JEA Water & Wastewater Standards Manual

VOLUME VIA: Water Reclamation Facility

Details

2024 - Edition

"Foundation for the Future - Water & Wastewater Standards"

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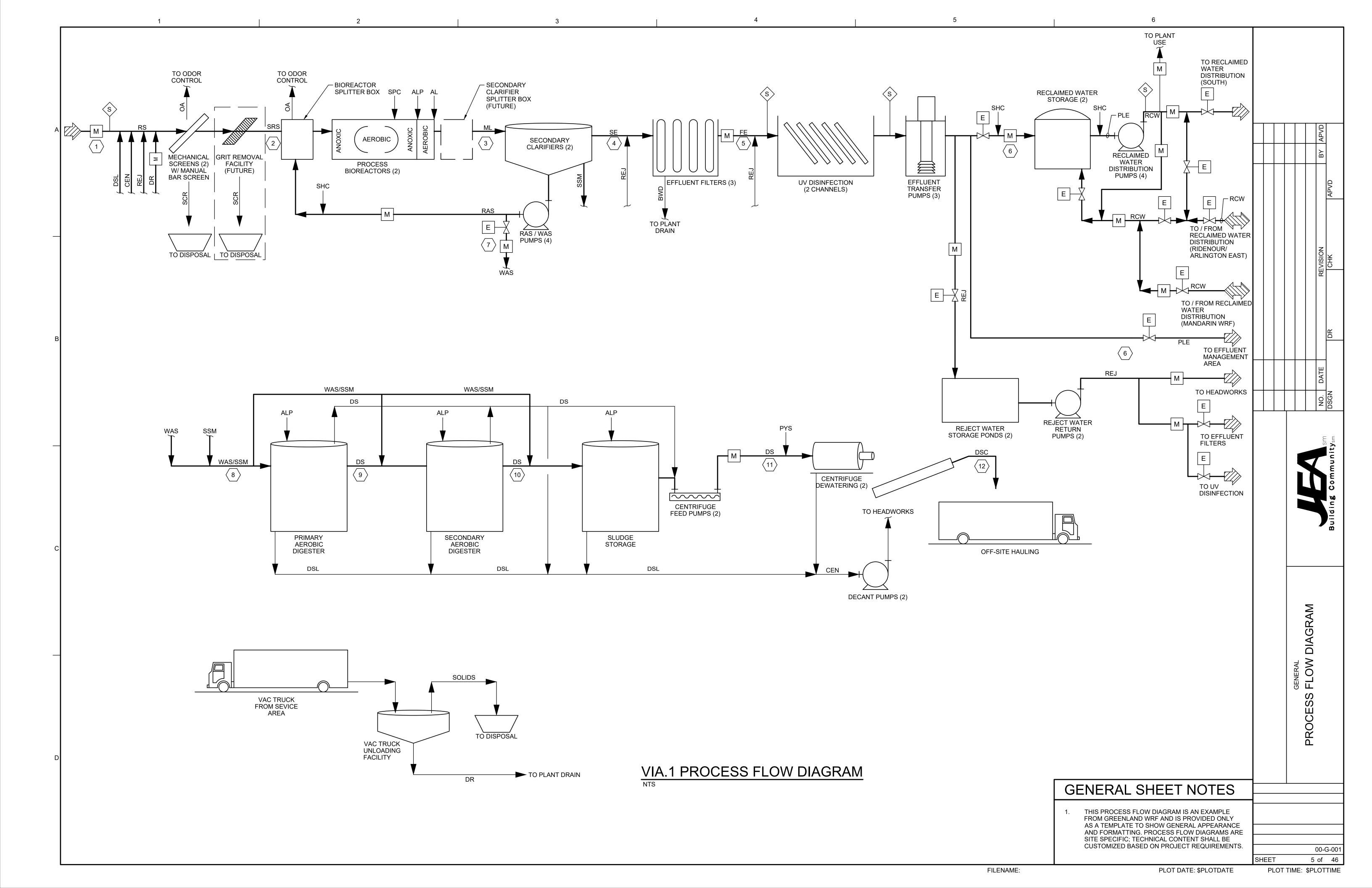
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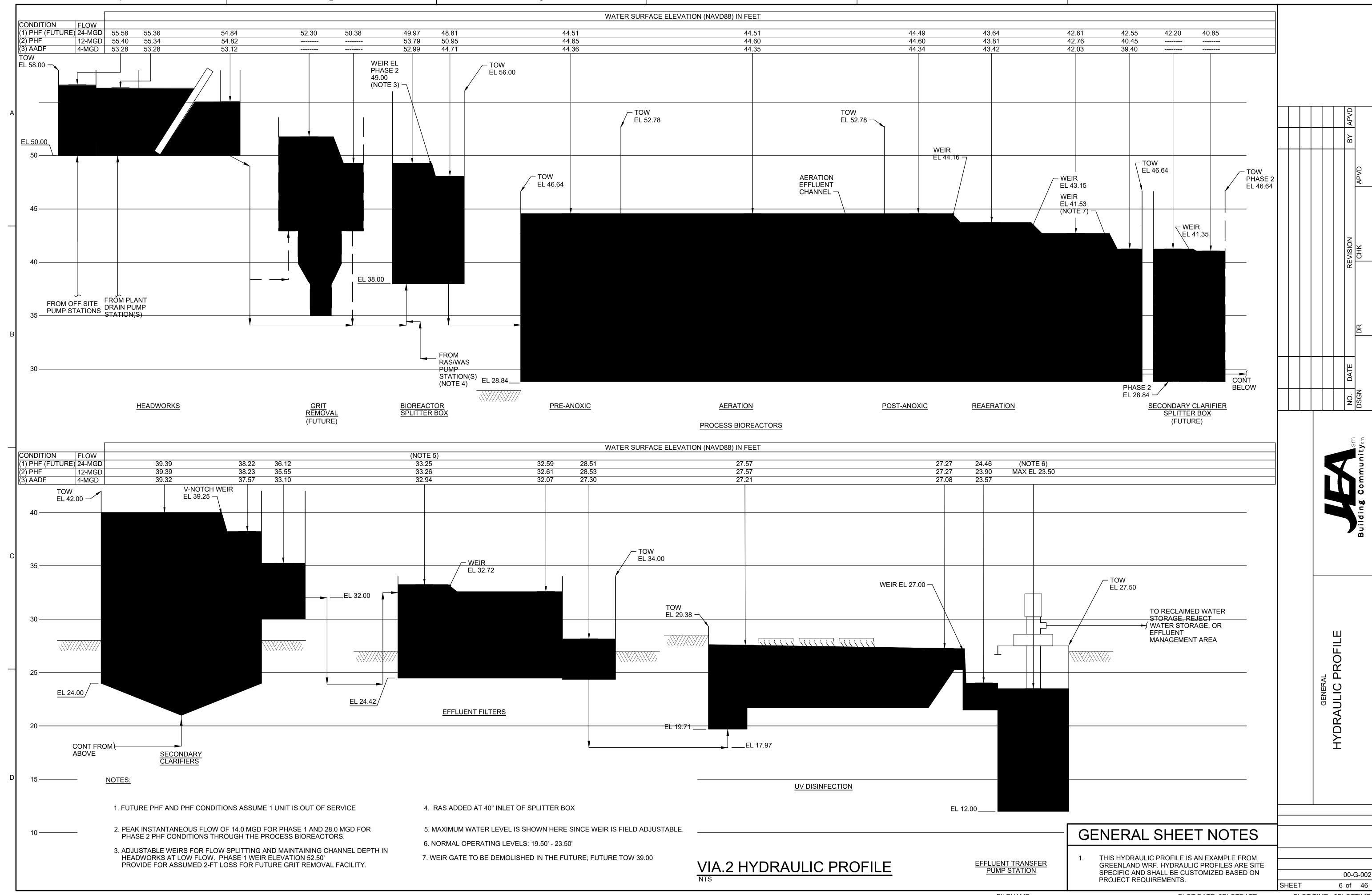
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| OF DVICE | PIPING SCHEDULE LEGEND |
|--------------------|--|
| SERVICE | |
| AL | ALUM ALUM ALUM ALUM ALUM ALUM ALUM ALUM |
| ALP | AIR - LOW PRESSURE |
| BWD | BACKWASH DRAIN BACKWASH DRAIN |
| BYP | BYPASS |
| CDR | CONTAINMENT DRAIN |
| CEN | CENTRATE CENTRATE |
| D | DRAIN-SANITARY DRAIN-SANITARY |
| DR | DRAIN CONTRACTOR CONTR |
| DS | DIGESTED SLUDGE |
| DSL | DECANT SLUDGE |
| FE | FILTERED EFFLUENT |
| FOR | FUEL OIL RETURN |
| FOS | FUEL OIL SUPPLY |
| HSM | HEADWORKS SCUM |
| HW | HOT WATER-POTABLE |
| LPO | LIQUID POLYMER |
| ML | MIXED LIQUOR |
| OA | ODOROUS AIR |
| OCD | ODOR CONTROL DRAIN |
| OF | OVERFLOW |
| PLE | PLANT EFFLUENT PLANT EFFLUENT |
| PW | POTABLE WATER |
| PYS | POLYMER SOLUTION POLYMER SOLUTION |
| RAS | RETURNED ACTIVATED SLUDGE |
| RCW | RECLAIMED WATER |
| REJ | REJECT WATER |
| RS | RAW SEWAGE |
| SA | SAMPLE SAMPLE |
| SE | SECONDARY EFFLUENT SECONDARY EFFLUENT |
| SHC | SODIUM HYPOCHLORITE |
| SPC | SUPPLEMENTAL CARBON |
| SRS | SCREENED RAW SEWAGE |
| SSM | SECONDARYSCUM |
| V | VENT |
| WAS | WASTE ACTIVATED SLUDGE |
| EXPOSURE | |
| BUR | BURIED |
| CONT | CONTAINMENT |
| EXP | EXPOSED |
| SUB | SUBMERGED |
| ENC | CONCRETE ENCASED |
| MATERIAL | |
| CELDI | CERAMIC EPOXY LINED DUCTILE IRON |
| CLDI | CEMENT-LINED DUCTILE IRON |
| CPVC | CHLORINATED POLYVINYL CHLORIDE PIPE |
| CS | CARBON STEEL CARBON STEEL |
| FRP | FIBERGLASS REINFORCED PLASTIC |
| PVC | POLYVINYL CHLORIDE |
| SST | STAINLESS STEEL STAINLESS STEEL |
| | STAINLESS STEEL STAINLESS STEEL |
| JOINT TYPE | FLANCED |
| FL | FLANGED PUBLICATION OF THE PUBLI |
| PO | PUSH-ON PROPRIETA DY RESTRICTED |
| PRJ | PROPRIETARY RESTRICTED DESTRAINED MECHANICAL |
| RM | RESTRAINED MECHANICAL |
| W | WELDED (INCLUDING SOLVENT AND FUSION) |
| SW | SOCKET WELDED |
| T | THREADED |
| PRESSURE TEST TYPE | |
| G | GRAVITY SERVICE: TEST PRESSURE IS NOT SHOWN ON GRAVITY SERVICES. TEST TO HIGHEST LIQUID LEVEL THAT PIPE CAN BE SUBJECT TO |
| Н | HYDROSTATIC HYDROSTATIC |
| P | PNEUMATIC |
| PC | TEST PER UNIFORM PLUMBING CODE |
| NA | NOT APPLICABLE OF THE PROPERTY |
| | |

