1/2016 | | $45.32 | $36.86 | $82.18 |
| Sign Makers and Hangars | 5/20/2011 | | $23.70 | $17.69 | $41.39 |
| Sprinklerfitters | 5/1/2015 | | $51.35 | $23.37 | $74.72 |
| Sprinklerfitters | 1/1/2017 | | $52.55 | $24.42 | $76.97 |
| Sprinklerfitters | 5/1/2016 | | $52.95 | $24.02 | $76.97 |
| Steamfitters | 5/1/2015 | | $48.53 | $30.08 | $78.61 |
| Steamfitters | 5/1/2016 | | $52.83 | $31.49 | $84.32 |
| Stone Masons | 5/1/2016 | | $37.86 | $26.99 | $64.85 |
| Stone Masons | 5/1/2018 | | $43.11 | $26.99 | $70.10 |
| Stone Masons | 5/1/2019 | | $45.86 | $26.99 | $72.85 |
| Stone Masons | 5/1/2017 | | $40.36 | $26.99 | $67.35 |
| Stone Masons | 5/1/2014 | | $38.30 | $22.90 | $61.20 |
| Stone Masons | 5/1/2015 | | $39.95 | $22.90 | $62.85 |
| Terrazzo Finisher | 5/1/2018 | | $41.31 | $22.73 | $64.04 |
| Terrazzo Finisher | 5/1/2019 | | $43.61 | $22.73 | $66.34 |
| Terrazzo Finisher | 5/1/2016 | | $37.06 | $22.73 | $59.79 |
| Terrazzo Finisher | 5/1/2017 | | $39.06 | $22.73 | $61.79 |
| Terrazzo Grinder | 5/1/2017 | | $39.33 | $22.73 | $62.06 |
| Terrazzo Grinder | 5/1/2019 | | $43.98 | $22.73 | $66.71 |
| Terrazzo Grinder | 5/1/2018 | | $41.58 | $22.73 | $64.31 |
| Terrazzo Grinder | 5/1/2016 | | $37.33 | $22.73 | $60.06 |
| Terrazzo Mechanics | 5/1/2018 | | $46.46 | $24.81 | $71.27 |
| Terrazzo Mechanics | 5/1/2019 | | $49.21 | $24.81 | $74.02 |
| Terrazzo Mechanics | 5/1/2017 | | $43.71 | $24.81 | $68.52 |
| Terrazzo Mechanics | 5/1/2016 | | $41.21 | $24.81 | $66.02 |
| Tile Finisher | 5/1/2017 | | $35.55 | $24.17 | $59.72 |
| Tile Finisher | 5/1/2018 | | $37.55 | $24.17 | $61.72 |
| Tile Finisher | 5/1/2019 | | $39.75 | $24.17 | $63.92 |
| Tile Finisher | 5/1/2016 | | $33.55 | $24.17 | $57.72 |
| Tile Finisher | 5/1/2014 | | $32.47 | $21.64 | $54.11 |
| Tile Finisher | 5/1/2015 | | $34.08 | $21.64 | $55.72 |
| Tile Layers | 5/1/2015 | | $41.90 | $22.08 | $63.98 |
| Tile Layers | 5/1/2014 | | $40.05 | $22.08 | $62.13 |
| Tile Setter | 5/1/2019 | | $49.21 | $24.81 | $74.02 |
| Tile Setter | 5/1/2016 | | $41.21 | $24.81 | $66.02 |

## BUREAU OF LABOR LAW COMPLIANCE
## PREVAILING WAGES PROJECT RATES

| Project: 17-00366 - Building | Effective Date | Expiration Date | Hourly Rate | Fringe Benefits | Total |
|---|---|---|---|---|---|
| Tile Setter | 5/1/2018 | | $46.46 | $24.81 | $71.27 |
| Tile Setter | 5/1/2017 | | $43.71 | $24.81 | $68.52 |
| Truckdriver class 1(see notes) | 5/1/2016 | | $29.85 | $17.14 | $46.99 |
| Truckdriver class 2 (see notes) | 5/1/2016 | | $29.95 | $17.14 | $47.09 |
| Truckdriver class 3 (see notes) | 5/1/2016 | | $30.20 | $17.14 | $47.34 |

# BUREAU OF LABOR LAW COMPLIANCE
# PREVAILING WAGES PROJECT RATES

| Project: 17-00366 - Heavy/Highway | Effective Date | Expiration Date | Hourly Rate | Fringe Benefits | Total |
|---|---|---|---|---|---|
| Carpenter - Chief of Party (Surveying & Layout) | 5/1/2016 | | $51.92 | $26.64 | $78.56 |
| Carpenter - Chief of Party (Surveying & Layout) | 5/1/2015 | | $49.23 | $25.89 | $75.12 |
| Carpenter - Instrument Person (Surveying & Layout) | 5/1/2016 | | $43.66 | $26.64 | $70.30 |
| Carpenter - Instrument Person (Surveying & Layout) | 5/1/2015 | | $42.81 | $25.89 | $68.70 |
| Carpenter - Rodman (Surveying & Layout) | 5/1/2016 | | $36.38 | $21.06 | $57.44 |
| Carpenter - Rodman (Surveying & Layout) | 5/1/2015 | | $34.25 | $20.31 | $54.56 |
| Carpenters | 5/1/2016 | | $43.66 | $26.64 | $70.30 |
| Carpenters | 5/1/2015 | | $42.81 | $25.89 | $68.70 |
| Carpenters | 5/1/2014 | | $41.56 | $25.59 | $67.15 |
| Cement Masons | 5/1/2016 | | $33.35 | $30.96 | $64.31 |
| Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing) | 7/1/2017 | | $46.20 | $31.26 | $77.46 |
| Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing) | 7/1/2018 | | $46.20 | $31.26 | $77.46 |
| Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing) | 7/1/2016 | | $46.20 | $31.26 | $77.46 |
| Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing) | 1/1/2017 | | $46.20 | $31.26 | $77.46 |
| Laborers (Class 01 - See notes) | 5/1/2016 | | $28.35 | $25.65 | $54.00 |
| Laborers (Class 02 - See notes) | 5/1/2016 | | $28.55 | $25.65 | $54.20 |
| Laborers (Class 03 - See notes) | 5/1/2016 | | $28.55 | $25.65 | $54.20 |
| Laborers (Class 04 - See notes) | 5/1/2016 | | $23.15 | $25.65 | $48.80 |
| Laborers (Class 05 - See notes) | 5/1/2016 | | $29.20 | $25.65 | $54.85 |
| Laborers (Class 06 - See notes) | 5/1/2016 | | $29.25 | $25.65 | $54.90 |
| Laborers (Class 07 - See notes) | 5/1/2016 | | $29.10 | $25.65 | $54.75 |
| Laborers (Class 08 - See notes) | 5/1/2016 | | $28.85 | $25.65 | $54.50 |
| Laborers (Class 09 - See notes) | 5/1/2016 | | $28.70 | $25.65 | $54.35 |
| Laborers (Class 10- See notes) | 5/1/2016 | | $28.85 | $25.65 | $54.50 |
| Laborers (Class 11 -See Notes) | 5/1/2016 | | $28.75 | $25.65 | $54.40 |
| Laborers (Class 12 -See Notes) | 5/1/2016 | | $30.45 | $25.65 | $56.10 |
| Laborers (Class 13 -See Notes) | 5/1/2016 | | $32.48 | $25.65 | $58.13 |
| Laborers (Class 14 -See Notes) | 5/1/2016 | | $28.50 | $25.65 | $54.15 |
| Laborers Utility (PGW ONLY) | 5/1/2015 | | $24.19 | $16.78 | $40.97 |
| Laborers Utility (PGW ONLY) | 5/1/2013 | | $27.10 | $15.38 | $42.48 |
| Laborers Utility (PGW ONLY) (Flagperson) | 5/1/2013 | | $20.07 | $15.38 | $35.45 |
| Laborers Utility (PGW ONLY) (Flagperson) | 5/1/2015 | | $19.42 | $16.78 | $36.20 |
| Landscape Laborer | 5/1/2015 | | $20.29 | $22.30 | $42.59 |
| Landscape Laborer | 5/1/2016 | | $21.19 | $22.65 | $43.84 |
| Painters (Bridges, Stacks, Towers) | 2/1/2016 | | $52.10 | $25.41 | $77.51 |
| Steamfitters (Heavy and Highway - Gas Distribution) | 5/1/2016 | | $50.19 | $31.18 | $81.37 |
| Steamfitters (Heavy and Highway - Gas Distribution) | 5/1/2015 | | $48.53 | $30.08 | $78.61 |
| Truckdriver class 1(see notes) | 5/1/2016 | | $29.70 | $17.14 | $46.84 |
| Truckdriver class 2 (see notes) | 5/1/2016 | | $29.80 | $17.14 | $46.94 |
| Truckdriver class 3 (see notes) | 5/1/2016 | | $30.05 | $17.14 | $47.19 |

BID FORM
BID No. 17-16
ELEVATOR UPGRADES
AT
NESHAMINY HIGH SCHOOL
FOR
NESHAMINY SCHOOL DISTRICT

Proposal of: Elevator Upgrades at The Neshaminy High School for the Neshaminy School District, Bid No. 18-11.

To: Mr. Joseph Rischow
Purchasing Supervisor
Langhorne, PA

In conformity with the Drawings and Specifications as prepared by Consolidated Engineers, 1022 James Drive, Leesport, Pennsylvania, after an examination of the site and the Bidding and Contract Documents, including the Advertisement, Instructions to Bidders, Proposals, Bid Form, Bid Bond, Qualification Statement, General Conditions, Supplementary Conditions, Standard Form of Agreement, Performance Bond and Payment Bond, Certificate of Insurance, and Technical Specifications and Drawings, the undersigned submits this proposal and encloses herewith as a bond on the form enclosed, furnished by Neshaminy School District, in an amount of not less than ten percent (10%) of the total of the hereinafter stated Base Bid, made payable to or indemnifying Neshaminy School District, 2001 Old Lincoln Highway, Langhorne, Pennsylvania. Which it is understood will be held by Neshaminy School District, as security as provided in the Instructions to Bidders, if this proposal or any part thereof is accepted by the School District, and the undersigned shall fail to furnish approved bonds and execute the Agreement within ten (10) days from the date of issuance of the award. Should the School District fail to make an award on this project through no fault or failure on the part of the Bidder, then the School Board shall return said bid security.

It is hereby certified that the undersigned is the only person(s) interested in this proposal as principal, and that the proposal is made without collusion with any person, firm, or corporation. The Bidder submits herewith, as such, a Non-Collusion Affidavit in accordance with the provisions of the Pennsylvania Antibid-Rigging Act of October 28, 1983.

Bidder hereby agrees to execute the Agreement and furnish surety company bonds in the form incorporated in the Contract Documents, in the amount of one-hundred percent (100%) of the contract price for the Performance Bond and Payment Bond, within ten (10) days after mailing by the School Board of notice of award, and to begin work within ten (10) days after date of Notice to Proceed.

Bidder guarantees that, if awarded contract, he will furnish and deliver all materials, tools, equipment, tests, transportation, secure all permits and licenses, do and perform all labor, superintendence and all means of construction, pay all fees and do all incidental work, and to execute, construct and finish, in an expeditious, substantial and workmanlike manner, in accordance with the Drawings and Specifications, to the complete satisfaction and acceptance of the School Board, for the Elevator Upgrades at The Neshaminy High School.

It is understood that the School Board, reserves the right to reject any or all proposals, or part thereof, or items therein and to waive technicalities required for the best interest of the School District. It is further understood that competency and responsibility of bidders will receive consideration before the award of the contract. A certified copy of the Contractor's Qualification Statement, AIA Document A305 will be submitted as requested.

Bidder submits this proposal with the understanding that the work shall be completed on or before the dates stipulated in the Advertisement for Bids and Instructions to Bidders; in accordance with the phased completion schedule; and, that time for completion of the work shall be considered as of the essence of this Contract.

A detailed breakdown sheet of the work, and the contract price of the work involved, will be submitted to the Engineer, within fifteen (15) calendar days after the execution of the Contract. The bidder agrees that he will not assign his bid or any of his rights or interests thereunder without the written consent of the School Board.

UNIT PRICES govern addition to or deduction from quantity included in the Base Bid and amounts actually installed on the job. Where existing work is indicated, price includes removal and replacing. Unit prices shall include all labor, materials, equipment, bailing, shoring, removal, supervision, overhead, profit, insurance, bond, etc. required to complete work specified. All quantities shall be verified by the Engineer.

THE BID, as called for, is submitted as follows:

BASE BID

State the costs associated with the upgrades required for the Elevator Upgrades at the Neshaminy High School. This shall include all general construction, as well as mechanical and electrical work as indicated in the contract documents.

_____Dollars

($_____)

ALTERNATE BID 1 - WELL CYLINDER DRILLING/EXCAVATION

The Base Bid includes all work required to furnish and install a new PVC sealed cylinder and plunger including all drilling and excavation work along with any required special hoisting or excavating equipment required to complete the Work. If existing conditions do not warrant the need of additional drilling or excavating equipment or further modifications to accommodate the same, this Alternate shall represent the total change in cost to credit that portion of the Work to the Owner.

_____Dollars

($_____)

ALTERNATE BID 2 – Non-Proprietary Controller and Devices

State the amount to be deducted from the base bid for the use of non-proprietary elevator controller and non-proprietary elevator devices, meeting the requirement of the specifications.

Deduct _____Dollars

Deduct ($_____)

In submitting this proposal, I have received and included in this Bid, the instructions and information contained in the following Addenda:

| Addendum No. | Dated |
|---|---|
| _____ | _____ |
| _____ | _____ |

The undersigned certifies that the Contract Documents have been considered, in their entirety, both before and in the preparation of this Proposal. The undersigned, in submitting this Proposal, intends to be legally bound by this Proposal.

IN WITNESS WHEREOF, the undersigned has caused this Proposal to be executed as of

_____.
Date

When the Bidder is an Individual:

_____ _____(SEAL)
Witness Bidder

*****

When the Bidder is a Partnership:

_____ _____(SEAL)
Witness By:

_____(SEAL)

_____(SEAL)

_____(SEAL)
Partners

*****

When the Bidder is a Corporation: (CORPORATE SEAL)

_____

ATTEST:

_____ By:_____

Secretary President

_____ is a Corporation organized

and existing under the Laws of _____ and has (has not) been granted a Certificate of Authority to do Business in Pennsylvania, as required by the Business Corporation Law, approved May 5, 1933, P. L. 364, as amended to date.

END OF SECTION 00300

## SECTION NC - NON-COLLUSION AFFIDAVIT

### INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S., 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.

This Non-Collusion Affidavit must be executed by the members, officer, or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.

Bid rigging and other efforts to restrain competition, and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval, or submission of this bid.

In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.
The term "complementary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.

Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

# NON-COLLUSION AFFIDAVIT

CONTRACT Elevator Upgrades at The Neshaminy High School

STATE OF Pennsylvania:

COUNTY OF Bucks:

I state that I am _____ of
(Title)

_____,
(Name of Firm)

and that I am authorized to make this affidavit on behalf of my firm, its owners, directors and officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

1. The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder, or potential bidder.

2. Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.

3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.

4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.

5. My firm, its affiliates, subsidiaries, owners, directors, officers and employees are not currently under investigation by any governmental agency and have not, in the last three (3) years, been convicted or found liable for any act prohibited by State or Federal law, in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

   _____

6. A statement above that a person or firm has been so convicted or found liable does not prohibit

_____
(Name of Public Entity)

from accepting a bid from or awarding a contract to such bidder, but may be a ground for consideration by

_____
(Name of Public Entity)

on the question of declining to award a contract to the bidder on the basis of a lack of responsibility.

I state that _____
(Name of Firm)

understands and acknowledges that the above representations are material and important, and will be relied on by

_____
(Name of Public Entity)

in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from

_____
(Name of Public Entity)

of the true facts relating to the submission of bids for this contract.

_____
(Signature)

_____
(Name and Title)

_____
(Name of Firm)

SWORN TO AND SUBSCRIBED BEFORE ME ON THIS

_____ DAY OF _____, 19___.

_____
(NOTARY PUBLIC)

MY COMMISSION EXPIRES ON: _____.

END OF SECTION 00480

## INSTRUCTIONS AND GENERAL CONTRACT TERMS AND CONDITIONS

### INSTRUCTIONS

For all bids exceeding Two Thousand Dollars ($2,000.00) a certified check, bank cashier's check, trust company treasurer's check or a Bid Bond from a surety company legally authorized to do business in the Commonwealth of Pennsylvania, and having the highest rating services, in an amount no less than ten percent (10%) of the total stated bid shall accompany the bid and shall be made payable to the Neshaminy School District. Such Guarantee or Bid Bond shall be forfeited to and retained by the School District as liquidated damages if the bid or any part thereof is accepted by the School District and the Bidder fails to carry out all of the provisions of the bid.

All bids will be publicly opened and read in the **Purchasing Department of the Neshaminy School District at 2001 Old Lincoln Highway, Langhorne, Pennsylvania** on the dates and times specified in the bid documents.

Award(s), if made, will be made to the lowest responsible Bidder for the separate bid selected and to include Alternate Bids, if any, which the School District chooses to accept and which results in the lowest aggregate bid. The determination of who constitutes the "lowest responsible Bidder" shall be within the sole discretion of the School District.

Bidders are expected to examine the specifications and all instructions. Failure to do so will be at the bidder's risk. ALL bids must conform to the specifications as listed.

> Bidder shall furnish the information required by the Bid Form. The bidder shall type or print his name on the lists and each continuation sheet thereof on which he makes an entry. Erasures or other changes must be initialed by the person signing the bid. The bid must be signed by an authorized officer or agent of the bidding company.
>
> No bid will be entertained unless properly made out in ink or typed, signed by the bidder and clearly marked on the envelope: **"SEALED BID – ELEVATOR UPGRADES AT THE NESHAMINY HIGH SCHOOL**"

The Contractor may visit the project site by contacting the district in advance to make arrangements. Any questions concerning the work shall be addressed to the School Authority representative. Questions or clarifications will be answered in writing. Contact Gerry Rutledge of the district at (215)-809-6250 to make arrangements to visit the site.

Contractor shall complete all work from immediately after the school year starting June 22nd, 2017 and complete by July 31st, 2017. If the Contractor does not comply with construction schedules they will be declared "non responsible" and the contract/purchase order will be canceled. The work will be rebid and all additional costs will be the responsibility of the "non responsible" Contractor and deducted from their final payment.

## AWARD OF CONTRACT

The School District reserves the right to reject any and all bids, or the waive informality in the bidding if it is in the interest of the School District to do so. Further, the School District reserves the right to make its award for one or for more of the articles set forth in the specifications or make its award for all of the articles set forth in these specifications.

Whenever two (2) or more bids of equal amounts are the lowest bids submitted by responsible Bidders the School District may award the bid to any one of such Bidders in its sole discretion. The School District has the right to select any and all of the bids, although they may not be awarded to the same bidding Contractor.

The award of the bid by the School District together with the issuance of a Purchase Order to the successful Bidder shall be deemed to result in a binding contract between the Bidder and the School District.

## DESIGNATED PRODUCTS OR ARTICLES

If awarded the contract, the Bidder agrees to furnish and/or install the articles or products set forth in the bid specifications at such times, at such places and in such quantities as specified and all such articles and products shall be subject to the inspection and approval of the School District. In the event any of the articles or products shall be rejected as unsuitable or not in conformance with these specifications, such articles and products shall at once be removed and returned to the Bidder at his expense and other articles or products of proper quality set forth in these specifications shall be furnished in their place at the expense of the successful Bidder.

In the event that the successful Bidder neglects or refuses to furnish and deliver the articles or products or any part thereof as provided in the specifications or to replace any products or articles which are rejected by the School District, then the School District is authorized and empowered to purchase such articles or products in conformity with the bid specifications from such other party and in such quantities and in such manner as the School District shall select at the expense of the successful Bidder or to cancel this contract and reserve all rights for damages which may be incurred by the School District.

Approval of Materials: Where the bid specifications describe or specify a particular product or article, alternate bids covering articles or products equal in all respects are permitted, unless otherwise stated. Where a bid specification specifies an article or product and the Bidder intends to furnish another product or article which he considers equal, then the name and grade of the "equivalent" product or article must be identified in the Bid. Whenever an article or one class of material is specified by the trade name or the manufacturer, the bidder must submit an alternate or equivalent ten (10) days prior to his bid date for review and acceptance along with savings to the Engineer. In addition, the proposed Contractor must include all associated costs for redesign of the concrete foundation, mechanical work, electrical work, and equipment modification or details, as well as, Fire Marshall approval at his expense. All of this must be done in an expeditious manner so that the schedule for delivery of the equipment is not modified. The Contractor must be aware of the importance of delivery of this equipment within the time constraints, to insure completion of the overall project.

The "Equivalent" must be equal in quality, finish and durability and be equally as serviceable for the purpose intended. Final determination of equality is wholly reserved to the School District/Engineer and its representatives.

With respect to any such articles or products, the Bidder shall be responsible for notifying the School District of any price advantage to the School District if the order of any such articles or products are increased to the next higher price or break point for that article or product. Should such price break point exist, such notice shall be given at the time the bid is submitted.

The School District is exempt from the payment of excise taxes and should the Bidder desire to be exempt from such tax, then the Bidder agrees to present, to the School District, properly prepared exemption certificates for execution. Such certificates will be presented only for articles or products furnished under the bid, will list the articles or products and their quantities and will state the names and addresses of the manufacturers and suppliers of such articles and products which are subject to excise tax.

LIQUIDATED DAMAGES

All work required to be performed under the bid specifications shall be started within ten (10) days from date of Purchase Order or notice to proceed, if this is applicable, and shall be completed in accordance with the bid specifications by the guaranteed completion date. Should the Bidder fail to complete the work before the expiration of the completion date set forth in the bid specifications, the Authority will then back charge the bidder the sum of Four Hundred Dollars ($400.00) per day for each calendar day the work remains uncompleted after the completion date. The parties agree that said sum is a proper measure of liquidated damages which the Authority shall sustain per diem as a result of the failure of the Bidder to complete the work within the time required. In no event shall this sum be construed as any form of penalty being imposed upon the Bidder. Liquidated damages shall be assessed after completion date of July 31st, 2016.

Should the Bidder be delayed in the completion of the work set forth in the bid specifications by reason of unforseen circumstances beyond his control and without his fault or negligence, including but not limited to acts of God or of the public enemy, acts of neglect of the School District, acts of other contractors, if any, fires, floods, epidemics, strikes, civil disturbances or freight embargos, the date specified in the bid specifications as the completion date shall be extended by such times as shall be fixed by the Authority, provided however, that any and all claims for extensions of time shall be made by the Bidder in writing within five (5) days after the termination of the event for which the Bidder seeks an extension of time. Otherwise, any claim for an extension by reason of said event shall have been waived by the Bidder.

INSURANCE, INDEMNIFICATION AND STATUS OF PARTIES

The Bidder shall not commence work until he has obtained all insurance required hereunder from carriers legally authorized to do business in the Commonwealth of Pennsylvania and assigned the highest rating available from independent rating services, nor shall the Bidder allow any Subcontractor to commence work on his subcontract until all similar insurance required of the Subcontractor has been so obtained. In this regard, the Bidder shall be required to maintain the following insurance during the term of this contract:

Workers' Compensation Insurance coverage to be statutory for all of his employees employed at the site of the project, and in case any work is sublet, the Bidder shall require

the Subcontractor to provide similar Workers' Compensation for all of the Subcontractor's employees unless such employees are covered by the protection afforded by the Bidder.

Public Liability and Property Insurance in an amount of not less than One Million Dollars ($1,000,000.00) for injuries, including accidental death, to any one (1) person, and subject to the same limit for each person in an amount not less than One Million Dollars ($1,000,000.00) on account of one accident, and insurance property damage in an amount not less than One Million Dollars ($1,000,000.00), provided however, that the Authority may accept insurance covering a subcontractor in amounts less than the requirements set forth herein where such requirements appear excessive because of the extent of the work to be performed by such subcontractors. All required by this paragraph shall be secured through a policy providing coverage on an "occurrence basis".

Public Liability and Property Motor Vehicle Insurance in an amount not less than One Million Dollars ($1,000,000.00) for per sonal injury, One Hundred Thousand Dollars ($100,000.00) for property damage.

Proof of Workers' Compensation Insurance effective for the duration of the work to be performed, must be provided prior to the commencement of work.

Prior to the commencement of any work, Certificates of Insurance evidencing such insurance shall be supplied to the School District. Such Certificates shall also provide that at least thirty (30) days prior notice be given to the School District of the cancellation of such insurance. The insured is the Neshaminy School District.

Conditions

All certificates to contain thirty (30) day notice of cancellation.

It is the obligation of the Bidder to obtain and furnish Certificates for any subcontractors subject to the above terms and conditions.

All insurance policies and/or bonds will be written with insurance companies licensed to do business in the Commonwealth of Pennsylvania and subject to the approval of the School District.

On larger contracts, an umbrella liability policy will be provided with a minimum limit of $3,000,000.00.

Notwithstanding anything to the contrary set forth herein or the acquisition of the insurance described herein, the Bidder hereby agrees to indemnify and hold the Neshaminy School District harmless from and against any and all liability, loss, damage, cost and expense, including court costs and attorney's fees, (Whether or not litigation be commenced) of whatever nature or type, that the School District may hereafter suffer or incur by reason of:

Any injury or harm sustained or reported to have been sustained by any person, including the employees of the Bidder, as a result of the work, duties or obligations being performed by the Bidder under the Bid Specifications;

Any other act or omission of the Bidder, its agents, representatives or employees, including but not limited to Subcontractors or laborers who are on any structure or real property of the Neshaminy School District during the course of the work being performed under the Bid Specifications; or

Any breach or default of the Bidder in the performance of the work, duties and obligations set forth in the Bid Specifications.

In performing the work set forth in the Bid Specifications, the Bidder will at all times be acting and performing as an independent contractor and not as an employee of the School District. The School District shall neither have nor exercise any control or direction over the methods utilized by the Bidder and the sole interest of the School District is to insure that the work set forth in the Bid Specifications is performed by the Bidder in a competent, efficient and satisfactory manner.

In the event contractor breaches or defaults under this contract or fails to perform fully with respect to the specifications set forth herein, the Neshaminy School District shall be entitled to not only the damages for such breach, default or failure to perform, but also its reasonable attorneys' fees, costs and expenses, including but not limited to expert witness fees, in order to remedy the breach, default or failure to perform.

PROTECTION AND NON-INTERFERENCE WITH DISTRICT'S OPERATIONS

The Bidder shall be responsible for the protection of the buildings, facilities and improvements within the areas where the work is being performed. Any disturbance or damage to the work being performed by the Bidder or to the existing building, improvements or equipment or any other impairment of the facilities resulting from the Bidder's performance, shall be promptly restored, repaired or replaced by the Bidder at no extra cost to the School District.

Each Bidder shall be responsible for performing his work in such a manner so as to maintain essential ingress and egress for visitors and occupants to the buildings and facilities and to continuously maintain all required emergency exits from and circulation between existing facilities. Passageways for emergency exits shall be kept continuously open and free from debris, construction equipment, tools, materials or other hazards. The Bidder shall provide all necessary temporary work which may be required to maintain all such ingress, egress and circulation requirements. The Bidder shall be responsible for providing coordination of this temporary work between himself and all Subcontractors and all temporary work shall be removed when no longer required.

Each Bidder shall commence the work and so schedule his work so as to avoid interference with the School's operations. Unavoidable interference with the School's operations shall not be carried out without the School District's approval obtained not less than forty-eight (48) hours prior to the anticipated interference. The bidder is advised that the School's operations during the school year are on an eight-hour day, five days per week basis.

To insure non-interference with the School's operation during the performance of the work, the Bidder shall remove from the buildings, facilities and improvements where the work is being performed all trash, combustible materials and debris of all kind being created during the performance of the work and upon completion of the work. This obligation shall also include all debris created by any subcontractors or men engaged by the Bidder in performing the work. Such debris shall be disposed of off-site by the Bidder.

PAYMENT, PERFORMANCE, AND MAINTENANCE BOND

The Bidder shall promptly pay all laborers and mechanics employed for the work set forth in the Bid Specifications as well as for all materials. Before final payment is made, the Bidder shall furnish the School District with satisfactory evidence that all labor and materials have been paid. Such evidence may include but not be limited to General Releases and/or Releases of Liens duly signed by the Bidder and any Subcontractors or material men.

Upon acceptance of the bid by the Neshaminy School District, the School District shall give written notice to the Bidder of its intention to accept the bid and to award a contract to him through the issuance of a Purchase Order. Upon receiving such notice and as a condition precedent to the awarding of a contract, the Bidder shall be required to furnish to the School District from surety companies legally authorized to do business in the Commonwealth of Pennsylvania and having the highest ratings available from independent rating services, the following Bonds as required by Pennsylvania law:

> Performance Bond or Certified Check in an amount equal to one hundred percent (100%) of the contract price, conditioned upon the faithful performance by the Bidder of the contract and the plans, specifications and conditions of the Contract.
>
> A Payment Bond or Certified Check in an amount equal to one hundred percent (100%) of the contract price so as to protect those supplying labor or materials to the Bidder or to any of the Bidder's Subcontractors.
>
> A Maintenance Bond or Certified Check in an amount equal to one hundred percent (100%) of the contract price, conditioned upon the faithful performance by the Bidder to remedy, without cost to the Owner, any break of warranty and/or defects which may develop during a period of two (2) years from the date of finial completion and acceptance of all the work performed under this contract.

The Bidder shall be required to file such Bonds or Certified Checks in the office of the Business Administrator within five (5) days of the School District's written notice to proceed or issuance of purchase order, whichever occurs first.

SCOPE OF WORK, WORKMANSHIP AND WARRANTY

The School District reserves the right to change, increase or reduce the work as set forth in the Bid Specifications and in such event shall notify the Bidder in writing, provided suitable adjustment is made in the original contract price. Further, the School District reserves the right to increase or decrease the quantity of any products or articles being installed as part of the work without affecting the unit price set forth in the Bid Specifications.

In performing the work, the Bidder agrees to fulfill all requirements with respect to the installation of any products or articles and hereby acknowledges that the Bid has been quoted on an installed basis. The Bidder acknowledges that he has accepted the responsibility for having visited the work site and familiarizing himself with all conditions which may affect such installation. The Bidder shall supply all material, tools, equipment, transportation, labor, supervision which may be required to complete the installation of such articles or products in a complete and approved manner.

All work shall be performed in a good and workmanlike manner and, when completed, shall show no signs of carelessness as a result of the work. During the term of the contract, all work and materials shall be subject to the inspection and approval of the School District and the School District reserves the right to reject any work or materials which in its judgement do not fulfill the requirements of the Bid Specifications.

All persons employed by the Bidder to perform the work required by the Bid Specifications shall be competent and first class workmen and mechanics as required by Section 752 of the Pennsylvania School Code of 1949, as amended.

The Bidder shall furnish to the School District, a written guarantee certifying that all defects in workmanship, materials or construction for a period of two (2) years from the date of issuance of final payment shall be corrected and repaired diligently and effectively but in no event later than thirty (30) days after Bidder's receipt of a written notice from the School District identifying such defect. All such corrections and repairs shall be performed by the Bidder at no additional cost to the School District.

The Contractor must submit documentation with his bid certifying that he has been actively engaged in this type of work for at least five (5) consecutive years.

SUBCONTRACTORS

Definition:

A Subcontractor is a firm or corporation or entity who has a direct Contract with the Contractor to perform any of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term Subcontractor does not include any separate Contractor or his Subcontractors.

A Sub-subcontractor is a person, firm or corporation who has a direct or indirect Contract with a Subcontractor to perform any of the Work at the site. The term Sub-subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or any authorized representative thereof.

Award of Subcontracts and Other Contacts for Portions of the Work:

Unless otherwise required by the Contract Documents or the Bidding Documents, the Contractor, as soon as practicable after the award of the Contract and not later than fifteen (15) days after official Notice to Proceed, shall furnish to the Owner, through the Project Engineer in writing, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. The Project Engineer will promptly reply to the Contractor, in writing, stating whether or not the Owner or the Project Engineer has reasonable objection to any such proposed person or entity. Failure to reply promptly shall constitute notice of no reasonable objection.

The Contractor shall not contract with any such proposed person or entity to whom the Owner or the Project Engineer has indicated reasonable objection. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.

If the Owner or the Project Engineer has reasonable objection to any such proposed person or entity, the Contractor shall submit a substitute to whom the Owner or the Project Engineer has no reasonable objection, and the occasioned by such substitution, and an appropriate supplement shall be issued; however, no increase in the Contract sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting names as required.

The Contractor shall make no substitution for any Subcontractor, person or entity previously selected if the Owner or Project Engineer makes reasonable objection to such substitution.
If the contractor should list his name as performing certain listed subcontract Work, he shall be required to establish to the satisfaction of the Owner, through the Project Engineer, that he has performed this subcontract Work on previous projects and furnish a certified statement to this effect.

Subcontractual Relations:

By written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents assumes toward the Owner and Project Engineer. Said agreement shall preserve and protect the rights of the Owner, Project Engineer and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor, so that the Contractor-Subcontractor agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with his Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Subcontractor any terms and conditions of the proposed subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents available to his Sub-subcontractors.

Contractor shall be held responsible for assuring that his Subcontractors comply with Pennsylvania Workers' Compensation Act's provisions, including the Contractor's responsibility to Sections 203 and 302.

Payment to Subcontractors:

The Contractor shall pay each Subcontractor, upon receipt of payment from the Owner, an amount equal to the percentage of completion allowed to the Contractor on account of such Subcontractor's Work. The Contractor shall also require each Subcontractor to make similar payments to his Sub-subcontractors.

If the Project engineer fails to issue a Certificate for Payment for any cause which is the fault of the Contractor and not the fault of a particular Subcontractor, the Contractor shall pay that Subcontractor on demand, make at any time after Certificate for Payment should otherwise have been issued, for his Work to the extent completed, less the retained percentage.

The Contractor shall pay each Subcontractor a just share of any insurance monies received by the Contractor, and he shall require each Subcontractor to make similar payments to his Sub-subcontractors.

The Project Engineer may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding percentages of completion certified to the Contractor on account of Work done by such Subcontractors.

Neither the Project Engineer nor the Owner shall have any obligation to pay or to effect the payment of any monies to any Subcontractor or Sub-subcontractor, except as may otherwise be required by law.

PAYMENT SCHEDULE AND FINAL PAYMENT

Payment to the Bidder of the contract price shall occur in accordance with the following schedule. This specification does not provide for periodic payments based upon a percentage of the work completed. Full payment will be made within forty-five (45) days upon completion of the work and receipt of all required documentation.

The acceptance by the Bidder of the final payment shall constitute a release of the School District by the Bidder with respect to all claims and all liability which the Bidder may assert against the School District, directly or indirectly, as a result of this contract including but not limited to any act or omission on the part by the School District relating to or arising out of the work under the contract, excepting the Bidder's claim for interest upon the final payment if the final payment is improperly delayed. However, the Bidder's acceptance of the final payment does not operate as a release of the Bidder and his sureties form any obligations under this contract with the School District or under the Performance Bond.

SITE INSPECTIONS, PERMITS AND REGULATORY REQUIREMENTS

It will be the Bidder's responsibility to visit the site of the work prior to submitting his Bid so as to fully inform himself as to all of the conditions concerning construction and labor under which the work is to be performed including all rules, regulations and directives of all local, state and federal agencies having jurisdiction over the work. In this regard, all work shall be performed in accordance with all such applicable rules, regulations and directives which are incorporated herein by reference and made a part hereof.

The Bidder shall secure and pay for all permits required by all local, state and federal agencies having jurisdiction over the work, including but not limited to fees, licenses and inspections necessary for the proper performance and completion of the work.

ACCESS TO RECORDS

The Owner shall be afforded access to all of the Contractor's accounting records relating to this Contract, and the Contractor shall preserve all such records for a period of three years or longer as may be required by law after the final payment.

SALES AND USE TAX

The contractor agrees to assign and transfer to the Owner all its rights to sales and use tax which may be refunded as a result of a claim for refund for materials purchased in connection with this Contract. The Contractor agrees to require any Subcontractors to provide access to the Owner of accounting records relating to this contract and to obtain their agreement not to seek refund for any sales or use tax which is the subject of this assignment.

NON-COLLUSION AFFIDAVIT

Included in the specification packet is a "Non-Collusion Affidavit." The bidder must execute this document, have it notarized and submit it, attached to the FORM OF PROPOSAL. Failure to comply with this provision will disqualify the bidder.

STATUTORY REQUIREMENT/GOVERNMENT REQUIREMENTS

In accordance with Section 755 of the Public School Code of 1949, as amended, the Pennsylvania Human Relations Act of 1955, as amended, the regulations of the Pennsylvania Human Relations Commission and the Governor's Code of Fair Practice, neither the Bidder, Subcontractor, nor any person acting on behalf of the Bidder or Subcontractor shall discriminate or permit discrimination or intimidation of any employee hired for the performance of the work on the basis of race, color, religion or natural origin. Further, the School District reserves the right to deduct from the Contract price a penalty of Five Dollars ($5.00) for each calendar day during which such person was discriminated against or intimidated in violation of the foregoing provision and/or cancel its Contract with the bidder so that all money due or to become due under the Contract may be forfeited for a second or subsequent violation. Further, pursuant to the requirements of the Pennsylvania Human Relations Act, the Bidder agrees to comply with all requirements set forth therein and hereby acknowledges the remedies available to the School District in the event of a violation of such Act.