| | 1 | 1 | 1 | 1 | PIPIN | G SCHEDULE | 1 | | 1 |
|------------------|--------|---------|-------------|--------------------|--------------------------|------------|---|-------------------------------------|--|
| SERVICE | LEGEND | SIZE(S) | EXPOSURE | PIPING MATERIAL | SPECIFICATION SECTION | JOINT TYPE | TEST PRESSURE (PSIG) AND TYPE (AS INDICATED IN LEGEND) | PIPE COLOR (AND LABEL) ² | REMARKS |
| ALUM | AL | 1 – 3 | BUR/EXP | PVC | 40 27 00.10 | W | 100, H | DARK GREEN | |
| AIR LOW PRESSURE | ALP | 5 – 18 | EXP | SST | 40 27 00.08 | W | 30, P | FEDERAL SAFETY GREEN | INSULATION PER SPEC SECTION 40 42 13 |
| BACKWASH DRAIN | BWD | 3 – 8 | BUR/ENC | PVC | 40 27 00.10 | W | 25, H | | |
| BACKWASIT DRAIN | | 3 | EXP | SST | 40 27 00.08 | W, FL | 25, H | | TYPE 304 SST |
| BYPASS | ВҮР | ALL | BUR/EXP | ALL | | | | | MATCH PIPE FOR PROCESS FLOW AT FACILITY (FAC) |
| CENTRATE | CEN | 4 – 12 | EXP | PVC | 40 27 00.10 | FL/W | 10, H | BLACK | |
| CENTRATE | | 16 | BUR/EXP | CELDI | 40 27 00.01 | PRJ/FL | | BLACK | |
| DRAIN, SANITARY | D | <=4 | BUR/EXP | PVC-DWV | 22 10 01.02 | W | 5,H | | SEE SPEC SECTION 22 10 01 FOR MORE DETAILS. |
| | | <=8 | BUR/EXP/ENC | PVC | 40 27 00.10 | W | 5, H | BLACK | ARV/ CONTAINMENT DRAINS |
| | | 4 | BUR/EXP/ENC | CELDI | 40 27 00.01 | PRJ/FL | 50, H | BLACK | FAC 10 |
| | | 2 - 4 | EXP | SST | 40 27 00.08 | W | 10, H | | FAC 38; TYPE 304 SST |
| DRAIN | DR | 4 – 6 | EXP/SUB | SST | 40 27 00.08 | w | 50, H | | FAC 59 AND FAC 63 |
| DIMIN | | 6 – 8 | BUR/EXP | CELDI | 40 27 00.01 | PRJ/FL | 50, H | BLACK | FAC 59 AND FAC 63 |
| | | 6 – 10 | BUR/ENC | CELDI | 40 27 00.01 | PRJ | 15, H | | FAC 22 AND FAC 30 |
| | | 6 – 12 | BUR/ENC | CLDI | 40 27 00.01 | PRJ | 20, H | | FAC 42 AND FAC 50 |
| | | 4 – 12 | BUR/ENC | PVC SDR 26 | 33 05 01.12 | РО | G | | IN BETWEEN MANHOLES |

| VASTE ACTIVATED SLUDGE | WAS | 4 – 8 | BUR/ENC/EXP | CELDI | 40 27 00.01 | PRJ/FL | 50, H | DARK BROWN | | |
|-----------------------------------|-------------|------------------|---------------------|-----------------|-----------------------------|-----------------|----------------|---|---|--|
| VENT | V 4- | | | CLDI | 40 27 00.01 | FL | NA | MATCH PROCESS FLOW | AT FACILITY, PLUMBING VENTS TO BE PVC-DWV, SEE SPECIFICATION 22 10 01 FOR MORE DETAILS. | |
| | | <= 4 | EXP | PVC/PVC- DWV | 40 27 00.10/ 22 10 01.02 | W | NA | | MATCH PIPE FOR PROCESS FLO | |
| SECONDARY SCUM | SSM | 4 – 6 | SUB/BUR/EXP | CELDI | 40 27 00.01 | PRJ/FL | 20, H | LIGHT BROWN | | |
| SCREENED RAW SEWAGE | SRS | 24 | BUR/EXP | CELDI | 40 27 00.01 | PRJ/FL | 30, H | DARK GRAY | | |
| SUPPLEMENTAL CARBON | SPC | 1 – 3 | BUR/EXP | PVC | 40 27 00.10 | W | 100, H | YELLOW BLACK | | |
| SODIUM HYPOCHLORITE | SHC | 1 – 3 | BUR/EXP | PVC | 40 27 00.10 | W | 100, H | FEDERAL SAFETY | | |
| SECONDARY EFFLUENT | | | | CLDI | 40 27 00.01 | PRJ/FL | 30, H | SILER/GRAY | | |
| SAMPLE | SA | <= 1 | EXP | PVC | 40 27 00.10 | W | 50, H | MEDIUM GREEN | | |
| RAW SEWAGE | RS | 30 – 36 | BUR/EXP | CELDI | 40 27 00.01 | PRJ/FL | 150, H | DARK GRAY | | |
| REJECT WATER | REJ | 6 – 24 | BUR/EXP/ ENC | CLDI | 40 27 00.01 | PRJ/FL | 30, H | DARK GRAY | | |
| | | 4 – 36 | BUR/EXP/ENC | CLDI | 40 27 00.01 | PRJ/FL | 150, H | PURPLE | WASHDOWN STATIONS AND AT FAC 30 SECONDARY CLARIFIER | |
| RECLAIMED WATER | RCW | <= 4 | BUR/EXP | PVC | 40 27 00.10 | W | 150, H | PURPLE | SECTION 40 42 13. TYPE 304 SST AT HOSE BIBB | |
| 1333 30 | | <= 3 | EXP/ENC | SST | 40 27 00.08 | W | 150, H | | INSULATION PER SPEC | |
| RETURN AND WASTE ACTIVATED SLUDGE | RAS/ WAS | 10 – 14 | BUR/EXP/ENC | CELDI | 40 27 00.01 | PRJ/FL | 50, H | LIGHT BROWN | | |
| RETURNED ACTIVATED SLUDGE | RAS | 14 - 36 | BUR/EXP/ENC | CELDI | 40 27 00.01 | PRJ/FL | 50, H | LIGHT BROWN | | |
| POLYMER SOLUTION | PYS | 1 – 2 | BUR/EXP | PVC | 40 27 00.10 | FL/ W | 150, H | BUFF | HEAT TRACE PER SPEC SECTIO 40 05 33. INSULATION PER SPEC SECTION 40 42 13 | |
| POTABLE WATER | PW | 6 – 8 | | CLDI | 40 27 00.11 40 27 00.01 | PRJ | 150, H | LIGHT BLUE, (PLUMBING PIPING LABEL TO BE GREEN WITH WHITE LETTERS) | 40 05 33. INSULATION PER SPEC SECTION 40 42 13. PLUMBING DISTRIBUTION PIPING TO BE CPVC. | |
| | | | BUR/EXP | PVC/CPVC | 40 27 00.10/ | W | 150, H | | HEAT TRACE PER SPEC SECTION | |
| I DANT ELL ESEINI | 1 == | 14 – 36 | BUR/EXP/ ENC | | 40 27 00.10 | PRJ/FL | 50, H | SILVER/GRAY | | |
| PLANT EFFLUENT | PLE | <=2 1/2 2 1/2 | EXP/ENC BUR | SST PVC | 40 27 00.08 40 27 00.10 | W/FL W | 50, H 50, H | | INSULATION PER SPEC SECTION 40 42 13. TYPE 304 SS | |
| OVERT LOVV | OI . | 10 – 24 | EXP/SUB/BUR/ ENC | CELDI/ CLDI | 40 27 00.01 | FL/PRJ | 5, H | WATOTT ROOLEGY | AT FACILITY | |
| OVERFLOW | OF | 3 - 4 | | PVC | 40 27 00.10 | W | 5, H | MATCH PROCESS FLOW | MATCH PIPE FOR PROCESS FLO | |
| ODOR CONTROL DRAIN | OCD | 2 – 4 | BUR/EXP | PVC | 40 27 00.10 | W | 5, H | BLACK | | |
| ODOROUS AIR | OA | 6 – 24 | EXP | FRP | 23 31 16.16 | SEE 23 31 16.16 | 25, H | NATURAL OR WHITE (WITH BLACK LETTERS) | | |
| MIXED LIQUOR | ML | 30 | BUR/EXP/ENC | CELDI | 40 27 00.01 | PRJ/FL | 30, H | SILVER/GRAY | | |
| LIQUID POLYMER | LPO | 2 – 4 | EXP | PVC | 40 27 00.10 | w | 100, H | BUFF | HEAT TRACE PER SPEC SECTIO 40 05 33. INSULATION PER SPEC SECTION 40 42 13. | |
| INTERNAL PLANT RETURN | IPR | 10 – 18 | BUR/EXP/ENC | CELDI | 40 27 00.01 | PRJ/FL | 50, H | BLACK | FAC 10 | |
| HOT WATER | HW | <=2 | EXP | CPVC | 40 27 00.11 | W | 150,H | GREEN (WITH WHITE LETTERS) | SEE SPEC SECTION 22 10 01 FO MORE DETAILS. | |
| HEADWORKS SCUM | HSM | 6 | EXP | PVC | 40 27 00.10 | W | 20, H | LIGHT BROWN | 02011014 10 27 00:20. | |
| FUEL OIL SUPPLY | FOS | 1/2 – 4 | EXP/CONT | cs | 40 27 00.03/ 43 40 05 | T/SW | 50, P | FEDERAL SAFETY ORANGE | PIPING TO INCLUDE SECONDARY CONTAINMENT PER SPEC SECTION 40 27 00.25. | |
| FUEL OIL RETURN | FOR | 1 ½ –2 | EXP/CONT | cs | 40 27 00.03/ 43 40 05 | T/SW | 50, P | FEDERAL SAFETY ORANGE | PIPING TO INCLUDE SECONDARY CONTAINMENT PER SPEC SECTION 40 27 00.25. | |
| FILTERED EFFLUENT | FE | 24 – 36 | BUR/EXP/ENC | CLDI | 40 27 00.01 | PRJ/FL | 30, H | SILVER/GRAY | | |
| DECANT SLUDGE | DSL | 4 – 8 | BUR/EXP/SUB | CELDI | 40 27 00.01 | PRJ/FL | 50, H | LIGHT BROWN | | |
| /ASTE ACTIVATED SLUDGE | DS/ WAS | | BUR/EXP | CELDI | 40 27 00.01 | PRJ/FL | 150, H | DARK BROWN | | |

VIA.3 PIPING SCHEDULE

²COATING SYSTEM NUMBER AS SPECIFIED IN SECTION 09 90 00, PAINTING AND COATING, AND AS SPECIFIED IN ARTICLE PIPE CORROSION PROTECTION.

"<=" LESS THAN OR EQUAL TO ">=" GREATER THAN OR EQUAL TO

| GENERAL SHEET NOTES | |
|--|------|
| THIS PIPING SCHEDULE IS AN EXAMPLE FROM GREENLAND WRF. PIPING SCHEDULES ARE SITE | |
| SPECIFIC AND SHALL BE CUSTOMIZED BASED ON PROJECT REQUIREMENTS | 00-G |
| | |

| | | | ELE | CTRIC ACTUATE | D VALVE SCHED | ULE | | | |
|-----------------------|------------|---------------------------|------------------------|--------------------|------------------------------------|---------------------|----------------------|--------------------------|--|
| TAG NUMBER | VALVE TYPE | ACTUATOR POWER SUPPLY | VALVE SIZE (INCHES) | PROCESS SERVICE | MAXIMUM OPERATING FLOW (GPM) | MAXIMUM DP (PSI) | OPERATION SERVICE | TRAVEL TIME (SECONDS) | CONTROL FEATURE MODIFICATIONS/ SUPPLEMENTS |
| [EXAMPLE] 34FV1201 | VXXX | 480-VOLT, THREE- PHASE | 4 | WAS | 350 | 20 | O/C | 60 | C, D, E, L, N |
| | | | | | | | | | |
| | | | | | | | | | |
| | | 4 | | | | | | 0. | |
| | | - | | | | | | 0 | |
| | | | | | | | | | |
| 2 | 3 | | | | | | | | |
| NOTES: | | | | | | | | | |

NOTES:

1. XXX

OPERATIONS SERVICE: O/C = OPEN-CLOSE, T = THROTTLING, M = MODULATING

CONTROL FEATURE MODIFICATIONS/SUPPLEMENTS:

A = ACTUATOR SHALL OPEN VALVE UPON LOSS OF SIGNAL.

B = ACTUATOR SHALL CLOSE VALVE UPON LOSS OF SIGNAL.

C = ACTUATOR SHALL REMAIN IN LAST POSITION UPON LOSS OF SIGNAL.

D = LOCAL-OFF-REMOTE SWITCH. WHEN IN LOCAL, OPEN-CLOSE MOMENTARY PUSHBUTTONS THAT MUST BE CONTINUOUSLY DEPRESSED TO INITIATE/MAINTAIN VALVE TRAVEL; TRAVEL STOPS WHEN PUSHBUTTON IS RELEASED OR WHEN END OF TRAVEL LIMIT IS REACHED. WHEN IN REMOTE, CONTROL POSSIBLE FROM REMOTE LOCATION EITHER VIA HARD WIRED CONTROL OR PROFINET AS APPLICABLE.

E = REMOTE OPEN-CLOSE MAINTAINED DRY CONTACTS; TRAVEL STOPS WHEN REMOTE CONTACT OPENS, OR WHEN END OF TRAVEL LIMIT IS REACHED.

F = THREE 24-VOLT DC INTERPOSING RELAYS FOR REMOTE OPEN-STOP-CLOSE CONTROL. RELAYS POWERED EXTERNALLY, THEREBY PERMITTING VALVE CONTROL FROM GREATER DISTANCES.

G = MOTOR AND CONTROL ENCLOSURE(S) NEMA 250, TYPE 4X WITH INTERNAL BRAKE, THERMAL OVERLOAD MONITOR AND ANTI-CONDENSATION HEATER.

H = MOTOR AND CONTROL ENCLOSURE(S) NEMA 250, TYPE 6 (IP 68) WITH 120-VOLT SPACE HEATERS.

I = MOTOR AND CONTROL ENCLOSURE(S) NEMA 250, TYPE 7 WITH 120-VOLT SPACE HEATERS.

J = VALVE POSITION OUTPUT CONVERTER THAT GENERATES ISOLATED 4 mA DC SIGNAL IN PROPORTION TO VALVE POSITION, AND IS CAPABLE OF DRIVING INTO LOADS OF UP TO 500 OHMS AT 24 VOLTS DC.

K = 120-VOLT SECONDARY CONTROL POWER TRANSFORMER.

L = EXTERNALLY OPERABLE POWER DISCONNECT SWITCH.

N = PROVIDE A NATIVE PROFINET DIGITAL NETWORK INTERFACE FOR COMMUNICATION WITH THE OWNDER'S PLC BASED SCADA SYSTEM. REMOTE CONTROL AND MONITORING OF THE VALVE SHALL BE POSSIBLE VIA THIS INTERFACE. NO EXCEPTIONS.

O = PROVIDE REMOTE HAND SWITCH TO BE LOCATED AS SHOWN ON DRAWINGS.

| | SOLENOID VALVE SCHEDULE | | | | | | | | | | | | |
|-----------------------|-------------------------|------------------------|--------------------|------------------------------------|---------------------|-----------------------|--------------------------|--|--|--|--|--|--|
| TAG NUMBER | VALVE TYPE | VALVE SIZE (INCHES) | PROCESS SERVICE | MAXIMUM OPERATING FLOW (GPM) | MAXIMUM DP (PSI) | OPERATIONS SERVICE | TRAVEL TIME (SECONDS) | ACTUATOR CONTROL FEATURES, OTHER NOTES | | | | | |
| [EXAMPLE] 10FV0601 | VXXX | 2" | RCW | 30 | 100 | O/C | <1 | FLP, B | | | | | |
| | es | | | 30 | | | | | | | | | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| IOTES: | | | | | | | | | | | | | |

1. XXX

OPERATIONS SERVICE: O/C = OPEN-CLOSE, T = THROTTLING, M = MODULATING

ACTUATOR CONTROL FEATURES:

A = VALVE SHALL BE EXPLOSION-PROOF SUITABLE FOR SERVICE IN A CLASS 1, DIV 1 ENVIRONMENT.