In accordance with Section 754 of the Public School Code of 1949, as amended and Act No. 182 of 1985, all laborers and mechanics employed by the Bidder under the contract shall be citizens of the United States and shall have been residents of the Commonwealth of Pennsylvania for at least ninety (90) days prior to their employment. The Bidder is notified that failure to comply with this provision shall be sufficient legal reason for the School District to refuse payment of the contract price to the Contractor.

In accordance with Section 10.F. of the Municipal Authorities Act, as amended; Section 751 of the Public School Code of 1949, as amended, and Section 1884 of the Steel Products Procurement Act of 1978, as amended, the Bidder agrees that if any steel products are to be used or supplied in the performance of the work set forth in the Bid Specifications, then such products shall be used or supplied in accordance with the terms of said Acts and any regulations issued pursuant thereto. Further, the Bidder acknowledges that the School District shall have available any and all remedies set forth in said Acts for a violation of said Acts or any regulations issued pursuant thereto.

In accordance with Section 111 of the Public School Code of 1949, as amended, the Bidder shall be required to submit for each of its employees as well as the employees of all Subcontractors engaged by the Bidder a report of criminal history information from the Pennsylvania State Police or a statement from the State Police that the State Police central repository contains no such information relating to an employee. The report or statement shall be no more than one (1) year old and the Bidder must submit an original of the document before commencing any work under the contract. Should any employees of the bidder or any Subcontractor not be residents of the Commonwealth of Pennsylvania, then for such employees a report or statement of federal criminal history from the Federal Bureau of Investigation shall be submitted and such report or statement shall be no more than one (1) year old.

In accordance with House Bill Number 1969 enacted into law, Act No. 247 became effective on November 25, 1972. It requires that Bidders on construction contracts for the Commonwealth of Pennsylvania be advised of those provisions of Federal and State statutes, rules and regulations dealing with the prevention of environmental pollution and the preservation of public natural resources that affect the project on which bids are being received.

In accordance with Section 753 of the Public School Code of 1949 as amended and Section 165-1 to Section 165-17 of the Prevailing Wage Act, the Bidder shall pay all wage rates required by said Acts and comply with all reporting requirements of said Acts or any regulations issued pursuant thereto so as to insure that the laborers and mechanics employed to perform the work specified under the contract shall be paid at the rates required.

Pennsylvania Child Abuse History Clearance: See pages at the end of this section.

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM REQUIREMENT OF THE PENNSYLVANIA PUBLIC WORKS EMPLOYMENT VERIFICATION ACT

All contractors must submit a "**Public Works Employment Verification Form**" to the school district at the time when performance and payment bonds are submitted. Submission of this form is a precondition of the contract being awarded and executed. The requirement applies to all employees hired by the contractor or subcontractor, regardless of whether the employee will be working onsite or offsite. This requirement does not apply to an entity that is solely a material supplier for the project.

ACT 82 of 2012 – ARREST or CONVICTION FORM UNDER ACT 24 AND 82 of 2012

Act 82 of 2012, signed into law on June 30, 2012, amends Section 111 of the School Code which provides for background checks for the employees of public schools, private schools, intermediate units and area vocational-technical schools who have direct contact with children. Section 111 also applies to independent contractors and their employees who have direct contact with children and to student teachers and student teacher candidates assigned to public and private schools. The amendments clarify that the employment prohibitions contained in Section 111(e) and Section 111(f.1) of the School Code, based on conviction of certain offenses, apply to both current and prospective employees. The changes to section 111 went into effect on June 30, 2012.

SPECIFICATIONS - ELEVATOR UPGRADES AT THE NESHAMINY HIGH SCHOOL

GENERAL

It is the intent of this specification to be used as a guide by the bidder to establish a standard of quality for materials to be used on this project. It does not relieve the successful bidder from furnishing and properly installing all material that may be necessary for the completion of the work as determined by the Neshaminy School District.

STATUS OF THE PARTIES

In the performance of the work, duties and obligations assumed by the Contractor under these specifications, Contractor will at all times be acting and performing as an independent Contractor and not as an employee of the School District. The School District shall neither have nor exercise any control or direction whatsoever over the methods utilized by the Contractor. The sole interest and responsibility of the School District is to insure that the work, duties and obligations set forth in the bid specifications shall be performed and rendered by the Contractor in a competent, efficient and satisfactory manner.

INDEMNIFICATION

Contractor hereby agrees to indemnify and hold the Neshaminy School District and Consolidated Engineers harmless from and against any and all liability, loss, damage, cost and expense including court costs and attorney's fees (whether or not litigation be commenced) of whatever nature or type that the School District may hereinafter suffer or incur by reason of:

Any injury or harm sustained or purported to have been sustained by any person including the employees of the Contractor as a result of the work, duties or obligations being performed by the Contractor under the bid specifications.

Any other act or omission of the Contractor, its agents, representatives or employees including but not limited to Subcontractors or laborers who are on any structure or real property of the Neshaminy School District, during the course of work being performed under the bid specifications.

Any breach or default of the Contractor in the performance of the work, duties and obligations set forth in the bid specification.

INSTRUCTIONS TO BIDDERS

Bidders are expected to examine the specifications and all instructions. Failure to do so will be at the bidder's risk.

Bidder shall furnish the information required by the bid form. The bidder shall type or print his name on the lists and each continuation sheet thereof on which he makes an entry. Erasures or other changes must be initialed by the person signing the bid. The bid must be signed by an authorized officer or agent of the bidding company.

No bid will be entertained unless properly made out in ink or typed, signed by the bidder and clearly marked on the envelope:

**"SEALED BID - "ELEVATOR UPGRADES AS THE NESHAMINY HIGH SCHOOL"**

Bids and modifications or withdrawals thereof received after the time set for opening same will not be considered.

Sealed bids will be received at the Office of the Purchasing Department, Mr. Joseph Rischow, 2001 Old Lincoln Highway, Langhorne, Pennsylvania 19047, until **Thursday February 16, 2017 at 10:00 AM prevailing time.**

The award of the contract by the Neshaminy School District and issuance of a purchase order to the successful bidder shall be deemed to result in a binding contract.

Whenever a particular make of material is shown or specified, such make of material shall be regarded as a standard. Any other make of material will be accepted which is comparably equal to the specified quality, workmanship, economy in operation and suitability for the purpose intended.

The successful Bidding Contractor will carry out all rehabilitation work in strict accordance with the specifications, and any work not conforming will be reinstated or replaced at the Contractor's expense.

ALL bids must conform to the specifications as listed.

The right to reject any one or all bids or any materials furnished which are not in strict compliance with the requirements of the specifications is a privilege reserved by the School District.

Bidding Contractors are required to visit all sites and verify all dimensions.

The job shall proceed in a workmanlike manner and when completed, the areas shall show no signs of carelessness as a result of this work.

The Contractor shall take all necessary precautions to avoid injury or damage to buildings, driveways, sidewalks and lawns.
Every precaution shall be made to protect the facilities during the course of the work. ALL damage that occurs will be completely restored to the satisfaction of the School District before final payment will be made.

The School District reserves the right to change, increase or reduce the work as necessary and in such event, shall notify the Contractor in writing, provided suitable adjustment is made in the original contract price.

The Contractor shall furnish to the School District a written guarantee certifying that all defects in the materials and workmanship that occur from natural wear and tear in connection with equipment installed as part of this contract, within a period of two (2) years from the date of acceptance, shall be corrected and repaired diligently and effectively at no additional cost to the School District.

All bids must be accompanied by a bid bond in the amount of 10% of bid or certified check in the amount of 10% of the bid.

Contractor awarded this work shall furnish evidence of full insurance coverage including workers' compensation, public liability and property damage.

Each contractor shall be required to furnish and pay for a performance bond, payment bond and maintenance bond, each in the amount of 100% of the contract price. Sureties shall be satisfactory to the School District. The School District shall give written notice to the Contractor of intention to accept his proposal and to award a contract to him in accordance with his proposal, whereupon the Contractor shall furnish such bonds to the School District within such period as required hereby and by Pennsylvania law.

DEFINITIONS

"Owner": Neshaminy School District.

AIA DOCUMENTS

By reference, the following AIA documents shall be a part of this contract:

| | |
|---|---|
| A-101 | Standard Form of Agreement Between Owner and Contractor |
| A-201** | General Conditions (2007) |
| A-305 | Contractor's Qualification Statement |
| A-310 | Bid Bond |
| A-312 | Performance Bond and Payment Bond |
| G-701 | Change Order |
| G-702/703 | Application and Certificate for Payment |
| G-704 | Certificate of Substantial Completion |
| G-705 | Certificate of Insurance |
| G-706 | Contractor's Affidavit of Payment of Debts and Claims |
| G-706A | Contractor's Affidavit and Release of Liens |
| G-707 | Consent of Surety Company to Final Payment |
| G-710 | Architect's Supplemental Instructions |
| G-713 | Construction Change Authorization |

** ***The general condition shall have the following revisions:***

1. Paragraph 15.2.5; Delete part of last sentence by removing all words after “on all parties”.
2. Delete the following paragraphs in their entirety; 15.2.6, 15.2.6.1, 15.3, 15.3.1, 15.3.2, 15. 3.3, 15 .4, 15 .4.1, 15. 4.2, 15 .4.3, 15. 4.4, 15 .4.4.1, 15 .4.4.2 and 15.4.4.3.

3. Add the following paragraph:

   **15.5 Governing Law/Venue**. This agreement shall be governed as to all matters, including validity, construction and performance by and under the laws of Pennsylvania, without reference to the law of conflicts and Owners and Contractors agree that the venue for all legal proceedings shall be exclusively the Court of Common Pleas of Bucks County, Pennsylvania and each of the Owner and Contractor herewith consent to the exclusive jurisdiction and venue of said court.

END OF SECTION

# PENNSYLVANIA CHILD ABUSE HISTORY CLEARANCE

COMPLETE SECTION 1 ONLY. Print clearly in ink. Enclose $10.00 money order ONLY, payable to DEPARTMENT OF PUBLIC WELFARE. **DO NOT send cash or personal check.**

Send to CHILDLINE AND ABUSE REGISTRY, DEPARTMENT OF PUBLIC WELFARE, P.O. BOX 8170 HARRISBURG, PA 17105-8170

**APPLICATIONS THAT ARE INCOMPLETE, ILLEGIBLE OR RECEIVED WITHOUT FEE WILL BE RETURNED UNPROCESSED. IF YOU HAVE QUESTIONS CALL 717-783-6211, OR (TOLL FREE) 1-877-371-5422.**

**CHILDLINE USE ONLY**

DATE RECEIVED BY CHILDLINE

## SECTION I — APPLICANT IDENTIFICATION

IN THIS SPACE PRINT APPLICANT'S FULL NAME AND ADDRESS (DO NOT USE INITIALS)

NAME

STREET

CITY, STATE
ZIP CODE

| SOCIAL SECURITY NUMBER | | |
|---|---|---|
| AGE | DATE OF BIRTH | DAYTIME PHONE NO. |
| SEX ☐ M ☐ F | COUNTY YOU LIVE IN | |

Disclosure of your Social Security number is voluntary. It is sought under 23 Pa.C.S. §§ 6336(a)(1) (relating to Information in statewide central register), 6344 (relating to Information relating to prospective child care personnel), 6344.1 (relating to Information relating to family day-care home residents), and 6344.2 (relating to Information relating to other persons having contact with children). The department will use your Social Security number to search the statewide central register to determine whether you are listed as the perpetrator in an indicated or founded report of child abuse.

### PURPOSE OF CLEARANCE (Check ONE block ONLY)

- ☐ Child Care Services Employee
- ☐ Foster Care ☐ Adoption ☒ School Employee
- ☐ Employment with a significant likelihood of regular contact with children
- ☐ Volunteers - A copy of your **PROCESSED** "Request for Criminal Record" (Form SP4-164) must be attached. Out-of-state residents must also attach a copy of their **PROCESSED** FBI clearance (Form FD-258).
- ☐ DPW Employment & Training Program Participant (signature required below)

SIGNATURE OF OIM/CAO REPRESENTATIVE

OIM/CAO PHONE NUMBER

### PREVIOUS NAMES USED SINCE 1975 (Include Maiden Name, Nicknames, Aliases)

1. (**LAST,** FIRST, MIDDLE)
2. (**LAST,** FIRST, MIDDLE)
3. (**LAST,** FIRST, MIDDLE)
4. (**LAST,** FIRST, MIDDLE)
5. (**LAST,** FIRST, MIDDLE)

### PREVIOUS ADDRESSES SINCE 1975 (Attach additional pages if necessary)

1.
2.
3.
4.

### HOUSEHOLD MEMBERS (List everyone who lived with you at any time since 1975 to the present)

| NAME (Last, First, Middle) Do not use initials. | RELATIONSHIP | PRESENT AGE | SEX |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |

**I certify that the above information is accurate and complete to the best of my knowledge and belief and submitted as true and correct under penalty of law (Section 4904 of the Pennsylvania Crimes Code).**

Applicants are required to show the administrator the original document. Administrators are required to keep a copy of this child abuse history record on file. Any person altering the contents of this document may be subject to civil, criminal or administrative action.

APPLICANT'S SIGNATURE

DATE

**DO NOT WRITE IN THIS SECTION - CHILDLINE USE ONLY**

## SECTION II — RESULTS OF HISTORY CHECK

☐ APPLICANT IS **NOT** LISTED IN A REPORT OF CHILD ABUSE OR A REPORT FOR SCHOOL EMPLOYEE.

☐ APPLICANT **IS** LISTED IN A REPORT OF CHILD ABUSE OR A REPORT FOR SCHOOL EMPLOYEE (SEE BELOW).

| STATUS OF REPORT | DATE OF INCIDENT | STATUS OF REPORT | DATE OF INCIDENT |
|---|---|---|---|
| 1. | – | 3. | – |
| 2. | – | 4. | – |

VERIFIER _____ DATE _____ VERIFIER'S SUPERVISOR _____ DATE _____

## SECTION III — VOLUNTARY CERTIFICATION FOR CHILD CARE SERVICES

_____ has requested a certification which includes a clearance of his/her name against the child abuse, school employee, and criminal history reports.

The results of the child abuse and school employee report clearances are listed in Section II on the reverse side. The results of the criminal history reports are listed below. Out-of-state residents must have criminal history clearance from both the Pennsylvania State Police and the FBI. The voluntary certification may be obtained every two years.

It is the responsibility of parents and guardians to review this information to determine the suitability of the applicant as a substitute caregiver.

### PENNSYLVANIA CHILD ABUSE HISTORY CLEARANCE

☐ Applicant is named as the perpetrator of a **founded** child abuse or school employee report which occurred in the last five years.

☐ Applicant is named as the perpetrator of a **founded** child abuse or school employee report which occurred over five years ago.

☐ Applicant is named as the perpetrator of an **indicated** child abuse or school employee report.

☐ Applicant is not named as the perpetrator of any child abuse or school employee report contained in the Statewide Central Register.

### PENNSYLVANIA STATE POLICE CLEARANCE

☐ Record exists and contains convictions which prohibit hire in a child care position. Report attached.

☐ Record exists, but convictions do not prohibit hire in a child care position. Report attached.

☐ Record exists, but no convictions are shown. This does not prohibit hire in a child care position. Report attached.

☐ No record exists. Report attached.

### FBI CLEARANCE

☐ Record exists and contains convictions which prohibit hire in a child care position. Report attached.

☐ Record exists, but convictions do not prohibit hire in a child care position. Report attached.

☐ Record exists, but no convictions are shown. This may not prohibit hire in a child care position. Report attached.

☐ No record exists. Report attached.

☐ No FBI clearance required.

VERIFIER _____ DATE _____ VERIFIER'S SUPERVISOR _____ DATE _____

## DIRECTIONS TO COMPLETE THE PENNSYLVANIA CHILD ABUSE HISTORY CLEARANCE APPLICATION:

1. Applicants are to complete Section I only.
2. Type or print clearly and neatly in ink only.
3. The space for the applicant's name must be the applicant's full legal name. An initial is not acceptable for a first name. The address listed must be applicant's current home address. This is also where the results of the clearance will be mailed.
4. The applicant's Social Security number is voluntary. If filling in the Social Security number please fill in the entire Social Security number.
5. Age – Fill in the applicant's current age.
6. Date of Birth – Fill in the applicant's date of birth (Example: 01/22/1990).
7. Daytime Phone Number – Fill in the number for where the applicant can be reached in the event that there are questions about the information on the application.
8. Sex – Check the appropriate box for male or female.
9. County You Live In – Fill in the name of the county where you reside (this should be the county for the address that the applicant filled in the space on the left of this section).
10. **Purpose of Clearance** – Do not check more than one block:
    a. Check the Child Care box if planning to work in a day care or child care setting.
    b. Check the Foster Care box if applying as a prospective foster parent.
    c. Check the School Employee box if seeking to have involvement within a school (public, private, vocational, or technical) for employment or volunteer purposes OR check this box if a child abuse clearance is needed due to enrollment in an educational program such as a nursing school or technical program.
    d. Check the Adoption Block if in the process or planning to adopt a child.
    e. Check Employment With A Significant Likelihood of Regular Contact With Children if NONE of the other options relate to why a child abuse clearance is needed.
    f. Check the Volunteers box if performing a service (paid or unpaid) for organizations such as Big Brothers/Big Sisters, Boy Scouts, Little League, or churches. As noted on the form, if the Volunteer box is checked, the applicant must also attached A COPY of the RESULTS from their PA State Police Criminal History Record Check. Do not send original criminal record results because the original cannot be returned. If the applicant is not a current Pennsylvania resident, the applicant must also attach a copy of their FBI Criminal History results obtained within the past year.
    g. Check the DPW Employment & Training Program Participant box if the applicant is participating in a Department of Public Welfare employment and training program through a county assistance office, or CAO, or the Office of Income Maintenance, OIM. The signature **AND** phone number of the CAO or OIM representative is required.
11. Previous Names Used Since 1975 - The applicant must list any and all full legal names that they have ever had since 1975. This includes maiden names, aliases and also known as (aka) names.
12. Previous Addresses Since 1975 - List all addresses where the applicant has resided since 1975. The applicant can attach an additional sheet of paper with all of the addresses listed if necessary. If the applicant cannot remember the exact mailing addresses since 1975, filling in as much information as possible about the location will be acceptable.
13. Household Members - Include anyone that the applicant lived with since 1975 (parents, guardians, siblings, children, spouse (ex), paramour, friends, etc.). If the applicant was under the age of 18 in 1975 this section must include other household members who lived with the applicant or with whom the applicant lived. Please note the household member's relationship to the applicant, their age (to the best of your knowledge) and their sex. Applications where this section is left blank will be rejected and returned to the applicant.
14. Applications must be signed and dated. Applications that are not signed and dated will be rejected and returned to the applicant.
15. Enclose a $10.00 money order for each application. No cash or personal checks will be accepted. Agency or business checks are acceptable.
16. Do not send any postage paid return envelopes for us to return your results. Results are issued through an automated system generated mailing process.

Note: Clearance results will be mailed to you within 14 days from the date that the clearance is received in our office. Failure to comply with the above instructions will cause considerable delay in processing the results of an applicant's child abuse clearance.

SP 4-164 (2-2013)

PENNSYLVANIA STATE POLICE

# REQUEST FOR CRIMINAL RECORD CHECK

This form is to be completed in ink by the requester – (information will be mailed to the requester only). If this form is not legible or not properly completed, it will be returned unprocessed to the requester. *A response may take four weeks or longer.*

**TRY OUR WEBSITE FOR A QUICKER RESPONSE**
**https://epatch.state.pa.us**

| | |
|---|---|
| **NAME/ REQUESTER** | |
| **ADDRESS** | |
| **CITY/STATE/ ZIP CODE** | |

**FOR CENTRAL REPOSITORY USE ONLY**
**CONTROL NUMBER**

**AFTER COMPLETION MAIL TO:**

**PENNSYLVANIA STATE POLICE**
**CENTRAL REPOSITORY – 164**
**1800 ELMERTON AVENUE**
**HARRISBURG, PA 17110-9758**

**1-888-QUERYPA (1-888-783-7972)**

**DO NOT SEND CASH OR PERSONAL CHECK**

**CHECK ONE BLOCK**

☐ **INDIVIDUAL/NONCRIMINAL JUSTICE AGENCY – ENCLOSE A CERTIFIED CHECK/MONEY ORDER IN THE AMOUNT OF $10.00, PAYABLE TO: "*COMMONWEALTH OF PENNSYLVANIA*" THE FEE IS NONREFUNDABLE**

☐ **NOTARIZED INDIVIDUAL/NONCRIMINAL JUSTICE AGENCY – ENCLOSE A CERTIFIED CHECK/MONEY ORDER IN THE AMOUNT OF $15.00, PAYABLE TO: "*COMMONWEALTH OF PENNSYLVANIA*" THE FEE IS NONREFUNDABLE**

☐ **FEE EXEMPT-NONCRIMINAL JUSTICE AGENCY – NO FEE**

**CONTACT TELEPHONE NUMBER (INCLUDING AREA CODE)**

| | | | - | | | | - | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

| **NAME/SUBJECT OF RECORD CHECK (FIRST)** | **(MIDDLE)** | **(LAST)** | | |
|---|---|---|---|---|
| **MAIDEN NAME AND/OR ALIASES** | **SOCIAL SECURITY NUMBER** | **DATE OF BIRTH (MM/DD/YYYY)** | **SEX** | **RACE** |
| | | | | |

**The Pennsylvania State Police response will be based on the comparison of the data provided by the requester against the information *contained in the files of the Pennsylvania State Police Central Repository only***

**FEES FOR REQUESTS - $10.00. NOTARIZED FEE REQUESTS - $15.00.**
******MAKE ALL MONEY ORDERS PAYABLE TO: COMMONWEALTH OF PENNSYLVANIA ******
**◄◄◄◄◄◄CHECK BOX THAT MOST APPLIES TO THE PURPOSE OF THIS REQUEST►►►►►►**

## REASON FOR REQUEST

☐ **INTERNATIONAL ADOPTION - INTERNATIONAL ADOPTION MUST BE NOTARIZED AND MAILED IN. ($15.00 FOR REQUEST)**

| | | |
|---|---|---|
| ☐ ADOPTION (DOMESTIC) | ☐ EMPLOYMENT/SCREENING | ☐ PASSPORT |
| ☐ ATTORNEY | ☐ FOSTER CARE | ☐ PRIVATE INVESTIGATIONS |
| ☐ BANKING | ☐ HEALTHCARE | ☐ SOCIAL SERVICES |
| ☐ BAR ASSOCIATION | ☐ HOUSING | ☐ TENANT CHECK |
| ☐ CHURCH | ☐ INSURANCE LICENSE | ☐ VISA |
| ☐ CHILD CARE | ☐ MENTAL HEALTH | ☐ VOLUNTEER AMBULANCE/FIREFIGHTER |
| ☐ EDUCATION | ☐ NURSE AID TRAINING | ☐ VOLUNTEER |
| ☐ ELDER CARE | ☐ OTHER _____ | |
| ☐ EMERGENCY MANAGEMENT | | |

☐ **ACCESS & REVIEW - (NOT FOR EMPLOYMENT PURPOSES. MUST BE MAILED INTO THE CENTRAL REPOSITORY WITH A COPY OF A VALID GOVERNMENT ISSUED PHOTO ID, SEE TERMS & CONDITIONS)**

AVAILABLE ONLY TO SUBJECT OF RECORD OR LEGAL REPRESENTATIVE WITH LEGAL AFFIDAVIT AND REQUIRED COPY OF GOVERNMENT PHOTO ID ATTACHED FOR THE PURPOSE OF REVIEWING YOUR CRIMINAL HISTORY.

**WARNING: 18 Pa.C.S. 4904(b) UNDER PENALTY OF LAW - MISIDENTIFICATION OR FALSE STATEMENTS OF IDENTITY TO OBTAIN CRIMINAL HISTORY INFORMATION OF ANOTHER IS PUNISHABLE AS AUTHORIZED BY LAW.**

***Homeland Security is Everyone's Responsibility - Pennsylvania Terrorism Tip Line 1-888-292-1919***

# ARREST/CONVICTION REPORT AND CERTIFICATION FORM
# (under Act 24 of 2011 and Act 82 of 2012)

## Section 1. Personal Information

Full Legal Name: _____

Date of Birth: _____/_____/_____

Any former names by which you have been identified: _____

## Section 2. Report of Arrest or Conviction

☐

By checking this box, I report that I have been arrested for or convicted of an offense or offenses enumerated under 24 P.S. §§1-111(e) or (f.1) ("Reportable Offense(s)"). See Instructions on Page 3 of this Form for a list of Reportable Offenses. If you have none to report, proceed to Section 3 of this form.

### Details of Arrests or Convictions

For each arrest for or conviction of any Reportable Offense, specify in the space below (or on additional attachments if necessary) the offense for which you have been arrested or convicted, the date and location of arrest and/or conviction, docket number, and the applicable court.

_____

_____

_____

_____

_____

## Section 3. No Arrest or Conviction

☐

By checking this box, I state that I have not been arrested for or convicted of any Reportable Offense.

## Section 4. Certification

*By signing this form, I certify under penalty of law that the statements made in this form are true, correct and complete. I understand that false statements herein, including, without limitation, any failure to accurately report any arrest or conviction for a Reportable Offense, shall subject me to criminal prosecution under 18 Pa.C.S. §4904, relating to unsworn falsification to authorities.*

_____

*Signature* *Date*

# INSTRUCTIONS

This standardized form (PDE-6004) has been developed by the Pennsylvania Department of Education, pursuant to 24 P.S. §1-111(j), to be used by current and prospective employees of public and private schools, intermediate units and area vocational-technical schools for the written reporting by current and prospective employees of any arrest or conviction for an offense enumerated under 24 P.S. §§1-111(e) and (f.1).

As required by subsection (j)(2) of 24 P.S. §1-111, this form shall be completed and submitted by all current and prospective employees of a public or private school, intermediate unit or area vocational-technical school. In addition, as required by subsection (j)(4) of 24 P.S. §1-111, this form shall be utilized by current and prospective employees to provide written notice within seventy-two (72) hours after an arrest or conviction for an offense enumerated under 24 P.S. §§1-111(e) or (f.1).

**Exemption**: Any current employee who completed a PDE-6004 on or before December 27, 2011, in compliance with 24 P.S. §§1-111(j)(1) and (2) on that date, and who has not been arrested for or convicted of an offense enumerated under 24 P.S. §§1-111(e) and (f.1) shall not be required to complete an additional form.

In accordance with 24 P.S. §1-111, employees completing this form are required to submit the form to the administrator or other person responsible for employment decisions in a school entity.

If you have questions regarding to whom the form should be sent, please contact your supervisor or the school entity administration office.

## PROVIDE ALL INFORMATION REQUIRED BY THIS FORM LEGIBLY IN INK.

# LIST OF REPORTABLE OFFENSES

- **A reportable offense enumerated under 24 P.S. §1-111(e) consists of any of the following:**

(1) An offense under one or more of the following provisions of Title 18 of the Pennsylvania Consolidated Statutes:

- Chapter 25 (relating to criminal homicide)
- Section 2702 (relating to aggravated assault)
- Section 2709.1 (relating to stalking)
- Section 2901 (relating to kidnapping)
- Section 2902 (relating to unlawful restraint)
- Section 2910 (relating to luring a child into a motor vehicle or structure)
- Section 3121 (relating to rape)
- Section 3122.1 (relating to statutory sexual assault)
- Section 3123 (relating to involuntary deviate sexual intercourse)
- Section 3124.1 (relating to sexual assault)
- Section 3124.2 (relating to institutional sexual assault)
- Section 3125( relating to aggravated indecent assault)
- Section 3126 (relating to indecent assault)
- Section 3127 (relating to indecent exposure)
- Section 3129 (relating to sexual intercourse with animal)
- Section 4302 (relating to incest)
- Section 4303 (relating to concealing death of child)
- Section 4304 (relating to endangering welfare of children)
- Section 4305 (relating to dealing in infant children)
- A felony offense under section 5902(b) (relating to prostitution and related offenses)
- Section 5903(c) or (d) (relating to obscene and other sexual materials and performances)
- Section 6301(a)(1) (relating to corruption of minors)
- Section 6312 (relating to sexual abuse of children)
- Section 6318 (relating to unlawful contact with minor)
- Section 6319 (relating to solicitation of minors to traffic drugs)
- Section 6320 (relating to sexual exploitation of children)

(2) An offense designated as a felony under the act of April 14, 1972 (P.L. 233, No. 64), known as "The Controlled Substance, Drug, Device and Cosmetic Act."

(3) An offense SIMILAR IN NATURE to those crimes listed above in clauses (1) and (2) under the laws or former laws of:

- the United States; or
- one of its territories or possessions; or
- another state; or
- the District of Columbia; or
- the Commonwealth of Puerto Rico; or
- a foreign nation; or
- under a former law of this Commonwealth.

- **A reportable offense enumerated under 24 P.S. §1-111(f.1) consists of any of the following:**

(1) An offense graded as a felony offense of the first, second or third degree, other than one of the offenses enumerated under 24 P.S. §1-111(e), if less than (10) ten years has elapsed from the date of expiration of the sentence for the offense.

(2) An offense graded as a misdemeanor of the first degree, other than one of the offenses enumerated under 24 P.S. §1-111(e), if less than (5) five years has elapsed from the date of expiration of the sentence for the offense.

(3) An offense under *75 Pa.C.S. § 3802(a)*, (b), (c) or (d)(relating to driving under influence of alcohol or controlled substance) graded as a misdemeanor of the first degree under *75 Pa.C.S. § 3803* (relating to grading), if the person has been previously convicted of such an offense and less than (3) three years has elapsed from the date of expiration of the sentence for the most recent offense.

COMMONWEALTH OF PENNSYLVANIA

# PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

**Date** _____

**Business or Organization Name (Employer)**_____

**Address** _____

**City** _____ **State**_____ **Zip Code** _____

☐ **Contractor** ☐ {dzōŏ2yúNI-ŏű2N óŏKŜŏ] 2yŜú

**Contracting Public Body** _____

**Contract/Project No** _____

**Project Description** _____

**Project Location** _____

**As a contractor/subcontractor for the above referenced public works contract, I hereby affirm that as of the above date, our company is in compliance with the Public Works Employment Verification Act ('the Act') through utilization of the federal E-Verify Program (EVP) operated by the United States Department of Homeland Security. To the best of my/our knowledge, all employees hired post January 1, 2013 are authorized to work in the United States.**

**It is also agreed to that all public works contractors/subcontractors will utilize the federal EVP to verify the employment eligibility of each new hire within five (5) business days of the employee start date throughout the duration of the public works contract. Documentation confirming the use of the federal EVP upon each new hire shall be maintained in the event of an investigation or audit.**

**I, _____, authorized representative of the company above, attest that the information contained in this verification form is true and correct and understand that the submission of false or misleading information in connection with the above verification shall be subject to sanctions provided by law.**

_____

**Authorized Representative Signature**

**MAINTENANCE BOND**

KNOW ALL PERSONS BY THESE PRESENTS, That we, the undersigned

_____

_____
as Principal and

_____
(Surety Company)

_____
(Address)

a corporation organized and existing under the laws of the State of and authorized to transact business in Pennsylvania, as Surety, are held and firmly bound unto

Neshaminy School District
2001 Old Lincoln Highway
Langhorne, Pennsylvania 19047

as hereinafter set forth, in the full and just sum of

100% accepted alternate amount
Dollars ($ _____), for maintenance as designated below; lawful money of the United States of America, to be paid to the Neshaminy School District, its successors or assigns, to which payment, well and truly to be made and done, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

Sealed with our respective seals and dates this _____ day of _____, 20____.

WHEREAS, the above bounden Principal has entered into a contract with

Neshaminy School District
2001 Old Lincoln Highway
Langhorne, Pennsylvania 19047

dated the _____ day of _____, 20____, for

Elevator Upgrades at the Neshaminy High School, Bid No. 17-16

upon certain terms and conditions in said contract more particularly mentioned; and

WHEREAS, it is one of the conditions of the award of the Neshaminy School District, pursuant to which said contract is about to be entered into, that these presents be executed.

NOW, THEREFORE, the joint and several conditions of this obligation are such:

That, if the above bounden Principal shall remedy without cost to the Neshaminy School District any break of service and/or default of full responsibility from the end date of initial two (2) year Project warranty; provided, in the judgment of the Neshaminy School District or its successor having jurisdiction in the premises, such defects are caused by defective or inferior materials or workmanship, then this part of this obligation shall be void; otherwise, it shall be and remain in full force and effect. The duties and responsibilities incurred by the Principal pursuant to said Maintenance Bond shall in no way absolve the Principal of any duty, responsibility or obligations vested in the Neshaminy School District.

Recovery by any persons, co-partnership, association, or corporation hereunder shall be subject to the provisions of the Act of December 20, 1967, P.L. 869, Act No. 385 (8 P.S. 191 ET SEQ), as amended, which Act is incorporated herein and made a part hereof, as fully and completely as though its provisions were fully and at length herein recited, except that, where said Act refers to the Commonwealth of Pennsylvania or a Department thereof, it shall be deemed to refer to the State System of Higher Education.

IN WITNESS WHEREOF, the said Principal and Surety have duly executed this Bond under seal the day and year above written.

WITNESS:

_____ _____(SEAL)
Principal - Individual

(CORPORATE SEAL) _____
Surety

_____ BY _____
Attorney-in-Fact

WITNESS: _____

_____ _____ (SEAL)

_____ _____ (SEAL)

_____ _____ (SEAL)

_____ _____ (SEAL)

(CORPORATE SEAL) _____
Surety

_____ BY _____
Attorney-in-Fact

(CORPORATE SEAL)

_____
Principal - Corporation

_____
Secretary or Treasurer

BY _____
President or Vice President

(CORPORATE SEAL

_____
Surety

_____

BY _____
Attorney-in-Fact

APPROVED AS TO LEGALITY AND FORM

_____ _____
Office of General Counsel Office of Attorney General

END OF SECTION

SECTION 01010 - PROJECT SUMMARY

This project includes the complete rebuild of the existing elevator located at the Neshaminy High School (Area K). The work shall include but not limited to; new Cylinder, new plunger, all new hydrolic piping, new controller, new power unit, new door operator, new door protection device, new car operating panel, new hall buttons, new traveling cables, emergency car lighting, required associated power wiring, code required sprinkler and fire alarm upgrades, hoistway door panels, new cab shell, new laminated walls, new stainless steel doors, return, header and strike, and new aluminum sill. Installation shall include startup and warrantees as here-in specified.

This contractor will be responsible to receive the equipment on delivery and complete the installation as here-in specified. This contractor shall be responsible for all start ups, testing and warrantees as here-in specified.

Coordination of the installation of the above work with the day-to-day operations of the Owner is required, and any disruptions must be worked out in advance.

END OF SECTION 01010

SECTION 01027 - APPLICATIONS FOR PAYMENT

Schedule of Values: Coordinate preparation of the Schedule of Values with the Contractor's Construction Schedule.

Correlate line items in the Schedule of Values with other schedules and forms, including:

Contractor's Construction Schedule.
Application for Payment form.
List of subcontractors.
List of products.
Schedule of submittals.

Submit the Schedule of Values to the Engineer at the earliest date, but no later than seven (7) days before the date scheduled for submittal of the initial Application for Payment.

Break Contract Sum down in enough detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items. Round amounts off to the nearest dollar; the total shall equal the Contract Sum.

For each item where an Application for Payment includes products purchased or fabricated and stored, but not installed, provide separate line items for initial cost, each subsequent stage of completion, and installed value.

Each item in the Schedule of Values and Applications for Payment shall be complete including total cost and share of overhead and profit.

Update and resubmit the schedule when Change Orders or Construction Change Directives change the Contract Sum.

Applications for Payment: Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.

Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for the application.

Application Preparation: Complete every entry, including notarization and execution by person authorized to sign on behalf of the Owner. Incomplete applications will be returned without action.

Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.

Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the period covered by the application.

Transmittal: Submit 3 executed copies of each application to the Engineer within 24 hours; one copy shall be complete, including waivers of lien and similar attachments.

Transmit each copy with a transmittal listing attachments, and recording information related to the application.

Waivers of Lien: With each application, submit waivers of lien from every entity who may file a lien arising out of the Contract, and related to the Work covered by the payment.

Submit partial waivers on each item for amount requested, prior to deduction for retainage, on each item.

When an application shows completion of an item, submit final or full waivers.
Waiver Delays: Submit each application with Contractor's waiver of lien for the period covered by the application.

Submit final Application for Payment with final waivers from every entity involved with performance of Work covered by the application who could be entitled to a lien.

Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:

List of subcontractors.
List of suppliers and fabricators.
Schedule of Values.
Contractor's Construction Schedule (preliminary if not final).
Submittal Schedule (preliminary if not final).
Copies of building permits
Copies of licenses from governing authorities.
Certificates of insurance and insurance policies.
Performance and payment bonds (if required).

Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions. Administrative actions and submittals that precede or coincide with this application include:

Occupancy permits, if required.
Warranties and maintenance agreements.
Test/adjust/balance records.
Maintenance instructions.
Meter readings.
Final cleaning.
Application for reduction of retainage, and consent of surety.

Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment application include:

Completion of Project closeout requirements.
Completion of items specified for completion after Substantial Completion.
Transmittal of required Project construction records to Owner.
Proof that taxes, fees and similar obligations have been paid.

END OF SECTION 01027

SECTION 01040 - PROJECT COORDINATION

This Section specifies requirements for project coordination including:

Coordination.
Administrative and supervisory personnel.
General installation provisions.
Cleaning and protection.

Coordination: Coordinate activities included in various Sections to assure efficient and orderly installation of each component. Coordinate operations included under different Sections that are dependent on each other for proper installation and operation.

Where installation of one component depends on installation of other components before or after its own installation, schedule activities in the sequence required to obtain the best results.

Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.

Make provisions to accommodate items scheduled for later installation.

Prepare memoranda for distribution to each party involved outlining required coordination procedures. Include required notices, reports, and attendance at meetings.

Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

Administrative Procedures: Coordinate scheduling and timing of administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:

Preparation of schedules.
Delivery and processing of submittals.
Progress meetings.
Project closeout activities.

Coordination Drawings: Prepare Coordination Drawings where close coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space necessitates maximum utilization of space for efficient installation of different components.

Show relationship of components shown on separate Shop Drawings.

Indicate required installation sequences.

Inspection of Conditions: The Installer of each component shall inspect the substrate and conditions under which Work is performed. Do not proceed until unsatisfactory conditions have been corrected.

Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in Contract Documents.

Inspect material immediately upon delivery and again prior to installation. Reject damaged and defective items.

Provide attachment and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level. Allow for expansion and building movement.

Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect. Refer questionable choices to the Engineer for decision.

Recheck measurements and dimensions, before starting installation.

Install each component during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.

Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.

Mounting Heights: Where mounting heights are not indicated, install components at standard heights for the application indicated. Refer questionable decisions to the Engineer.

Cleaning and Protection: During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

Limiting Exposures: Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure. Such exposures include:

Excessive static or dynamic loading.
Excessive internal or external pressures.
Excessive weathering.
Excessively high or low temperatures or humidity.
Air contamination or pollution.
Water or ice.
Chemicals or solvents.
Heavy traffic, soiling, staining and corrosion.
Rodent and insect infestation.
Unusual wear or other misuse.
Contact between incompatible materials.
Theft or vandalism.

END OF SECTION 01040

SECTION 01045 - CUTTING AND PATCHING

Refer to other Sections of these Specifications, including Divisions -15 and -16, for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

Structural Work: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load deflection ratio. Obtain approval of the cutting and patching proposal before cutting and patching structural elements.

Operational and Safety Limitations: Do not cut and patch operating elements or safety components in a manner that would reduce their capacity to perform as intended, or would increase maintenance, or decrease operational life or safety. Obtain approval of the cutting and patching proposal before cutting and patching operating elements or safety related systems:

Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

Materials: Use materials identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible. Use materials whose performance will equal or surpass of existing materials.

Inspection: Before cutting, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

Temporary Support: Provide temporary support of Work to be cut.

Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions that might be exposed during cutting and patching operations.

Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

Take all precautions to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

Performance: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

> Cut existing construction to provide for the installation of other components or the performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review procedures with the original installer; comply with the original installer's recommendations.

Where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

Cleaning: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty and similar items. Thoroughly clean piping, conduit and similar features before painting or finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01090 - DEFINITIONS AND STANDARDS

Summary: This Section specifies requirements for compliance with governing regulations, codes and standards. Requirements include obtaining permits, licenses, and inspections, as well as payments, statements and requirements associated with regulations, codes and standards.

Refer to General and Supplementary Conditions for requirements for compliance with governing regulations.

Definitions: The following definitions supplement definitions contained in the Agreement, General and Supplementary Conditions and other Contract Documents. They apply generally to the Work.

Indicated refers to graphic representations, notes or schedules on Drawings, or paragraphs or schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference.

Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Engineer", "requested by the Engineer", and similar phrases. No implied meaning shall be interpreted to extend the Engineer's responsibility into the Contractor's supervision of construction.

Approve, used in conjunction with action on submittals, applications, and requests, is limited to the Engineer's duties and responsibilities stated in General and Supplementary Conditions. Approval shall not release the Contractor from responsibility to fulfill Contract Document requirements.

Regulation includes laws, ordinances, statutes, and lawful orders of authorities having jurisdiction, and rules, conventions and agreements in the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.

Furnish means "supply and deliver, ready for unloading, unpacking, assembly, installation, and similar operations."

Install describes operations at site including "unloading, unpacking, assembly, erection, anchoring, applying, working to dimension, finishing, protecting, cleaning and similar operations."

Provide means "furnish and install, complete and ready for use."

Installer is an entity engaged by the Contractor, an employee, or subcontractor for performance of a particular activity, including installation, erection, and application. Installers shall be experienced in the operations they perform.

The term "Experienced," when used with "Installer" means having a minimum of 5 previous projects similar in size to this project, and familiar with precautions required, and requirements of the authority having jurisdiction.

Project Site is the space available for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.

Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

Language used in the Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words as singular where applicable and the context indicates.

Imperative Language is generally used. Requirements expressed imperatively are to be performed by the Contractor. At certain locations subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when noted.

Assignment of Specialists: Certain construction activities shall be performed by specialists, recognized experts in operations to be performed. Specialists must be engaged for those activities, and these assignments are requirements over which the Contractor has no option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

Drawing Symbols: Graphic symbols on Drawings are recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., seventh edition.

Mechanical/Electrical Drawings: Graphic symbols on mechanical and electrical Drawings are aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by symbols recommended by technical associations. Refer instances of uncertainty to the Engineer for clarification before proceeding.

Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable industry standards have the same force and effect as if bound or copied into Contract Documents. Such standards are part of the Contract Documents by reference. Individual Sections indicate which standards the Contractor must keep available at the Project site for reference.

Referenced standards take precedence over standards that are not referenced but recognized in the industry as applicable.
Unreferenced standards are not applicable, except as a general requirement of whether the Work complies with recognized construction industry standards.

Publication Dates: Where compliance with a standard is required, comply with standard in effect as of date of Contract Documents.

Updated Standards: Submit a Change Order proposal where an applicable standard has been revised and reissued after the date of the Contract Documents and before performance of Work. The Engineer will decide whether to issue a Change Order to proceed with the updated standard.

Conflicting Requirements: Where compliance with two or more standards that establish different or conflicting requirements for minimum quantities or quality levels is specified, the most stringent requirement will be enforced. Refer uncertainties as to which quality level is more stringent to the Engineer for a decision before proceeding.

Minimum Quantities or Quality Levels: The quantity or quality shown or specified is the minimum to be provided or performed. Indicated values are minimum or maximum, as appropriate for the requirements. Refer instances of uncertainty to the Engineer for decision before proceeding.

Copies of Standards: Each entity engaged on the Project shall be familiar with standards applicable to that activity. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are required, obtain copies directly from the publication source. Although copies of standards needed for enforcement of requirements may be part of submittals, the Engineer reserves the right to require the submittal of additional copies for enforcement of requirements.

Abbreviations and Names: Where acronyms or abbreviations are used in Specifications or other Contract Documents they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

Trade Union Jurisdictions: Maintain, complete current information on jurisdictional matters, regulations and pending actions, as applicable to construction activities. The manner in which Contract Documents have been organized and subdivided is not intended to indicate of trade union or jurisdictional agreements.

Discuss new developments at project meetings at the earliest feasible dates. Record relevant information and actions agreed upon.

Assign and subcontract construction activities, and employ tradesmen and laborers, in a manner that will not unduly risk jurisdictional disputes that could result in conflicts, delays, claims and losses.

Permits, Licenses, and Certificates: Submit copies of permits, licenses, certifications, inspection reports, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records in conjunction with compliance with standards and regulations bearing on performance of the Work.

END OF SECTION 01090

SECTION 01200 - PROJECT MEETINGS

Summary: This Section specifies requirements for Project meetings including:

Pre-Construction Conferences.
Progress Meetings.

Pre-construction Conference: Conduct a pre-construction conference after execution of the Agreement and prior to commencement of construction activities. Review responsibilities and personnel assignments.

Attendees: The Owner, Engineer and their consultants, the Contractor and its superintendent, subcontractors, and other concerned parties shall be represented by persons authorized to conclude matters relating to the Work.

Agenda: Discuss significant items that could affect progress, including the tentative construction schedule, critical sequencing, use of the premises, procedures for processing Change Orders and equipment deliveries.

Pre-installation Conference: Conduct a pre-installation conference before each activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in the installation, and coordination or integration with other materials and installations that have preceded or will follow, shall attend. Advise the Engineer of scheduled meeting dates.

Review progress of other activities and preparations for the activity under consideration at each conference, including time schedules, manufacturer's recommendations, weather limitations, substrate acceptability, compatibility problems and inspection and testing requirements.

Record significant discussions, agreements and disagreements of each conference, along with the approved schedule. Distribute the meeting record to everyone concerned, promptly, including the Owner and Engineer.

Do not proceed if the conference cannot be successfully concluded. Initiate necessary actions to resolve impediments and reconvene the conference at the earliest feasible date.

Progress Meetings: Conduct progress meetings at regular intervals. Notify the Owner and Engineer of scheduled dates. Coordinate meeting dates with preparation of the payment request.

Attendees: The Owner and Engineer, each subcontractor, supplier or other entity concerned with progress or involved in planning, coordination or performance of future activities shall be represented by persons familiar with the Project and authorized to conclude matters relating to progress.

Agenda: Review minutes of the previous progress meeting. Review significant items that could affect progress. Include topics appropriate to the current status of the Project.

Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

Review the present and future needs of each entity present, including such items as:

Time.
Sequences.
Deliveries.
Off-site fabrication problems.
Site utilization.
Temporary facilities and services.
Hazards and risks.
Quality and Work standards.
Change Orders.
Documentation of information for payment requests.

Reporting: No later than 5 days after each meeting, distribute copies of minutes of the meeting to each party present and to parties who should have been present. Include a summary, in narrative form, of progress since the previous meeting.

END OF SECTION 01200

SECTION 01230 - ALTERNATE BIDS

ALTERNATE BID - WELL CYLINDER DRILLING/EXCAVATION

The Base Bid includes all work required to furnish and install a new PVC sealed cylinder and plunger including all drilling and excavation work along with any required special hoisting or excavating equipment required to complete the Work. If existing conditions do not warrant the need of additional drilling or excavating equipment or further modifications to accommodate the same, this Alternate shall represent the total change in cost to credit that portion of the Work to the Owner.

END OF SECTION 01230

SECTION 01300 - SUBMITTALS

Summary: This Section specifies requirements for handling submittals.

General Procedures: Coordinate submittal preparation with performance of construction activities, and with purchasing or fabrication, delivery, other submittals and related activities. Transmit in advance of performance of related activities to avoid delay.

Coordinate transmittal of different submittals for related elements so processing will not be delayed by the need to review concurrently for coordination. The Engineer reserves the right to withhold action on a submittal requiring coordination until related submittals are received.

Submittal Preparation: Place a label or title block on each submittal for identification. Provide a 4" x 5" space on the label or beside the title block on Shop Drawings to record Contractor's review and approval markings and action taken. Include the following information on the label for processing and recording action taken.

Project name.
Date.
Name and address of Engineer.
Name and address of Contractor.
Name and address of subcontractor.
Name and address of supplier.
Name of manufacturer.

Submittal Transmittal: Package submittals appropriately for transmittal and handling. Transmit with a transmittal form. Submittals received from other than the Contractor will be returned without action.

Contractor's Construction Schedule: Submit a fully detailed construction schedule, within 10 days of the date established for Commencement of the Work. Provide a line item for each construction activity. Use the breakdown of units of Work as indicated in the " Schedule of Values".

Secure commitments for performing critical construction operations from parties involved. Coordinate each activity with other activities and show in proper sequence; include minor elements involved in the construction sequence. Indicate sequences necessary for completion of related portions.

Coordinate the Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests and other schedules.

Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the Schedule to allow time for the Engineer's procedures necessary for certification of Substantial Completion.

Submittal Schedule: Submit the Submittal Schedule within 10 days of the Construction Schedule. Coordinate the Schedule with the list of subcontracts, Schedule of Values and list of products as well as the Construction Schedule.

Prepare the Schedule in chronological order; include submittals. Provide the following information:

Scheduled date for the first submittal.
Related Section number.
Name of subcontractor.
Description of the construction element covered.
Scheduled date the Engineer's final release or approval.

Distribution of Schedules: Distribute copies of the Construction and Submittal Schedules to the Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. When revisions are made, distribute to the same parties and post in the same locations.

Updating: Revise each Schedule after each meeting or activity, where revisions have been made. Issue the updated Schedules concurrently with report of each meeting.

Shop Drawings: Submit new information, drawn to accurate scale. Indicate deviations from Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Include the following information:

Dimensions.
Identification of products and materials included.
Notation of coordination requirements.
Notation of dimensions established by field measurement.

Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48".

Initial Submittal: Submit one correctable translucent print and one blue-line print for review; the reproducible print will be returned.

Final Submittal: Submit 3 blue-line prints; if the Drawing is required for maintenance manuals submit 5 prints. 2 prints will be retained; the remainder will be returned. One of the prints returned shall be maintained as a "Record Document".

Do not use Shop Drawings without a final stamp indicating action taken in connection with construction.

Product Data: Collect Product Data into a single submittal for each element or system. Mark each copy to show applicable choices and options.

Where Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

Manufacturer's printed recommendations.
Compliance with recognized trade association standards.
Compliance with recognized testing agency standards.
Application of testing agency labels and seals.
Notation of dimensions verified by field measurement.
Notation of coordination requirements.

Preliminary Submittal: Submit a preliminary single-copy where selection of options is required.

Submittals: Submit 3 copies of each required submittal; submit 6 copies for maintenance manuals. The Engineer will retain one, and will return the other marked with action taken and corrections or modifications required.

Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

Distribution: Furnish copies of final submittal to installers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession.

Do not permit use of unmarked copies of Product Data in connection with construction.

Distribution: Prepare additional sets for subcontractors, manufacturers, fabricators, installers, and others as required for performance. Show distribution on transmittal forms.

Engineer's Action: Except for submittals for record, information or similar purposes, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

Action Stamp: The Engineer will stamp each submittal with a self-explanatory action stamp. The stamp will be appropriately marked to indicate action taken.

END OF SECTION 01300

SECTION 01600 - MATERIALS AND EQUIPMENT

"Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock.

"Named Products" are items identified by manufacturer's product name, including make or model designation indicated in the manufacturer's product literature.

"Materials" are products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

"Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

When the Contractor has the option of selecting between two or more products, the product selected shall be compatible with products previously selected.

Nameplates: Except for required labels and operating data, do not attach manufacturer's nameplates or trademarks on surfaces exposed to view in occupied spaces or on the exterior.

Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an inconspicuous accessible surface. The nameplate shall contain the following information and essential operating data:

Name of product and manufacturer.
Model and serial number.
Capacity.
Speed.
Ratings.

Product Storage, and Handling: Store and handle products in accordance with manufacturer's recommendations, using methods that will prevent damage, deterioration and loss.

Coordinate delivery to minimize long-term storage and prevent overcrowding construction spaces. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

Inspect products on delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.

Store products to facilitate inspection and measurement of quantity or counting of units. Store heavy materials away from the structure in a manner that will not endanger supporting construction.

Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

Non-Proprietary Specifications: When Specifications list products or manufacturers that are available and may be used, but do not restrict the Contractor to use of these products only, the Contractor may propose any product that complies with Contract requirements. Comply with provisions for "substitutions" to obtain approval for use of an unnamed product.

Descriptive Specification Requirements: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that provides the characteristics and otherwise complies with requirements.

Compliance with Standards: Where Specifications require compliance with a standard, select a product that complies with the standard specified.

Installation of Products: Comply with manufacturer's instructions and recommendations for installation of products. Anchor each product securely in place, accurately located and aligned with other Work. Clean exposed surfaces and protect to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01600

SECTION 01700 - PROJECT CLOSEOUT

Substantial Completion: Before requesting inspection for certification of Substantial Completion, complete the following:

In the Application for Payment that coincides with the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed substantially complete.

Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar record information.

Complete start-up testing of systems, and instruction of the Owner's personnel. Remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

Complete final clean up. Touch-up and repair and restore marred exposed finishes.

Inspection Procedures: On receipt of a request for inspection, the Engineer will proceed or advise the Contractor of unfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.

Results of the completed inspection will form the basis of requirements for final acceptance.

Final Acceptance: Before requesting inspection for certification of final acceptance and final payment, complete the following:

Submit final payment request with releases.

Submit a final statement, accounting for changes to the Contract Sum.

Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance

Submit consent of surety to final payment.

Submit evidence of continuing insurance coverage complying with insurance requirements.

Reinspection Procedure: The Engineer will reinspect the Work upon receipt of notice that the Work has been completed, except items whose completion has been delayed because of circumstances acceptable to the Engineer.

Upon completion of reinspection, the Engineer will prepare a certificate of final acceptance, or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

If necessary, reinspection will be repeated.

Record Document Submittals: Do not use Record Documents for construction purposes; protect from loss in a secure location; provide access to Record Documents for the Engineer's reference.

Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark-up these drawings to show the actual installation. Mark whichever drawing is most capable of showing conditions accurately. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover.

Record Specifications: Maintain one copy of the Project Manual, including addenda. Mark to show variations in actual Work performed in comparison with the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot be readily discerned later by direct observation. Note related record drawing information and Product Data.

Upon completion of the Work, submit record Specifications to the Engineer for the Owner's records.

Maintenance Manuals: Organize maintenance data into sets of manageable size. Provide the number of copies as specified in section 01300. Bind in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following information:

Emergency instructions.
Spare parts list.
Copies of warranties.
Wiring diagrams.
Recommended "turn around" cycles.
Inspection procedures.
Shop Drawings and Product Data.

Operating and Maintenance Instructions: Arrange for the manufacturer's recognized representative of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Include a detailed review of the following:

Maintenance manuals.
Spare parts and materials.
Tools.
Lubricants.
Control sequences.
Hazards.
Warranties and bonds.

Maintenance agreements and similar continuing commitments.

As part of instruction for operating equipment, demonstrate the following procedures:

Start-up and shutdown.
Emergency operations.
Noise and vibration adjustments.
Safety procedures.

Provide a video of the above demonstrations taped on VHS format to be turned over to the owner for his use as needed.

Final Cleaning: Employ experienced workers for final cleaning. Clean each surface to the condition expected in a commercial building cleaning and maintenance program. Complete the following before requesting inspection for certification of Substantial Completion:

Remove labels that are not permanent labels.

Clean exposed hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication.

Clean the site of rubbish, litter and other foreign substances. Sweep paved areas; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

Removal of Protection: Remove temporary protection and facilities.

Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION 01700

SECTION 01740 - WARRANTIES AND BONDS

Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

Special Warranties are written warranties required by or incorporated in Contract Documents, to extend time limits provided by standard warranties or to provide greater rights for the Owner.

Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

Requirements for warranties for products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.

Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with the Contractor.

Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

Replacement Cost: On determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through part of its useful service life.

Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

Rejection of Warranties: The Owner reserves the right to reject warranties and limit selections to products with warranties not in conflict with requirements of the Contract Documents.

The Owner reserves the right to refuse to accept Work where a special warranty, or similar commitment is required, until evidence is presented that entities required to countersign commitments are willing to do so.

Submit written warranties to the Engineer prior to the date certified for Substantial Completion. If the Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties on the Engineer's request.

When a designated portion of the Work is completed and occupied or used, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Engineer within fifteen days of completion of that designated portion of the Work.

When a special warranty is to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Engineer for approval prior to final execution.

Special warranty forms are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Engineer for approval prior to final execution.

Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

Provide heavy paper dividers with celluloid covered tabs for each warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.

When operating and maintenance manuals are required for warranted construction, provide additional copies of each warranty, as necessary, for inclusion in each required manual.

END OF SECTION 01740

SECTION 04200 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry joint reinforcement.
5. Ties and anchors.
6. Miscellaneous masonry accessories.

B. Related Sections:

1. Division 05 Section "Metal Fabrications" for furnishing steel lintels and shelf angles for unit masonry.

C. Products installed, but not furnished, under this Section include the following:

1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section "Metal Fabrications."

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 INFORMATIONAL SUBMITTALS

A. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent testing agency acceptable to the authorities having jurisdiction, qualified according to ASTM C 1093 for testing indicated.

B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

E. Preconstruction Testing Service: The contractor or manufacturer shall engage a qualified independent testing agency to perform preconstruction testing indicated below. Payment for these services will be made by the contractor or manufacturer. Retesting of materials failing to meet specified requirements shall be done at contractor's expense.

1. Concrete Masonry Unit Test: For each concrete masonry unit indicated, per ASTM C 140.
2. Mortar Test: For mortar properties per ASEM C 270.
3. Grout Test: For compressive strength per ASTM C 1019.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 PROJECT CONDITIONS

A. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide bullnose units for outside corners unless otherwise indicated.

B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.

1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E 514 as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.

a. Products: Subject to compliance with requirements, provide one of the following:

1) ACM Chemistries; "RainBloc."
2) BASF Aktiengesellschaft; "Rheopel Plus."
3) Grace Construction Products, W. R. Grace & Co. - Conn.; "Dry-Block."

C. Concrete Masonry Units (CMUs): ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
2. Density Classification: Lightweight
3. Size ( Width): Manufactured to dimensions 3/ 8 inch less than nominal dimensions.
4. Exposed Faces: Provide uniform texture type, aggregate size and mix ratio adjusted to provide an extremely fine smooth face texture free of fissures, voids and other defects.

## 2.3 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold-weather construction.

B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. White-Mortar Aggregates: Natural white sand or crushed white stone.
3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

E. Aggregate for Grout: ASTM C 404.

F. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent by same manufacturer.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ACM Chemistries; "RainBloc for Mortar."
b. BASF Aktiengesellschaft; "Rheopel Mortar Admixture."
c. Grace Construction Products, W. R. Grace & Co. - Conn.; "Dry-Block Mortar Admixture."

G. Water: Potable.

## 2.4 REINFORCEMENT

A. Basis of Design: Subject to compliance with requirements, Masonry Joint Reinforcement incorporated into the project shall be based on products manufactured as follows:

a. Single Wythe Wall: Hohmann & Barnard, Inc.; "#120 Truss Mesh."

B. Acceptable Manufacturers: Subject to compliance with requirements, in lieu of the Basis of Design manufacturer, Contractor may provide products from other manufacturers that meet or exceed the published data of the specified Basis of Design product.

C. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.

1. Interior and Exterior Walls: Hot-dip galvanized, carbon steel.
2. Wire Size for Side Rods: 0.148-inch diameter.
3. Wire Size for Cross Rods: 0.148-inch diameter.
4. Wire Size for Veneer Ties: 0.148-inch diameter.
5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.

6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

D. Masonry Joint Reinforcement for Single-Wythe Masonry: Truss type with single pair of side rods.

## 2.5 TIES AND ANCHORS

A. Basis of Design: Subject to compliance with requirements, Ties and Anchors incorporated into the project shall be based on products as manufactured by as follows, in sizes as required by project conditions:

1. Masonry to Masonry Wall Ties: Hohmann & Barnard, Inc.; "MWT-Mesh Wall Tie."

B. Acceptable Manufacturers: Subject to compliance with requirements, in lieu of the Basis of Design manufacturer, Contractor may provide products from other manufacturers that meet or exceed the published data of the specified Basis of Design product.

C. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
2. Galvanized Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 zinc coating.
3. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
4. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.

E. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.

1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.

## 2.6 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type M.
2. For reinforced masonry, use Type S.
3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type S.
4. For interior non-load-bearing partitions, Type S.

C. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

A. Thickness: Build masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Do not install unit masonry that is damaged, cracked or has chipped corners. Remove and replace any unit masonry that contain these issues.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

1. Tooth new masonry units into existing masonry units.

G. Do not wet CMUs.

## 3.3 SPECIAL UNIT MASONRY PROJECT TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/4 inch or minus 1/8 inch.
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/4 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/8 inch in a story height or 1/4 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 5 feet or 1/4 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 3/16 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
5. For lines and surfaces do not vary from straight by more than 3/16 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 3/16 inch in 10 feet, or 1/2 inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.
6. For exposed bed joints interrupted by control or expansion joints, bed joint line and level shall not vary by more than 1/8" inch.

D. Masonry installations that do not conform to the Special Unit Masonry Tolerances indicated above shall be removed and reinstalled.

## 3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond, unless noted otherwise on Drawings; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.
2. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Joint Firestopping."

## 3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.

3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
5. In accordance with the Special Unit Masonry Project Tolerances listed in this Section.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

1. At cavity walls, bevel beds away from cavity, to minimize mortar protrusions into cavity. As work progresses, trowel mortar fins protruding into cavity flat against the cavity face of the brick.

## 3.6 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

## 3.7 ANCHORING MASONRY VENEERS

A. Anchor masonry veneers to concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:

1. Fasten anchors to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
2. Embed tie sections in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of sheathing.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.

## 3.8 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry as follows:

1. Install preformed control-joint gaskets designed to fit standard sash block.

C. Control Joint Spacings: If location of control (vertical movement) joints is not shown, place vertical joints at not more than 25'-0" center-to-center spacing; locate joints at columns when spacing exceeds 20'-0". Verify location of all control joints with Architect.

## 3.9 LINTELS

A. Install steel lintels where indicated and above all openings in masonry walls including above all wall openings, passages, elevator doors, return air openings, etc; above all built-in items, and in addition to locations noted or shown on the Drawings.

B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels when approved in advance by the Architect.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

## 3.10 REPAIRING, POINTING, CLEANING, AND PROTECTION

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units or installations out of compliance with the Special Unit Masonry Project Tolerances indicated in this Section. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

1. Contractor shall identify and replace units noted above as part of their quality control program. Architect reserves the right to back charge Contractor for their time to identify masonry units if Contractor fails to identify and replace non-compliant installations.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

E. Protection: Provide final protection and maintain conditions that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

## 3.11 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Excess Masonry Waste: Remove excess clean masonry waste and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04200

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
2. Elevator machine beams, hoist beams.
3. Steel shapes for supporting elevator door sills.
4. Steel elevator pit ladder.
5. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section:

1. Loose steel lintels for all masonry wall penetrations.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.
4. Rough hardware.

C. Related Sections:

1. Division 04 Section "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.
2. Division 09 Section "Painting & Finishing."

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Design, engineer, fabricate, and install the following metal fabrications to withstand the required structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each respective component of each metal fabrication.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

## 1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Nonslip aggregates and nonslip-aggregate surface finishes.
2. Paint products.
3. Grout.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

## 1.5 INFORMATIONAL SUBMITTALS

A. Mill Certificates: Signed by manufacturers of stainless-steel certifying that products furnished comply with requirements.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

## 1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without causing delay in the work.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6, "Structural Welding Code - Stainless Steel."

## 1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate construction to ensure that

actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

## 1.8 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages and steel weld plates and angles for casting into concrete. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

# PART 2 - PRODUCTS

## 2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

## 2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

C. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

D. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

## 2.3 NONFERROUS METALS

A. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.

B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

## 2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.

C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 325, Type 3; with hex nuts, ASTM A 563, Grade C3; and, where indicated, flat washers.

D. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1.

E. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Plain Washers: Round, ASME B18.22.1.

G. Lock Washers: Helical, spring type, ASME B18.21.1.

H. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

I. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

J. Post-Installed Anchors: Torque-controlled expansion anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

## 2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grouts specifically recommended by manufacturer for interior and exterior applications.

F. Concrete: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi.

2.6 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-

inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

J. Allow for thermal movement resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening up of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

## 2.7 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.
3. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors 1-1/4 inches wide by 1/4 inch thick by 8 inches long at 24 inches o.c., unless otherwise indicated.

C. Galvanize miscellaneous framing and supports at exterior and below-grade locations and where indicated.

## 2.8 STEEL LADDERS

A. Steel Ladders: Fabricate steel ladders in accordance with ANSI A14.3. Elevator pit ladders shall comply with ASME A17.1

1. Space siderails 18 inches apart unless otherwise indicated.
2. Space siderails of elevator pit ladders 18 inches apart.
3. Siderails: Continuous, 1/2-by-2-1/2-inch steel flat bars, with eased edges.
4. Rungs: 3/4-inch- diameter steel bars.
5. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
6. Provide nonslip surfaces on top of each rung by coating with abrasive material metallically bonded to rung.

    a. Products: Subject to compliance with requirements, provide one of the following:

        1) IKG Industries, a division of Harsco Corporation; Mebac.
        2) SlipNOT Metal Safety Flooring, a W. S. Molnar company; SlipNOT.

7. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted steel brackets.
8. Galvanize interior ladders, including brackets and fasteners.

## 2.9 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize exterior miscellaneous steel trim.

## 2.10 ELEVATOR PIT SUMP COVER

A. Provide cast iron frame and cover for cast-in-place concrete elevator pit sump where indicated on the drawings and as follows:

1. Neenah Foundry Company Model "R-1878-A5G" with ½"w. grate slots, and angle frame with flange at base and anchor lugs for installation in cast-in-place concrete.

## 2.11 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates.

## 2.12 LOOSE STEEL LINTELS

A. Provide steel lintels above all openings in masonry walls as indicated in Division 04 Section "Unit Masonry".

B. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

C. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches unless otherwise indicated.

D. Galvanize loose steel lintels located in exterior walls.

## 2.13 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each

unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

## 2.14 ROUGH HARDWARE

A. Furnish bent, or otherwise custom fabricated, bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 06 Sections.

B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts that bear on wood structural connections, and furnish steel washers elsewhere.

## 2.15 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

## 2.16 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Items Indicated to Receive Primers Specified in Division 09 Section "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
4. Other Items: SSPC-SP 3, "Power Tool Cleaning."

D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.

B. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

### 3.2 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

## 3.3 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for operable partitions securely to and rigidly brace from building structure.

## 3.4 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.

1. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations unless otherwise indicated.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

## 3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05500

SECTION 09910 – PAINTING AND FINISHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on substrates.

1.3 DEFINITIONS

A. Gloss Level 1 (Matte Flat Finish): Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. Gloss Level 2 (Velvet-Like Flat Finish): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. Gloss Level 3 (Eggshell Finish): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

D. Gloss Level 4 (Satin Finish): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. Gloss Level 5 (Semi-Gloss Finish): 35 to 70 units at 60 degrees, according to ASTM D 523.

F. Gloss Level 6 (Gloss Finish): 70 to 85 units at 60 degrees, according to ASTM D 523.

G. Gloss Level 7 (High-Gloss Finish): More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Initial Selection: For each type of topcoat product.

1. Submit manufacturer's standard "fan deck" of colors.
2. Architect will request Samples for Verification after receipt of manufacturer's "fan deck."

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.
5. Architect will furnish color schedule approximately 10 weeks after receipt of samples and other color-dependent submittals of other specification sections.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.

B. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue with manufacturer's data.
2. Remove rags and waste from storage areas daily.
3. Protect product from freezing.

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in rain, snow, fog, mist, or when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Where moisture is present, the general contractor shall provide the necessary ventilation to establish appropriate condition. Should the surface be too dry for the product application, the painting contractor shall provide the necessary methods to establish the appropriate conditions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. The Sherwin Williams Company (SW).
2. PPG Architectural Coatings (PPG) *formerly Glidden*.
3. Benjamin Moore & Co (BM).

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

C. Colors: As selected by Architect from manufacturer's full range.

1. Interior Work: A maximum of 3 different pigmented colors will be used, with variations for trim, wall surfaces, wainscots, and graphics.

D. Multiple Colors: Each room or space may have walls of more than one color. The right is reserved to vary the color after the first coat.

E. Color Guarantee: Painting Contractor shall guarantee all in-place paint and stain colors to match colors selected. Obtain copies of standard color charts used, and be certain all in-place paint and stain colors closely match selected colors. Surfaces which fail to pass color inspection shall be repainted at no additional cost to Owner.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to

remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Gypsum Board: 12 percent.
5. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

F. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

G. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" and "Maintenance & Repainting Manual" as applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
2. Clean existing surfaces of residue and miscellaneous applied fixtures to provide a properly prepared surface to receive new finish.
3. Spackle holes, depressions and imperfections on existing gypsum board, concrete and plaster surfaces as recommended by manufacturer to provide a uniform surface to receive new finish.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer**.**

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

## 3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and according to recommendations in "MPI Manual."

1. Materials shall be applied with roller or brush, except that spraying will be permitted for items such as mechanical equipment, grilles, or similar items. Mask off adjoining areas not receiving a spray finish against overspray.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on existing surfaces painted previously or on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

    a. Spot prime where required or provide alternative preparation product as recommended by manufacturer.

B. If, in the opinion of the Architect, adequate block filler, primer, paint or coating coverage is not provided, Contractor shall apply additional coats to satisfy Architect, at no additional cost to the Owner.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints and finishes to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Paint exposed surfaces whether or not colors are designated in "schedules", except where natural finish of materials is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated, Architect will select these from standard colors available for materials systems specified.

## 3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

## 3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

## 3.6 PAINTING AND FINISHING SCHEDULE

A. Concrete and Masonry Substrates

1. Interior, Latex, Traffic Surfaces: Gloss Level 3

a. SW
1st coat: Armorseal Tread Plex
2nd coat: Armorseal Tread Plex
3rd coat: Armorseal Tread Plex

b. PPG
1st coat: Tru-Glaze-WB
2nd coat: Tru-Glaze-WB
3rd coat: Tru-Glaze-WB

c. BM
1st coat Super Spec HP Waterbourne Urethane
2nd coat: Super Spec HP Waterbourne Urethane
3rd coat: Super Spec HP Waterbourne Urethane

B. Metal Substrates:

1. Interior, Ferrous Metals, Latex: Gloss Level 5

a. SW
Primer*: DTM Primer / Finish
1st coat: DTM Acrylic Finish
2nd coat: DTM Acrylic Finish

b. PPG
Primer*: Devoe Coatings Devflex DTM Primer/Finish
1st coat: Devoe Coatings Devflex Acrylic
2nd coat: Devoe Coatings Devflex Acrylic

c. BM
Primer*: Super Spec HP Acrylic Metal Primer
1st coat: Super Spec HP DTM Acrylic
2nd coat: Super Spec HP DTM Acrylic

*Spot prime where metals are shop coated or primed

2. Non-Ferrous Metals, (Galvanized), Latex: Gloss Level 5

a. SW
Primer: DTM Primer / Finish
1st coat: DTM Acrylic Finish
2nd coat: DTM Acrylic Finish

b. PPG
Primer*: Devoe Coatings Devflex DTM Primer/Finish
1st coat: Devoe Coatings Devflex Acrylic
2nd coat: Devoe Coatings Devflex Acrylic

c. BM
Primer: Super Spec HP Acrylic Metal Primer
1st coat: Super Spec HP DTM Acrylic
2nd coat: Super Spec HP DTM Acrylic

C. Gypsum Board and Plaster Substrates:

1. Interior, Latex Paint System: Gloss Level 3

a. SW
Primer: ProMar 200 Zero VOC Primer
1st coat: ProMar 200 Zero VOC
2nd coat: ProMar 200 Zero VOC

b. PPG
Primer: LifeMaster No VOC Interior Primer
1st coat: Diamond 450 No VOC

| | | | |
|---|---|---|---|
| | | 2nd coat: | Diamond 450 No VOC |
| c. | BM | Primer: | Ultra Spec 500 Interior Latex Primer |
| | | 1st coat: | Ultra Spec 500 Interior |
| | | 2nd coat: | Ultra Spec 500 Interior |

END OF SECTION 09910

SECTION 14240 - HYDRAULIC ELEVATOR REPLACEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes existing hydraulic passenger elevator modernization for a complete, working system and shall include the furnishing of all labor, materials, tools, equipment and services required ·to provide a complete the elevator modernization and upgrade.

B. Work" as specified herein and as indicated on the drawings.

C. Related Requirements:

1. Section 011000 " Summary" for purchase contract for elevators negotiated by Owner and assigned to Contractor.

2. Section 055000 "Metal Fabrications" for the following:

a. Structural-steel shapes for subsills.
b. Pit ladders.

1.3 DEFINITIONS

A. Definitions in ASME A17.1/CSA B44 apply to work of this Section.

B. Defective Elevator Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 ACTION SUBMITTALS

A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for car enclosures; hoistway entrances; and operation, control, and signal systems.

B. Shop Drawings:

1. Include plans, elevations, sections, and large-scale details indicating service at each landing; machine room layout; coordination with building structure; relationships with other construction; and locations of equipment.

2. Include large-scale layout of car-control station.
3. Indicate maximum dynamic and static loads imposed on building structure at points of support as well as maximum and average power demands.

C. Samples for Initial Selection: For finishes involving color selection.

D. Samples for Verification: For exposed car, hoistway door and frame, and signal equipment finishes, 3-inch-square Samples of sheet materials and 4-inch lengths of running trim members.

## 1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Certificates: For elevator equipment, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Manufacturer Certificates: Signed by elevator manufacturer, certifying that existing hoistway, pit, and existing machine room layout and dimensions, as shown on Drawings, and electrical service, as shown and specified, will accommodate elevator system being provided.

D. Sample Warranty: For special warranty.

## 1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.

1. Submit manufacturer's/installer's standard operation and maintenance manual, in accordance with ASME A17.1/CSA B44 including diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.

B. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

C. Continuing Maintenance Proposal: Submit a continuing maintenance proposal from Installer to Owner, in the form of a standard one-year maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Elevator manufacturer or a licensee of the manufacturer, who has not less than 5 years successful experience with the installation of similar elevators, and who is currently under contract for maintenance of similar elevators in the area, and who maintains a service center within 50 miles of the project site.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials, components and equipment in manufacturer's protective packaging. Store materials, components, and equipment off of ground, under cover, and in a dry location.