B = VISUAL INDICATOR

FC = FAIL CLOSE UPON LOSS OF SIGNAL

FO = FAIL OPEN UPON LOSS OF SIGNAL

FLP = FAIL LAST POSITION UPON LOSS OF SIGNAL

VIA.4 VALVE SCHEDULE, ELECTRIC ACTUATED

VIA.5 VALVE SCHEDULE, SOLENOID

GENERAL

00-G-004
EET of 46
PLOT TIME: \$PLOTTIME

FILENAME: PLOT DATE: \$PLOTDATE

| | | | SELF-REGULATED \ | ALVE SCHEDULI | E | | |
|------------------------|------------|------------------------|-----------------------------|---------------------------------|----------------------------|--------------------|--------------------|
| TAG NUMBER | VALVE TYPE | VALVE SIZE (INCHES) | INLET PRESSURE ¹ | OUTLET PRESSURE ¹ | MAXIMUM PRESSURE (PSIG) | FLOW (GPM, UON) | PROCESS SERVICE |
| [EXAMPLE] 10ARV0101 | VXXX | 2 | N/A | N/A | <25 | 12,600 | RS |
| | | | | | | | |
| | | | | | | | |
| | | | | 1 | | | |
| | | | | 1 | | | |
| 3 | | | W.S. | | | | |
| | | | V 10 | | | | |
| | | | | | | | |

 INLET/OUTLET PRESSURE = INITIAL SET PRESSURE FOR PRESSURE RELIEF/SUSTAINING VALVE OR INITIAL DOWNSTREAM SET PRESSURE FOR PRESSURE REDUCING VALVE. IN POUNDS PER SQUARE INCH, GAUGE (PSIG). THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ADJUSTMENTS TO VALVE SETTINGS DURING START-UP TO "TUNE" THE SYSTEM AS DIRECTED BY THE OWNER OR ENGINEER.

| | | | | | FLOW | CONTROL | VALVE SCH | EDULE | | | | |
|------------------------|---------------|----------|--------------------|-----|------|----------------------------------|-----------|--------|----------|--------------------------|-------------|----------|
| TAG NUMBER | VALVE TYPE | | PROCESS SERVICE | Cv | | VALVE POSITION (PERCENT OPEN) | | MAX DP | CONTROL | ACTUATOR POWER SUPPLY | TRAVEL TIME | P&ID NO. |
| | TIPE | (INCHES) | SERVICE | MIN | MAX | Min Cv | Max Cv | (PSIG) | FEATURES | POWER SUPPLI | (SECONDS) | |
| [EXAMPLE] 34FCV1401 | VXXX | 4 | WAS | 235 | 803 | 20 | 80 | 20 | NA | NA (MANUAL) | NA | I-08-609 |
| | | | | | | | | | 7 | | | |
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CONTROL FEATURE MODIFICATIONS/SUPPLEMENTS:

- A = ACTUATOR SHALL OPEN VALVE UPON LOSS OF SIGNAL.
- B = ACTUATOR SHALL CLOSE VALVE UPON LOSS OF SIGNAL.
- C = ACTUATOR SHALL REMAIN IN LAST POSITION UPON LOSS OF SIGNAL.
- D = LOCAL-OFF-REMOTE SWITCH. WHEN IN LOCAL, OPEN-CLOSE MOMENTARY PUSHBUTTONS THAT MUST BE CONTINUOUSLY DEPRESSED TO INITIATE/MAINTAIN VALVE TRAVEL; TRAVEL STOPS WHEN VIA HARD WIRED CONTROL OR PROFINET AS APPLICABLE. PUSHBUTTON IS RELEASED OR WHEN END OF TRAVEL LIMIT IS REACHED. WHEN IN REMOTE, CONTROL POSSIBLE FROM REMOTE LOCATION EITHER
- E = REMOTE OPEN-CLOSE MAINTAINED DRY CONTACTS; TRAVEL STOPS WHEN REMOTE CONTACT OPENS, OR WHEN END OF TRAVEL LIMIT IS REACHED.
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- H = MOTOR AND CONTROL ENCLOSURE(S) NEMA 250, TYPE 6 (IP 68) WITH 120-VOLT SPACE HEATERS.
- I = MOTOR AND CONTROL ENCLOSURE(S) NEMA 250, TYPE 7 WITH 120-VOLT SPACE HEATERS.
- J = VALVE POSITION OUTPUT CONVERTER THAT GENERATES ISOLATED 4 mA DC SIGNAL IN PROPORTION TO VALVE POSITION, AND IS CAPABLE OF DRIVING INTO LOADS OF UP TO 500 OHMS AT 24 VOLTS DC.
- K = 120-VOLT SECONDARY CONTROL POWER TRANSFORMER.
- L = EXTERNALLY OPERABLE POWER DISCONNECT SWITCH.
- N = PROVIDE A NATIVE PROFINET DIGITAL NETWORK INTERFACE FOR COMMUNICATION WITH THE OWNDER'S PLC BASED SCADA SYSTEM. REMOTE CONTROL AND MONITORING OF THE VALVE SHALL BE POSSIBLE VIA THIS INTERFACE. NO EXCEPTIONS.

VIA.6 VALVE SCHEDULE, SELF REGULATED

VIA.7 VALVE SCHEDULE, FLOW CONTROL

GENERAL VALVE SCHE

PLOT DATE: \$PLOTDATE PL

FILENAME:

PLOT TIME: \$PLOTTIME

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| | | | Slide Gat | e Schedule | | | |
|---|-------------------|--|----------------------------|----------------|---|-------------------------------------|-------------------|
| Gate Identification No. and Location | Assembly Style | Wall Opening (width / height inches) | Gate Height (inches) | Flow Stream | Design Operating Head (feet) Seating/Unseating Condition | Operator Type / Control Style | Notes |
| [Example] 10GTE0301 Headworks | Style A.2 | 36 / 96 | 96 | RS | 3 Seating | Type 2 | Odor Control Seal |
| | | | | | | | |
| | | | 8 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | 3 | | | |
| | | | | | | | |
| | | | | 6 | | | |
| Note: See the Drawings for a | | | | | | | |

Note: See the Drawings for configuration and invert elevations.

| VIA.8 | SLIDE | GATE | SCHE | DULE |
|-------|-------|------|------|------|
| NTS | | | | |

| | SENERAL | ATE SCHEDULE | | Building Communitysm |
|--|---------|--------------|----------|----------------------|
| | | | .ON | |
| | | | NO. DATE | z |
| | | | | DR |
| | | | REVISION | CHK |
| | | | | APVD |
| | | | BY APVD | |
| | | | 4PVD | |

FILENAME: PLOT DATE: \$PLOTDATE

PLOT TIME: \$PLOTTIME

00-G-006 of 46

| CRANE DA | TA SHEET: (Facility No. – Fa | acility Name) |
|---|--------------------------------|----------------------------------|
| Project: | | Manufacturer.: |
| Owner: | | Model No.: |
| Service: | | Number of Units: |
| Equip. Tag Number(s): | | Rev/Date/By:// |
| | GENERAL REQUIREMENTS | |
| Equipment Capacity:tons | Factory Testing: | Power Supply: |
| Method of Control: | ☐Required ☐Not Required | Voltage |
| Location of Control: | Field Testing: Not required | Phase |
| Equipment Location: | Required, functional and | Frequency |
| ☐Indoors ☐Outdoors | Performance | |
| BRIDGE | TROLLEY | HOIST |
| Type: | Type: | Type: |
| ☐Single Girder ☐Double Girder | ☐Top Running ☐Underhung | ☐Electric, Wire Rope |
| ☐Top Running ☐Underhung | | ☐Hand Operated, Chain |
| Service Class (ANSI): | Service Class (ANSI): | Service Class (ANSI): |
| ☐A (standby) ☐B (light) | ☐A (standby) ☐B (light) | ☐H1 (standby) ☐H2 (light) |
| C (moderate) D (heavy) | ☐C (moderate) ☐D (heavy) | ☐H3 (standard ☐H4 (heavy) |
| ☐E (severe) ☐F (continuous) | ☐E (severe) ☐F (continuous) | ☐H5 (severe) |
| Speed (fpm): | Speed (fpm): | Speed (fpm): |
| Constant Speed | ☐Constant Speed ☐Two Speed | ☐Constant Speed ☐Two Speed |
| ☐Variable Speed ☐Hand Operated | ☐Variable Speed ☐Hand Operated | ☐Variable Speed |
| Motor hp: | Motor hp: | Motor hp: |
| Service Factor: | Service Factor: | Service Factor: |
| Main Runway Electric Conductors: | Electric Conductors: | Hook: See Crane Dimension Sheet |
| ☐Bus Bar ☐Festoon | □Bus Bar □Festoon □ | Hook Manufacturer: |
| Bridge Drive System (CMAA): | Cable Reel | Reeving: |
| □A1 □A2 □A3 | | |
| □A4 □A5 □A6 | | |
| | SPECIAL REQUIREMENTS | |
| Accessories: | Remote Controls: | Special Electrical Requirements: |
| Service Platform | ☐Infrared, line-of-sight | |
| ☐Central Lubrication System | ☐Frequency Modulated (FM) | |
| OSHA Operating and Safety | Manufacturer: | |
| Devices | ☐Extended Grease Fittings | |
| See Crane Dimension Sheet for clearances, | ift distances, and details. | |