1.9 JOB CONDITIONS

A. Hoistway: The Installer shall examine the hoistway and supporting structure, and the conditions under which the elevator work is to be installed. Notify the Contractor in writing of dimensional discrepancies and other conditions detrimental to proper performance of the elevator work. Do not proceed with the elevator installations until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Temporary Elevator Use: Do not use or permit anyone to use the permanent elevator for any purpose, other than necessary installation and testing procedures, prior to Owner's acceptance.

1.10 COORDINATION

A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.

B. Furnish well casing and coordinate delivery with related excavation work.

C. Coordinate locations and dimensions of other work specified in other Sections that relates to hydraulic elevators, including pit ladders; sumps and floor drains in pits; entrance subsills; electrical service; and electrical outlets, lights, and switches in hoistways, pits, and machine rooms.

1.11 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide one year's full maintenance service by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

1. Perform maintenance, including emergency callback service, during normal working hours.

2. Include 24-hour-per-day, 7-day-per-week emergency callback service.

a. Response Time: Two hours or less.

1.12 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair, restore, or replace elevator work that fails in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
2. Warranty Period: 1 year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 HYDRAULIC ELEVATOR MANUFACTURERS

A. Basis of Design: Subject to compliance with requirements, Hydraulic Elevators incorporated into the project shall be based on systems as follows:

1. Otis Elevator Company

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. KONE Inc.
2. Schindler Elevator Corp.

C. Source Limitations: Obtain elevators from single manufacturer.

1. Major elevator components, including pump-and-tank units, plunger-cylinder assemblies, controllers, signal fixtures, door operators, car frames, cars, and entrances, shall be manufactured by single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with ASME A17.1/CSA B44 and governing PA Elevator Code. In the event of any discrepancies between codes, the more stringent requirements shall govern.

1. Hoistway Certification: The elevator manufacturer, in accordance with the requirements of the PA Elevator Code, shall engage a professional engineer to certify that the existing hoistway, existing pit, existing machine room, and existing surrounding building structure are adequate for the loads imposed (including seismic loads based on the project locale) by the elevator and its operation.

B. Accessibility Requirements: Comply with Section 407 in the United States Access Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.

C. Fire-Rated Hoistway Entrance Assemblies: Door and frame assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 and in accordance with the standards set forth in the PA Elevator Code.

## 2.3 ELEVATORS

A. Elevator System, General: Manufacturer's standard elevator systems. Unless otherwise indicated, manufacturers' standard components shall be used, as included in standard elevator systems and as required for complete system.

B. Elevator Description:

1. Elevator Number(s): Confirm designation with Owner.
2. Type: Existing under-the-car single cylinder to be replaced.
3. Rated Load: 2500 lb.
4. Rated Speed: Match or exceed existing operating speed.
5. Auxiliary Operations:

    a. Standby-powered lowering.

6. Security Features: Card-reader operation keyswitch operation tied into Owner’s existing system.
7. Car Enclosures:

    a. Inside width and depth: Maximize based on size of existing platform and shaft to be reused.
    b. Inside Height: Not less than 93 inches to underside of ceiling.
    c. Front Walls (Return Panels): Satin stainless steel, No. 4 finish with integral car door frames.
    d. Car Fixtures: Satin stainless steel, No. 4 finish.
    e. Side and Rear Wall Panels: Satin stainless steel, No. 4 finish.
    f. Reveals: Satin stainless steel, No. 4 finish.
    g. Door Faces (Interior): Satin stainless steel, No. 4 finish.
    h. Door Sills: Aluminum.
    i. Ceiling: Luminous ceiling.
    j. Handrails: 1/2 by 2 inches rectangular, at sides and rear of car.
    k. Floor: Manufacturer's standard resilient flooring.

8. Hoistway Entrances:

    a. Width: match existing.
    b. Height: match existing.
    c. Type: Single-speed side sliding.
    d. Frames: Satin stainless steel, No. 4 finish.
    e. Doors: Satin stainless steel, No. 4 finish.
    f. Sills: Aluminum.

9. Hall Fixtures: Satin stainless steel, No. 4 finish.

10. Additional Requirements:

    a. Provide inspection certificate in each car, mounted under acrylic cover with frame made from satin stainless steel, No. 4 finish.
    b. Provide hooks for protective pads and one complete set(s) of full-height protective pads.

## 2.4 SYSTEMS AND COMPONENTS

A. Pump Units: Positive-displacement type with a maximum of 10 per cent variation between no load and full load and with minimum pulsations.

1. Pump shall be submersible type with submersible squirrel-cage induction motor, and shall be suspended inside oil tank from vibration isolation mounts or shall be tank-top-mounted type with fan-cooled, squirrel-cage induction motor, and shall be mounted on oil tank with vibration isolation mounts and enclosed in prime-painted steel enclosure lined with 1-inch-thick, glass-fiber insulation board.
2. Motor shall have wye-delta starting.
3. Motor shall have variable-voltage, variable-frequency control.

B. Hydraulic Silencers: System shall have hydraulic silencer containing pulsation-absorbing material in blowout-proof housing at pump unit.

C. Piping: Size, type, and weight of piping as recommended by elevator manufacturer, with flexible connectors to minimize sound and vibration transmissions from power unit.

1. Cylinder units shall be connected with dielectric couplings.
2. Casing for Underground Piping: Schedule 40 PVC pipe complying with ASTM D 1785, joined with PVC fittings complying with ASTM D 2466 and solvent cement complying with ASTM D 2564.

D. Hydraulic Fluid: Elevator manufacturer's standard fire-resistant fluid with additives as needed to prevent oxidation of fluid, corrosion of cylinder and other components, and other adverse effects.

E. Hydraulic Fluid: Nontoxic, biodegradable, fire-resistant fluid, made from vegetable oil with antioxidant, anticorrosive, antifoaming, and metal-passivating additives, that is approved by elevator manufacturer for use with elevator equipment.

F. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.

G. Protective Cylinder Casing: PVC or HDPE pipe casing complying with ASME A17.1/CSA B44, of sufficient size to provide not less than 1-inch clearance from cylinder and extending above pit floor. Casing shall have means of monitoring effectiveness to comply with ASME A17.1/CSA B44.

H. Car Frame and Platform: Welded or bolted steel units as required to reuse existing platform.

I. Guides: Roller guides Polymer-coated, non-lubricated sliding guides or sliding guides with guide-rail lubricators. Provide guides at top and bottom of car frame.

## 2.5 OPERATION SYSTEMS

A. General: Provide manufacturer's standard microprocessor operation system as required to provide type of operation indicated. Units shall be equal to Otis' HydroAccel™.

B. Auxiliary Operations:

1. Single-Car Standby-Powered Lowering: On activation of standby power, if car is at a floor, it remains at that floor, opens its doors, and shuts down. If car is between floors, it is lowered to a preselected floor, opens its doors, and shuts down. If car is below the preselected floor, it is lowered to the next lower floor, opens its doors, and shuts down.

C. Security Features: Security features shall not affect emergency firefighters' service.

1. Card-Reader Operation: System uses card readers at hall push-button stations to authorize calls. Security system determines which landings and at what times calls require authorization by card reader. Provide required conductors in traveling cable and panel in machine room for interconnecting card readers, other security access system equipment, and elevator controllers..

a. Security access system equipment shall be coordinated with Owner's existing system.

## 2.6 DOOR-REOPENING DEVICES

A. Infrared Array: Provide door-reopening device with uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more light beams shall cause doors to stop and reopen.

## 2.7 CAR ENCLOSURES

A. General: Provide steel-framed car enclosures with non-removable wall panels, with removable car roof, access doors, power door operators, and ventilation.

1. Provide standard railings complying with ASME A17.1/CSA B44 on car tops where required by ASME A17.1/CSA B44.

B. Materials and Finishes: Manufacturer's standards, but not less than the following:

1. Subfloor: Exterior, C-C Plugged grade plywood, not less than 7/8-inch nominal thickness.
2. Floor Finish: Manufacturer's standard resilient flooring.
3. Stainless-Steel Wall Panels: Flush, formed-metal construction; fabricated from stainless-steel sheet.
4. Fabricate car with recesses and cutouts for signal equipment.
5. Fabricate car door frame integrally with front wall of car.
6. Stainless-Steel Doors: Flush, hollow-metal construction; fabricated from stainless-steel sheet.
7. Sight Guards: Provide sight guards on car doors.
8. Sills: Extruded or machined metal, with grooved surface, 1/4 inch thick.

9. Luminous Ceiling: Fluorescent light fixtures and ceiling panels of translucent acrylic or other permanent rigid plastic.
10. Light Fixture Efficiency: Not less than 35 lumens/W.
11. Ventilation Fan Efficiency: Not less than 3.0 cfm/W.

## 2.8 HOISTWAY ENTRANCES

A. Hoistway Entrance Assemblies: Manufacturer's standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Frame size and profile shall accommodate hoistway wall construction.

B. Fire-Rated Hoistway Entrance Assemblies: Door-and-frame assemblies shall comply with NFPA 80 and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing at as close-to-neutral pressure as possible according to NFPA 252 or UL 10B.

1. Fire-Protection Rating: 1-1/2 hours with 30-minute temperature rise of 450 deg F.

C. Materials and Fabrication: Manufacturer's standards, but not less than the following:

1. Steel Subframes: For med from cold- or hot-rolled steel sheet, with factory-applied enamel or powder-coat finish or rust-resistant primer. Fabricate to receive applied finish as indicated.
2. Stainless-Steel Frames: Formed from stainless-steel sheet.
3. Stainless-Steel Doors: Flush, hollow-metal construction; fabricated from stainless-steel sheet.
4. Sight Guards: Provide sight guards on doors matching door edges.
5. Sills: Extruded or machined metal, with grooved surface, 1/4 inch thick.
6. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

## 2.9 SIGNAL EQUIPMENT

A. General: Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Provide vandal-resistant buttons and lighted elements illuminated with LEDs.

B. Car-Control Stations: Provide manufacturer's standard recessed or semi-recessed car-control stations. Mount in return panel adjacent to car door unless otherwise indicated.

1. Mark buttons and switches for required use or function. Use both tactile symbols and Braille.
2. Provide "No Smoking" sign matching car-control station, either integral with car-control station or mounted adjacent to it, with text and graphics as required by authorities having jurisdiction.

C. Emergency Communication System: Two-way voice communication system, with visible signal, which dials preprogrammed number of monitoring station and does not require handset use. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.

D. Firefighters' Two-Way Telephone Communication Service: Provide flush-mounted cabinet in each car and required conductors in traveling cable for firefighters' two-way telephone.

E. Car Position Indicator: Provide illuminated, digital-type car position indicator, located above car door or above car-control station. Also, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served. Include travel direction arrows if not provided in car-control station.

F. Hall Push-Button Stations: Provide one hall push-button station at each landing.

1. Provide units with flat faceplate for mounting with body of unit recessed in wall.
2. Equip units with buttons for calling elevator and for indicating applicable direction of travel.

G. Hall Lanterns: Units with illuminated arrows; however, provide single arrow at terminal landings. Provide the following:

1. Units with flat faceplate for mounting with body of unit recessed in wall and with illuminated elements projecting from faceplate for ease of angular viewing.

H. Hall Annunciator: With each hall lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.

1. At manufacturer's option, audible signals may be placed on cars.

I. Hall Position Indicators: Provide illuminated, digital-display-type position indicators, located above hoistway entrance at ground floor.

1. Integrate ground-floor hall lanterns with hall position indicators.

J. Standby-Power Elevator Selector Switches: Provide switches, as required by ASME A17.1/CSA B44, where indicated. Adjacent to switches, provide illuminated signal that indicates when normal power supply has failed. For each elevator, provide illuminated signals that indicate when they are operational and when they are at the designated emergency return level with doors open.

K. Emergency Pictorial Signs: Fabricate from materials matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire, elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station unless otherwise indicated.

## 2.10 FINISH MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, commercial steel, Type B, exposed, matte finish.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, commercial steel, Type B, pickled.

C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.

D. Stainless-Steel Bars: ASTM A 276, Type 304.

E. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.

F. Aluminum Extrusions: ASTM B 221, Alloy 6063.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Verify critical dimensions and examine supporting structure and other conditions under which elevator work is to be installed.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

A. Install cylinder in protective casing within well hole. Before installing protective casing, remove water and debris from well hole and provide permanent waterproof seal at bottom of well casing.

B. Replace cylinder in plumb alignment and accurately centered for elevator car position and travel. Anchor securely in place, supported at pit floor. Seal between protective casing and pit floor with 4 inches of nonshrink, nonmetallic grout or other material acceptable to the manufacturer.

C. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS workmanship and welding operator qualification standards.

D. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.

E. Install piping above the floor, where possible. Install underground piping in casing.

F. Lubricate operating parts of systems as recommended by manufacturers.

G. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay installation of sills and frames until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

H. Leveling Tolerance: 1/4 inch, up or down, regardless of load and travel direction.

I. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.

J. Locate hall signal equipment for elevators as follows unless otherwise indicated:

1. Place hall lanterns either above or beside each hoistway entrance.
2. Mount hall lanterns at a minimum of 72 inches above finished floor.

## 3.3 FIELD QUALITY CONTROL

A. Acceptance Testing: On completion of elevator installation and before permitting elevator use (either temporary or permanent), perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies.

B. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times that tests are to be performed on elevators.

## 3.4 DEMONSTRATION

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

B. Check operation of elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

## 3.5 PERMITS

A. The contractor shall be required to secure all permits, including but not limited PA Labor & Industry's Elevator Division, required for the Project locality and will be required to provide the operating certificate(s) as a condition of Substantial Completion.

## 3.6 MAINTENANCE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Perform maintenance during normal working hours.
2. Perform emergency callback service during normal working hours with response time of two hours or less.
3. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of two hours or less.

END OF SECTION 14240

# SECTION 21 13 10 - WET-PIPE SPRINKLER SYSTEMS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY OF WORK

A. This project consists of modifications and extensions of the existing sprinkler system to provide protection in the elevator shaft in accordance with NFPA 13 and all local codes.

### 1.3 SUBMITTALS

A. Product Data: For each type of product. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Operation and Maintenance Data: For sprinkler specialties to include in emergency, operation, and maintenance manuals.

### 1.4 PERFORMANCE REQUIREMENTS

A. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.

B. Sprinkler system design shall be approved by authorities having jurisdiction.

1. Sprinkler Occupancy Hazard Classifications:

    a. Ordinary Hazard, Group 1

2. Minimum Density for Automatic-Sprinkler Piping Design:

    a. Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. area.

### 1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13.

1.6 PROJECT CONDITIONS

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

1. Notify Owner's representative a minimum of 7 days in advance of proposed interruption of sprinkler service.

2. Do not proceed with interruption of sprinkler service without written permission.

1.7 COORDINATION

A. Coordinate layout and installation of sprinklers with other construction that penetrate ceilings, including light fixtures, HVAC equipment, and partition assemblies. Refer to the requirements

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article, in Part 3, for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

2.2 STEEL PIPE AND FITTINGS

A. Schedule 40 black-steel Pipe: ASTM A 53. Pipe ends may be factory or field formed to match joining method.

B. Schedule 40 black steel Pipe Nipples: ASTM A 733, made of ASTM A 53/, standard-weight, seamless steel pipe with threaded ends.

C. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.

D. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.

E. Schedule 40 Grooved-Joint, Steel-Pipe and fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Anvil International, Inc.
b. Victaulic Company.

2. Pressure Rating: 175 psig minimum.
3. Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch (3.2 mm) thick or ASME B16.21, nonmetallic and asbestos free.

1. Class 125, Cast-Iron Flanges and Class 150, Bronze Flat-Face Flanges: Full-face gaskets.
2. Class 250, Cast-Iron Flanges and Class 300, Steel Raised-Face Flanges: Ring-type gaskets.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

2.4 LISTED FIRE-PROTECTION VALVES

A. General Requirements:

1. Valves shall be UL listed or FM approved.
2. Minimum Pressure Rating for Standard-Pressure Piping: 175 psig.
3. Minimum Pressure Rating for High-Pressure Piping: 300 psig.

B. Ball Valves:

1. Manufacturers: Subject to compliance with code requirements provide products by one of the following.

a. Anvil International, Inc.
b. Victaulic Company.
c. NIBCO.

2. Standard: UL 1091 except with ball instead of disc.
3. Valves NPS 2 and Smaller: Bronze body with threaded ends.

C. Check Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. AFAC Inc.
b. American Cast Iron Pipe Company; Waterous Company Subsidiary.
c. Anvil International, Inc.
d. Clow Valve Company; a division of McWane, Inc.
e. Crane Co.
f. Fire Protection Products, Inc.
g. Milwaukee Valve Company.
h. Mueller Co.; Water Products Division.
i. NIBCO INC.
j. Reliable Automatic Sprinkler Co., Inc.
k. Tyco Fire & Building Products LP.
l. United Brass Works, Inc.
m. Victaulic Company.
n. Viking Corporation.
o. Watts Water Technologies, Inc.

2. Standard: UL 312.
3. Pressure Rating: 250 psig.
4. Type: Swing check.
5. Body Material: Cast iron.
6. End Connections: Flanged or grooved.

2.5 SPECIALTY VALVES

A. General Requirements:

1. Standard: U L's " Fire Protection Equipment D irectory" l isting or " Approval Guide," published by FM Global, listing.
2. Pressure Rating:

    a. Standard-Pressure Piping Specialty Valves: 175 psig (1200 kPa) minimum.
    b. High-Pressure Piping Specialty Valves: [250 psig (1725 kPa) minimum] [300 psig (2070 kPa)].

3. Body Material: Cast or ductile iron.
4. Size: Same as connected piping.
5. End Connections: Flanged or grooved.

B. Alarm Valves:

1. Standard: UL 193.
2. Design: For horizontal or vertical installation.
3. Include t rim s ets f or b ypass, dr ain, el ectrical s prinkler al arm s witch, pressure gag es, retarding chamber, and fill-line attachment with strainer.
4. Drip Cup Assembly: Pipe drain without valves and separate from main drain piping.

2.6 SPRINKLER SPECIALTY PIPE FITTINGS

A. Branch Outlet Fittings:

1. Standard: UL 213.
2. Pressure Rating: 175 psig.
3. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
4. Type: Mechanical-T and -cross fittings.
5. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
6. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
7. Branch Outlets: Grooved, plain-end pipe, or threaded.

B. Flow Detection and Test Assemblies:

1. Standard: U L's " Fire Protection Equipment D irectory" l isting or " Approval Guide," published by FM Global, listing.
2. Pressure Rating: 175 psig.
3. Body Material: C ast- or d uctile-iron housing with or ifice, s ight glass, and i ntegral t est valve.
4. Size: Same as connected piping.
5. Inlet and Outlet: Threaded.

C. Branch Line Testers:

1. Standard: UL 199.
2. Pressure Rating: 175 psig.
3. Body Material: Brass.
4. Size: Same as connected piping.
5. Inlet: Threaded.
6. Drain Outlet: Threaded and capped.
7. Branch Outlet: Threaded, for sprinkler.

## 2.7 SPRINKLERS

A. Manufacturers: Subject to compliance with requirements provide products by one of the following:

1. Reliable Automatic Sprinkler Co., Inc.
2. Tyco Fire & Building Products LP.
3. Viking Corporation.

B. General Requirements:

1. Standard: U L's " Fire Protection Equipment D irectory" l isting or " Approval Guide," published by FM Global, listing.
2. Pressure Rating for Automatic Sprinklers: 175 psig minimum.

C. Automatic Sprinklers with Heat-Responsive Element:

1. Early-Suppression, Fast-Response Applications: **UL 1767**
2. Nonresidential Applications: **UL 199**
3. Characteristics: Nominal 1/2-inch (12.7-mm) orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

D. Sprinkler Finishes:

1. Chrome plated.
2. Bronze.
3. Painted.

E. Special Coatings:

1. Wax.
2. Lead.
3. Corrosion-resistant paint.

F. Sprinkler Guards:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Reliable Automatic Sprinkler Co., Inc.
b. Tyco Fire & Building Products LP.
c. Victaulic Company.

d. Viking Corporation.

2. Standard: UL 199.
3. Type: Wire cage with fastening device for attaching to sprinkler.

2.8 ALARM DEVICES

A. Alarm-device types shall match piping and equipment connections.

B. Water-Flow Indicators:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:

a. ADT Security Services, Inc.
b. McDonnell & Miller; ITT Industries.
c. Potter Electric Signal Company.
d. System Sensor; a Honeywell company.
e. Viking Corporation.
f. Watts Industries (Canada) Inc.

2. Standard: UL 346.
3. Water-Flow Detector: Electrically supervised.
4. Components: Two single-pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
5. Type: Paddle operated.
6. Pressure Rating: 250 psig (1725 kPa).
7. Design Installation: Horizontal or vertical.

C. Valve Supervisory Switches:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:

a. Fire-Lite Alarms, Inc.; a Honeywell company.
b. Kennedy Valve; a division of McWane, Inc.
c. Potter Electric Signal Company.
d. System Sensor; a Honeywell company.

2.
3. Type: Electrically supervised.
4. Components: Single-pole, double-throw switch with normally closed contacts.
5. Design: Signals that controlled valve is in other than fully open position.

PART 3 - EXECUTION

3.1 PREPARATION

A. When required , perform flow test according to NFPA 13 and NFPA 291. Use results for system design calculations. Report test results promptly and in writing.

## 3.2 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical. Deviations from approved working plans for piping require written approval from authorities having jurisdiction.

B. Piping Standard: Comply with requirements for installation of sprinkler piping in NFPA 13.

## 3.3 JOINT CONSTRUCTION

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.

B. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller.

C. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

D. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

E. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

F. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.

G. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

H. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

## 3.4 VALVE AND SPECIALTIES INSTALLATION

A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

## 3.5 SLEEVE INSTALLATION

A. General Requirements: Install sleeves for pipes and tubes passing through penetrations in floors, partitions, roofs, and walls.

B. Sleeves are not required for core-drilled holes.

C. Permanent sleeves are not required for holes formed by removable PE sleeves.

D. Cut sleeves to length for mounting flush with both surfaces unless otherwise indicated.

E. For interior wall penetrations, seal annular space between sleeve and pipe or pipe insulation using joint sealants appropriate for size, depth, and location of joint.

F. Install sleeves that are large enough to provide annular clear space between sleeve and pipe or pipe insulation unless otherwise indicated.

G. Install sleeve materials according to the following applications:

1. Sleeves for Piping Passing through Concrete Floor Slabs: Galvanized-steel pipe.
2. Sleeves for Piping Passing through Concrete Floor Slabs of Mechanical Equipment Areas or Other Wet Areas: Galvanized-steel pipe.

    a. Extend sleeves 2 inches above finished floor level.
    b. For pipes penetrating floors with membrane waterproofing, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.

3. Sleeves for Piping Passing through Gypsum-Board Partitions:

    a. **Galvanized-steel-sheet**.
    b. Exception: Sleeves are not required for water-supply tubes and waste pipes for individual plumbing fixtures if escutcheons will cover openings.

H. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestop materials and installations in Division 07 Section "Penetration Firestopping."

## 3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections.

1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
4. Energize circuits to electrical equipment and devices.
5. Coordinate with fire-alarm tests. Operate as required.

B. Sprinkler piping system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.7 CLEANING

A. Clean dirt and debris from sprinklers. Remove and replace sprinklers with paint other than factory finish.

3.8 PIPING SCHEDULE

A. Standard-pressure, wet-pipe sprinkler system, NPS 2 and smaller, shall be one of the following

1. Schedule 40, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.

2. Schedule 40 , black-steel pipe with cut or roll grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

3.9 SPRINKLER SCHEDULE

A. Use sprinkler types in subparagraphs below for the following applications:

1. Rooms without Ceilings: Upright sprinklers or pendant sprinklers.

B. Provide sprinkler types in subparagraphs below with finishes indicated.

1. Upright, Pendent and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.

END OF SECTION 21 13 10

# SECTION 22 13 10 - SANITARY WASTE AND VENT PIPING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. This Section includes soil, waste, and vent piping inside the building.

### 1.3 SUBMITTALS

A. Product Data: For pipe, tube, fittings, and couplings.

### 1.4 QUALITY ASSURANCE

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

B. The installation shall comply with the requirements of the 2009 International Plumbing Code (I.P.C.) and any applicable local code amendments. Verify the code with requirements with the local code officials before beginning the work.

C. All sanitary piping and fittings are required to be ar the identification of the manufacturer as required in Chapter 3; 303.1 of the IPC.

D. Cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute and shall be Third Party Tested per the requirements of the I.P.C.

## PART 2 - PRODUCTS

### 2.1 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

### 2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Hub and Spigot Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 74. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute® and listed by NSF® International. Pipe and fittings to be Service (SV) class.

B. Joints can be made using a compression gasket manufactured from an elastomer meeting the requirements of ASTM C 564 or lead and oakum.

C. All pipe and fittings to be produced by a single manufacturer and are to be installed in accordance with manufacturer's recommendations and applicable code requirements.

2.3 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

A. Hubless Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 888 and CISPI Standard 301. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute ® and listed by NSF® International.

B. Hubless Couplings shall conform to ASTM C 1540 for heavy duty couplings. Gaskets shall conform to ASTM C 564.

C. All pipe and fittings to be produced by a single manufacturer and are to be installed in accordance with manufacturer's recommendations and applicable code requirements. Couplings shall be installed in accordance with the manufacturer's band tightening sequence and torque recommendations. Tighten bands with a properly calibrated torque limiting device.

2.4 COPPER TUBE AND FITTINGS

A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.

1. Copper Drainage Fittings: cast copper or wrought copper, solder-joint fittings.

B. Hard Copper Tube: ASTM B 88, Types L and M (ASTM B 88M, Types B and C), water tube, drawn temper.

1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.

C. Copper Unions: MSS SP-123, copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Flanges and unions may be used on aboveground pressure piping, unless otherwise indicated.

B. Aboveground, soil and waste piping NPS 4 (DN 100) and smaller shall be any of the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless cast-iron soil pipe and fittings heavy-duty shielded, stainless-steel couplings; and hubless-coupling joints.
3. Copper DWV tube, copper drainage fittings, and soldered joints.

C. Aboveground, soil and waste piping NPS 5 (DN 125) and larger shall be:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.

D. Aboveground, vent piping NPS 4 (DN 100) and smaller shall be any of the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless cast-iron soil pipe and fittings; heavy-duty shielded, stainless-steel rigid, couplings; and hubless-coupling joints.

E. Aboveground, vent piping NPS 5 (DN 125) and larger shall be any of the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless cast-iron soil pipe and fittings; heavy-duty shielded, stainless-steel couplings; and hubless-coupling joints.

F. Underground, soil, waste, and vent piping shall be:

1. Service class, cast-iron soil piping; gaskets; and gasketed joints.

## 3.2 EXCAVATION AND BACKFILL

A. Provide all excavation and backfill required for underground piping installations. Perform excavation and backfill work conforming to the requirements of Section 306, Trenching, Excavation and Backfill, of the 2009 International Plumbing Code.

## 3.3 PIPING INSTALLATION

A. Provide all required excavation and backfill where required for underground piping installations. Refer to Section 306, Trenching, Excavation and Backfill, of the 2009 International Plumbing Code for requirements.

B. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.

C. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Select number of interlocking rubber links required to make installation watertight.

D. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

E. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

F. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

G. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:

1. Building Sanitary Drain: 2 per cent downward in direction of flow for piping NPS 3 (DN 80) and smaller; 1 percent downward in direction of flow for piping NPS 4 (DN 100) and larger.
2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.

H. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

I. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

## 3.4 JOINT CONSTRUCTION

A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

B. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.

C. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

## 3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with the following requirements:

1. Vertical Piping: MSS SP-69, Type 8 clamps.
2. Horizontal Piping Runs: MSS SP-69, Type 1, adjustable, clevis hangers.

B. Install hangers for cast-iron soil piping with the following maximum horizontal spacing:

1. All sizes: 60 inches.
2. Spacing for 10-foot lengths, without fittings, may be increased to 10 feet.

C. Install supports for vertical cast-iron soil piping every 15 feet and at all floors.

D. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4: 72 inches.
2. NPS 1-1/2 and larger: 120 inches.

E. Install supports for vertical copper tubing every 10 feet and at all floors.

## 3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Equipment: Connect drainage piping as indicated. Provide shutoff valve, if indicated, and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 (DN 65) and larger.

## 3.7 FIELD QUALITY CONTROL

A. Test systems according to procedures of authorities having jurisdiction or, in absence of such procedures, testing shall be per the requirements on the International Plumbing Code Section 312, Test And Inspections.

B. Piping Inspections: coordinate all inspection requirements with the Authorities Having Jurisdiction. Do not enclose, cover, or put piping into operation until it has been inspected and approved.

C. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

## 3.8 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION 22 13 10

# SECTION 22 13 50 – ELEVATOR SUMP PUMPS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section includes Elevator Sump Pump and Accessories.

### 1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components, rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Wiring Diagrams: For power, signal, and control wiring.

C. Operation and Maintenance Data: For pumps and controls, to include in operation and maintenance manuals.

### 1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. UL Compliance: Comply with UL 778 for motor-operated water pumps.

## PART 2 - PRODUCTS

### 2.1 ELEVATOR SUMP PUMP SYSTEM

A. The contractor shall furnish and install a Stancor Model SE-50-ELV complete pump and Oil-Minder® control system for each elevator pit, as shown on the drawings. The pumping system shall be capable of pumping water while containing oil. The pump and oil sensor technology control system must comply with ASME 17.1 standards. The system shall function automatically and shall provide a local audible alarm with silence switch and LED indicator lights for EACH of the following events a) the presence of oil in the sump when the pump is signaled to run, b) high liquid in the sump, c) high amps or a locked rotor motor condition, d) electrical power to the panel and e) pump activation. An alarm that sounds only in the event of a high liquid level condition and/or oil detected in the pit shall not be considered equal and will not be accepted. Provide dry contacts for remote monitoring of oil detected, high water alarm, and high amperage/motor overload alert. The Oil Monitoring Control System shall have a minimum of 10 years of proven reliability. The sump pump shall be a Model SE-50, heavy duty submersible type, capable of pumping 50 GPM @ 20' TDH (3000 GPH as per ASME A 17.1

Section 2. 2.2.5 (2007)). T he pum p s hall be approved t o m eet U L 7 78 s tandards and s hall include thermal and overload protection. The motor shall be rated ½ H.P., 1 phase, 60 Hertz, 115 volt, and shall be capable of operating continuously or intermittently. The pump discharge shall have a minimum discharge connection size of 2". The motor housing and fastening bolts shall be c onstructed of 30 4 S tainless Steel and t he mechanical s eals s hall be hous ed i n a separate oi l-filled c ompartment. The pum p s hall have a s emi-open non -clogging V ortex impeller, and shall be designed for floor mounting complete with support legs. The Solid State Oil Minder® control system shall be approved to UL508 standards and housed in a gasketed NEMA 4X enclosure with an 8-pin twist-lock waterproof electrical receptacle. The control panel shall include a f ield a djustable switch with v ariable s ensitivity s ettings f or oi l with a s eparate over-current r elay and f ield a djustable m otor o verload heater with an o ptional a utomatic or manual reset but ton. T he f actory i nstalled O il Sensor pr obe d etection s ystem must be hermetically sealed, heavy duty, Stainless Steel with low voltage self-cleaning technology. The oil sensor probe voltage shall not exceed 15 millivolts DC until it comes in contact with water, at which point t he o il s ensor r eturns t o 5 VDC. T he low 15 m illivolt D C i nput s hall r educe t he potential field and subsequent metal ion exchange, preventing build up of foreign matter on the probe surface. Oil sensing systems using optical lenses subject to dirt contamination and false alarms are not considered equal. The pump control float and oil sensing probe are to be factory mounted on the pump and factory tested. Pipe discharge mounted pump floats and oil sensors are not c onsidered e qual. T he c ontrol pa nel shall hav e a high decibel w arning hor n w ith illuminated red l ight complete with alarm silencing s witch. The system shall include dual float switches for pump activation and high water alarm, with the high water alarm float also acting as a r edundant pump run ( on) float in the event of t he primary p ump run float being incapacitated, a clearly marked terminal board with remote monitoring contacts for connection to the BMS. Provide a solid state push to test switch to perform all pump and control diagnostic tests. Provide a f actory prewired N EMA 4X j unction box with 8 -pin t wist-lock el ectrical receptacle and 25' of heavy duty 8-pin mating cable. Provide as required by project conditions connecting cable in 25' lengths with 8-pin quick connects on each end to connect the junction box t o t he c ontrol panel. Total c able length shall not ex ceed 2 50 f eet. P rovide f actory har d wiring of pum p, oi l pr obe and floats into the N EMA 4X j unction box. All c ables bet ween t he pump and junction box shall be 16' long and the electrical cable and plug from the control panel shall be 8' long. The control unit, pump, floats and sensor probe shall be factory assembled as a complete, ready to us e system and shall be tested, appr oved a nd labeled, for t he intended purpose as a system, by a nationally recognized testing laboratory such as ENTELA.

B. The pum ping s ystem manufacturer/ s upplier s hall pr ovide all of t he s ystem c omponents t o insure proper pump station performance.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. The plumbing contractor is responsible for proper installation of the pumps and accessories and installation per the manufacturer's instructions.

B. The el ectrical c ontractor will provide a ll p ower an d al l c ontrol wiring t o and from t he pum p station.

### 3.2 CONNECTIONS

A. Comply with requirements for piping specified in Division 22 Section "Sanitary Waste and Vent Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

## 3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: The pump manufacturer shall provide one day of field start up service and one day of owner instruction with copies

END OF SECTION 22 13 50

# SECTION 26 00 10 – BASIC ELECTRICAL REQUIREMENTS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes general administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division-1:

1. Submittals.
2. Coordination Drawings.
3. Record documents.
4. Maintenance manuals.
5. Rough-ins.
6. Electrical installations.
7. Cutting and patching.

### 1.2 SUBMITTALS

A. Follow the procedures specified in Division 1.

B. Submit a minimum of eight (8) copies of electrical related Shop Drawings, Product Data, and Samples submitted, to allow for required distribution of each submittal required, which will be retained by the Electrical Consulting Engineer.

C. Provide the following shop drawings in booklet form:

1. Light fixtures cuts shall be submitted all at one (1) time in a booklet form.
2. Wire devices shall be submitted all at one (1) time in a booklet form and be from one (1) manufacturer.

### 1.3 PRODUCT REVIEWS AND SUBSTITUTIONS

A. Refer to Division 1 for substitutions requirements under this contract. Division 1 requirements supersede requirements listed elsewhere.

B. No Manufacturer's products will be reviewed as an equivalent to the specified products unless submitted by a Bidding Contractor for review ten (10) calendar days prior to bid due date. No products will be reviewed after that time. Product review requests must be submitted in accordance with Division 1 and Section 26 00 10. An addendum will be issued to all Bidding Contractors listing any Manufacturers whose products have been added to the Contract Documents as equivalents to the specified products.

C. No substitutions will be reviewed by the Engineer after the Bid Due Date unless specifically requested by the Owner or Architect in writing with an associated credit with the substitution.

1.4 SHOP DRAWINGS

A. Refer to the Conditions of the Contract (General and Supplementary) and Division-1 for submittal definitions, requirements, and procedures.

B. Submittal of Shop Drawings, Product Data, and Samples will be reviewed only when submitted by the Prime Contractor. Submittals from sub-Contractors and material suppliers directly to the Architect/Engineer will not be reviewed. No equipment/materials shall be installed until the Shop Drawings have been stamped with “No Exceptions Taken” or “Make Corrections Noted” by the Architect/Engineer.

C. Submit Shop Drawings as listed in each specification section. Following is a list of shop drawings to assist the contractor; however, the contractor shall supply all shop drawings as listed in each individual section whether listed below or not.

1. Disconnect Switches.
2. Individually-Mounted Circuit Breakers.
3. Elevator Power Module Switch.
4. Fuses.
5. Wiring Devices and Wall Plates.
6. All Lighting Fixtures (submit in booklet form and with detail drawings where required).
7. Lamps and Ballasts.
8. Fire Alarm Equipment and associated wiring diagrams, and layout drawings.
9. Fire Stopping Material.

D. When preparing submittals and any required final programming, use a room number schedule generated by the architect and/or the owner, which indicates the actual room numbers that will be used when the building is occupied. If the schedule is not available, revise the initial submittal, when a schedule is available, to reflect the proper room numbers.

1.5 PRODUCT OBSOLESCENCE

A. In all cases, the most current iteration of the specified product shall be submitted. Where the specified product is no longer manufactured, the contractor shall submit an equivalent product with the same or better specifications. Where specific manufacturers are specified, the contractor shall supply from the same manufacturer the recommended replacement; however, under no circumstances shall the replacement product be deficient in any aspect to the specified product.

B. In the submittal for the product, the Contractor shall provide a signed letter clearly indicating the reason for the replacement product, and confirmation that the replacement product meets or exceeds all of the specified product’s specifications to the best of the Contractor’s knowledge.

C. The replacement product shall be provided at no additional cost to the owner, and shall not constitute any extension to the project schedule.

D. These requirements shall be inclusive to requirements listed elsewhere in the specifications, and shall not void any other requirements.

1.6 INSPECTIONS

A. The Contractor shall provide certificates of approval, in triplicate, for service equipment, building rough wiring, and building finished wiring.

B. Inspection certificates shall be submitted to the Engineer within 30 days after the inspections are made. Contractor shall use an independent NEC Certified Inspection Agency as the approved agency. Contractor must verify that the Certified Inspection Agency is approved by the local municipality and the Owner to inspect electrical installations in the project locality. All inspection certificates must be received before final payment can be made.

C. Refer to General Conditions for additional information.

1.7 MANUFACTURER'S REQUIREMENTS

A. All material shall be new, of the best respective kinds, manufactured by the company or companies mentioned and shall be of domestic manufacture unless specified otherwise.

B. All equipment, material or apparatus of any one system must be the product of one Manufacturer, or system tested products.

C. Manufacturers not listed in the Contract Documents must submit to the Engineer via a Bidding Contractor all product information per Division 1 requirements.

1.8 NAMEPLATE DATA

A. Each item of power operated equipment shall be provided with a permanent operational data nameplate on indicating Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliance, and similar essential data. Nameplates shall be located in an accessible location.

1.9 FAMILIARITY WITH PROPOSED WORK

A. All Contracts are with the understanding that the Contractor, prior to submission of his bid, acquainted himself with the requirements of the Drawings and Specifications, including "Conditions of the Contract," conditions of the site, its terrain, soil conditions, all other requirements of the Contract, and that he obtained all information necessary for completion of the work on or before the date specified for receiving of bids.

B. In all cases where a device or part of the equipment is herein referred to in the singular, such reference shall apply to as many such items as are required to complete the installation.

C. "Existing" information does not necessarily represent "as-built" conditions. The Contractor shall verify all existing conditions. If discrepancies are found the Contractor shall notify the Architect/Engineer for a resolution before proceeding.

1.10 DEFINITIONS

A. The terms "The Contractor" or "This Contractor" mentioned in these Specifications refers to the Electrical Contractor responsible for the work and equipment included in these Specifications.

B. The term Sub-Contractor refers to any reference to, or letting of work contained in these Specifications to any Sub-Contractor or Manufacturer by the Prime Contractor. This does not relieve the Prime Contractor of his responsibility for all work, material and equipment in this Specification.

C. The term “Provide,” when used separately, shall mean to “Furnish and Install.”

D. The term “Furnish,” when used separately, shall mean to obtain and deliver on the job for installation by other trades.

E. The term “Install,” when used separately, shall mean to mount in place, connect and make operable.

1.11 INTENT OF THE DRAWINGS AND SPECIFICATIONS

A. The Drawings which accompany the Specifications are for the purposes of illustrating the character and extent of the work, and are subject to such modifications by Architect/Engineer as may be found either necessary or advisable before ordering the prosecution of the work. The Contractor shall conform to and abide by whatever Supplementary Drawings and explanations which may be furnished by the Architect/Engineer for the purpose of illustrating the work. The Architect/Engineer shall decide as to the meaning or intention of any portion of the Specifications and Drawings.

B. Where the work is shown in complete detail on only half or a portion of a Drawing, or there is an indication of continuation, the remainder being shown in outline, the work drawn out in detail shall be understood to apply to other like portions of the structure. All work that may be called for in the Specifications and not shown on the Drawings, or shown on the Drawings and not called for in the Specifications, shall be executed and furnished by the Contractor as described in both.

C. Should any incidental work or materials be required, but not set forth in the Specifications or Drawings, either directly or indirectly, but which is necessary to fulfill the intent thereof, the Contractor is to understand same to be implied and required, and he shall perform all such work and furnish all such materials as fully as if they were particularly delineated or described, without additional cost to Owner. This shall include all materials, devices, methods peculiar to the machinery, equipment, apparatus, or systems as described herein.

1.12 WIRING LAYOUTS

A. Should it become necessary to rearrange any of the circuit or feeder wiring, approval to do so shall first be obtained from the Engineer. The Contractor will be supplied with a spare set of Drawings on which all such approved changes shall be noted. Upon completion of all work under this Contract, these Drawings shall be returned to the Architect/Engineer, who will issue a receipt for same.

1.13 FIELD MEASUREMENTS

A. Before ordering any materials or doing any work, Contractor shall verify all measurements at the building site, and shall be responsible for correctness of same. At no time shall the Contractor scale Drawings for the purpose of installation.

B. No extra compensation will be allowed on account of differences between actual dimensions and those indicated on the Drawings. Any difference which may be found shall be submitted to the Architect/Engineer for consideration before proceeding with the work.

1.14 COORDINATION

A. The Contractor shall cooperate with the other Contractors and shall arrange to eliminate conflicts with the equipment and work of the Contractors.

B. The Contractor shall be responsible for coordinating all electrical devices/equipment with the casework before rough-in. Any conflicts with casework and electrical devices/equipment shall be brought to the attention of the Architect/Engineer before rough-in. Any electrical device/equipment installed in conflict with casework shall be removed and reinstalled at the Contractor's expense.

1.15 CHASES AND OPENINGS

A. The Contractor shall determine, in advance, the locations and sizes of all chases and openings necessary for the proper installation of his work and have same provided during construction. Any chase or opening not made during construction, due to the Contractor's failure to determine same in advance, shall be done by the Contractor at his own expense. Any unnecessary cutting shall be repaired to match the original conditions of the area disturbed at the Contractor's expense.

1.16 AIR PLENUMS

A. The Contractor shall use a conduit system or approved plenum rated wiring for all wiring located above ceilings.

1.17 RECORD DOCUMENTS

A. Refer to Division-1 for requirements. The following requirements supplement the requirements of Division-1.

B. Mark Drawings to indicate revisions to conduit size and location both exterior and interior; actual equipment locations, dimensioned from column lines; concealed equipment, dimensioned from column lines; distribution and branch electrical circuitry; fuse and circuit breaker size and arrangements; support and hanger details; work performed via Change Orders; concealed control system devices.

C. Mark Specifications to indicate changes by addendum or Change Orders; actual equipment and materials used.

1.18 OPERATION AND MAINTENANCE DATA

A. Refer to Division-1 for requirements.

B. Contractor shall provide Operation and Maintenance data listed in individual section in addition to requirements listed in Division 1.

1.19 WARRANTIES

A. Division 1 warranties shall be considered minimum warranties. Any warranties listed in the individual sections that are longer than Division 1 warranties shall be honored.

B. Refer to individual sections for warranty requirements beyond those as specified in Division 1.

1.20 TEST AND ADJUST

A. All systems installed under this Contract shall be tested and adjusted to insure that all equipment and systems meet or exceed the specified requirements.

1.21 PHASE LOAD BALANCE

A. A reasonable balance shall be secured on the phases of all main distribution feeders and bus bars.

B. Following installation and with the system in operation, the Electrical Contractor shall check the balance and rearrange connections so that the ampacity on any of the two single-phase phases of the main bus shall not vary more than 10% of each other.

1.22 PAINTING

A. Refer to the Division-1 for general requirements.

B. The Contractor shall be responsible for all touch up painting on this project for electrical work.

1.23 CLEANING

A. Refer to Division-1 Section, “Project Closeout” or “Final Cleaning” for general requirements for final cleaning.

B. The Contractor shall keep the building free of rubbish and material during the course of construction insofar as the work under this Contract is concerned.

C. Upon completion of the project, the Contractor shall remove all rubbish, surplus equipment and shipping labels and have all areas broom clean. The Contractor shall thoroughly clean all fixtures, and other electrical equipment, leaving same in first-class working condition.

1.24 INSTRUCTION OF OWNER'S PERSONNEL

A. The Contractor shall provide instruction of the owner’s personnel as outlined in Division 1. The following requirements shall be included in addition to Division 1 requirements.

B. The Contractor shall provide the services of competent personnel and/or Manufacturer trained personnel to instruct employees designated by the Owner in the proper operation, care and maintenance of the equipment and system installed under the Contract.

C. A letter of certification itemizing the equipment, system, instructor, and bearing signatures of the employees instructed shall be delivered to the Engineer and the Owner upon completion of the project. The letter of certification shall note the number of hours spent in explanation and actual operation of system with maintenance personnel.

1.25 DELIVERY AND STORAGE OF MATERIALS

A. Refer to the Division-1 for delivery and storage of materials requirements.

B. The Contractor shall provide for, or secure use of, suitable-dry storage space for the safe delivery and storage of his materials. The Contractor shall be responsible for providing their own storage trailers on site. The use of Owner's inside-building storage will not be permitted, unless noted otherwise.

1.26 PROTECTION OF EQUIPMENT AND MATERIALS

A. Responsibility for care and protection of electrical work rests with the Contractor until it has been tested and accepted by the Owner. After delivery, before and after installation, protect equipment and materials against theft, injury, or damage in all cases.

B. Protect equipment outlets, and pipe openings with temporary plugs, caps, or burlap. Electrical conduit openings shall be covered with capped bushing or fiber disks and bushings.

C. The contractor shall be responsible to protect all existing electrical or communications equipment to remain from construction dirt and debris, whether created from this contractor or another contractor. The contractor shall determine the method needed to protect each piece of equipment to remain. Should existing equipment be damaged during demolition it will be the responsibility of the contractor to provide necessary repairs or replacement of the damaged equipment.

1.27 SCAFFOLDING AND HOISTING

A. The Contractor shall provide all lumber and other material required for the erection of all staging, scaffolding, shoring, protective platforms, railings and ladders. Scaffolding shall be removed at the completion of the work.

B. The Contractor shall protect any flooring that is to remain. The Contractor shall inspect the flooring before the scaffolding is installed and report any damage that exists before the start of the construction. The Contractor shall be responsible to repair any damage to the flooring after the scaffolding is removed to the acceptance of the owner at no additional cost to the owner.

1.28 PERMITS AND FEES

A. Unless noted otherwise, all general permits, certificates, tests, and inspection fees required for the work provided under this contract shall be paid by the Contractor. Refer to General Conditions for additional information.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment Specifications in Divisions-2 through -25 for rough-in requirements.

## 3.2 EXTERIOR AND INTERIOR EXCAVATION

A. Prior to any digging outside and inside the building, the Contractor shall provide Ground Penetrating Radar (GPR) to ensure there are no utilities in the area of excavation. Should any utilities be found, the contractor shall provide information to the engineer, architect and owner and propose alternate locations for the excavation. If the contractor neglects to perform the GPR prior to excavation and destroys any underground utilities, it shall be the responsibility of the contractor to repair the utilities to the engineer, architect and owner's satisfaction without any additional cost to the owner.

## 3.3 CUTTING AND PATCHING

A. Perform cutting and patching in accordance with Division-1. In addition to the requirements specified in Division-1, the following requirements apply. The Contractor shall be responsible for providing all cutting and patching required to perform his work unless noted otherwise.

B. Perform cutting, fitting, and patching of electrical equipment and materials required to:

1. Uncover work to provide for installation of ill-timed work.
2. Remove and replace defective work.
3. Remove and replace work not conforming to requirements of the Contract Documents.
4. Remove samples of installed work as specified for testing.
5. Install equipment and materials in existing structures.
6. Upon written instructions from the Architect, uncover and restore work to provide for Architect observation of concealed work.

C. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new work.

D. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

## 3.4 PROTECTION OF INSTALLED WORK

A. During construction activities, including cutting and patching operations, protect adjacent installations.

B. Patch existing finished surfaces and building components using new materials matching existing materials and experienced installers. For installers' qualifications refer to the materials and methods required for the surface and building components being patched.

## 3.5 ELECTRICAL INSTALLATION

A. Coordinate electrical equipment and material installation with other building components. Verify all dimensions by field measurements. If no dimensions are given, Contractor shall verify with Architect or Engineer before starting work. At no time shall the Contractor scale Drawings for the purpose of locating items.

B. Provide for chases, slots, and openings in other building components to allow for electrical installations. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

C. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing-in the building.

D. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible, or to meet current local, national and ADA codes.

E. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

F. Install systems, materials, and equipment to conform with submittal data, including Coordination Drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect/Engineer.

G. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

H. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

I. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

## 3.6 ELECTRICAL REQUIREMENTS FOR EQUIPMENT INSTALLATION

A. Conduit and power wiring of required size and voltage, from a panelboard or similar source, shall be furnished and installed by this Contractor, to the equipment furnished by another Contractor. A junction box or means of disconnect (as required) shall be furnished and installed at the equipment by this Contractor meeting the National Electric Code.

B. Unless noted otherwise, a full complement of electrical control components, required for the intended use and/or operation of specified equipment, including variable frequency controllers, speed controllers and/or other control devices required, whether integral or remote, shall be furnished by the Contractor furnishing the equipment. These control devices as well as power wiring (where required) through these devices shall be installed by this Contractor.

## 3.7 CONTROL WIRING FOR EQUIPMENT INSTALLED BY ANOTHER CONTRACTOR

A. This Contractor shall be responsible for providing all required control wiring, (except HVAC system control wiring) for any equipment provided by another Contractor which shall include, but not be limited to, motorized backboards, screens, partitions, curtains, motor operated doors, etc, unless noted otherwise.

B. The Contractor shall provide all boxes and conduit required for any equipment provided by another Contractor. Control wiring shall also include any wiring of motion or occupancy sensors for doors, curtains, etc.

C. Coordinate all required work for a complete and functional system with the Contractor supplying the equipment. Make all required connections.

3.8 TEMPORARY ELECTRIC/TELEPHONE (add other architect requirements)

A. Refer to Division-1, “General Conditions.”

B. Temporary Electric for Building Construction: Refer to Temporary Facilities for requirements.

C. Lighting: Provide temporary lighting in accordance with OSHA, (5-footcandles) with local switching to fulfill security requirements and provide illumination for construction operations and traffic conditions.

1. Lamps and Light Fixtures: Provide general service lamps. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

3.9 ELECTRICAL DEMOLITION

A. The Electrical Contractor shall be responsible for all electrical demolition.

B. The Contractor shall be responsible for disconnecting and removing from the site all conduit, wiring, light fixtures, devices, panelboards, switchboards, transformers, disconnect switches, emergency generators, data, phone, fire alarm, etc. The Owner shall tag or notify the Contractor as to any devices, equipment or systems which they wish to salvage before start of each phase of construction. See “Salvage” paragraph 3.14 for additional information.

C. Where fastened equipment is removed, the contractor shall be responsible to remove the associated lags or bolts that fastened the equipment down. Grind lags or bolts to below exiting surface and patch surface to match existing condition.

D. The Demolition Notes or Drawing that are provided are to be used as a guide only. The contractor is responsible to visit the site prior to submitting his bid to verify the extent of electrical demolition required. There will be no change orders issued after award of the bid for demolition purposes.

3.10 SALVAGE

A. The Owner reserves the right to salvage any electrical equipment prior to the start of each phase of construction.

END OF SECTION 26 00 10

# SECTION 26 05 00 – COMMON REQUIREMENTS – ELECTRICAL CONSTRUCTION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes materials and methods that are common to various Electrical Systems.

### 1.2 SUBMITTALS

A. Product Data: For the following:

1. Fireproofing

### 1.3 COORDINATION

A. Arrange for conduit spaces, chases and openings in building structure during progress of construction to allow for electrical installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are construction as applicable.

C. Coordinate requirements for access panels and doors for electrical items requiring access that are concealed behind finished surfaces.

## PART 2 - PRODUCTS

### 2.1 FIRESTOPPING

A. The Contractor shall be responsible for providing permanent, UL approved firestopping systems for all penetrations through fire rated floor or fire rated wall assemblies. For areas that will require future access for the installation of additional cables, repair, or retrofit, the firestopping system shall consist of re-usable intumescent pillows or putty. All firestopping shall meet the requirements of ASTM E-814 and UL 1479.

1. Subject to compliance with project requirements, firestopping materials may be provided by one of the following Manufacturers.

a. Specified Technologies Inc. (STI) Somerville, NJ (800) 992-1180
b. Tremco, Beechwood, OH (800) 321-7906
c. 3M, St. Paul, MN (800) 328-1687

2. Submit for review the following product data.

a. Product data sheets.
b. UL System Drawings for each firestopping application.
c. Manufacturer’s Certificates of Conformance for their products.

PART 3 - EXECUTION

3.1 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment Specifications in Divisions-2 through -25 for rough-in requirements.

3.2 EQUIPMENT INSTALLATION – COMMON REQUIREMENTS

A. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

B. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

3.3 FIRESTOPPING

A. Comply with manufacturer's written instructions for install fire stopping. When mechanical system is used, set securely in place in accessible locations.

B. Firestopping shall be installed in all fire rated walls. Review all drawings, including architectural, and site conditions to determine where fire rated walls are located.

END OF SECTION 26 05 00

SECTION 26 05 19 – WIRES AND CABLES – 600V AND BELOW

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The extent of the wire and cable work is indicated by Drawings and by requirements or other sections of the Specifications for cables used for power, lighting, signal, control and related system rated 600 volts or less. See below paragraph 2.4 B. for permitted use of Type MC Cables on this project.

1.2 CODES AND STANDARDS

A. NEC Compliance: Comply with applicable requirements of NEC for construction and installation of wires/cables and connectors.

B. UL Compliance: Comply with UL Stds 83 and 486A, B and C. Provide wiring/cabling and connector products which are UL-listed and labeled consistent with their uses.

C. ICEA Compliance: Insulated Cable Engineers Association Inc., Standard WC-5-86.

D. IEEE Compliance: Institute of Electrical and Electronic Engineers, Standard 82-83.

1.3 SUBMITTALS

A. Comply with Division 1 requirements.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide all wires and cables of sizes indicated on the Drawings and suitable for the temperature, conditions and location where installed. Install all wire in raceway.

2.2 CONDUCTOR MATERIAL

A. Use copper conductors of 98% conductivity and rated at 600V for all wires and cables, unless otherwise noted.

2.3 INSULATION

**A.** No conductors smaller than No. 12 AWG shall be used unless noted elsewhere. All wires No. 8 AWG or larger shall be stranded. Wire sizes No. 12 and No. 10 AWG. shall be solid (**stranded wire used for No. 12 AND 10 will not be permitted unless otherwise noted).**

B. All copper conductors shall be provided with type THHN/THWN insulation, unless noted otherwise

C. Each circuit shall be provided with a dedicated neutral wire. Sharing of neutral wire for multiple circuits shall not be permitted, unless otherwise noted.

2.4 CABLES

A. Provide the following in NEC approved locations and project applications where indicated.

B. Type MC Cable: Provide Metal Clad Cable wiring using two No. 12 AWG with separate copper ground wire (unless noted otherwise). Where AC (armored cable without separate neutral) is installed, Contractor will be required to remove cable and reinstall with approved cable type at no additional cost to the owner. Metal Clad cable may be used on this project only as follows:

1. For lighting and receptacle branch circuits from panel to device(s) or light fixture(s) above accessible ceilings. MC Cable may not be used in exposed structure areas of the building.
2. Connection to motors (2 feet maximum);
3. Fishing existing walls.

C. Where MC cables are run in parallel (i.e. down corridors), the Contractor shall bundle the cables and zip tie them together.

D. The Contractor shall bear all costs related for removing MC cable not pre-approved. Support and secure type MC cable at intervals not exceeding 6'-0". In addition, type MC cable must be supported within 12" of every fitting, junction box or outlet box that the cable enters.

E. All other wiring shall be installed in conduit as specified in section 26 05 33, unless approved otherwise by the Engineer prior to installation.

F. All feeder wiring shall be run in conduit.

2.5 CONNECTORS FOR CONDUCTORS

A. Provide UL-listed factory-fabricated, solderless metal connectors of sizes, ampacity ratings, materials, types and classes for applications and for services indicated. Use connectors with temperature ratings equal to or greater than those of the wires upon which used.

PART 3 - EXECUTION

3.1 WIRES AND CABLES

A. General: Install electrical cables, wires, and connectors in compliance with NEC. Coordinate cable installation with other work. Pull conductors simultaneously where more than one is being installed in same raceway. Use UL listed pulling compound or lubricant, where necessary.

B. Use pulling means including, fish tape, cable, rope, and basket weave wire/cable grips which will not damage cables or raceways. Do not use rope hitches for pulling attachment to wire or cable.

**C. While installing cables, care shall be taken to protect outer coating. If outer coating is damaged, contractor shall remove and reinstall cables.**

D. Conceal all cable in finished spaces. Install exposed cable parallel and perpendicular to surfaces or exposed structural members, and follow surface contours, where possible. Keep conductor splices to minimum.

E. Install splice and tap connectors which possess equivalent or better mechanical strength and insulation rating than conductors being spliced. Use splice and tap connectors which are compatible with conductor material.

F. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than No. 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal. Provide wire ties and neatly train and rack wires in all boxes, panels, and other areas as required.

G. Tighten electrical connectors and terminals, including screws and bolts, in accordance with Manufacturer's published torque tightening values. Where Manufacturer's torque requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A and UL 486B.

H. Each branch circuit shall be provided with a dedicated neutral wire, unless noted otherwise.

3.2 FIELD QUALITY CONTROL

A. Prior to energizing, check installed wires and cables with megohm meter to determine insulation resistance levels to assure requirements are fulfilled.

B. Prior to energizing, test wires and cables for electrical continuity and for short-circuits.

C. Subsequent to wire and cable hook-ups, energize circuits and demonstrate proper functioning. Correct malfunctioning units, and retest to demonstrate compliance.

D. Color-Coding for Phase Identification:

1. Color-code secondary service, feeder, and branch circuit conductors with factory-applied color as follows:

| Phase | 120/208 Volts | 120/240 Volts | 277/480 Volts |
|---|---|---|---|
| A | Black | Black | Brown |
| B | Red | Orange (High-Leg) | Orange |
| C | Blue | Blue | Yellow |
| Traveler | Yellow | Yellow | Yellow w/ “T” tag |
| Neutral | White | White | Gray |
| Ground | Green | Green | Green w/ Yellow stripe |

2. Switch legs shall include an additional “S” tag.

3. Provide visible colored taped as listed above at all termination points for No. 8 and larger wires.

END OF SECTION 26 05 19

# SECTION 26 05 26 – GROUNDING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Extent of electrical grounding and bonding work is indicated by Drawings and Schedules and as specified herein. Grounding and bonding work is defined to encompass systems, circuits, and equipment.

B. Type of electrical grounding and bonding work specified in this section includes the following:

1. Solidly grounded.

### 1.2 CODES AND STANDARDS

A. Electrical Code Compliance: Comply with applicable local electrical code requirements of the authority having jurisdiction, and NEC as applicable to electrical grounding and bonding, pertaining to systems, circuits and equipment.

B. UL Compliance: Comply with applicable requirements of UL 467, 486A, and 869, pertaining to grounding and bonding of systems, circuits and equipment. Provide grounding and bonding products which are UL-listed and labeled for their intended usage.

## PART 2 - PRODUCTS

### 2.1 MATERIALS AND COMPONENTS

A. General: Except as otherwise indicated, provide electrical grounding and bonding system assembly of materials, including, but not limited to, cables/wires, connectors, solderless lug terminals, grounding electrodes and plate electrodes, bonding jumper braid, surge arresters, and additional accessories needed for a complete installation. Where more than one type component product meets indicated requirements, selection is Installer's option. Where materials or components are not indicated, provide products which comply with NEC, UL, and IEEE requirements and with established industry standards for those applications indicated.

B. Conductors: Unless otherwise indicated, provide electrical grounding conductors for grounding system connections that match power supply wiring materials and are sizes according to NEC.

C. Bonding Plates, connectors, Terminals, and Clamps: Provide electrical bonding plates, connectors, terminals, lugs and clamps as recommended by bonding plate, connector, terminal and clamp Manufacturers for indicated applications.

D. Ground Electrodes and Plates:

1. Grounding Electrodes: Solid copper, 5/8" diameter by 10 feet.
2. Grounding Electrodes: Steel with copper welded exterior, 3/4" diameter by 10 feet.

E. Electrical Grounding connection Accessories: Provide electrical insulating tape, heat shrinkable insulating tubing, welding materials, bonding straps, as recommended by accessories Manufacturers for type service indicated.

F. Direct Burial Compression Grounding System similar to Panduit's Structural Ground " Direct Burial Compression Grounding System" shall also be acceptable where exothermic connections are specified. Direct Burial System shall meet IEEE Standard 837-2002. System shall also meet UL 467. Contractor shall be responsible for providing all Grounding plates, connectors, cables Hydraulic crimping tool, etc for a complete system. All other Direct Burial Grounding system manufacturers shall be submitted for approval prior to bidding.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which electrical grounding and bonding connections are to be made and notify Architect/Engineer in writing of conditions detrimental to proper completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION OF ELECTRICAL GROUNDING AND BONDING SYSTEM

A. General: Install electrical grounding and bonding system as indicated, in accordance with Manufacturer's instructions and applicable portions of NEC, NECA's "Standard of Installation", and in accordance with recognized industry practices to ensure that products comply with requirements.

B. Coordinate with other electrical work as necessary to interface installation of electrical grounding and bonding system work with other work.

C. Branch Circuits: Install a minimum 12 AWG ground wire in each 20A circuit and conduit run and to connect to each device. Size larger circuit ground wires as per NEC Table 250-122.

D. Exothermically weld grounding conductors to underground grounding electrodes.

E. Ground electrical service system neutral at service entrance equipment to grounding electrodes per NEC Article 250. Grounding conductor shall be 4/0 copper, unless otherwise noted.

F. Direct burial compression grounding system similar to T &B and Panduit shall also be acceptable. System shall meet IEEE Standard 837-2002. System shall meet UL.

G. Ground each separately-derived system neutral to separate grounding electrode.

H. Connect together system neutral, service equipment enclosures, exposed noncurrent carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.

I. Terminate feeder and branch circuit insulated equipment grounding conductors with grounding lug, bus, or bushing.

J. Connect grounding electrode conductors to copper electrodes as per N.E.C. and 1" diameter, or greater, metallic cold water pipe using a suitably sized ground clamp. Provide grounding electrode connection to concrete slab rebar to meet NEC. Provide 4/0 copper conductor for all connections.

K. Tighten grounding and bonding connectors and terminals, including screws and bolts, in accordance with Manufacturer's published torque tightening values for connectors and bolts. Where Manufacturer's torquing requirements are not indicated, tighten connections to comply with tightening torque values specified in UL 486A to assure permanent and effective grounding.

L. Route grounding connections and conductors to ground and protective devices in shortest and straightest paths as possible to minimize transient voltage rises.

M. Apply corrosion-resistant finish to field-connections, buried metallic grounding and bonding products, and places where factory-applied protective coatings have been destroyed, which are subjected to corrosive action.

N. Install clamp-on connectors on clean metal contact surfaces, to ensure electrical conductivity and circuit integrity.

O. Provide ground wire connection to all electrical boxes and wiring devices.

P. Bond service ground conduit to grounding conductor if conduit is metallic.

Q. The contractor shall be responsible to provide grounding connection on gas piping where an appliance or mechanical piece of equipment has gas and electric circuit run to it. The ground conductor size shall be the same size as the electrical branch circuit run to the appliance or equipment to meet the NEC. article 250.

## 3.3 FIELD QUALITY CONTROL

A. Upon completion of installation of electrical grounding and bonding systems, test ground resistance with ground resistance tester. Where tests show resistance-to-ground is over 25 ohms, take appropriate action to reduce resistance to 25 ohms, or less, by driving additional ground rods; then retest to demonstrate compliance.

B. The contractor shall be responsible to test grounding system on site and turnover documentation to owner that grounding system is compliant with specifications.

C. Contractor shall coordinate with local inspector to provide tests as required.

END OF SECTION 26 05 26

# SECTION 26 05 29 – SUPPORTING DEVICES

## PART 1 - GENERAL

### 1.1 CODES AND STANDARDS

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical supporting devices.

B. NECA Compliance: Comply with National Electrical Contractors Association's "Standard of Installation" pertaining to anchors, fasteners, hangers, supports, and equipment mounting.

C. UL Compliance: Provide electrical components and devices which are UL-listed and labeled.

## PART 2 - PRODUCTS

### 2.1 GENERAL

A. Provide supporting devices which comply with manufacturer's standard materials, design and construction in accordance with published product information, and as required for complete installation; and as herein specified. Where more than one (1) type of device fulfills indicated requirements, selection is Installer's option.

### 2.2 SUPPORTS

A. Provide supporting devices of types, sizes and materials indicated; and having the following construction features:

B. Clevis Hangers: For supporting up to 2" rigid metal conduit; galvanized steel; with 2" diameter hole for round steel rod; approximately 54 pounds per 100 units.

C. Riser Clamps: For supporting up to 5" rigid metal conduit; black steel; with 2 bolts and nuts, and 4" ears; approximately 510 pounds per 100 units.

D. Reducing Couplings: Steel rod reducing coupling, 2" x 5/8", black steel; approximately 16 pounds per 100 units.

E. C-Clamps: Black malleable iron; 2"rod size; approximately 70 pounds per 100 units.

F. I-Beam Clamps: Black steel, 1-1/4" x 3/16" stock; 3/8" cross bolt; flanges width 2"; approximately 52 pounds per 100 units.

G. One-Hole Conduit Straps: For supporting 3/4" rigid metal conduit; galvanized steel; approximately 7 pounds per 100 units.

H. Two-Hole Conduit Straps: For supporting 3/4" rigid metal conduit; galvanized steel; 3/4" strap width; and 2-1/8" between center of screw holes.

I. Hexagon Nuts: For 2" rod size; galvanized steel; approximately 4 pounds per 100 units.

J. Round Steel Rod: Black steel; 2” diameter; approximately 67 pounds per 100 feet.

K. Offset conduit clamps: For supporting 2” rigid metal conduit; black steel; approximately 200 pounds per 100 units.

## 2.3 ANCHORS

A. Provide anchors of types, sizes and materials indicated; and having the following construction features:

B. Lead Expansion Anchors: 2”; approximately 38 pounds per 100 units.

C. Toggle Bolts: Spring head; 3/16" x 4"; approximately 5 pounds per 100 units.

D. Manufacturers: Provide anchors of one of the following (for each type of anchor):

1. Ackerman Johnson Fastening Systems, Inc.
2. Ideal Industries, Inc.
3. Joslyn Manufacturing and Supply Co.
4. McGraw Edison Co.

## 2.4 SLEEVES AND SEALS

A. Provide sleeves and seals, including armored cable seals, of types, sizes, and materials indicated, with the following construction features:

B. Sleeve Seals: Provide sleeves for piping which penetrated foundation walls below grade, or exterior walls. Caulk between sleeve and pipe with non-toxic, UL-classified caulking material to ensure watertight seal.

C. Wall and Floor Seals: Provide watertight wall and floor seals, or types and sizes indicated; suitable for sealing around conduit, pipe, of tubing passing through concrete floors and walls. Construct seals with steel sleeves, malleable iron body, neoprene sealing grommets and rings, metal pressure rings, pressure clamps, and cap screws.

D. Fire-Rated Walls and Floors: At all locations where conduits, cables, or ducts penetrate a fire-rated wall or floor, a special fire-retardant caulking compound or other approved device as specified in section 26 05 00 shall be used.

## 2.5 CONDUIT CABLE SUPPORTS

A. Provide cable supports with insulating wedging plug for non-armored type electrical cables in risers; construct for 2” rigid metal conduit; 3-wires, type wire as indicated; construct body of malleable-iron casting with hot-dip galvanized finish.

2.6 U-CHANNEL STRUT SYSTEMS

A. Provide U-channel strut system for supporting equipment supplied under this contract, 12-ga hot-dip galvanized steel, or types and sizes indicated; construct with 9/16” diameter holes, 8” on center on top surface, with standard green finish, and with the fittings which mate and match with U-channel.

B. Auxiliary Steel Supports: Provide all required auxiliary steel to install any equipment supplied under this contract. The design and gauge of steel used shall be as required by the manufacturer's specifications.

C. Manufacturers: Provide U-channel strut systems of one of the following (for each type system):

1. Allied Tube and Conduit Corp.
2. Midland-Ross Corp.
3. OZ/Gedney Div; General Signal Corp.
4. Power-Strut Div; Van Huffel Tube Corp.
5. Unistrut Div; GTE Products Corp.

PART 3 - EXECUTION

3.1 GENERAL

A. Install hangers, anchors, sleeves and seals as indicated, in accordance with manufacturer's written instructions and with recognized industry practices. Comply with installation requirements of NECA and NEC pertaining to supporting devices.

B. Coordinate with other mechanical and electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.

C. Where supports or anchors are installed after the spray on insulation and/or firestopping is installed, patch the spray on insulation and/or firestopping to match surrounding area.

END OF SECTION 26 05 29

SECTION 26 05 33 – RACEWAYS

PART 1 - GENERAL

1.1. DESCRIPTION OF WORK

A. The extent of the raceway and work required by this section is indicated by Drawings and requirements of other sections of this Specification.

B. Provide metal and nonmetallic conduit, tubing and fittings of types, grades, sizes and weights (wall thicknesses) for each service indicated on plans. Where types and grades are not indicated, provide proper selection determined by installer to fulfill wiring requirements and comply with applicable portions of NEC for raceways.

**C.** It is the intent of these Specifications and Drawings that all feeder wiring be run in a continuous conduit system. Type MC cables are permitted for lighting and power, branch circuits above ceilings, fishing existing walls, and connection to equipment/motors (2 feet max). In areas of exposed structure all wiring shall be run in conduit. **Surface conduit shall be run in elevator machine room, MC Cable is not permitted in elevator machine room.**

D. Refer to section 26 05 19 for acceptable uses of MC cables.

1.2. CODES AND STANDARDS

A. NEMA Compliance: Comply with applicable requirements of NEMA standards pertaining to raceways.

B. UL Compliance and Labeling: Comply with provisions of UL safety standards pertaining to electrical raceway systems; provide products and components which have been UL-listed and labeled.

C. NEC Compliance: Comply with NEC requirements as applicable to construction and installation of raceway systems.

PART 2 - PRODUCTS

2.1. CONDUITS

A. Rigid Steel Conduit: Provide rigid steel, zinc-coated, threaded type conforming to FS WW-C-581, ANSI C80.1 and UL 6. Provide zinc-coating fused to inside and outside walls.

B. Rigid Aluminum Conduit: Provide rigid aluminum, threaded type conforming to ANSI and UL standards.

C. Intermediate Steel Conduit: Provide rigid intermediate grade (IMC) hot-dip galvanized threaded conforming to FS WW-C-581 and UL 1242.

D. Electrical Metallic Tubing (EMT): FSW-C-563, ANSI C80.3, and UL 797.

E. Liquid-Tight Flexible Metal Conduit: Provide liquid-tight flexible metal conduit; construct of single strip, flexible, continuous, interlocked, and double-wrapped steel; galvanized inside and outside; coat with liquid-tight jacket of flexible polyvinyl chloride (PVC).

F. Flexible Metal Conduit: FS WW-C-566 and UL 1. Formed from continuous length of spirally wound, interlocked zinc-coated strip steel.

G. PVC Heavy Wall Conduit: Schedule 40, 90C, UL-rated, constructed of polyvinyl chloride and conforming to NEMA TC-2, for direct burial, or normal above ground use, UL-listed and in conformity with NEC Article 347.

H. PVC Light Wall Conduit shall not be acceptable under any circumstances. PVC Heavy Wall conduit shall be used when encased in concrete.

I. No other type of conduit shall be used, unless otherwise noted, or prior approval granted by the engineer.

2.2. CONDUIT FITTINGS

A. Flexible Metal Conduit Fittings: Provide conduit fittings for use with flexible steel conduit of threadless hinged clamp type.

B. Straight Terminal Connectors: Contractor shall provide one-piece body, with female end with clamp and deep slotted machine screw for securing conduit, and male threaded end provided with locknut.

C. 45-Deg or 90-Deg Terminal Angle Connectors: Two-piece body construction with removable upper section, female end with clamp and deep slotted machine screw for securing conduit, and male threaded end provided with locknut.

D. Rigid Metal Conduit Fittings: Cast-malleable-iron, galvanized or cadmium plated, conforming to FS W-F-408. Use Type 1 fittings for raintight connections, Type 2 fittings for concrete tight connections, and Type 3 fittings for other miscellaneous connections.

E. Rigid Aluminum Conduit Fittings: Provide cast-aluminum conduit fittings and mounting hardware conforming to ANSI and UL standards of types required for the application.

F. Liquid-Tight Flexible Metal Conduit Fittings: FS W-F-406, Type 1, Class 3, Style G. Provide cadmium-plated, malleable-iron fittings with compression type steel ferrule and neoprene gasket sealing rings, with insulated, or non-insulated throat.

G. EMT Fittings: All couplings and connectors shall be of the set-screw type.

H. PVC Heavy Wall Conduit and Tubing Fittings: Mate and match to conduit or tubing type and material.

I. Conduit and Tubing Accessories: Provide conduit, tubing and duct accessories of types, sizes, and materials, complying with Manufacturers' published product information, which mate and match conduit and tubing.

J. Conduit Bodies: Provide galvanized cast-metal conduit bodies of types, shapes, and sizes as required to fulfill job requirements and NEC requirements. Construct conduit bodies with

threaded-conduit entrance ends, removable covers, either cast or galvanized steel, and corrosion-resistant screws.

K. All raceway conduit and fittings above a ceiling shall be plenum rated.

2.3. WIREWAYS

A. General: Provide electrical wireways of types, grades, sizes, and number of channels for each type of service as indicated. Provide complete assembly of raceway including, but not limited to, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other components and accessories as required for complete system.

B. Lay-In Wireways: Provide lay-in wireways with hinged covers, in accordance with UL 870 and with components UL-listed, including lengths, connectors and fittings. Design units to allow fastening hinged cover closed without use of parts other than standard lengths, fittings and connectors. Construct units to be capable of sealing cover in closed position with sealing wire. Provide wireways with knockouts.

C. Connectors: Provide wireway connectors suitable for "lay-in" conductors, with connector covers permanently attached that removal is not necessary to utilize the lay-in feature.

D. Finish: Protect sheet metal parts with rust inhibiting coating and baked enamel finish. Plate finish hardware to prevent corrosion. Protect screws installed toward inside of wireway with spring nuts to prevent wire insulation damage.