CRANE DIMENSION SHEET: (Facility No. – Facility Name) Building Clearances for Top-Running Cranes

| Dunaing | g Clearances for Top-Kun | ming Cranes |
|-----------------------------|--------------------------|-------------------------------|
| Project: | | |
| Owner: | | |
| Equip. Tag No.: | | |
| | ~ I OW POIN | T OF ROOF TRUSS, LIGHTS, ETC. |
| D | A A | EE |
| | SPAN BETWEEN RAILS | RUNWAY |
| | | 10.12 |
| HIGH HOOK | i \ | MAX N |
| LOW POINT | OF BRIDGE | |
| OPERATING | FLOOR: F | 3 LOW HOOK |
| Ø | PIT FLOOR | |
| A: | E: | J: |
| B: | | |
| B plus C: | G: | High Hook to Operating |
| D: | H: | Floor: |
| Notes: | | |
| 1. Runway Length: | | |
| 2. Bridge Wheelbase, Center | | |

GRANE DATA SHEET

& DIMENSION SHEET

VIA.10 CRANE DIMENSION SHEET

FILENAME:

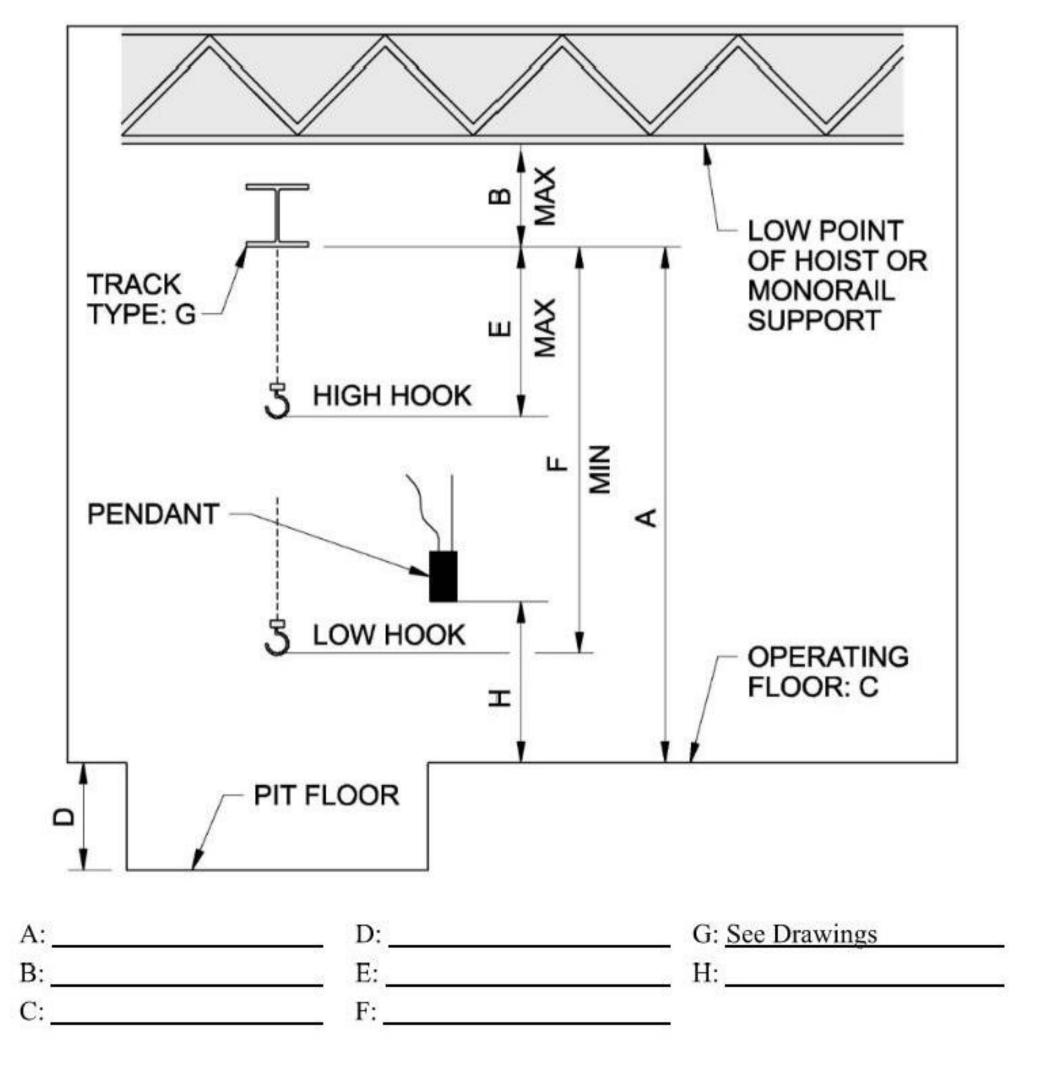
00-G-007

MASTER

| Project: | Manufacturer.: | |
|--|--|--|
| Owner: | Model No.: | |
| Service: | Number of Units: | |
| Equip. Tag Number(s): | | |
| G | RAL REQUIREMENTS | |
| Equipment Capacity:tons Factory | ing: Power Supply: | |
| Method of Control: | ed Not Required Voltage | |
| Location of Control: Field T | g: Not required Phase | |
| Equipment Location: | ed, functional and Frequency | |
| □Indoors □Outdoors per | ance | |
| HOIST | TROLLEY | |
| Type: Electric, Wire Rope | C (moderate) D (heavy) Speed (fpm): to Constant Speed Variable Speed Hand Open | |
| | IAL REQUIREMENTS | |
| Accessories: Remote | And the same of th | |
| 52_V | d, line-of-sight | |
| 25 DAMES A COMPANION OF STREET AND | r; | |
| devices | 4x | |

HOIST/MONORAIL DIMENSION SHEET: (Facility No. – Facility Name) Building Clearances for Monorail Cranes

| Project: | | |
|----------------------------|--|--|
| Owner: | | |
| Equipment Tag Number(s): _ | | |
| 1 1 0 , , - | | |



Notes:

Monorail Track Length: ______

VIA.12 HOIST/MONORAIL DIMENSION SHEET

FILENAME: PLOT DATE: \$PLOTDATE

NIS

VIA.11 HOIST/MONORAIL DATA SHEET

PLOT TIME: \$PLOTTI

| Max. NPSH Required at Rated Capacity (Ft. Absolute): Max. Pump Speed at Rated Capacity (rpm): Constant (Y/N): Adjustable (Y/N): Reverse rotation: Pump shall be capable of operating at runaway speed in reverse rotation without damage. wk2 inertia of total rotating assembly (pump + motor components) lb-ft2, minimum: DESIGN AND MATERIALS Pump Type: Horizontal (Y/N) Frame-Mounted (Y/N) | REVISION BY APVD |
|---|--|
| Constant (Y/N): | REVISION BY |
| Adjustable (Y/N): Reverse rotation: Pump shall be capable of operating at runaway speed in reverse rotation without damage. wk2 inertia of total rotating assembly (pump + motor components) lb-ft2, minimum: DESIGN AND MATERIALS | REVISION I AND TO THE |
| Reverse rotation: Pump shall be capable of operating at runaway speed in reverse rotation without damage. wk2 inertia of total rotating assembly (pump + motor components) lb-ft2, minimum: DESIGN AND MATERIALS | REVISION |
| rotation without damage. wk2 inertia of total rotating assembly (pump + motor components) lb-ft2, minimum: DESIGN AND MATERIALS | REVISION |
| wk2 inertia of total rotating assembly (pump + motor components) lb-ft2, minimum: DESIGN AND MATERIALS | REVISION |
| DESIGN AND MATERIALS | REV |
| | |
| Pump Type: Horizontal (Y/N) Frame-Mounted (Y/N) | |
| · | |
| Vertical (Y/N) Other | |
| Casing Material: | DATE |
| Casing Wear Rings (Y/N) Casing Wear Ring Material: | 0 2 C |
| Impeller: Type: Material: | |
| Impeller Wear Rings (Y/N)Impeller Wear Ring Material: | |
| Shaft Material: Shaft Sleeve Material: | |
| Shaft Seal: Packing (Y/N) Mechanical (Y/N) Type: | |
| Seal Lubrication: | |
| ABMA B-10 Bearing Life (hrs): Lubrication: | |
| Bearings: Outboard End Type: Inboard End Type: | |
| Coupling: Falk (Y/N) Fast: (Y/N) Spring-Grid (Y/N) | |
| Gear Type (Y/N) Spacer (Y/N) | S |
| Manufacturer Standard (Y/N) | |
| Baseplate Material: | ENERAL TA S |
| Drive Type: Direct-Coupled Belt Adjustable Speed Other | |
| | Casing Material: Casing Wear Rings (Y/N) Casing Wear Ring Material: Impeller: Type: Material: Impeller Wear Rings (Y/N) Impeller Wear Ring Material: Shaft Material: Shaft Sleeve Material: Shaft Seal: Packing (Y/N) Mechanical (Y/N) Type: Seal Lubrication: ABMA B-10 Bearing Life (hrs): Lubrication: Bearings: Outboard End Type: Inboard End Type: Coupling: Falk (Y/N) Fast: (Y/N) Spring-Grid (Y/N) Gear Type (Y/N) Spacer (Y/N) Manufacturer Standard (Y/N) Baseplate Material: |