E. Raintight Troughs: Construct in accordance with UL 870, with components UL listed.

F. Construction: 16-ga galvanized sheet metal parts for 4" x 4" to 6" x 6" sections, and 14-ga parts for 8" x 8" and larger sections. Provide knockouts only in bottom of troughs, with suitable adapters to facilitate or tear during installation, or would compromise raintight capability of the trough. Do not use cover screws that will protrude into the trough area and damage wire insulation.

G. Finish: Provide 14-ga and 16-ga galvanized sheet metal parts with corrosion-resistant phosphate primer and baked enamel finish. Plate hardware to prevent corrosion.

2.4. SURFACE RACEWAY

A. Provide single or dual channel surface raceway as specified on the drawings. Unless noted otherwise, raceway finish shall be selected at shop drawings from full list of standard and premium finishes.

B. Device plates matching the raceway system shall be utilized. Standard wall mounted device plates shall not be acceptable.

PART 3 - EXECUTION

3.1. GENERAL

A. All conduit shall be installed concealed throughout new construction work, either in walls, under slabs, or above ceilings. Type MC cables are permitted only as noted.

B. Unless noted otherwise, raceways and cables shall be installed near the structure and be supported independently from the structure. Support systems for other building systems (i.e. ductwork, HVAC equipment, system piping, ceiling supports, etc.) shall not be used to support conduits and cables. When routed from light fixtures and other system connections, raceways and cables shall be routed directly vertical to structure and across. Drop wire supports shall not be used on any ceiling support wires under any circumstances.

C. Use PVC Schedule 40 conduit where feeders and service conductors are embedded in concrete, masonry, or earth, and use rigid galvanized steel elbows with large sweep elbows wherever turns are needed. Where PVC conduit is installed below finished floor level within the building pad, contractor shall transition to an approved type of above ground conduit within the floor slab. Where PVC conduit is used exterior to the building under finished grade, contractor shall transition to galvanized rigid steel conduit at the elbow up, and continue using galvanized rigid steel along the riser to above finished grade.

D. PVC Schedule 40 conduit may be run in CMU wall cavities when originating from below finished grade and terminating at a recessed box no higher than 48” above finished floor or grade. For all other installations within wall cavities, PVC conduit shall not be used.

E. Use rigid aluminum conduit where installed exposed outdoors.

F. Use EMT conduit in mechanical equipment rooms, electrical equipment rooms, penthouses, crawl spaces, walls, and areas above ceiling.

G. Use flexible metal conduit in moveable partitions and from outlet boxes to recessed lighting fixtures, and final 24" of connection to motors, or control items subject to movement or vibration, and in cells of precast concrete panels. Conduit size shall be increased as required to fit wiring per NEC.

H. Use liquid-tight flexible metal conduit in mechanical spaces. Conduit size shall be increased as required to fit wiring per NEC.

I. Cut conduits straight, properly ream, and cut threads for heavy wall conduit deep and clean.

J. Field-bend conduit with benders designed for purpose so as not to distort nor vary internal diameters.

K. Size conduits to meet NEC, except no conduit shall be smaller than 3/4" on this project.

L. Fasten conduit terminations in sheet metal enclosures by two locknuts, and terminate with bushing. Install locknuts inside and outside enclosure. **Metallic insulating conduit bushings shall be used on all power conduits.** Split bushings shall not be acceptable.

M. Conduits are not to cross pipe shafts or ventilating duct openings.

N. Keep conduits a minimum distance of 6" from parallel runs of hot water pipes or other sources of heat. Wherever possible, install horizontal raceway runs above water and steam piping.

O. Support riser conduit at each floor level with clamp hangers.

P. Use of running threads at conduit joints and terminations is prohibited.

Q. Where required, use 3-piece union or split coupling.

R. Complete installation of electrical raceways before starting installation of cables/wires within raceways.

S. For concrete floors-on-grade, install PVC Schedule 40 conduits under concrete slabs.

T. Install underground conduits minimum of 24" below finished grade.

U. Install conduits so as not to damage or run through structural members. Avoid horizontal or cross runs in building partitions or side walls.

V. Above requirements for exposed conduits also apply to conduits installed in space above hung ceilings, and in crawl spaces.

**W. Conduits shall not be installed against roof deck. Allow minimum 3" space between top conduit and roof deck for the possible penetration of roof nails to protrude without damaging conduit.**

X. In finished spaces without ceilings (i.e. gymnasiums, natatoriums, etc.), conduits shall be installed as high as possible, while meeting other requirements within these specifications. Conduits along bottom cord of open joists shall not be acceptable. Where conduits need to be installed along bottom of joists or beams, they shall be installed against walls.

Y. Provide fish wire or pull string in all spare conduits.

Z. Cap all spare conduits installed for future use.

AA. Install surface metal raceways in corners or walls or conceal as much as possible.

BB. There shall be no more than three (3) 20A branch circuits installed in a single 3/4" conduit. Each circuit shall be provided with a dedicated neutral wire. Sharing of neutral wire for multiple circuits will not be permitted.

CC. At locations where conduits are installed after painting is done, the contractor shall be responsible to go back and paint conduit and boxes same color to match.

DD. Metallic and non-metallic raceway shall be mechanically fastened to surfaces at intervals as recommended by the manufacturer. Under no circumstances shall glue, two-sided tape, or other type of adhesive be the only means of attachment.

## 3.2. CONDUITS IN CONCRETE SLABS

A. Conduits installed in concrete slabs will not be permitted. PVC conduits shall be installed under concrete slabs in stone base minimum 4" below to top of conduit.

B. Conduits installed in elevated slabs will not be permitted. Conduits shall be installed in ceiling plenum spaces below elevated slabs.

3.3. EXPOSED CONDUITS

A. Install exposed conduits and extensions from concealed conduit systems neatly, parallel with, or at right angles to walls of building.

B. Install exposed conduit work as not to interfere with ceiling inserts, lights, or ventilation ducts or outlets.

C. Support exposed conduits by use of hangers, clamps, or clips. Support conduits on each side of bends and on spacing not to exceed following: Up to 1": 6'-0"; 1-1/4" and over: 8'-0".

D. Run conduits for outlets on waterproof walls exposed. Set anchors for supporting conduit on waterproof wall in waterproof cement.

E. Cap all spare and active conduits stubbed up from the floor with secure PVC caps. Caps used for active conduits shall be notched to accommodate the quantity and size of cables installed in each conduit.

F. Exposed conduits shall be run along walls and at 12” from roof deck. – deck screws, gym, etc.

3.4. NON-METALLIC CONDUITS

A. Make solvent cemented joints in accordance with recommendations of Manufacturer.

B. Install PVC conduits in accordance with NEC and in compliance with local utility practices. Provide expansion joints as required by Manufacturer and NEC.

3.5. CONDUIT FITTINGS

A. Construct locknuts for securing conduit to metal enclosure with sharp edges for digging into metal, and ridged outside circumference for proper fastening.

B. Bushings for terminating conduits smaller than 1-1/4" are to have flared bottom and ribbed sides, with smooth upper edges to prevent injury to cable insulation.

C. Install insulated type bushings for terminating conduits 1-1/4" and larger.

D. Bushings are to have flared bottom and ribbed sides. Upper edge to have phenolic insulating ring molded into bushing.

E. Bushing of standard or insulated type to have screw type grounding terminal.

F. Miscellaneous fittings such as reducers, chase nipples, 3-piece unions, split couplings, and plugs to be specifically designed for their particular application.

3.6. RACEWAYS AND WIREWAYS

A. Avoid use of dissimilar metals through system to eliminate possibility of electrolysis. Where dissimilar metals are in contact, coat all surfaces with corrosion inhibiting compound before assembling.

B. Install expansion fittings in all raceways/wireways wherever structural expansion joints are crossed.

C. Make changes in direction to raceway/wireway run with proper fittings, supplied by raceway Manufacturer. No field bends of raceway/wireway sections will be permitted.

D. Properly support and anchor raceways/wireways for their entire length by structural materials. Raceways are not to span any space unsupported.

E. Use boxes as supplied by Manufacturer wherever junction, pull or device boxes are required. Standard electrical "handy" boxes, etc., shall not be permitted for use with surface installations.

END OF SECTION 26 05 33

# SECTION 26 05 35 – ELECTRICAL BOXES AND FITTINGS

## PART 1 - GENERAL

### 1.1. DESCRIPTION OF WORK

A. The extent of electrical box and associated fittings work is indicated by Drawings and Schedules.

### 1.2. CODES AND STANDARDS

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical wiring boxes and fittings.

B. UL Compliance: Comply with UL Std No.'s 50, 514-series and 886. Provide electrical boxes and fittings which are UL-listed and labeled.

C. NEMA Compliance: Comply with applicable requirements of NEMA Stds/Pub No.'s OS1, OS2 and Pub 250.

## PART 2 - PRODUCTS

### 2.1. FABRICATED MATERIALS

A. Outlet Boxes: Provide galvanized coated flat-rolled sheet-steel outlet wiring boxes, of shapes, cubic inch capacities, and sizes, including box depths as indicated (or as required), suitable for installation at respective locations. Construct outlet boxes with mounting holes, and with cable and conduit-size knockout openings in bottom and sides. Provide boxes with threaded screw holes, with corrosion-resistant cover and grounding screws for fastening surface and device type box covers, and for equipment type grounding. Flush boxes must be mounted flush with finished wall surface.

B. Outlet Box Accessories: Provide outlet box accessories as required for each installation, including box supports, mounting ears and brackets, wallboard hangers, box extension rings, fixture studs, cable clamps and metal straps for supporting outlet boxes, which are compatible with outlet boxes being used to fulfill installation requirements for individual wiring situations. Choice of accessories is Installer's code - compliance option.

C. Device Boxes: Provide galvanized coated flat-rolled sheet-steel non-gangable device boxes, of shapes, cubic inch capacities, and sizes, including box depths as indicated (or as required), suitable for installation at respective locations. Construct device boxes for flush mounting with mounting holes, and with cable-size knockout openings in bottom and ends, and with threaded screw holes in end plates for fastening devices. Provide cables clamps and corrosion-resistant screws for fastening cable clamps, and for equipment type grounding. Flush boxes must be mounted flush with finished wall plate.

D. Device Box Accessories: Provide device box accessories as required for each installation, including mounting brackets, device box extensions, switch box supports, plaster ears, and plaster board expandable grip fasteners, which are compatible with device boxes being utilized to fulfill installation requirements for individual wiring situations. Choice of accessories is Installer's codes-compliance option.

E. Surface-Mounted Device and Outlet Boxes: Provide a minimum depth galvanized-coated steel box where indicated on the Drawings without pre-punched knockouts.

F. Raintight Outlet Boxes: Provide corrosion-resistant cast-metal raintight outlet wiring boxes, of types, shapes and sizes, including depth of boxes, with threaded conduit holes for fastening electrical conduit, including face plate gaskets and corrosion-resistant plugs and fasteners.

G. Junction and Pull Boxes: Provide galvanized code-gauge sheet steel junction and pull boxes, with screw-on covers; of types, shapes and sizes, to suit each respective location and installation; with welded seams and equipped with stainless steel nuts, bolts, screws and washers. Provide handles on covers over 4 square feet.

H. Where surface or recessed boxes are indicated to be blank or with wire leads for future use, they shall be provided with blank covers per Division 26 “Wiring Devices”.

## PART 3 - INSTALLATION

### 3.1. GENERAL

A. Install electrical boxes and fittings as indicated, in accordance with Manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation", and in accordance with recognized industry practices to fulfill project requirements.

B. Coordinate installation of electrical boxes and fittings with wire/cable, wiring devices, and raceway installation work.

C. Provide weathertight outlets for interior and exterior locations exposed to weather or moisture.

D. Provide knockout closures to cap unused knockout holes where blanks have been removed.

E. Install electrical boxes in those locations which ensure ready accessibility to enclosed electrical wiring.

F. Avoid installing boxes back-to-back in walls. Provide not less than 6" (150mm) separation or separate stud spaces.

G. Position recessed outlet boxes accurately to allow for surface finish thickness.

H. Where devises are shown at casework, contractor shall coordinate exact location and height with casework to ensure usability of devices.

I. Avoid using round boxes where conduit must enter box through side of box, which would result in difficult and insecure connections when fastened with locknut or bushing on rounded surfaces.

J. Fasten electrical boxes firmly and rigidly to substrates, or structural surfaces to which attached, or solidly embed electrical boxes in concrete or masonry.

K. Provide electrical connections for installed boxes.

L. Subsequent to installation of boxes, protect boxes from construction debris and damage.

M. Ground electrical boxes properly upon completion of installation work and demonstrate compliance with requirements. Ground electrical box and wiring device.

3.2. INSTALLATION TO MEET ACOUSTICAL PERFORMANCE

A. In order to reduce sound transmission through walls, when back boxes are installed to serve both sides of the wall, they shall be installed in different stud cavities. Where boxes are found to be installed in the same stud cavity, feeding two different sides of the wall, they will be required to be removed and reinstalled at the contractor's expense.

END OF SECTION 26 05 35

# SECTION 26 05 53 – ELECTRICAL IDENTIFICATION

## PART 1 - GENERAL

### 1.1 CODES AND STANDARDS

A. UL Compliance: Comply with UL Std 969.

B. NEC and NEMA Compliances: Comply with NEC and NEMA WC-1 and WC-2.

C. ANSI Compliance: Comply with ANSI Std A13.1.

## PART 2 - PRODUCTS

### 2.1 GENERAL

A. Except as otherwise indicated, provide Manufacturer's standard products of categories and types required for each application. Where more than single type is specified for an application, selection is installer's option, but provide single selection for each application.

### 2.2 UNDERGROUND-TYPE PLASTIC LINE MARKER

A. Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide tape with printing which most accurately indicates type of service of buried cable.

1. Provide line marker with detectable metallic core for installation above primary power, secondary power and communications service ductbanks.
2. Provide standard plastic line markers for all other installations.

### 2.3 CABLE/CONDUCTOR IDENTIFICATION BANDS

A. Provide Manufacturer's standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type; either pre-numbered plastic coated type, or write-on type with clear plastic self-adhesive cover flap; numbered to show circuit identification.

### 2.4 SELF-ADHESIVE PLASTIC SIGNS

A. Provide Manufacturer's standard, self-adhesive or pressure-sensitive, pre-printed, flexible vinyl signs for operational instructions or warnings; of sizes suitable for application areas and adequate for visibility, with proper wording for each application areas and adequate for visibility, with proper wording for each application (e.g., “EXHAUST FAN FED FROM PANEL PD1”).

B. Colors: Unless otherwise indicated, or required by governing regulations, provide white signs with black lettering.

2.5 ENGRAVED PLASTIC-LAMINATE SIGNS

A. Provide engraving stock melamine plastic laminate with black face and white core plies (letter color), complying with FS L-P-387, in sizes and thicknesses indicated. Engrave laminate with engraver's standard letter style of sizes and wording indicated, and punch for mechanical fastening except where adhesive mounting is necessary because of substrates.

B. Thickness: 1/16", for units up to 20 sq. in. or 8" length; 1/8" for larger units.

C. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate substrate.

2.6 LETTERING AND GRAPHICS

A. Coordinate names, abbreviations and other designations used in electrical identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by Manufacturers or as required for proper identification and operation/maintenance of electrical systems and equipment systems and equipment. Comply with ANSI A13.1 pertaining to minimum sizes for letters and numbers.

2.7 MANUFACTURER

A. Provide electrical identification products of one of the following (for each type marker):

1. Ideal Industries, Inc.
2. LEM Products, Inc.
3. Markal Company
4. National Band and Tag Co.

PART 3 - EXECUTION

3.1 GENERAL

A. Install electrical identification products as indicated, in accordance with Manufacturer's written instructions, and requirements of NEC.

3.2 COORDINATION

A. Where identification is to be applied to surfaces which require finish, install identification after completion of painting.

3.3 REGULATIONS

A. Comply with governing regulations and requests of governing authorities for identification of electrical work.

## 3.4 UNDERGROUND CABLE IDENTIFICATION

A. During backfilling/topsoiling of each exterior underground electrical, signal or communication cable, install continuous underground-type plastic line marker, located directly over buried line at 6" to 8" below finished grade. Where multiple small lines are buried in a common trench and do not exceed an overall width of 16", install a single line marker.

B. Install line marker for every buried cable, regardless of whether direct-buried or protected in conduit.

## 3.5 CABLE/CONDUCTOR IDENTIFICATION

A. Apply cable-conductor identification where wires of communication/signal system are present, except where another form of identification (such as color-coded conductors) is provided. Match identification with marking system used in panelboards, shop drawings, Contract Documents, and similar previously established identification for project's electrical work.

B. Install engraved plastic-laminate tags on new power cables in all manholes and in pullboxes to identify over current device number. Use tie wraps to attach tag to cables. The nameplate shall bear the following information: Building served; voltage, cable size, class of insulation, phase designation.

## 3.6 DANGER SIGNS

A. In addition to installation of danger signs required by governing regulations and authorities, install appropriate danger signs at locations indicated and at locations subsequently identified by Installer of electrical work as constituting similar dangers for persons in or about project.

B. High Voltage: Install danger signs wherever it is possible, under any circumstances, for persons to come into contact with electrical power of voltages higher than 110-120 volts.

C. Critical Switches/Controls: Install danger signs on switches and similar controls, regardless of whether concealed or locked up, where untimely or inadvertent operation (by anyone) could result in significant danger to persons, or damage to or loss of property.

## 3.7 ARC FLASH SIGNS

A. Provide arc flash stickers on equipment per NEC and NFPA. Stickers shall be placed in a prominent position that is clearly visible before access to a dangerous area is reached. This includes the front of devices similar to disconnect switches, motor starters, switchboards, etc. and just inside the front cover of panelboards.

B. Provide signs for each unit of the following categories of electrical work.

1. Panelboards, electrical cabinets and enclosures.
2. disconnect switches.
3. Elevator Power module.
4. Disconnect switches.

## 3.8 EQUIPMENT/SYSTEM IDENTIFICATION

A. Install engraved plastic-laminate sign on each major unit of electrical equipment in building; including central or master unit of each electrical system including communication/control/signal systems, unless unit is specified with its own self-explanatory identification or signal system. Except as otherwise indicated, provide single line of text, 1/2" high lettering on 1-1/2" high sign (2" high where 2 lines are required), White lettering in Black field. Provide text matching terminology and numbering of the Contract Documents and shop drawings. Each listed piece of equipment below shall have a sign that has the following: 1. Equipment Name, 2. Where the equipment is fed from. Example: PANEL “PD1" (FED FROM PANEL DPD )

B. Provide signs for each unit of the following categories of electrical work.

1. Panelboards, electrical cabinets and enclosures.
2. Disconnect switches.
3. Elevator Power module.
4. Disconnect switches.

C. Install signs at locations indicated or, where not otherwise indicated, at location for best convenience of viewing without interference with operation and maintenance of equipment. Secure to substrate with fasteners, except use adhesive where fasteners should not or cannot penetrate substrate.

## 3.9 DIRECTORIES

A. Provide typed circuit directory cards in all “New” panelboards (both breaker and fuse type) and low voltage lighting control panels indicating the room number or area, and the item or items controlled by each circuit. Provide typed circuit directory cards for all “Existing” panelboards and low voltage lighting control panels where the Contractor has added, deleted or moved circuits with in an “Existing” panelboard.

1. Contractor shall trace existing circuits within existing panelbaords and low voltage lighting control panels to properly identify all circuits within the panelboards and low voltage lighting control panels.

B. Directories shall use actual room numbers to indicate locations of all devices, including, but not limited to receptacles, lighting, mechanical equipment, etc. When preparing schedule, use a room number schedule generated by the architect and/or the owner, which indicates the actual room numbers that will be used when the building is occupied. If the schedule is not available, request, in writing, a schedule to reflect the proper room numbers.

C. Provide sufficient information to meet requirements of Article 408 of the National Electric Code.

## 3.10 ADDITIONAL FUSE LABELING

A. At the exterior enclosure of all fused switches, provide additional labeling designating fuse sizes, types and quantity.

3.11 RECEPTACLE CIRCUIT IDENTIFICATION

A. At each receptacle, identify panelboard and circuit number from which receptacle is served. Use machine printed, pressure sensitive, abrasion resistant label tape on backs of the wall plate and durable wire markers or tags within outlet boxes.

END OF SECTION 26 05 53

# SECTION 26 27 26 – WIRING DEVICES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes receptacles, connectors, switches, and finish plates.

### 1.2 DEFINITIONS

A. GFCI: Ground fault circuit interrupter.

### 1.3 SUBMITTALS

A. Product Data: For each product specified.

B. Shop Drawings:

1. Legends for receptacles and switch plates, where indicated on the drawings.

C. Maintenance Data: For materials and products to include in maintenance manuals specified in Division 1.

### 1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

B. Comply with NEMA WD 1.

C. Comply with NFPA 70.

D. Compliance with Federal Specifications – indentified by the federal specifications mark (capital letters ‘F’ and ‘S’ each in a wing on either side of the UL Listing mark):

1. Receptacles and GFCI’s: Federal Specification number WC596.
2. Switches: Federal Specification number WS896.

### 1.5 COORDINATION

A. Receptacles for Owner Furnished Equipment, or Equipment furnished by other trades: Match plug configurations.

1. Cord and Plug Sets: Match equipment requirements.

## PART 2 - PRODUCTS

2.1 WALL SWITCHES

A. Manufacturers

1. Hubbell HBL1221 Series.
2. Leviton 1221-2 Series.
3. Pass & Seymour PS20AC1 Series.
4. Arrow Hart (Cooper) AH1221 Series.

B. Description: NEMA WD 1, heavy duty industrial grade, binding screw type for back and side wiring, AC only snap switch with grounded mounting strap, and grounding terminal with green screw.

C. Toggle Color: As selected by Architect.

D. Types: Switch shall be single pole, double pole, three-way, or 4-way, as required by the drawings.

E. Voltage Rating: 120/277 volts, AC.

F. Current Rating: 20 amperes.

2.2 RECEPTACLES

A. Duplex Convenience Receptacle

1. Manufacturers

a. Hubbell HBL5362 Series.
b. Leviton 5362 Series.
c. Pass & Seymour PS5362 Series.
d. Arrow Hart (Cooper) AH5362 Series.

2. Description: Heavy-Duty Federal Industrial Spec Grade with nylon face (smooth), brass strap, brass contacts for side and back wiring, and nylon base.
3. Provide with WR (weather resistant) label when installed in exterior applications per code.
4. Where indicated on the drawings, or per current version of NEC, provide the tamper resistant version with internal shutter system.
5. Color of receptacles shall be as selected by the Architect.
6. Prewired and plug-in devices shall be acceptable provided device matches specifications and plug-in devices are crimped and welded. Provide similar to Pass & Seymour “Plug Tail” type receptacles.

B. Ground Fault Circuit Interrupter (GFCI) Receptacle

1. Manufacturers

a. Hubbell GF20 Series.
b. Leviton 7899 Series.
c. Pass & Seymour 2095 Series.

d. Arrow Hart (Cooper) VGF20

2. Description: Federal Specification Grade with high-impact-resistant thermoplastic construction, brass contacts for side and back wiring and LED trip indicator light.
3. GFCI receptacles shall not be connected to protect downstream devices, unless noted otherwise on the drawings. Provide unit designed for installation in a 2-3/4" deep outlet box without adapter, grounding type, Class A, Group 1, per UL 943.
4. Device shall comply with Federal Specification WC596. Devices shall have protection so that if critical components are damaged and ground fault protection is lost, power to receptacle shall be disconnected.
5. Provide with WR (weather resistant) label when installed in exterior applications per code.
6. Where indicated on the drawings, or per current version of NEC, provide the tamper resistant version with internal shutter system.
7. Prewired and plug-in devices shall be acceptable provided device matches specifications and plug-in devices are crimped and welded.

C. Weatherproof Receptacle

1. Consisting of a GFCI receptacle as specified above in an outlet enclosure that is UL listed for wet locations, and meet NEC and OSHA requirements while in use.

a. Exterior-mounted receptacles **installed in existing walls and on mechanical units** shall have a self-closing weatherproof (in use) cover similar to Pass & Seymour WIUC series. Exterior-mounted receptacles **installed in new walls** shall have a self-closing weatherproof (in use) and be mounted over a recessed box similar to Arlington Industries DSBVR1W series. Paint cover to match adjacent surface with appropriate type of paint. Coordinate color with Architect prior to ordering.

## 2.3 SPECIAL PURPOSE RECEPTACLES

A. Manufacturers

1. Hubbell.
2. Leviton.
3. Pass & Seymour.
4. Arrow Hart (Cooper).

B. Description: Polarized, grounding type

C. Device Body: Black nylon

D. Configuration: As required by the amperage and voltage of the equipment to be connected on the drawings.

E. Provide equipment cord and caps as required for equipment.

2.4 WIRING DEVICE ACCESSORIES

A. Wall Plates: Provide wall plates for single and combination wiring devices, of types, sizes, and with ganging and cutouts as indicated. Provide plates which mate and match with wiring devices to which attached. Provide metal screws for securing plates to devices with screw heads colored to match finish of plates.

B. Wall Plates: Provide 302 satin finished stainless steel wall plates throughout the building.

C. Provide galvanized steel wall plates in unfinished spaces.

2.5 CORD AND PLUG SETS

A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.

1. Cord: Rubber insulated, stranded copper conductors, with type SOW A jacket. Green insulated grounding conductor, and equipment rating ampacity plus a minimum of 30 percent.
2. Plug: Nylon body and integral cable clamping jaws. Match cord and receptacle type for connection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate with other work, including painting, electrical boxes and wiring work, as necessary to interface installation of wiring devices with other work.

B. Verify all receptacle mounting heights before roughing in unless noted. If an outlet is installed in such a location as to be out of proper relation to beams, walls, or finish details of the building, its location shall be corrected by and at the expense of the Contractor under direction of the Architect/Engineer.

C. Install devices and assemblies plumb and secure only in electrical boxes which have been cleaned of excess building materials, dirt, and debris. Device to be secure tight against wall box and flush with wall plate.

D. Install switches on latch side of doorways.

E. Install wall plates when painting is complete.

F. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

G. Protect devices and assemblies during painting.

3.2 INSTALLATION TO MEET ACOUSTICAL PERFORMANCE

A. In order to reduce sound transmission through walls, when devices boxes are installed to serve both sides of the wall, they shall be installed in different stud cavities. Where boxes are found to be installed in the same stud cavity, feeding two different sides of the wall, they will be required to be removed and reinstalled at the contractor's expense.

3.3 IDENTIFICATION

A. The requirements listed below are in addition to the requirements listed in Division 26 “Electrical Identification”.

B. Switches: Where three or more switches are ganged, and elsewhere as indicated, identify each switch with approved legend engraved on wall plate.

C. Receptacles: Identify panelboard and circuit number from which served. Use machine printed, pressure sensitive, abrasion resistant label tape on backside of the wallface plate and durable wire markers or tags within outlet boxes.

3.4 CONNECTIONS

A. Connect wiring device grounding terminal to outlet box with bonding jumper.

B. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.

C. Tighten electrical connectors and terminals according to manufacturers published torque tightening values. If manufacturers torque values are not indicated, use those specified in UL 486A and UL 486B.

3.5 FIELD QUALITY CONTROL

A. Test wiring devices for proper polarity and ground continuity. Operate each device at least six times.

B. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.

C. Replace damaged or defective components.

3.6 CLEANING

A. Internally clean devices, device outlet boxes, and enclosures. Replace stained or improperly painted wall plates or devices.

END OF SECTION 26 27 26

SECTION 26 28 13 – FUSES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes cartridge fuses, rated 600 V and less, for use in switches, panelboards, switchboards, controllers, and motor control centers; and spare fuse cabinets.

1.2 SUBMITTALS

A. Product Data: Include dimensions and Manufacturer's technical data on features, performance, electrical characteristics, and ratings for each fuse type indicated.

1.3 QUALITY ASSURANCE

A. Source Limitations: Provide fuses from a single Manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NEMA FU 1.

D. Comply with NFPA 70.

1.4 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F or more than 100 deg F, apply Manufacturer's ambient temperature adjustment factors to fuse ratings.

1.5 COORDINATION

A. Coordinate fuse ratings with HVAC and refrigeration equipment nameplate limitations of maximum fuse size.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged in original cartons or containers and identified with labels describing contents.

1. Fuses: Quantity equal to one (1) set for every five (5) installed sets, but not fewer than one set of three of each kind.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Industries, Inc.; Bussmann Div.
2. General Electric Co.; Wiring Devices Div.
3. Mersen (Ferraz Shawmut).
4. Tracor, Inc.; Littelfuse, Inc. Subsidiary.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuse; class and current rating indicated; voltage rating consistent with circuit voltage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

B. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

A. Main Service: Class L, time delay (601 to 6000A) or Class J, time delay (0 to 600A).

B. Main Feeders: Class L, time delay (601 to 6000A) or Class J, time delay (0 to 600A).

C. Combination Starter/Disconnect Switches: Class RK1, time delay.

D. Disconnect Switches: Class RK1, time delay (30-600A).

E. Other Branch Circuits: Class RK5, time delay.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

3.4 IDENTIFICATION

A. The requirements listed below are in addition to the requirements listed in Division 26 “Electrical Identification”.

B. Install labels indicating fuse replacement information on inside door of each fused switch.

END OF SECTION 26 28 13

# SECTION 26 28 15 – POWER MODULE SWITCH (ELEVATOR)

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

A. Provide Elevator Power Module Switch(es), fuses and accessories as required and specified on Contract Drawings to distribute electrical power to all Elevators.

### 1.2 CODES

A. All work shall be performed in accordance with the latest edition of applicable standards, codes and laws.

1. NFPA 70 B 1999 Section 620-51 A-C, 620-62, 620-91(c)
2. Canadian Electric Code Part I 38-034(3)
3. ANSI/ASME A17.1 B 1996 Section 102.2(4)
4. BOCA 3006.2.3
5. NFPA 72 B 1999 Section 3-9.4.4

### 1.3 STANDARDS

A. Except as modified by governing codes, all equipment shall be manufactured in accordance with the latest applicable standards:

1. Enclosed Switches, UL 98 and CSA - C22.2 No. 4

### 1.4 SUBMITTALS

A. Submit Shop Drawings and product data under the provisions of the General Conditions.

B. Product Data: Provide Manufacturer's catalog information showing dimensions, configurations, and methods of mounting and installation.

C. Submit listing of all types, sizes and quantity of fuses which will be installed including the location of each.

D. Spare fuses shall be supplied and turned over to the Owner. ( Refer to Section 26 28 13 Fuses.).

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Bussmann - Power Module Switch - PS

B. Littelfuse - Power-Switch - LPS Series

2.2 GENERAL CONDITIONS & REQUIREMENTS

A. Provide Power Module Switch in a single NEMA enclosure with all necessary relay(s), control transformer and other options (as listed below), and as shown on Drawings. The Power Module Switch shall be constructed, listed, and certified to the standards as listed in above. The Power Module Switch shall have an ampere rating as shown on the Contract Drawings, and shall include a horsepower rated fusible switch with shunt trip capabilities. The ampere rating of the switch shall be based upon Elevator Manufacturer requirements and utilize Class J Fuses (provided separately). It shall include as an accessory, a 100VA control power transformer with primary and secondary fuses. The primary voltage rating shall be 600 volts with a 120 volt secondary. It shall also contain an isolation relay (3PDT, 10amp, 120 V). The coil of the isolation relay shall be coordinated with fire alarm system connection by the Electrical Contractor (120V AC or 24V DC). A normally open dry contact shall be provided by the Fire Alarm Safety System to energize the isolation relay and activate the shunt trip solenoid (140VA inrush at 120V). (Note: if 24V DC coil is selected, a separate 24V DC source and contact must be provided by the Fire Alarm Safety System).

B. Module shall contain the following options:

1. The Key to Test Switch, “On” Pilot Light ( Green, Red or White), 1PNC Mechanical Interlock (required for hydraulic elevators with automatic recall), Fire Alarm Voltage Monitoring Relay (Needed to comply with NFPA 72), NEMA 1Enclosure.
2. The module shall have been successfully tested to a short circuit rating with Bussmann Low-Peak Class J fuses at 200,000 amps RMS Symmetrical. All switches shall have shunt trip capabilities at 120V AC from remote fire safety signal. Branch feeders shall be selectively coordinated and fed with an upstream supply overcurrent protective device at a minimum of 2:1 size ratio utilizing Low-Peak (Class J, RK1, or L) fuses.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All material installation shall be in accordance with Manufacturer’s recommendations and the provisions of applicable codes.

B. Fuses shall not be installed until equipment is ready to be energized.

C. Provide wiring and connection from Elevator Power Module Switch to Fire Alarm System.

3.2 IDENTIFICATION

A. Provide switch and fuse identification as listed in Division 26 “Electrical Identification”.

END OF SECTION 26 28 15

# SECTION 26 28 16 – DISCONNECT SWITCHES

## PART 1 - GENERAL

### 1.1 WORK INCLUDED

A. Disconnect switches.

B. Enclosures.

### 1.2 REFERENCES

A. FS W F 870 Fuseholders (For Enclosed Cartridge Fuses).

B. FS W S 865 Switch, Box, (Enclosed), Surface Mounted.

C. NEMA KS 1 Enclosed Switches.

### 1.3 SUBMITTALS

A. Submit product data under provisions of Section 26 00 10.

B. Include outline Drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Square D Company.

B. Siemens.

C. Eaton (Cutler Hammer).

D. General Electric.

E. No Other Manufacturers will be considered.

### 2.2 HEAVY DUTY TYPE

A. All switches shall have switch blades which are visible when the switch is OFF and the cover is open.

B. Lugs shall be front removable and UL listed for 60°C or 75°C conductors in switches rated 30 100 ampere, 75°C conductors in switches rated 200 1200 ampere, copper conductors.

C. All current carrying parts shall be plated to resist corrosion.

D. Switches shall have removable arc suppressors to facilitate easy access to line side lugs.

E. Switches shall have provisions for a field installable electrical interlock.

F. Switch operating mechanism shall be quick make, quick break such that, during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operating handle after the closing or opening action of the contacts has started.

G. The operating handle shall be an integral part of the box, not the cover.

H. The handle position shall travel at least 90 degrees between OFF and ON positions to clearly distinguish and indicate handle position.

I. All switches shall have a dual cover interlock mechanism to prevent unintentional opening of the switch cover when the switch is ON and prevent turning the switch ON when the cover is open. The cover interlock mechanism shall have an externally operated override but the override shall not permanently disable the interlock mechanism. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

J. Switch enclosure shall be NEMA 1 unless otherwise on the Drawings or required by the NEC in accordance with the project conditions.

K. The enclosure shall be finished with Gray baked enamel paint which is electrodeposited on cleaned, phosphate pre treated steel (Type 1), or Gray baked enamel paint which is electrodeposited on cleaned, phosphate pre treated galvannealed steel (Type 3R).

L. The enclosure shall have ON and OFF markings on the cover to clearly identify the position of the switch.

M. All switches shall have provisions to lock the operating handle in the OFF position.

N. Tangential knockouts shall be provided to facilitate ease of conduit entry for switches rated 30 200A.

O. Enclosures for Type 3R switches through 200 ampere shall have provisions for interchangeable bolt on hubs in the top endwall.

P. Switches shall be horsepower rated for ac and/or dc as indicated on the plans.

Q. The UL listed short circuit current rating of the switches shall be: 200,000 rms symmetrical amperes when used with or protected by Class R fuses (30 600 ampere switches employing appropriate fuse rejection schemes).

## 2.3 SWITCH ACCESSORIES

A. Where switches are designated to be used as service entrance, the switch shall be labeled for such use.

B. Where fused switches are designated to have type "R" fuses, the switch shall be provided with rejection clips.

C. Provide fuse clip adaptors as required to accommodate smaller fuses when required.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. Install disconnect switches to meet N.E.C. working clearance requirements.

B. Install fuses in fusible disconnect switches.

### 3.2 IDENTIFICATION

A. The requirements listed below are in addition to the requirements listed in Division 26 “Electrical Identification”.

B. Provide labeling on the exterior of each disconnect switch Stating the following:

1. What the piece of equipment is fed from the switch.
2. Where the piece of equipment is fed from the switch.
3. Size, type and quantity of fuses within cabinet.

### 3.3 FIELD QUALITY CONTROL

A. Subsequent to completion of installation of disconnects, energize circuits and demonstrate capability and compliance with requirements. Demonstrate switch operation through six (6) opening/closing cycles with circuit unloaded. Open each switch enclosure to display interior, mechanical and electrical connections and fuse installation, and for verification of type and rating of fuses installed. Where possible, correct deficiencies at project site, then retest or demonstrate compliance; otherwise, remove and replace with new units and retest.

END OF SECTION 26 28 16

SECTION 28 31 11 - FIRE ALARM AND DETECTION SYSTEM **SILENT KNIGHT**

PART 1 - GENERAL

1.1 SUMMARY

A. It is the intent of these specifications, drawings, schedules and riser diagrams to describe the minimum requirements to furnish and install a completely new fire alarm system device and connect to the existing buildings Silent Knight Fire Alarm system. The system shall include the following:

1. Analog Addressable Monitoring and Control
2. Manual Operator Switches and Annunciation
3. Manual Stations
4. Analog Addressable Smoke Detectors with Application Specific Detection
5. Analog Addressable Duct Smoke Detectors with Application Specific Detection
6. Analog Addressable Heat Detection
7. Addressable Monitoring and Control Modes for:

    a. Elevator Recall Control

    b. Sprinkler System Flow and Tamper Valves
8. Remote Network panels
9. Visual Indicating Appliances
10. Audible Indicating Appliances (Speakers)

    a. Central Station Reporting of Alarm, Trouble and Supervisory Conditions

11. Standby Batteries
12. Conduit, Wire, Outlet Boxes, Miscellaneous Parts
13. Other items required for a complete and operational system.

B. The Contractor shall be responsible for submitting all drawings, riser diagrams, calculations etc. to local authority for their approval. All components require U.L. and F M compliance. The Contractor shall be required to provide UL and FM certification documentation to township officials to meet all township requirements before the township will accept the system. The Contractor shall be responsible to review all annunciator, Knox Box and sprinkler gong locations with local officials prior to beginning work. The Contractor shall be responsible for any and all permits required by the township.

C. The Contractor shall verify that all peripheral devices (initiation and annunciation) is compatible with the system. If an alternate manufacturer of peripheral device is required, the contractor shall supply the alternate manufacture at no additional cost to the Owner. The alternate manufactured device shall be equivalent in performance and appearance to the specified.

D. Provide interconnections as listed in part 2.

E. Provide training as listed in part 3.

1.2 CODES AND STANDARDS

A. NEC Compliance: Comply with the National Electric Code (NEC), latest version in effect as of the bid due date of this project, as applicable to construction and installation of fire alarm and detection system components and accessories.

B. The Fire Alarm System Supplier shall contract with an independent Electrical Inspection Agency to inspect the fire alarm system installation for compliance with Article 760 of the NEC and other applicable articles of the NEC. The Inspection Agency shall be a different company than the Electrical Inspection Agency used by the Electrical Contractor. An approval certificate from the Electrical Inspection Agency shall be submitted to the Architect and Engineer before final approval of the system is granted.

C. The name of the Electrical Inspection Agency is to be submitted with the shop drawings for approval by the Architect and Engineer of record for this project.

D. NFPA Compliance: Comply with latest edition of NFPA 72 National Fire Alarm Code, as applied to construction and installation of fire alarm and detection system components and accessories. The Contractor shall be responsible to have the Fire Alarm manufacturer review the drawings prior to installation of any device. Any device(s) required to be added or relocated to meet NFPA requirements shall be submitted prior to installation.

E. ADA Compliance: Provide fire alarm system signaling components which meet the 1990 Americans with Disabilities Act (ADA) and any subsequent modifications and clarifications to this law.

F. U.L Compliance and Labeling: Provide fire alarm and detection system components which are U.L. listed and labeled for their intended use and service.

G. Commonwealth of Pennsylvania: The complete installation shall be installed in a manner to provide a system that meets the requirements of the Pennsylvania Construction Code Act (Title 34) as adopted on April 11, 2003 and the Uniform Construction Code.

H. Local Code Requirements: Comply with the latest codes as adopted by the local code authority having jurisdiction (AHJ) and implemented by its building code services bureau. The Contractor and equipment supplier shall assist the building code services bureau inspectors in the final test of equipment and operation of the system.

I. NICET Certification: The Equipment Supplier shall employ at least one individual full time in the office supporting this project that has attained NICET Level I II Certification in Fire Alarm Systems. All submittals and drawings shall be approved, initialed and show the NICET Certification Number of the individual maintaining the certification and taking responsibility for the documentation. As an alternate to the NICET Level III requirement, all submittals, drawings, and testing shall be reviewed, witnessed, and stamped sealed by a Professional Engineer (PE), licensed in the State of Pennsylvania, and the PE shall present a final letter of certification of the system at the completion of the project.

1.3 DESCRIPTION OF WORK

A. The contractor shall be responsible to contact the School District's local " Silent Knight" manufacturer's Rep. to verify all devices and equipment required for this project are provided in his bid. There will be no additional monies after award of bid for not having correct devices, or equipment.

B. The system shall be an analog addressable type to include manual stations, automatic detectors, visual indicating appliances, audible indicating appliances, equipment and connections for remote Central Station monitoring, sprinkler flow and tamper switch monitoring, standby batteries, conduit, wire, outlet boxes, elevator recall, and any other items required to provide a complete and operational system.

C. The Contractor is responsible to have the existing Fire Alarm system reprogramed and tested by the manufacturer after elevator renovation work is completed, cleaned and free of dirt. All costs for this work shall be provided in the contractors bid.

1.4 QUALITY ASSURANCE

A. Manufacturers: Firms engaged in the manufacturer of fire alarm and detection systems, of the type, operational, electrical and electronic characteristics required with systems that have been installed in satisfactory operation for not less than one year. New products must be thoroughly field-tested. Equipment not meeting this requirement will not be accepted for approval.

1.5 SUBMITTALS

A. Submit under provisions of Section 26 00 10.

B. The installing contractor and/or equipment manufacturer shall provide complete and detailed shop drawings and include:

1. Detailed written system description describing system functions and operation. All specification deviations shall be clearly noted and marked.
2. Control panel wiring schematic and interconnections.
3. Complete point to point wiring diagram showing terminal connections to all system devices.
4. Riser wiring diagram and associated zones.
5. Complete floor plan drawings locating all devices associated with the fire alarm system.
6. Factory data sheets on which piece of equipment to be used and so marked as to model, dimensions, size, voltage, and configuration.
7. Complete Bill of Material for reference.
8. Programming matrix defining all input/output functions and zoning.
9. Provide complete battery calculations for both alarm and supervisory mode.

C. The equipment supplier must have a minimum NICET Level 3 Certification, or Submittals and Drawings must be stamped by a Registered Fire Protection Engineer.

D. Submit a copy of NICET Level III Certificate and technician's factory certification cards.

E. All submittal data will be in bound form with contractor's name, supplier's name, project name, and State Fire Alarm License number adequately identified.

F. When preparing submittals and any required final programming, use a room number schedule generated by the architect and/or the owner, which indicates the actual room numbers that will be used when the building is occupied. If the schedule is not available, revise the initial submittal, when a schedule is available, to reflect the proper room numbers.

1.6 WARRANTY

A. The Contractor shall warrant the fire alarm equipment and wiring to be free from inherent mechanical and electrical defects for a period of two (2) years from the date of the final acceptance of the system of the last phase of the project. The Fire Alarm System equipment shall have a warranty of two (2) years from date of the last phase of the project. Defective equipment shall be replaced at no cost to the Owner during this two-year warranty period. The equipment manufacturer shall provide to the Owner a maintenance contract that covers the requirements for inspections and tests in accordance with NFPA 72 and the Pennsylvania Department of Labor & Industry, Uniform Construction Code during the two (2) year warranty period at no additional cost to the owner. The required inspections and tests shall be provided as part of the maintenance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The existing buildings Fire Alarm System is Silent knight –

B. No other Manufacturers will be accepted.

2.2 FIRE ALARM AND DETECTION SYSTEMS

A. General: Provide fire alarm and detection system products of types, sizes and capacities indicated that comply with manufacturer's standard design, materials, and components; construct in accordance with published product information, and as required for complete installation. Provide fire alarm and detection systems for applications indicated, and with the following sequence of operations, components and function features.

B. The system shall be a addressable type to include manual stations, automatic detectors, visual indicating appliances, audible indicating appliances, remote annunciators, equipment and connections for remote monitoring, sprinkler flow switch, sprinkler tamper switch, duct detector, standby batteries, conduit, wire, outlet boxes and any other items required to provide a complete and operational system.

C. Provide fire alarm and detection systems for applications indicated, and with the following sequence of operations, components, and function features.

D. Operation: The system specified is an addressable type system that provides the capability of monitoring individual devices such as smoke detectors, heat detectors, manual pull stations, sprinkler activating devices and other auxiliary functions for alarm and trouble indications. All items monitored for alarm and/or trouble conditions shall be capable of custom programming a minimum of 232 alpha/numeric character identification that is displayed on the control unit. In addition to the text message the user can view a graphic map with an icon indicating the location of the event in the building. Custom programming of automatic operation for individual devices for alarm signaling, fire department reporting, remote annunciation and other auxiliary control functions shall be provided. The system shall have a minimum capacity of 2500 input and 2500 output devices within the Main Processor. If the system needs grow beyond of 2500 points, the system shall be able to be networked to a minimum of 64 identical panels. In addition, the system shall have the following functions:

1. Initiating Device Calibration Check: It shall be possible to check the calibration at each initiating device at the control unit to verify correct operation.
2. Detector Sensitivity Check/Adjustment: Provide the capability of checking and adjusting individual detectors for alarm condition sensitivity from the control unit. The detector sensitivity monitoring shall meet and be listed by Underwriters' Laboratory for this function.
3. Coded Signaling: Operate audible notification appliance signals on a Coded manor in accordance with the National Standard. The system shall have the ability to code each device with a distinctive code. This code shall be software selectable.
4. Compare Function: Software to allow for a printout of a comparison of the original or previous program and any software modifications that are made to indicate any deficiencies caused by reprogramming. Systems not providing a compare printout function shall require 100% re-testing after every software modification and furnish a print out with each device being re-tested to the institution.
5. Detector Maintenance Monitoring: Provide monitoring of smoke detector chambers for gradual build-up of foreign materials in the sensing chamber. When the control senses a high level of contamination, the control panel shall cause a trouble condition and indicate the specific detector that needs maintenance.
6. Automatic Drift Compensation: All smoke detectors shall be monitored for changes in sensitivity ranges and automatically adjust the detection window, up or down, to compensate for environmental changes or degradation of detector components.
7. Visual Indicating Appliances Control: All visual indicating appliances shall be synchronized throughout the facility.
8. Application Specific Detection: Smoke detectors shall be individually programmed to provide the maximum sensitivity allowed by UL standards to actual fire phenomena and be discriminatory to deceptive phenomena that cause unwanted alarms. The program shall allow for a selection of 11 application specific environments to choose from as listed below. These selections shall be submitted for application to the Engineer before final acceptance of the system. Systems not including this feature shall provide both ionization and photoelectric detection at each location, programmed with algorithms to provide the earliest possible detection and minimize unwanted alarms.

9. Alarm Verification: Provide field programmable alarm verification for all smoke detectors that allows a time delay of up to 50 seconds before a smoke detector signals the alarm. This feature shall not be utilized or required with application specific detectors where no delays of reporting of fire phenomena are necessary and 'deceptive phenomena' is ignored.

10. Detector Maintenance Monitoring: Provide monitoring of smoke detector chambers for gradual build-up of foreign materials in the sensing chamber. When the control senses a high level of contamination, the control panel shall cause a trouble condition and indicate the specific detector that needs maintenance.
11. Automatic Drift Compensation: All smoke detectors shall be monitored for changes in sensitivity ranges and automatically adjust the detection window up or down to compensate for environmental changes or degradation of detector components.
12. Battery Standby: Provide in the control unit cabinet, batteries that will operate all system initiating devices for a minimum of 24 hours during power outage and operate the entire system for a minimum of 2 hours of emergency operation or 15 minutes of evacuation alarm at maximum connected load. The batteries shall be the sealed type and automatically recharge after normal power is restored.
13. Device Bypassing: Provide the capability through the control panel keypad to individually disarm an initiating device or output circuit. If an initiating device such as a smoke detector malfunctions, disarming and bypassing the units shall be possible without affecting other devices within the system. Output control functions such as notification appliance circuits or fun shut down shall be capable of being individually bypassed during tests or abnormal conditions. A trouble condition shall be created when any initiating or output device is disarmed or bypassed.
14. Event History Storage: All events of the system shall be logged in non-volatile history buffer with a minimum capacity of 1000 events. The events may be recalled by category.
15. Walk Test: A walk test feature shall be provided that allows testing individual zones, loops or the entire system in either a silent or audible basis. In either test, programmed functions shall be bypassed.
16. Fully Field Programmable: The complete system operation shall be programmed via a standard lap top computer. The program shall be capable of being stored in the computer hard disk, floppy disk and printed on standard continuous form paper. A floppy disc and printed copy of the complete program shall be turned over to the Owner upon acceptance of the system.
17. Compare Program: The system program shall allow for a printout of any and only changes that have been made to the program since the last program event or session. This printout shall indicate the time and date of the previous and current program sessions. Once the system is accepted by the authority having jurisdiction (AHJ), a copy of the current program must be signed by the AHJ on the first page and last page of the continuous form printout. Any changes to the program after this time and date, must be submitted for approval by the AHJ in printed form or the entire system must be re-tested and approved at the discretion of the Department of General Services Engineer and the AHJ. With the compare program printout, all the devices and their operation shall be tested in accordance with NFPA 72 (1996) which requires an additional 10% of the unchanged portion of the system, up to a total of 50 devices, to be tested. Documentation shall be provided that these tests were made after each programming change or session that is downloaded to the system.

## 2.3 MATERIALS AND EQUIPMENT

A. Fire Alarm Control Panel:

Existing to remain.

B. Local Off Site Dialer:

Existing to remain.

C. Initiation Devices:

1. Smoke Detectors:

a. Smoke detectors shall be Silent Knight Model IDP-Photo-T ceiling mounted Analog/Addressable photoelectric smoke detectors with integrated heat sensors. The combination detector head and twist lock base shall be U.L. listed compatible with the Silent Knight IFP-2000 fire alarm control panel.

b. The base shall permit direct interchange with Silent Knight's IDP-Heat detector. The base shall be the appropriate twist lock base IDP-6AB

c. The smoke detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady at full brilliance. The detector may be reset by actuating the control panel's reset switch. The sensitivity of the detector shall be capable of being selected and measured by the control panel without the need for external test equipment.

d. The vandal security-locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be field selectable when required. It shall be possible to perform a sensitivity test of the detector without the need of generating smoke. The test method shall simulate the effects of products of combustion in the chamber to ensure testing of the detector circuits.

e. Detectors shall have completely closed back to restrict entry of dust and air turbulence and have a 30 mesh insect screen. Electronics of the unit shall be shielded to protect against false alarms from E.M.I. and R.F.I.

2. Heat Detectors:

a. Furnish and install analog/addressable heat detectors, Silent Knight model IDP-Heat-T. The combination heat detector and twist lock base shall be U.L. listed compatible with the Silent Knight IFP-2000 fire alarm control panel.

b. The base shall permit direct interchange with the Silent Knight IDP-Photo photoelectric smoke detector. The base shall be appropriate twist lock base IDP-6AB.

c. The heat detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady at full brilliance. The detector may be reset by actuating the control panel's reset switch.

d. The vandal security-locking feature shall be used in those areas as indicated on the drawings. Electronics of the unit shall be shielded to protect against false alarms from E.M.I. and R.F.I.

3. Manual Pull Stations

a. Manual Fire Alarm Stations shall be double action type, with a key operated test-reset lock in order that they may be tested, and so designed that after actual emergency operation, they cannot be restored to normal except by use of a key. The reset key shall be so designed that it will reset manual station and open FACP without use of another key. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of fifty feet, front or side. Manual stations shall be constructed of die cast metal with clearly visible operating instructions on the front of the stations in raised letters. Stations shall be suitable for surface mounting on matching back box, or semi-flush mounting on a standard single-gang box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) dependent on manual station accessibility or per local requirements. Manual stations shall be Model IDP-Pull.

4. Addressable Interface Devices:

5. Addressable Interface devices compatible with the system shall be provided to monitor contacts for such items as water-flow, tamper, pressure, and PIV switches, Knox Box, Air Handling Unit Fans that are required by codes to be controlled, Kitchen Hood Suppression System, and Elevator Recall Modes connected to the fire alarm system. These interface devices shall be able to monitor a single or dual contacts. An address will be provided for each contact. Where remote supervised relay is required the interface shall be equipped with a SPDT relay rated for 4 amps resistive and 3.5 amps inductive. The addressable interface modules shall be model number HTRI Series.

D. Notification Appliances:

1. The speaker/strobe or speaker appliance as indicated on the drawings shall be a multiple tap speaker having taps for ¼, ½, 1 and 2 watts. The speaker/strobes shall have a synchronized strobe light with multiple candela taps to meet the intended application. The strobe light taps shall be adjustable for 15, 30, 75, and 110 candela. The appliance shall be white for wall and ceiling mounting. Do not load any circuit beyond 75 % of its capacity. Provide white devices with red lettering.
2. The strobe only appliance as indicated on the drawings shall be a synchronized strobe light with multiple candela taps to meet the intended application. The strobe light taps shall be adjustable for 15, 30, 75, and 110 candela. The appliance shall be white for wall and ceiling mounting. Do not load any circuit beyond 75 % of its capacity. Provide white devices with red letters.
3. Where shown on the drawings, provide strobe units in combination with the audible indicating appliances. Strobes shall be supervised and synchronized within each circuit. An alarm extender panel shall be provided where needed. The power supply shall be a minimum of 8 amps. The power supply shall contain four supervised notification circuits strobes and audibles. There shall be a 1 amp filtered auxiliary power limited output.
4. Provide Weatherproof Speaker Strobe Units located exterior of the building and where indicated on the drawings. These units shall have the same feature as speaker/strobe unit mentioned above and shall be weatherproof and rated for outdoor use. Furnish with surface weatherproof backbox.
5. Where notification appliances are indicated, provide manufacturer approved weather proof enclosures, etc.

E. Other Conditions

1. After installation of smoke detectors, in potentially dusty areas, this Contractor shall provide an airtight plastic cover over the units to keep contaminants from entering the unit in all areas, until time of acceptance. It is the responsibility of the Electrical Contractor to either clean or replace any devices that have become soiled or contaminated by construction dirt.
2. The fire alarm equipment distributor shall stock the recommended spare parts listed for the UL certification.

- Annunciator: Existing to remain.

2.4 INTERCONNECTIONS

A. Provide connections to the Elevator Power Module Switch.

PART 3 - INSTALLATION

3.1 GENERAL

A. Examine areas and conditions under which fire alarm system is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Install system and materials in accordance with manufacturer's instructions and rough-in drawings, and details on the drawings. Install electrical work and use electrical products of these specifications.

C. Electrical Contractor shall install backboxes flush in wall with conduit to above accessible ceilings for fire alarm system. This contractor shall coordinate locations and backbox sizes with electrical contractor.

D. This contractor is responsible for furnishing and installing all devices in ceiling tiles, including but not limited to backboxes, and supports.

3.2 EQUIPMENT INSTALLATION

A. Manual Pull Stations: Mount semi-flush in recessed back boxes. Where surface mounting is approved, use manufacturers standard surface Red backbox.

B. Ceiling Mounted Smoke Detectors: Not less than 4” from a side wall to the near edge. For exposed solid-joist construction, mount detectors on the bottom of joists. On smooth ceilings, install not more than 30 ft. apart in any direction.

C. Audible Alarm Indicated Devices: Install not less than 6” below the ceiling. Install Speakers on flush mounted back boxes with the device operating mechanism concealed behind a grille. Combine audible and visible alarms at the same location into a single unit.

D. Visible Alarm Indicated Devices: Install at least 6” below the ceiling and at a Maximum height of 96 inches.

3.3 WIRING

A. Wiring connections shall be made by the Contractor as shown on drawings furnished by the representative of the equipment manufacturer. Power shall not be applied to the system until the representative of the manufacturer has approved the connections to the control equipment.

B. The system shall be installed in a manner approved by the State Inspections Department and the National Electric Code utilizing approved raceways or approved fire alarm cable.

C. Power for all fire alarm devices, including, but not limited to control panel, remote battery panels, initiation devices and annunciation devices, 120 V and less shall be provided. Any power at 120V shall be connected to the nearest available panelboard on a 20A, 1P breaker. Provide a handle locking devices. The exterior of the panel shall be a laminated label indicating that the breaker for the fire alarm system is in that panel with the breaker number. In addition, the breaker or breakers for the fire alarm system shall be clearly marked.

D. All fire alarm cabling shall be plenum rated. Contractor shall install in a code compliant method. Fire alarm cable shall **not** be installed in the cable tray or with data cabling within J-hooks.

E. Fire alarm circuit identification shall meet N.E.C. Article 760.

3.4 FIELD QUALITY CONTROL

A. The manufacturer shall provide local representative to review the system installation with installers to assure proper wiring and installation methods are used. Job visits shall be made by representatives of the equipment manufacturer as necessary through construction.

B. Demonstration of System Operation: After adjustments to the system have been completed, arrange for a demonstration of the system operation for personnel designated by the Owner.

C. Notify in writing through the prime Contractor, the Architect, Consulting Engineer and the Owner of the time and date the demonstration will take place. Provide a technician representing the equipment manufacturer to conduct the system demonstration.

D. Pre-Testing: After installation, align, adjust, and balance the system and perform complete pre-testing. Determine, through pre-testing, the compliance of the system with requirements of drawings and specifications. Correct deficiencies observed in pre-testing. Replace malfunctioning or damaged items with new ones, and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.

E. Report of Pre-Testing: After pre-testing is complete, provide a letter certifying the installation is complete and fully operable, including the names and titles of witnesses to preliminary tests.

F. Final Test Notice: Provide a minimum of five (5) days notice in writing when the system is ready for final acceptance testing.

G. Minimum System Tests: Test the system according to procedures outlined in NFPA 72. Minimum required tests are as follows:

1. Verify the absence of unwanted voltages between circuit conductors and ground.
2. Test all conductors for short circuits using an insulation testing device.

3. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohm meter. Record the circuit resistance of each circuit on record drawing.
4. Verify that the control unit is in the normal condition as detailed in the manufacturer's operation and maintenance manual.
5. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10% of initiating and indicating devices. Observe proper signal transmission according to class of wiring used.
6. Test each initiating and indicating device for alarm operation and proper response at the control unit. Test smoke detectors with actual products of combustion.
7. Test the system for all specified functions according to the approved operation and maintenance manual. Systematically initiate specified functional performance items at each station, including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequence. Observe indicating lights, displays, signal tones, and Annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.
8. Test Both Primary and Secondary Power: Verify by test that the secondary power system is capable of operating the system for the period and in the manner specified.

H. Re-Testing: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets specifications and complies with applicable standards.

I. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Submit log on the satisfactory completion of tests.

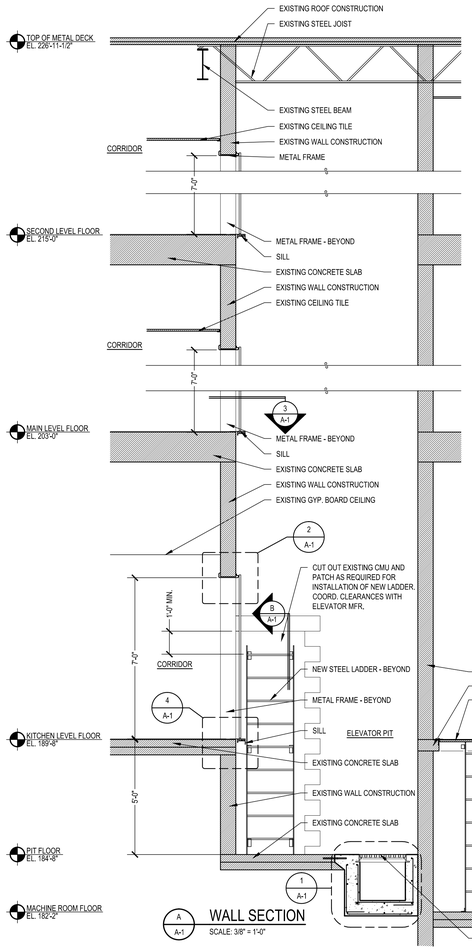
J. Tag all equipment, stations, and other components at which tests have been satisfactorily completed.

## 3.5 SEQUENCE OF OPERATIONS

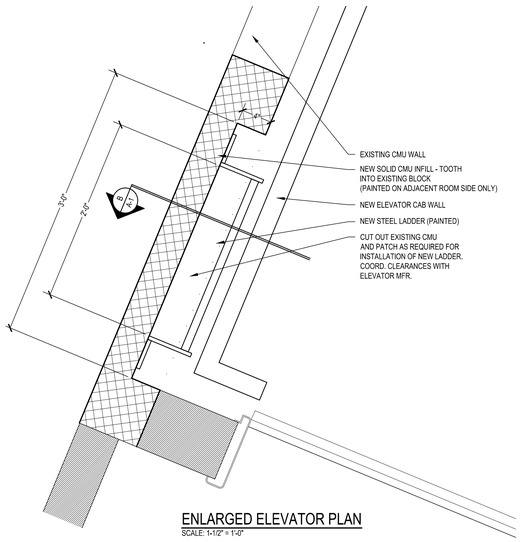
A. In additions to the operations and functions listed, the following shall also occur:

1. Elevator Recall shall be programmed to meet the requirements of the local fire marshal or local authority having jurisdiction.
2. Where duct mounted smoke detectors are indicated, the associated air handling unit shall be connected to the fire alarm system via interface module. An auxiliary relay base shall not be used, unless noted otherwise.

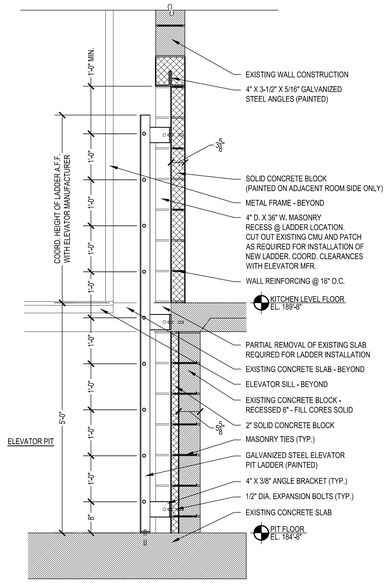
END OF SECTION 28 31 11




A A-1 WALL SECTION
SCALE: 3/8" = 1'-0"



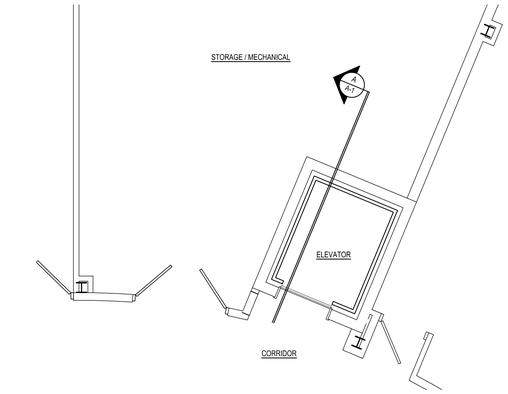

## ENLARGED ELEVATOR PLAN
SCALE: 1-1/2" = 1'-0"



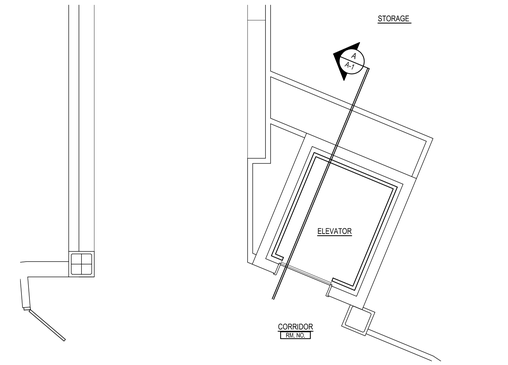

B A-1 PARTIAL WALL SECTION
SCALE: 3/4" = 1'-0"

**GENERAL ELEVATOR MODERNIZATION/REPLACEMENT NOTES:**

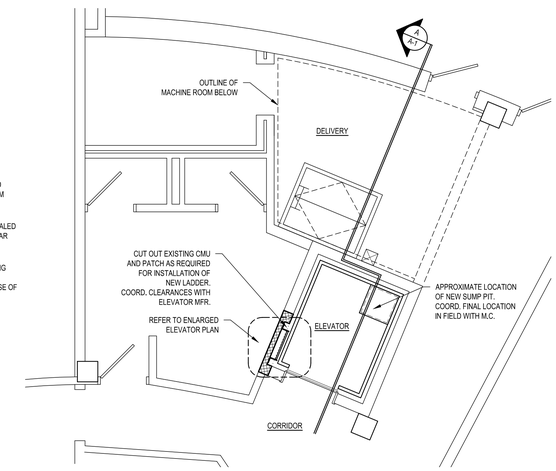
1. THE EXITING ELEVATOR CAB, EQUIPMENT, ENTRIES, ETC. SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. ONLY THE CAR PLATFORM AND RAILS SHALL REMAIN FOR REUSE. ALL OTHER EQUIPMENT SHALL BE PROVIDED NEW AND CUSTOM FIT TO THE EXISTING HOIST WAY, RAILS AND PLATFORM THAT ARE TO BE REUSED. THE EXISTING RAILS AND PLATFORM SHALL BE INSPECTED AND PREPARED TO ACCEPT ALL NEW EQUIPMENT INDICATED IN THE DOCUMENTS. THE ELEVATOR REFURBISHMENT SHALL CONSIST OF A COMPLETE PROJECT AND SHALL INCLUDE ALL INCIDENTALS NECESSARY FOR FULL AND LEGAL OPERATION TO COMPLY WITH THE CURRENT PA L&I ELEVATOR CODE, ANSI A117.1-2009, FEDERAL ACCESSIBILITY REQUIREMENTS AND THE 2009 IBC.
2. CONTRACTOR SHALL PROVIDE A NEW ELEVATOR CONTROLLER WITH A CONTROL SYSTEM SHALL BE PROVIDED TO PERFORM ALL THE FUNCTIONS OF SAFE ELEVATOR MOTION AND ELEVATOR DOOR CONTROL. THIS SHALL INCLUDE ALL THE HARDWARE REQUIRED TO CONNECT, TRANSFER AND INTERRUPT POWER, AND PROTECT THE MOTOR AGAINST OVERLOADING. THE SYSTEM SHALL ALSO PERFORM GROUP OPERATIONAL CONTROL. EACH CONTROLLER CABINET CONTAINING MEMORY EQUIPMENT SHALL BE PROPERLY SHIELDED FROM LINE POLLUTION. THE MICROCOMPUTER SYSTEM SHALL BE DESIGNED TO ACCEPT REPROGRAMMING WITH MINIMUM SYSTEM DOWNTIME.
3. CONTRACTOR SHALL REPLACE THE EXISTING POWER UNIT WITH A NEW POWER UNIT. THE NEW POWER UNIT SHALL CONSIST OF A POSITIVE DISPLACEMENT PUMP, MOTOR, INTEGRAL 4-COIL CONTROL VALVE, OIL TANK AND MUFFLER. THE PUMP AND MOTOR ARE SUBMERSIBLE TYPE AND SHALL BE MOUNTED TO THE TANK WITH RUBBER ISOLATORS TO REDUCE VIBRATION AND NOISE. THE PUMP AND MOTOR SHALL BE EXTERNALLY MOUNTED AND BELT DRIVEN. A MUFFLER SHALL BE PROVIDED TO DISSIPATE PULSATIONS AND NOISE FROM THE FLOW OF HYDRAULIC FLUID. THE VALVE SHALL CONSIST OF UP, UP LEVELING, DOWN AND DOWN LEVELING CONTROLS ALONG WITH MANUAL LOWERING AND A PRESSURE RELIEF VALVE.
4. CONTRACTOR SHALL FURNISHED AND INSTALL A NEW CLOSED LOOP DOOR OPERATOR. CAR AND HOIST WAY DOORS SHALL BE POWER OPERATED BY MEANS OF A CLOSED LOOP DOOR OPERATOR MOUNTED ON TOP OF THE CAR SHALL GIVE CONSISTENT DOOR PERFORMANCE WITH CHANGES IN TEMPERATURE, WIND OR MINOR OBSTRUCTION IN THE DOOR TRACK. THE SYSTEM SHALL CONTINUALLY MONITOR DOOR SPEED AND POSITION AND ADJUSTS IT ACCORDINGLY TO MATCH THE PRE-DETERMINED PROFILE.
5. CONTRACTOR SHALL FURNISH AND INSTALL A NEW SOLID STATE, INFRARED PASSENGER PROTECTION DEVICE ON THE CAR DOOR. ELEVATOR DOORS SHALL BE PROVIDED WITH A REOPENING DEVICE THAT WILL STOP AND REOPEN THE CAR DOOR(S) AND HOIST WAY DOOR(S) AUTOMATICALLY SHOULD THE DOOR(S) BECOME OBSTRUCTED BY AN OBJECT OR PERSON. DOOR PROTECTION SHALL CONSIST OF A TWO DIMENSIONAL, MULTI-BEAM ARRAY PROJECTING ACROSS THE CAR DOOR OPENING.
6. CONTRACTOR SHALL PROVIDE A NEW CAR OPERATING PANEL CONTAINING ALL PUSH BUTTONS, KEY SWITCHES, AND MESSAGE INDICATORS FOR PROPER AND LEGAL ELEVATOR OPERATION. THE CAR OPERATING PANEL SHALL HAVE A SATIN STAINLESS STEEL FINISH AND SHALL CONTAIN A BANK OF ROUND SATIN STAINLESS STEEL, LED ILLUMINATED MECHANICAL BUTTONS FLUSHMOUNTED TO THE PANEL AND MARKED TO CORRESPOND TO THE LANDINGS SERVED. ALL BUTTONS SHALL HAVE RAISED NUMERALS AND ADA COMPLIANT BRAILLE MARKINGS. THE CAR OPERATING PANEL SHALL BE EQUIPPED WITH THE FOLLOWING FEATURES:
   a. RAISED MARKINGS AND ADA COMPLIANT BRAILLE TO THE LEFT HAND SIDE OF EACH PUSH-BUTTON.
   b. CAR POSITION INDICATOR AT THE TOP OF, AND INTEGRAL TO THE CAR OPERATING PANEL.
   c. DOOR OPEN AND DOOR CLOSE BUTTONS.
   d. INSPECTION KEY-SWITCH.
   e. HELP BUTTON/HANDS-FREE PHONE: THE HELP BUTTON SHALL INITIATE TWO-WAY COMMUNICATION BETWEEN THE CAR AND A LOCATION INSIDE THE BUILDING (COORDINATE WITH EC), SWITCHING OVER TO ANOTHER LOCATION IF THE CALL IS UNANSWERED. WHERE PERSONNEL ARE AVAILABLE WHO CAN TAKE THE APPROPRIATE ACTION. VISUAL INDICATORS SHALL BE PROVIDED FOR CALL INITIATION AND CALL ACKNOWLEDGEMENT.
   f. LANDING PASSING SIGNAL: A CHIME BELL SHALL SOUND IN THE CAR TO SIGNAL THAT THE CAR IS EITHER STOPPING AT OR PASSING A FLOOR SERVED BY THE ELEVATOR.
7. CONTRACTOR SHALL PROVIDE NEW STAINLESS STEEL HALL BUTTONS AND FACEPLATES AT EACH LANDING, WITH AN UP BUTTON AND A DOWN BUTTON AT EACH INTERMEDIATE LANDING AND A SINGLE BUTTON AT EACH TERMINAL LANDING. FACEPLATES SHALL BE APPLIED FLUSH-MOUNTED TO WALL. A CALL SHALL BE REGISTERED BY MOMENTARY PRESSURE OF A LANDING BUTTON. THE BUTTON SHALL BECOME ILLUMINATED AND REMAIN ILLUMINATED UNTIL THE CALL IS ANSWERED. ALL BUTTONS, SHALL BE LONG LIFE LED ILLUMINATION TYPE.
8. CONTRACTOR SHALL PROVIDE AN ENABLING KEY SWITCH FOR INSPECTION PURPOSES. KEY SWITCH SHALL BE PROVIDED IN THE CAR OPERATING PANEL TO PERMIT OPERATION OF THE ELEVATOR FROM ON TOP OF THE CAR AND TO MAKE CAR AND HALL BUTTONS INOPERATIVE. AN OPERATING FIXTURE SHALL BE PROVIDED ON TOP OF THE CAR CONTAINING CONTINUOUS PRESSURE 'UP' AND 'DOWN' BUTTONS, AN EMERGENCY STOP BUTTON, AND AN INSPECTION-INITIATING SWITCH, THIS SWITCH SHALL MAKE THE FIXTURE OPERABLE AND, AT THE SAME TIME, MAKE THE DOOR OPERATOR AND CAR AND HALL BUTTONS INOPERABLE.
9. CONTRACTOR SHALL PROVIDE ALL WIRING AND ELECTRICAL INTERCONNECTIONS TO COMPLY WITH GOVERNING CODES. INSULATED WIRING SHALL HAVE FLAME RETARDANT, MOISTURE-PROOF OUTER COVERING AND SHALL BE RUN IN CONDUIT, TUBING OR ELECTRICAL WIRE WAYS. TRAVELING CABLES SHALL BE FLEXIBLE AND SUITABLY SUSPENDED TO RELIEVE STRAIN ON INDIVIDUAL CONDUCTORS.
10. CONTRACTOR SHALL PROVIDE FURNISH AND INSTALL ELEVATOR TRAVELING CABLE AS A VITAL LINK BETWEEN THE ELEVATOR CAR AND CONTROLLER. ALL POWER AND SIGNAL INFORMATION WILL BE TRANSMITTED THROUGH THE TRAVELING CABLE. APPROXIMATELY 95%, OF WIRE AND CABLE PROVIDED WILL BE INSTALLED IN A FIXED LOCATION. THE REMAINDER SHALL BE INSTALLED WHERE SOME FLEXIBILITY OR MOTION IS REQUIRED TO ACCOMMODATE CAR AND CABLE MOVEMENT.
11. CONTRACTOR SHALL PROVIDE AN EMERGENCY POWER UNIT EMPLOYING A 12-VOLT SEALED RECHARGEABLE BATTERY AND A TOTALLY STATIC CIRCUIT, THE POWER UNIT SHALL ILLUMINATE THE ELEVATOR CAR AND PROVIDE CURRENT TO THE ALARM BELL IN THE EVENT OF NORMAL POWER FAILURE. THE EQUIPMENT SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST REVISION OF THE ASME/ANSI A17.1 CODE.
12. ELEVATOR MANUFACTURER SHALL BE RESPONSIBLE FOR DELEGATED DESIGN OF THE COMPLETE MODERNIZATION AND REPLACEMENT OF THE EXISTING ELEVATOR. ALL NEW MATERIAL FURNISHED SHALL BE SPECIFICALLY DESIGNED TO OPERATE WITH THE ORIGINAL ELEVATOR EQUIPMENT BEING RETAINED, THUS ASSURING MAXIMUM PERFORMANCE AND ELIMINATING ANY DIVIDED RESPONSIBILITY. ELEVATOR COMPANY SHALL ASSUME FULL RESPONSIBILITY FOR NEW AND REUSED EXISTING EQUIPMENT.
13. ALL MATERIAL, REMOVED OR UNUSED, NOT REQUIRED IN THE MODIFICATION WILL BECOME THE PROPERTY OF CONTRACTOR WHO SHALL SALVAGE AND REMOVE FROM THE SITE OR LEGALLY DISPOSE OF OFF-SITE.
14. ELEVATOR CONTRACTOR SHALL APPLY FOR AND FURNISH ALL LICENSES AND PERMITS AND SHALL ARRANGE FOR AND MAKE ALL REQUIRED INSPECTIONS AND TESTS. THERE SHALL BE NO ADDITIONAL COSTS TO THE OWNER FOR FAILED INSPECTIONS, REINSPECTIONS OR RETESTS OF ANY EQUIPMENT OR SYSTEM FOR THE ELEVATOR, IF AN INSPECTION FAILS DUE TO THE WORK OF ANOTHER PRIME CONTRACTOR, THE GENERAL CONTRACTOR'S SOLE RECOURSE FOR COSTS SHALL BE WITH THAT PRIME CONTRACTOR(S) THEY DEEM RESPONSIBLE FOR THE SAME.
15. CONTRACTOR SHALL PROVIDE SHALL FURNISH AND INSTALL THE ELEVATOR AND ALL EQUIPMENT IN ACCORDANCE WITH THE APPLICABLE VERSION OF THE ASME/ANSI A17.1/ CS-B44 SAFETY CODE FOR ELEVATORS AND ESCALATORS, AN AMERICAN NATIONAL STANDARD, INCLUDING THE LATEST SUPPLEMENT, AND THE AMERICANS WITH DISABILITIES ACT. THE ELEVATOR, EQUIPMENT AND INSTALLATION SHALL ALSO COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES.
16. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES PROVIDE VENTILATION AND/OR COOLING EQUIPMENT AS REQUIRED.
17. CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE THE FOLLOWING:
   a. ANY ADDITIONAL ELECTRICAL POWER FOR LIGHT, TOOLS, HOISTS, ETC. DURING INSTALLATION AS WELL AS ELECTRICAL CURRENT FOR STARTING, TESTING AND ADJUSTING THE ELEVATOR.
   b. A SMOKE DETECTOR SYSTEM, LOCATED AS REQUIRED WITH WIRING FROM THE SENSING DEVICES TO EACH ELEVATOR CONTROLLER.
   c. A FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER PER THE APPLICABLE NATIONAL ELECTRICAL CODE WITH FEEDER OR BRANCH WIRING TO CONTROLLER.
   d. A 120 VOLT AC, 20 AMP, SINGLE-PHASE POWER SUPPLY WITH FUSED SPST DISCONNECT SWITCH FOR ELEVATOR WITH FEEDER WIRING TO EACH CONTROLLER FOR CAR LIGHTS.
   e. MODIFICATION OR INSTALLATION OF LIGHTS AND/OR ELECTRICAL OUTLETS IN THE MACHINE ROOM AND/OR PIT.
18. CONTRACTOR SHALL PROVIDE ANY REQUIRED CUTTING AND PATCHING, INCLUDING CUTOUTS TO ACCOMMODATE HALL SIGNAL FIXTURES, PATCHING AND PAINTING OF WALLS, FLOORS, OR PARTITIONS. ALL WORK SHALL BE PERFORMED TO RESTORE EXISTING SURFACES TO MATCH ADJACENT SURFACES IN NEW CONDITION ACCEPTABLE TO THE OWNER AND ENGINEER.
19. CONTRACTOR SHALL FURNISH AND INSTALL A NEW CYLINDER AND WITH SEALED PVC PROTECTION. THE CYLINDER SHALL BE OF A DOUBLE BOTTOM DESIGN CONSTRUCTED OF STEEL PIPE OF SUFFICIENT THICKNESS AND SUITABLE FOR THE OPERATING PRESSURE AS PRESCRIBED BY THE LATEST REVISION OF THE ASME A17.1 OR CAN3- B44 CODES. THE TOP OF THE CYLINDER SHALL BE EQUIPPED WITH A NEW CYLINDER HEAD WITH A DRIP RING TO COLLECT ANY OIL SEEPAGE AS WELL AS AN INTERNAL GUIDE RING AND SELF-ADJUSTING PACKING. THE CYLINDER EXTERIOR SHALL BE COVERED WITH A PROTECTIVE COATING. SEALED PVC PROTECTION SHALL PROTECT THE CYLINDER FROM CORROSION, PERMIT MONITORING AND EVACUATION OF LIQUIDS TO MAKE SURE THE CYLINDER DOES NOT COME IN CONTACT WITH WATER, AND SHALL CONTAIN OIL SHOULD THE CYLINDER LEAK. THE SEALED PVC PROTECTION SHALL PROTECT AGAINST POSSIBLE ENVIRONMENTAL CONTAMINATION AND CLEAN-UP COSTS.
20. CONTRACTOR SHALL FURNISH AND INSTALL A NEW PLUNGER CONSTRUCTED OF SELECT STEEL TUBING OR PIPE OF PROPER DIAMETER MACHINED TRUE AND SMOOTH WITH A FINE POLISHED FINISH. THE PLUNGER SHALL BE PROVIDED WITH A STOP RING ELECTRICALLY WELDED TO IT TO PREVENT THE PLUNGER FROM LEAVING THE CYLINDER.
21. CONTRACTOR SHALL INSTALL THE PLUNGER AND NEW CYLINDER PLUMB TO OPERATE FREELY WITH MINIMUM FRICTION.
22. CONTRACTOR SHALL REMOVE THE EXISTING CYLINDER-HEAD SUPPORT FOR CYLINDER REPLACEMENT. AFTER INSTALLATION OF THE NEW CYLINDER AND SEALED PVC PROTECTION SYSTEM IS COMPLETE, INSTALLER SHALL PROVIDE A NEW CYLINDER- HEAD SUPPORT. ELEVATOR MANUFACTURER SHALL PROVIDE A 20-YEAR WARRANTY FOR THE CYLINDER AND SEALED PVC PROTECTION.
23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING HYDRAULIC TO/FROM PIPING WITH NEW ABOVE-GROUND TO/FROM HYDRAULIC PIPING.
24. CONTRACTOR SHALL REMOVE THE EXISTING CYLINDER FROM THE ORIGINAL WELL HOLE. ALL DRILLING WORK SHALL BE INCLUDED IN THE PROJECT INCLUDING ANY SPECIAL HOISTING OR EXCAVATING EQUIPMENT REQUIRED TO COMPLETE THE WORK. PHYSICAL OBSTRUCTIONS, HINDRANCES, GROUND WATER, OR CAVE-INS ENCOUNTERED BELOW THE GROUND SHALL BE PLANNED FOR AND INCLUDED IN THE PROJECT. CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF ALL SPOILS RESULTING FROM THE WORK.
25. CONTRACTOR SHALL FURNISH AND INSTALL NEW CAB AND ENTRANCES AS FOLLOWS:
   a. NEW HOIST WAY DOOR PANELS
   b. NEW CAB SHELL
   c. NEW LAMINATED WALLS
   d. NEW STAINLESS DOORS, RETURN, HEADER, AND STRIKE
   e. NEW ALUMINUM SILL
26. GENERAL CONTRACTOR SHALL PROVIDE FOR AND ACCOMMODATE THE WORK OF THE ELEVATOR INSTALLER AS FOLLOWS:
   a. PROVIDE PROTECTION FOR FLOORS, WALLS AND ELEVATOR ENTRANCES FOR NORMAL ACTIVITIES ASSOCIATED WITH THIS WORK.
   b. ALL BUILDING PROTECTION AND ALTERATIONS NEEDED TO BRING IN SPECIAL DRILLING OR EXCAVATION EQUIPMENT FOR REMOVAL OF CONTAMINANT MATERIAL AND TO REMOVE SAME FROM THE SITE.
   c. ELECTRIC POWER FOR LIGHT, TOOLS, HOISTS, WELDING, DRILLING RIG (IF NECESSARY), ETC. REQUIRED FOR THE DURATION OF THIS PROJECT. VENTILATION FOR WELDING OPERATIONS INCLUDING FIRE WATCH AND FIRE EXTINGUISHERS.