VIA.13 PUMP DATA SHEET

VIA.13 PUMP DATA SHEET CONTINUED

PLOT DATE: \$PLOTDATE PLOT TIME: \$PLOTTIME

| DRIVE MOTOR (See Specification Low-Voltage AC Induction Motors or Medium- | PERISTALTIC HOSE PUMP DATA SHEET | |
|--|--|--|
| Voltage AC Induction Motors.) Weltager Phase Symphonesis Smoot (mm) | Tag Numbers: | |
| Horsepower: Voltage: Phase: Synchronous Speed (rpm) | Pump Name: | |
| Service Factor: | Manufacturer and Model Number: (1) | |
| Motor nameplate horsepower shall not be exceeded at any head-capacity point on pump curve. | SERVICE CONDITIONS (2) | |
| Enclosure: DIP EXP ODP TEFC CISD-TEFC | Liquid Pumped (Material and Percent): | |
| TENV WPII SUBM | | |
| Mounting Type: Horizontal Vertical Solid Shaft Nonreverse Ratchet (Y/N) | Pumping Temperature (Fahrenheit): Normal: Max Min Specific Gravity @ 60 Degrees F: Viscosity Range: | |
| Adjustable Speed Drive Range: min to max, | | |
| See Specification Low-Voltage Adjustable Frequency Drive Systems. | pH: Abrasive (Y/N): Possible Scale Buildup (Y/N): | |
| REMARKS | Inlet Pressure at Pump (psig): | |
| | Min. Net Positive Inlet Pressure Available (psia): | |
| | Area Classification: | |
| | PERFORMANCE REQUIREMENTS | |
| | Rated Capacity (gpm): Rated Differential Pressure (psi): | |
| | Maximum Pump Speed at Rated Condition (rpm): | |
| | Constant Speed (Y/N): Adjustable Speed (Y/N): | |
| | Speed Range:% to% of Rated Speed: | |
| | DESIGN AND MATERIALS | |
| | Pump Type: Heavy-duty, horizontal, peristaltic hose pump | |
| | Pump Configuration: Direct or close-coupled | |
| | Pump Housing Material: Cast, ASTM A48/A48M, Class 25 | |
| | Cover Material: Carbon steel or cast iron, with inspection window | |
| | Cover Seal Material: EPDM or Buna N (NBR) | |
| | Rotor Material: Cast iron | |
| | | |
| | | |
| | | |
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| | | |
| VIA.13 PUMP DATA SHEET CONTINUED | VIA.14 PERISTALTIC HOSE PUMP DATA SHEET | |

PLOT DATE: \$PLOTDATE PLOT TIME: \$PLOT

| | Rotor Shoes: Material selected to be suitable for intended flow stream and hose material. |
|------|--|
| | No. of Rotor Shoes (Minimum): 2 |
| | Rotor Shoe Shim Material: Type 316 stainless steel |
| | Hose Size, Millimeters: |
| | Maximum Number of Hose Occlusions per 100 Gallons Pumped: |
| | Hose Material: Material selected to be suitable for intended flow stream. |
| | Hose Pressure Rating (psig): |
| | Hose Inserts Material: |
| | Hose Lubricant: Manufacturer's standard |
| | Flange Rating and Material: ANSI Class 125/150 Material selected to be suitable for intended flow stream. |
| | Bearing Housing Material: Cast iron |
| | Bearing Type: Ball bearings, permanently lubricated |
| | Bearing Life (ABMA L-10) (hrs): 100,000 |
| | Gear Drive: Planetary type, AGMA Class II |
| | Baseplate: Material selected to be suitable for intended flow stream/service area. |
| | High Level Leak Detector (Y/N): |
| | Pump Speed Sensor (Y/N): |
| | Revolution Sensor (Y/N): |
| | Suction Pulsation Dampener (Y/N): |
| | Discharge Pulsation Dampener (Y/N): |
| DRIV | VE MOTOR (see IV.3.9, Low-Voltage AC Induction Motors) |
| | Horsepower: Voltage: Phase: Synchronous Speed (rpm): |
| | Service Factor:Inverter Duty (Y/N): |
| | Enclosure: DIP EXP ODP TEFC CISD-TEFC TENV WPI WPII SUBM |
| | Adjustable Speed Drive Range: min to max, see Section IV.3.15 Low-Voltage Adjustable Frequency Drive Systems |

| REMARKS | | | |
|---------|--|--|--|
| | | | |
| | | | |
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VIA.14 PERISTALTIC HOSE PUMP DATA SHEET CONTINUED

VIA.14 PERISTALTIC HOSE PUMP DATA SHEET CONTINUED

SHEET 15 of 46
PLOT DATE: \$PLOTDATE PLOT TIME: \$PLOTTIME

| Tag N | fumbers: |
|-------|--|
| | Name: |
| | facturers and Product: (1) |
| SERV | /ICE CONDITIONS (3) |
| | Liquid Pumped: |
| | Pumping Temperature (Fahrenheit): Normal Max Min |
| | Specific Gravity at 60 Degrees F: Viscosity Range: |
| | Possible Scale Buildup (Y/N): Corrosive (Y/N): |
| | Largest Diameter Solid Pump Can Pass (inches): |
| | Min. NPSH Available (Ft. Absolute): |
| | Location: Outdoor (Y/N): |
| PERI | FORMANCE REQUIREMENTS |
| | Primary Duty Point: |
| | Secondary Duty Point: |
| | Maximum Shutoff Pressure at Primary Duty Point (Ft): |
| | Max. NPSH Required (Ft. Absolute): |
| | Adjustable Speed (Y/N): |
| DESI | GN AND MATERIALS |
| | Pump Type: |
| | Bowl: |
| | Bowl Bearings: |
| | Bowl Wear Rings (Y/N):Bowl Wear Ring Material: |
| | Column: |
| | Line Shafting: |

| Discharge Head: _ | | | |
|--|-----------------------------|-----------------------|----------------------|
| Гуре: | | | |
| | | | |
| Discharge Nozzle | Size (inches): | Flange Standar | d/Class: |
| mpeller Material: | | | |
| mpeller Wear Rin | ngs (Y/N): | Impeller Wear | Ring Material: |
| Head Shaft Materi | ial: | Shaft Sleeve Ma | terial: |
| Shaft Sealing: | Packing (Y/N): | Mechanic | cal (Y/N): |
| | Type: | | |
| Seal Lubrication: | 9 | | |
| Coupling: Falk (Y | //N): Fast: (Y/I | N): Spring-G | rid (Y/N): |
| Gear Ty | ype (Y/N): Spa | acer (Y/N): | |
| Manufa | acturer Standard (Y/N) |): | |
| Sole Plate (Y/N): | ş) | Material: | |
| Motor Base Mater | rial: | | |
| MOTOR (See S ₁ AC Induction Mo | pecification Low-Volutions) | tage AC Induction M | lotors or Medium- |
| Horsepower: | Voltag | ge: | Phase: |
| Synchronous Spee | ed (rpm): | | |
| Service Factor: | | | |
| Motor nameplate loump curve. | horsepower shall not b | be exceeded at any he | ead-capacity point o |
| | EXP:OD | | |
| Mounting Type: | Vertical Hollow S | Shaft: Nonreverse | Ratchet (Y/N): |
| | Vertical Solid Sha | aft: | |
| ABMA 9 and ABI | MA 11, B-10 Motor B | Bearing Life (hrs): | |
| KNS: | | | |

VIA.15 VERTICAL TURBINE PUMP DATA SHEET

VIA.15 VERTICAL TURBINE PUMP DATA SHEET CONTINUED

PLOT DATE: \$PLOTDATE

| Tag Numbers: | | | |
|-------------------------------------|--------------------------|---------------------------|----------------|
| Pump Name: | | | |
| Manufacturer and Model Number: (1) | | | |
| (2) | | | |
| SERVICE CONDITIONS | | | |
| Liquid Pumped (Material and Perc | ent): | | |
| Pumping Temperature (Fahrenheit | | | |
| Liquid pH: | | | |
| Abrasive (Y/N) | | 10 13 | 20 20 |
| Suction Pressure (psig): Minimum | | | |
| Altitude (ft msl): Area Clas | ssification: | _Location (inc | loor/outdoor): |
| PERFORMANCE REQUIREMENTS | | 5075X 19 | |
| Capacity (US gpm): Maximum: | | | |
| Maximum Discharge Pressure (psi | | | |
| Internal Bypass Valve Setting (psig | 25 ASS/00 | | |
| Relief Valve Setting (psig/as recon | 23 | | |
| Back Pressure Valve Setting (psig/ | | | |
| Max. Stroke Rate (spm): Mfr. (1) | | Mfr. (2) | |
| DESIGN AND MATERIALS | 14000004 | | |
| Pump Type: Single Diaphragm (Y | orthologia Optionisti | | |
| Tubular (double) Diaphragm (Y/N | | | |
| Wet End Material: | 590.90 806 006 | economic and those region | |
| Check Valve Material: | | N 355 | , Si |
| Diaphragm Material: | 95 (6) | | |
| Calibration Cylinder: Quantity: | | | 15 15 1 |
| Diaphragm Actuation Type: Mech | nanical | | |
| Stroke Position Adjustment: Manu | 0.40 (m).40 (m) | | - |

| Tag Numbers: | | | |
|------------------------------|-----------------------|--------------|-----------------------------------|
| DRIVE MOTOR (See | Specification Section | n, Low-Vol | tage AC Induction Motors) |
| Horsepower: | Voltage: | Phase: | Synchronous Speed (rpm) |
| Service Factor: | | | |
| Motor nameplate pump curve. | te horsepower shall n | ot be exceed | ded at any head-capacity point on |
| Enclosure: DIP | P EXP VPI WPII | ODPSUBM | TEFC CISD-TEFC |
| Variable Speed Drive System. | Drive, See Specifica | tion Section | , Low-Voltage Variable Frequency |
| TESTING | | | |
| Pump Tests: Fa | ctory Functional (Y/I | 4) | Factory Performance (Y/N) |
| Field Functi | ional (Y/N) | 10 | Field Performance (Y/N) |
| Motor Test: Sho | ort Commercial (Y/N |) | Other |
| | | | |
| | ort Commercial (Y/N |) | Other |