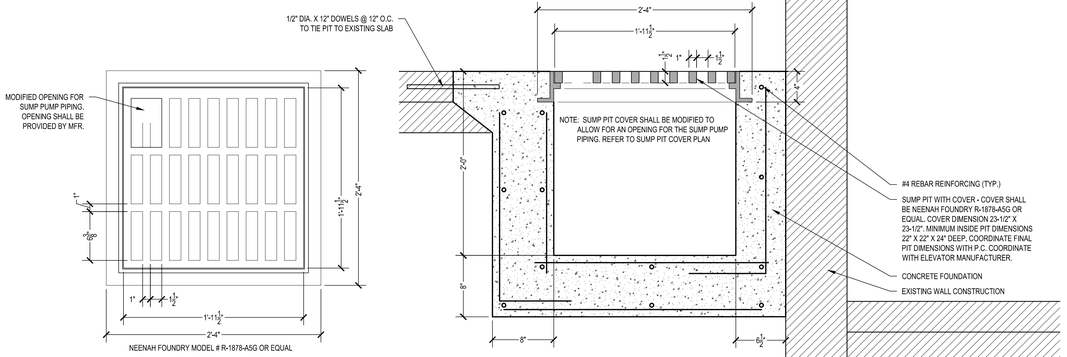

## SECOND LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"



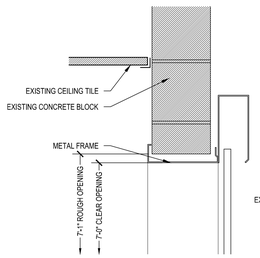

## MAIN LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"



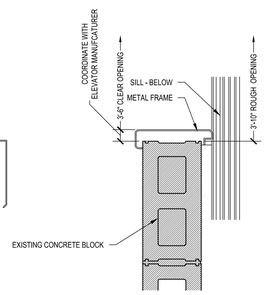

## KITCHEN LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"



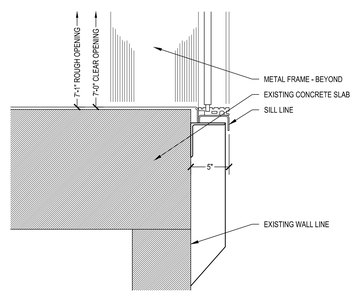

1 A-1 ELEVATOR SUMP PIT COVER DETAIL
SCALE: 1-1/2" = 1'-0"




2 A-1 ELEVATOR HEAD DETAIL
SCALE: 1-1/2" = 1'-0"




3 A-1 ELEVATOR JAMB DETAIL
SCALE: 1-1/2" = 1'-0"




4 A-1 ELEVATOR SILL DETAIL
SCALE: 1-1/2" = 1'-0"

| REVISIONS | BY |
|---|---|
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# ELEVATOR UPGRADES
FOR THE
NESHAMINY HIGH SCHOOL
NESHAMINY SCHOOL DISTRICT

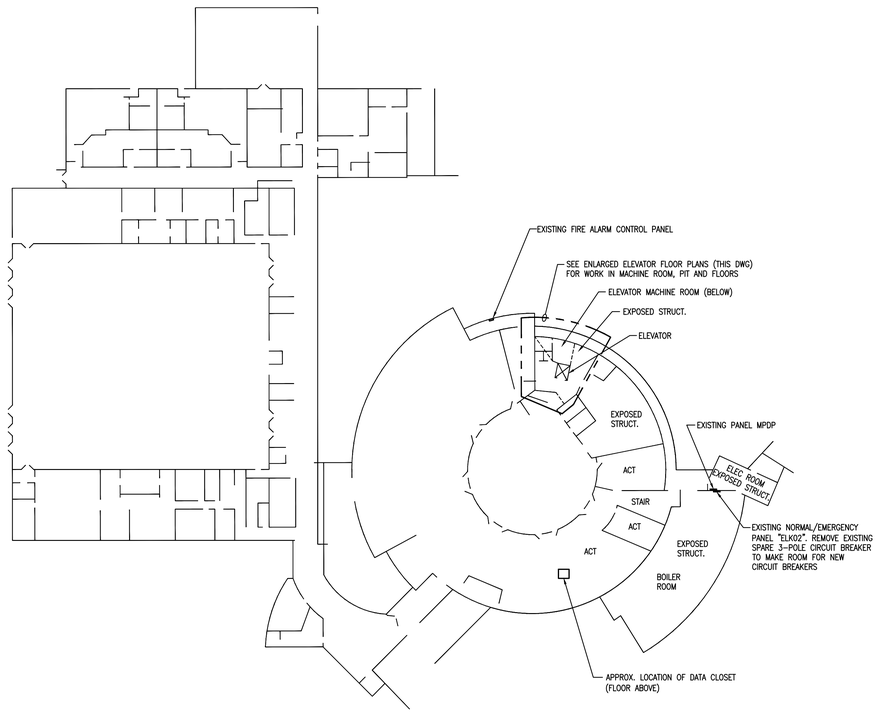
## ELEVATOR UPGRADES
## PLANS, DETAILS & NOTES

All DIMENSIONS and EXISTING CONDITIONS shall be CHECKED and VERIFIED by the CONTRACTOR at the SITE.

| | |
|---|---|
| DRAWN | TCW |
| CHECKED | PML |
| DATE | 01-20-17 |
| SCALE | AS NOTED |
| JOB NO. | 15-2447-1 |
| SHEET | A-1 |

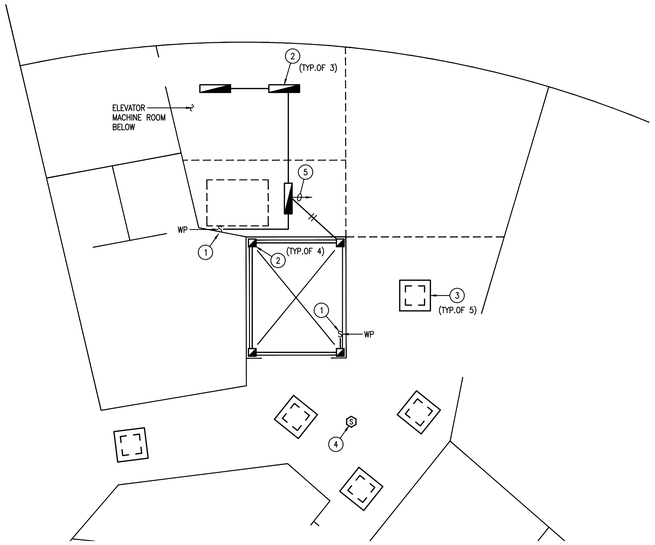
AEM #: 15033.00

AEM ARCHITECTS INC
3700 PERKIOMEN AVENUE, READING, PA 19606-2795
Phone: 610.779.3220 Fax: 610.779.9022 www.aem-arch.com




## LOWER LEVEL FLOOR PLAN

SCALE: 1/32" = 1'-0"




## PARTIAL LOWER LEVEL LIGHTING PLAN

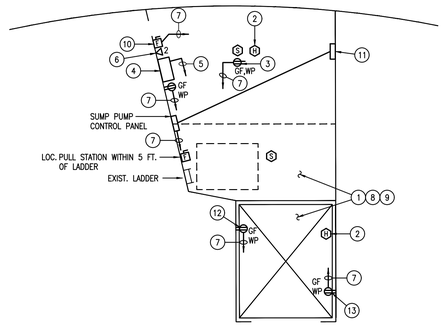
SCALE: 1/4" = 1'-0"

## LIGHTING PLAN NOTES:

1. LOCATE WEATHERPROOF SWITCH NEXT TO MACHINE ROOM PIT LADDER.
2. PROVIDE SURFACE MOUNTED LIGHT FIXTURE LITHONIA CAT. NO. VSLC117 (17 WATT) T8 SCE MVOLT.
3. DISCONNECT AND REMOVE EXISTING RECESSED INCANDESCENT LIGHT FIXTURE. INSTALL NEW SURFACE MOUNTED LED LIGHT FIXTURE. CONNECT TO EXISTING LIGHTING CIRCUIT. FIXTURE SHALL BE LITHONIA CAT. NO. 2RTLX222LD26 (26 WATT) MVOLT SURFACE 2X2.
4. DISCONNECT AND REMOVE EXISTING SMOKE DETECTOR AND PROVIDE NEW. TYPICAL FOR MAIN LEVEL AND UPPER LEVEL ELEVATOR LOBBIES.
5. RUN 2#10W/#10GRD.-3/4" CONDUIT TO EXISTING NORMAL/EMERGENCY PANEL LOCATED IN EXISTING BOILER ROOM. ADD 1P-20A CIRCUIT BREAKER AND CONNECT. CIRCUITS/CONDUITS SHALL BE ROUTED THROUGH EXPOSED STRUCTURE ROOMS AND ABOVE ACT CEILINGS. CIRCUIT MAY NOT RUN THROUGH STAIR TOWER.

## DRAWING NOTES:

1. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES AND EQUIPMENT WITH IN ELEVATOR MACHINE ROOM AND ELEVATOR PIT. REMOVE ALL ASSOCIATED CONDUIT AND WIRING. DISCONNECT AND REMOVE ALL FIRE ALARM DEVICES. REMOVE DISCONNECT AND REMOVE LIGHT FIXTURES.
2. LOCATE HEAT DETECTOR WITH IN 24" OF SPRINKLER HEAD.
3. MOUNT RECEPTACLE ON CONCRETE CEILING ABOVE EXISTING SUMP PUMP
4. 200A, 208V, 3ø ELEVATOR POWER MODULE SWITCH. CONNECT TO EXISTING SILENT KNIGHT FIRE ALARM SYSTEM.
5. RUN 3#1/0W/#6GRD-2" CONDUIT TO EXISTING PANEL MPDP IN ELECTRIC ROOM. CONNECT TO EXISTING 3P-150A CIRCUIT BREAKER. RUN FEEDER CONDUIT THROUGH EXPOSED STRUCTURE ROOMS AND ABOVE ACCESSIBLE CEILINGS. FEEDER MAY NOT RUN THRU STAIR TOWER.
6. TELEPHONE OUTLET. RUN TWO(2) CAT 6 CABLES 1" CONDUIT TO EXISTING FIRST FLOOR DATA CLOSET PROVIDE TERMINATIONS. PROVIDE PATCH CORDS FROM OUTLETS TO ELEVATOR CONTROLLER. REFER TO PARTIAL LOWER LEVEL 1/2" SCALE FOR DATA CLOSET LOCATION.
7. RUN 2#10W/#10GRD-3/4" CONDUIT TO EXISTING NORMAL/EMERGENCY PANEL LOCATED IN EXISTING BOILER ROOM. ADD 1P-20A CIRCUIT BREAKER AND CONNECT. CIRCUITS/CONDUITS SHALL BE ROUTED THROUGH EXPOSED STRUCTURE ROOMS AND ABOVE ACT CEILINGS. CIRCUIT MAY NOT RUN THROUGH STAIR TOWER.
8. ALL DEVICES LOCATED 48" AFF. MINIMUM.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED TO RELOCATE ANY ELECTRICAL EQUIPMENT DUE TO NOT COORDINATING EQUIPMENT WITH ELEVATOR SUPPLIER AND ELEVATOR MACHINE ROOM AND PIT LAYOUT DRAWINGS PRIOR TO INSTALLATION.
10. PROVIDE 2P-30A F.D.S. CONNECT TO ELEVATOR CAR LIGHTS.
11. OIL MINDER PUMP CONTROL PANEL. VERIFY EXACT LOCATION IN FIELD PRIOR TO ROUGH-IN. CONNECT TO LINE SIDE OF GF RECEPTACLE.
12. ELEVATOR SUMP RECEPTACLE. VERIFY EXACT LOCATION OF SUMP PRIOR TO ROUGH-IN.
13. LOCATE PIT RECEPTACLE NEXT TO LADDER.




## ELEVATOR MACHINE ROOM - POWER PLAN

SCALE: 1/4" = 1'-0"

## GENERAL ELECTRICAL NOTES:

1. THE CONTRACTOR SHALL PROVIDE ALL CIRCUITS (FEEDER AND BRANCH) WITH AN EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH N.E.C. TABLE 250-122.
2. IN ADDITION TO CONDUIT SLEEVES REQUIRED TO PERFORM WORK, THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL 1" SPARE SLEEVE FROM THE CORRIDOR INTO EACH OFFICE, CONFERENCE ROOM, ETC. THE CONTRACTOR SHALL ALSO PROVIDE AN ADDITIONAL 2" SPARE SLEEVE FROM THE CORRIDOR INTO EACH INSTRUCTIONAL SPACE. THESE SLEEVES ARE FOR FUTURE USE AND SHALL REMAIN EMPTY AT THE END OF THE PROJECT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. PROVIDE FIRE PROOFING AS REQUIRED IN THE SPECIFICATIONS.
3. THE CONTRACTOR SHALL PROVIDE SPARE CONDUITS FROM RECESSED PANELBOARDS TO ACCESSIBLE CEILING SPACES. PROVIDE ONE, ONE-INCH CONDUIT FOR EVERY TWO SPARE POLES IN PANEL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY MISCELLANEOUS STEEL REQUIRED FOR MOUNTING ELECTRICAL EQUIPMENT.
5. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS AND DETAILS TO COORDINATE THE EXACT LOCATION OF ALL ELECTRICAL DEVICES OR EQUIPMENT TO BE INSTALLED. DRAWINGS SHALL NOT BE SCALED.
6. EACH TRADE CONTRACTOR MUST FAMILIARIZE HIMSELF WITH THE AVAILABLE SPACE IN THE CONCEALED AREAS OF THE STRUCTURE. HE MUST COORDINATE ALL THE WORK TO BE DONE AND EQUIPMENT TO BE INSTALLED IN ADVANCE AND PRIOR TO INSTALLING ANY SYSTEM OR PORTION THEREOF. COORDINATE WITH FINAL CASEWORK LAYOUTS. ANY CONTRACTOR WHO FAILS TO COMPLY SHALL BEAR ALL COSTS OF EACH TRADE FOR DISCONNECTING, REMOVING AND REINSTALLING SYSTEM, EQUIPMENT OR PORTIONS THEREOF.
7. THE SPACE ABOVE ALL CEILINGS WILL BE USED AS A RELIEF AIR PLENUM. LOW VOLTAGE WIRING FOR OTHER SYSTEMS MUST BE AN APPROVED AIR PLENUM CABLE, OR RUN IN CONDUIT.
8. ALL LOW VOLTAGE WIRING, NOT INSTALLED IN CONDUIT, ABOVE CEILINGS MUST BE RUN PERPENDICULAR AND/OR PARALLEL TO BUILDING STEEL. ALL CABLES MUST BE NEATLY TRAINED AND WIRE TIED TO THE BUILDING STEEL OR INSTALLED ON J-HOOKS, BRIDLE RINGS OR IN CABLE TRAY WITH 25% SPARE CAPACITY. CABLES THAT ARE SIMPLY DRAPED THROUGH STEEL OR RUN AT ODD ANGLES WILL HAVE TO BE REMOVED AND REINSTALLED.
9. CONDUIT SLEEVES MUST BE PROVIDED FOR ALL LOW VOLTAGE WIRING RUN IN OR THROUGH WALLS. IN ROOMS WITHOUT CEILINGS, LOW VOLTAGE WIRING MUST BE RUN IN CONDUIT. NO EXPOSED LOW VOLTAGE WIRING WILL BE PERMITTED.
10. IN NEW CONSTRUCTION AND EXISTING CONSTRUCTION, ALL CONDUIT AND WIRING RUN TO FINISHED SPACES (I.E., CLASSROOMS, CORRIDORS, OFFICES, STORAGE ROOMS, ETC.) MUST BE CONCEALED. CONDUIT MAY BE RUN EXPOSED IN UNFINISHED AREAS (I.E., CRAWL SPACES, MECHANICAL EQUIPMENT ROOMS, ETC.). NO SURFACE RACEWAY MAY BE USED UNLESS SHOWN ON DRAWINGS OR APPROVED BY ENGINEER OR ARCHITECT IN WRITING. WHERE WALLS ARE SOLIDLY FILLED (I.E. WITH GROUT) THE CONTRACTOR SHALL PROVIDE SIMILAR TO WIREMOLD V700 SERIES METALLIC RACEWAY AT NO ADDITIONAL COST TO THE OWNER. FINAL ROUTING SHALL BE APPROVED BY ENGINEER/ ARCHITECT. FINISH SELECTED BY ARCHITECT FROM COMPLETE LIST OF STANDARD FINISHES. REFER TO SPECIFICATIONS TO DETERMINE WHERE MC CABLE MAY BE USED.
11. OUTLETS MOUNTED BACK TO BACK AND/OR THE USE OF THROUGH BOXES IS NOT PERMITTED.
12. THE CONTRACTOR SHALL VERIFY THE MOUNTING HEIGHT (SHOWN ON THE DRAWINGS) OF BUILDING MOUNTED LIGHT FIXTURES WITH THE ARCHITECT BEFORE ROUGHING IN.
13. THE CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING OF EXISTING SURFACES THAT IS REQUIRED FOR HIS WORK. PATCHING SHALL INCLUDE EVERYTHING EXCEPT FINAL FINISH.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXTERIOR SOUND SYSTEM HORNS AND LIGHTING FIXTURES MOUNTED ON THE BUILDING. PROVIDE NEW SPEAKERS AND LIGHTING FIXTURES AS SHOWN ON DRAWINGS. E.C. SHALL BE RESPONSIBLE FOR PLUGGING OR SEALING ANY HOLES IN MASONRY WHERE EXISTING FASTENERS OR CONDUIT IS REMOVED. NO SURFACE CONDUIT ON EXTERIOR OF BUILDING WILL BE PERMITTED FOR NEW EQUIPMENT UNLESS REVIEWED BY ARCHITECT/ENGINEER PRIOR TO INSTALLATION.
15. THE CONTRACTOR SHALL COORDINATE ALL DEVICES ASSOCIATED WITH MECHANICAL, PLUMBING AND ARCHITECTURAL EQUIPMENT INDICATED TO HAVE POWER CONNECTIONS WITH CONTRACTOR PROVIDING EQUIPMENT PRIOR TO ORDERING DEVICES AND ROUGH-INS. THE CONTRACTOR SHALL REQUEST SHOP DRAWINGS FOR ALL EQUIPMENT REQUIRING POWER BEFORE ROUGH-IN.
16. THE CONTRACTOR SHALL COORDINATE THE MOUNTING HEIGHT OF ALL SURFACE RACEWAY WITH THE OWNER FOR OWNER SUPPLIED FURNITURE. WHERE SURFACE RACEWAY IS DIRECTED TO BE INSTALLED BELOW COUNTERTOPS, CONTRACTOR SHALL PROVIDE WOOD BLOCKING TO ALLOW THE RACEWAY TO BE ROUTED IN FRONT OF COUNTER SUPPORTS. THIS BLOCKING SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
17. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF OUTLETS MOUNTED IN CASEWORK WITH ARCHITECTURAL DRAWINGS.
18. FOR WORK REQUIRED WITHIN AREAS OF THE BUILDING WHERE NO GENERAL TRADES WORK IS REQUIRED, THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ALL CEILING TILES, INCLUDING INSULATION FOUND ABOVE THE CEILING TO PERFORM HIS WORK. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO NOTIFY THE OWNER/ENGINEER IN WRITING WITH DATED PHOTOGRAPHIC EVIDENCE OF ANY DAMAGED CEILING TILES PRIOR TO REMOVAL. OTHERWISE, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGED CEILING TILES WITHIN THE AREA OF WORK.
19. ALL LOW VOLTAGE (BELOW 120V) COPPER CABLE RUN TO EXTERIOR OF BUILDING MUST BE LIGHTNING PROTECTED PER CODE. CONTRACTOR SHALL PROVIDE SOLID STATE LIGHTNING PROTECTION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
20. THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL FIVE (5) DATA DROPS FOR ATC PANELS. THESE DROPS SHALL BE COORDINATED WITH THE INSTALLING CONTRACTOR. EACH DROP SHALL MEET THE DATA SPECIFICATIONS AND INCLUDE A JACK, BACKBOX, COVERPLATE, 300' OF HORIZONTAL WIRING, 20' OF CONDUIT AND OTHER EQUIPMENT FOR A FUNCTIONING NETWORK.
21. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES USING PA-ONE CALL, REVIEWING THE SITE SURVEY DRAWINGS AND REQUESTING ANY INFORMATION THE OWNER MAY BE ABLE TO PROVIDE ABOUT THE LOCATION OF TRENCHING AND EXCAVATING FOR ALL EXTERIOR CONDUITS, LIGHT BASES, UNDERGROUND PULL BOXES, TRANSFORMER VAULTS, EQUIPMENT PADS, ETC.
22. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL KNOWN AND UNKNOWN UNDERGROUND UTILITIES AND EQUIPMENT FOR BOTH EXTERIOR AND INTERIOR APPLICATIONS WITH THE USE OF GROUND PENETRATING RADAR BEFORE TRENCHING, SAW CUTTING, AND EXCAVATING. THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRING ANY BELOW GRADE UTILITIES THAT ARE DAMAGED DUE TO FAILURE TO VERIFY THE LOCATIONS OF ALL UNDERGROUND UTILITIES. SIGNED AND DATED DOCUMENTATION OF GPR SHALL BE AVAILABLE UPON REQUEST.
23. PROVIDE TWO (2) CONTROL STATIONS IN THE MAIN ADMINISTRATION AREA FOR LIGHTING OVERRIDE. ONE STATION SHALL CONTROL EXTERIOR LIGHTING AND THE OTHER STATION SHALL CONTROL ALL CORRIDORS. PROVIDE LABELS ON THE STATIONS. COORDINATE FINAL LOCATION WITH THE OWNER PRIOR TO ROUGH-IN.
24. UNLESS NOTED OTHERWISE, THE CONTRACTOR SHALL PROVIDE FINAL POWER CONNECTIONS TO ALL POWERED EQUIPMENT FURNISHED BY OTHER CONTRACTORS AND THE OWNER, INCLUDING, BUT NOT LIMITED TO AIR HANDLING EQUIPMENT, HEATING EQUIPMENT, COOLING EQUIPMENT, PUMPS, PLUMBING FIXTURE SENSORS, ELECTRIC WATER COOLERS, ELEVATORS, CHAIR LIFTS, KITCHEN EQUIPMENT, GYMNASIUM EQUIPMENT, SHOP EQUIPMENT, SECURITY GRILLES, DOOR HARDWARE, ELECTRONIC SIGNAGE, AUDITORIUM EQUIPMENT, ETC.
25. UNLESS NOTED OTHERWISE, LIGHT SWITCHES INDICATED IN ROOMS SHALL CONTROL THE LIGHTING WITHIN THAT ROOM. WHERE MULTIPLE SWITCHES ARE INDICATED, REFER TO THE ASSOCIATED DRAWING NOTES AND/OR SUB-LETTER DESIGNATION FOR THE LIGHTING TO BE CONTROLLED BY EACH SWITCH.
26. WHERE ELECTRICAL DEVICES, INCLUDING, BUT NOT LIMITED TO RECEPTACLES, DATA JACKS, A/V CONNECTIONS, ETC. ARE INSTALLED IN TACKBOARD, CABINETS OR CASEWORK, THE DEVICE SHALL BE FLUSH WITH THE SURFACE OF THE TACKBOARD, CABINET OR CASEWORK.
27. PROVIDE BOX EXTENSIONS WHEREVER WALL MOUNT ELECTRICAL DEVICES, INCLUDING, BUT NOT LIMITED TO RECEPTACLES, DATA JACKS, WALL SWITCHES, ETC. ARE LOCATED AT TACKBOARDS OR OTHER WALL COVERING, AND CANNOT BE LOCATED ADJACENT DUE TO SPACE CONSTRAINTS, EQUIPMENT REQUIREMENTS OR DIRECT DIRECTION VIA ARCHITECT/ ENGINEER DIRECTION OR ARCHITECTURAL ELEVATIONS. THE DEVICE COVERPLATE SHALL COVER THE OPENING IN THE TACKBOARD OR WALL COVERING TO CREATE A NICE AND NEAT INSTALLATION.

## ELECTRICAL LEGEND

### LIGHTING

| SYMBOL | DESCRIPTION |
|---|---|
| | – LIGHTING FIXTURE – NORMAL AND EMERGENCY POWER. |

### SWITCHES

| SYMBOL | DESCRIPTION |
|---|---|
| S | – SINGLE POLE SWITCH – 20 AMP. |
| Swp | – WEATHERPROOF SINGLE POLE SWITCH |

### RECEPTACLES

| SYMBOL | DESCRIPTION |
|---|---|
| | – DUPLEX RECEPTACLE – 20 AMP – 120 VOLT. |
| GF,WP | – GROUND FAULT, WEATHERPROOF – 20AMP – 120VOLT DUPLEX RECEPTACLE. "WHILE IN" WEATHERPROOF COVER. |

### EQUIPMENT

| SYMBOL | DESCRIPTION |
|---|---|
| F | – FUSED DISCONNECT SWITCH – SIZE AND TYPE INDICATED. |

### FIRE ALARM SYSTEM

| SYMBOL | DESCRIPTION |
|---|---|
| H | – HEAT DETECTOR. |
| S | – SMOKE DETECTOR. |

### WIRING

| SYMBOL | DESCRIPTION |
|---|---|
| -#- | EQUIPMENT CONNECTED TO SAME CIRCUIT EXCEPT SEPARATELY CONTROLLED. |
| | HOMERUN TO APPLICABLE PANEL. |

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# ELEVATOR UPGRADES
FOR THE
NESHAMINY HIGH SCHOOL
NESHAMINY SCHOOL DISTRICT

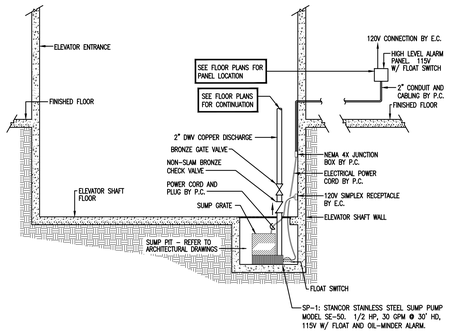
PARTIAL LOWER LEVEL FLOOR PLAN - LOWER LEVEL LIGHTING PLAN - ELEVATOR MACHINE RM. POWER PLAN

| | |
|---|---|
| DRAWN | LD |
| CHECKED | JS |
| DATE | 01-20-17 |
| SCALE | AS NOTED |
| JOB NO. | 15-2447-1 |
| SHEET | E-1 |

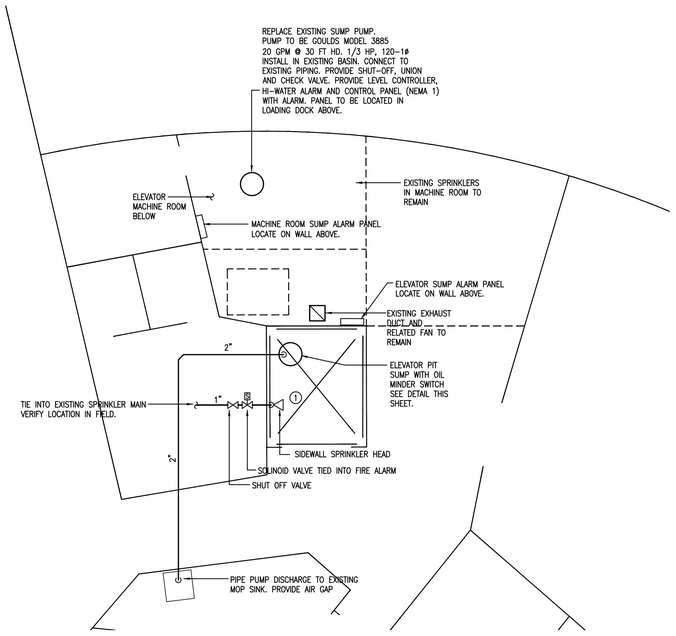
## GENERAL PROJECT NOTES:

1) CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED TO COMPLETE THE PROJECT.

2) CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF CEILING TILES REQUIRED TO COMPLETE THE PROJECT.




## ELEVATOR SUMP PUMP DETAIL




## PARTIAL LOWER LEVEL L PLAN

SCALE: 1/4" = 1'-0"

(1) PROVIDE SAME NEW SPRINLKER AND RELATED PIPING AND APPURTENANCES AT THE TOP OF THE ELEVATOR SHAFT.

| REVISIONS | BY |
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# ELEVATOR UPGRADES

FOR THE

NESHAMINY HIGH SCHOOL

NESHAMINY SCHOOL DISTRICT

PARTIAL LOWER LEVEL FLOOR PLAN - MECHANICAL - DETAILS AND NOTES

| | |
|---|---|
| DRAWN | FB |
| CHECKED | AM |
| DATE | 01-20-17 |
| SCALE | AS NOTED |
| JOB NO. | 15-2447-1 |
| SHEET | M-1 |