| X | Communit |
|---|----------|
| 7 | |
| | Building |

GENERAL PUMP DATA SHEE

VIA.16 CHEMICAL METERING PUMP DATA SHEET

VIA.16 CHEMICAL METERING PUMP DATA SHEET

PLOT DATE: \$PLOTDATE

PLOT TIME: \$PLOT

1 of 46

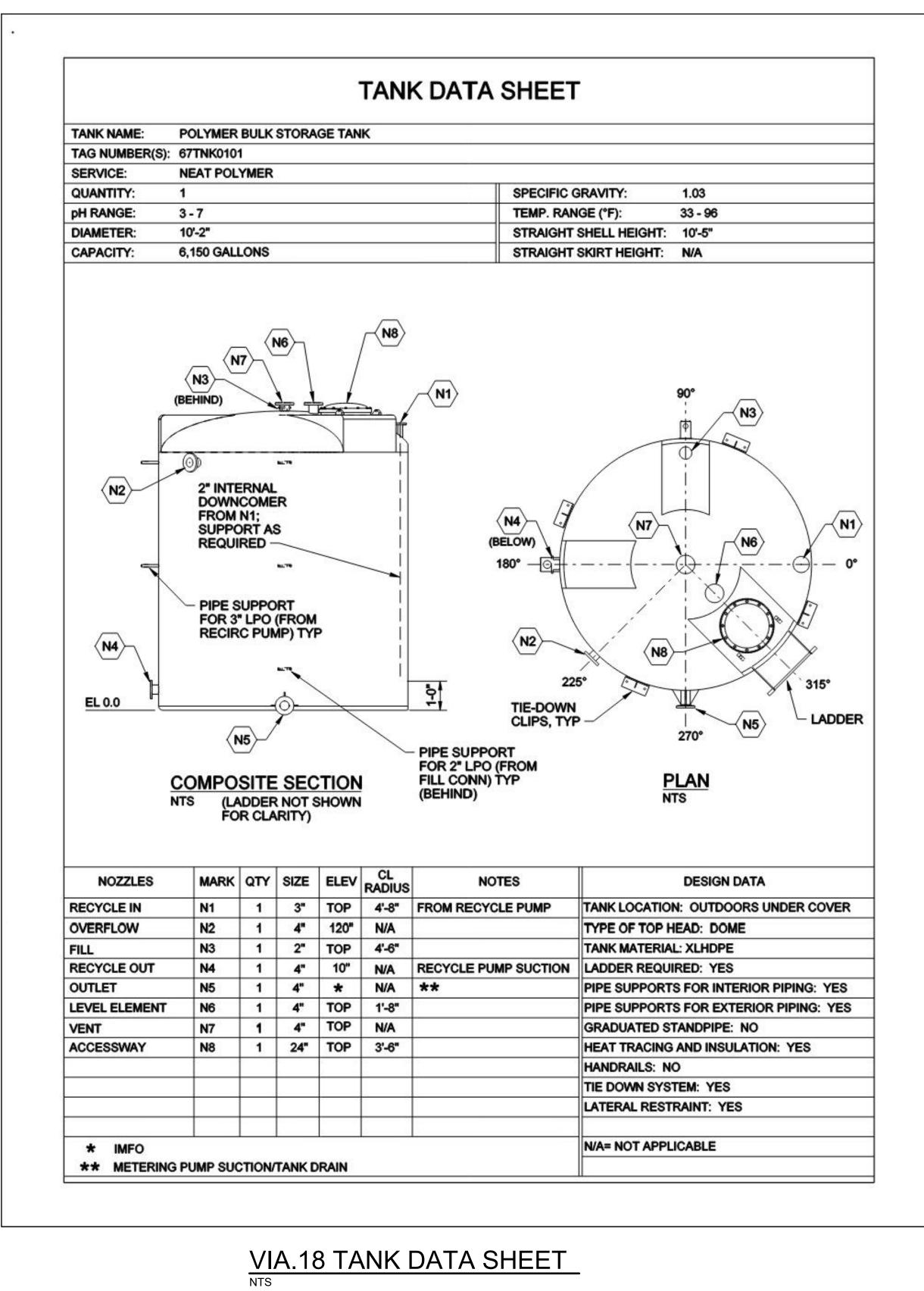
| | Screw Conveyor Schedule |
|---|-------------------------|
| Conveyor Name | |
| Number | |
| Conveyor Type | |
| Material | |
| Density, lbs/ft ³ maximum | |
| Capacity, cubic feet per hour | |
| Screw Speed, rpm maximum | |
| Trough Fill, maximum percent | |
| Screw Diameter, inches maximum | |
| Conveyor Length, end plate to end plate, feet | |
| Incline, degrees | |
| Drive Location | |
| Feed Points, each | |
| Feed From | |
| Discharge Points, each | |
| Actuated Gates, each | |
| Discharge To | |
| Hours of Operation, hours per day | |
| | |

| | | | | | | REVISION BY APVD | CHK APVD |
|----|-----|---------|-----|---------|--------------------|------------------|-------------|
| | | | | | | NO. DATE | DSGN DR |
| | | | | | | W.S. | |
| | | | | GENERAL | EQUIPMENT SCHEDULE | | |
| SH | EEI | <u></u> | | | 1 | 00-0 of | G-014 46 |
| | Ρl | .OT | TIN | 1E: | \$PL | .OT | TIME |

VIA.17 SCREW CONVEYOR SCHEDULE

FILENAME:

PLOT DATE: \$PLOTDATE



FRP TANK SCHEDULE

| Name of Tank* | - | | <u> </u> |
|--|----|----|----------|
| Equipment Numbers | | | |
| Filament-wound or Contact-molded | | | |
| Maximum Capacity Measured to High Solution Level (gallons) | | | |
| Installation (Vertical/Horizontal) | | | |
| Diameter (feet) | | | 85 |
| Straight Shell Height (feet) | | | |
| Support (saddles, flat pad, legs) | | | |
| Type of Bottom Head | | | . Are |
| Type of Top Head | ž | | 3 |
| Ladder Required (Yes/No) | | | |
| Tank Location (indoor/outdoor) | | | |
| Ambient Temperature Range (degrees F) | 0 | | |
| Exterior Loading (psf): | ė. | | 2 |
| Personnel Roof Loads | | | |
| Platforms | | | |
| Mixers | 5 | | 3 |
| Pipe Supports | | | 2 |
| Operating Contents: | | | |
| Temperature (degrees F, not to exceed 180) | | | |
| Chemical Composition | 2 | | 3 |
| Specific Gravity | | | 2 |
| Concentration | | | |
| pH Range | | | |
| Sight Glass Type (1 or 2) | | | 3 |
| Sight Glass Tube Length | | 27 | 2 |
| Insulation/Heat Tracing (Yes/No) | | | |

GENERAL
TANK DATA SHEET
AND SCHEDULE

VIA.19 FRP TANK SCHEDULE

GENERAL SHEET NOTES

THIS TANK DATA SHEET IS AN EXAMPLE FROM BLACKS FORD WRF. TANK DATA SHEETS ARE SITE-SPECIFIC AND SHALL BE CUSTOMIZED BASED 00-G-015 ON PROJECT REQUIREMENTS. 1 of 46

FILENAME:

PLOT DATE: \$PLOTDATE

PLOT TIME: \$PLOTTIME

| Type: | | |
|---|---------------------------------------|--|
| Material: | | |
| Discharge Nozzle | Size (inches): | Flange Standard/Class: |
| Impeller Material: | 0 | |
| Impeller Wear Rin | ngs (Y/N): | Impeller Wear Ring Material: |
| Head Shaft Materi | al: | Shaft Sleeve Material: |
| Shaft Sealing: | Packing (Y/N): | Mechanical (Y/N): |
| | Type: | |
| Seal Lubrication: | | |
| | | /N): Spring-Grid (Y/N): |
| Gear Ty | ype (Y/N): Sp | pacer (Y/N): |
| Manufa | cturer Standard (Y/N | J): |
| Sole Plate (Y/N): | · · · · · · · · · · · · · · · · · · · | Material: |
| Motor Base Mater | ial: | |
| VE MOTOR (See Spage AC Induction Mo | | ltage AC Induction Motors or Medium- |
| Horsepower: | Volta | ge: Phase: |
| Synchronous Spee | ed (rpm): | |
| | | |
| Service Factor: | | |
| | norsepower shall not | be exceeded at any head-capacity point on |
| Motor nameplate l pump curve. Enclosure: DIP: | EXP: OI | DP:TEFC:CISD-TEFC: |
| Motor nameplate l pump curve. Enclosure: DIP: | EXP: OI WPI: WPII: | be exceeded at any head-capacity point on DP:TEFC:CISD-TEFC: Shaft:Nonreverse Ratchet (Y/N): |

| Elastomers: | - | | |
|---------------|-------------------------|---------------|--------------------------|
| Fasteners: | | | |
| Impeller: | Material: | | |
| Shaft Materia | al: | | |
| Double Mecl | hanical Seal: | | Bearing Life (Hrs): |
| DRIVE MOTO | OR (See Specification | Low Voltage | AC Induction Motors) |
| Horsepower: | Voltage: | Phase: | Synchronous Speed (rpm): |
| Enclosure: _ | | | |
| Other Featur | es: | | |
| Moisture De | tection Switches (Y/N): | | |
| | E 1 11 1; W. | ndings (Y/N): | |
| | tection Embedded in Wi | | |
| Thermal Pro | tection Embedded in Wi | | |

| Building |
|----------|
| |

GENERAL SUBMERSIBLE MIXER DATA SHEET

VIA. 20 SUBMERSIBLE MIXER DATA SHEET

VIA.20 SUBMERSIBLE MIXER DATA SHEET CONTINUED

NTS

PLOT DATE: \$PLOTDATE PL

PLOT TIME: \$PLOTTIM

| nirements of NEMA MG 1 e type of equipment, furnish motors and accessories of a single r hazardous (classified) locations that conform to UL 674 and Guaranteed Minimum Efficiency at Full Load: percent |
|---|
| nirements of NEMA MG 1 e type of equipment, furnish motors and accessories of a single r hazardous (classified) locations that conform to UL 674 and Guaranteed Minimum Efficiency at Full Load: percent |
| nirements of NEMA MG 1 e type of equipment, furnish motors and accessories of a single r hazardous (classified) locations that conform to UL 674 and Guaranteed Minimum Efficiency at Full Load: percent |
| irements of NEMA MG 1 e type of equipment, furnish motors and accessories of a single hazardous (classified) locations that conform to UL 674 and Guaranteed Minimum Efficiency at Full Load: percent |
| e type of equipment, furnish motors and accessories of a single hazardous (classified) locations that conform to UL 674 and Guaranteed Minimum Efficiency at Full Load: percent |
| hazardous (classified) locations that conform to UL 674 and Guaranteed Minimum Efficiency at Full Load: percent |
| Guaranteed Minimum Efficiency at Full Load: percent |
| 5 250 M. 19 20 4 20 1 20 1 20 1 20 1 20 1 20 1 20 1 |
| Guaranteed Minimum Power Factor at Full Load: percent |
| |
| Service Factor (@ rated max. amb. temp.): 1.0 1.15 |
| Enclosure Type: |
| Multispeed, Two-Speed: / rpm |
| Winding: One Two |
| Mounting Type: Horizontal Vertical |
| ☐ Vertical Shaft: ☐ Solid ☐ Hollow |
| ☐ Vertical Thrust Capacity (lb): Up Down |
| Adjustable Speed Drive: See Specification Low-Voltage Adjustable Frequency Drive Systems. |
| Operating Speed Range: to% of Rated Speed |
| ☐ Variable Torque |
| Constant Torque |
| ecification Low-Voltage AC Induction Motors. |
| |
| |

VIA. 21 INDUCTION MOTOR DATA SHEET

| Panel 📢 | P&ID ▼ | Service ~ | NEMA 🕶 | Material 🔻 | Maximum External Dimensions HxWxD (in) | Note s - | FDT - | Thermostat - | Service Lights/ Outlets | Environment 💌 |
|-----------------------|-----------|--|--------|---------------|--|----------|-------|--------------|----------------------------|-------------------------|
| (EXAMPLE) 70-ICP-1 | I-08-619A | Primary and Secondary Digester Control | 12 | Painted Steel | 72x72x 24 | | Yes | Yes | Yes | Inside, Air Conditioned |
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VIA. 22 CONTROL PANEL SCHEDULE

PLOT DATE: \$PLOTDATE FILENAME:

INDUCTION MOTOR DATA SHEET CONTROL PANEL SCHEDULE

2 of 46

| PAINT | SYSTEM | DATA | SHEET |
|-------|--------|------|-------|
| | | | |

Complete this PSDS for <u>each</u> coating system, include all components of the system (surface preparation, primer, intermediate coats, and finish coats). Include all components of a given coating system on a single PSDS.

| Paint System Number (from Spec.): | | |
|-----------------------------------|-----------------------------------|----------------------|
| Paint System Title (from Spec.): | | |
| Coating Supplier: | | |
| Representative: | | |
| Surface Preparation: | | |
| Paint Material (Generic) | Product Name/Number (Proprietary) | Min. Coats, Coverage |
| | | |
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PAINT PRODUCT DATA SHEET

Complete and attach manufacturer's Technical Data Sheet to this PPDS for <u>each</u> product submitted. Provide manufacturer's recommendations for the following parameters at temperature (F)/relative humidity:

| Temperature/RH | 50/50 | 70/30 | 90/25 |
|------------------|-------|-------|-------|
| Induction Time | | | |
| Pot Life | | | |
| Shelf Life | | | |
| Drying Time | | | |
| Curing Time | | | |
| Min. Recoat Time | | | |
| Max. Recoat Time | | | |

| Provide manufacturer's recommendation | s for the following: | | |
|---------------------------------------|----------------------|-------|--|
| Mixing Ratio: | | | |
| Maximum Permissible Thinning: | | | |
| Ambient Temperature Limitations: | min.: | max.: | |
| Surface Temperature Limitations: | min.: | max.: | |
| Surface Profile Requirements: | min.: | max.: | |

| | | | 4 | |
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| | | | NO. DATE | |
| | | | NO. | DSGN |

GENERAL
PAINT SYSTEM AND
PRODUCT DATA SHEET

VIA. 23 PAINT SYSTEM DATA SHEET

VIA. 24 PAINT PRODUCT DATA SHEET

PLOT DATE: \$PLOTDATE

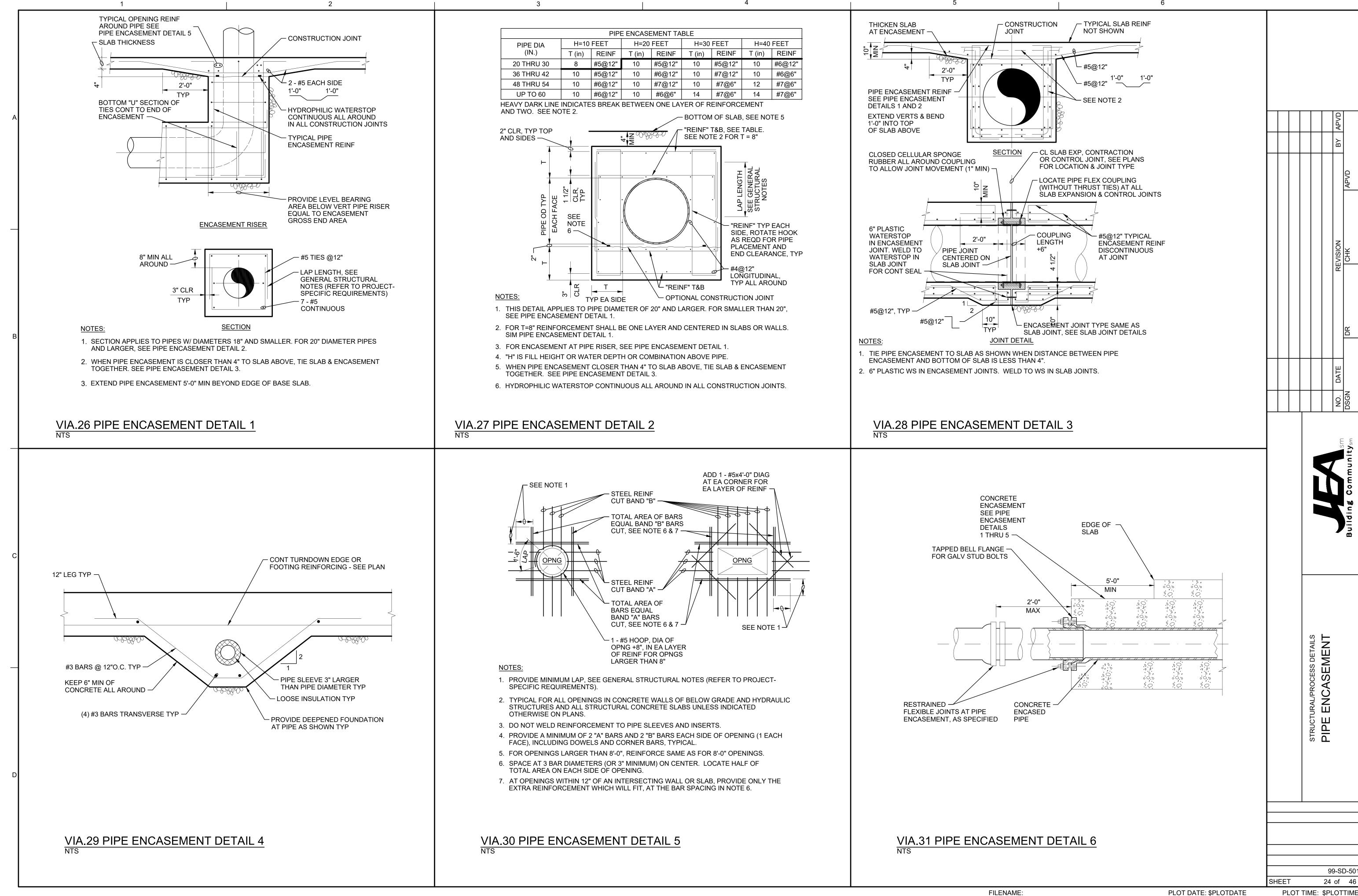
2 of 46

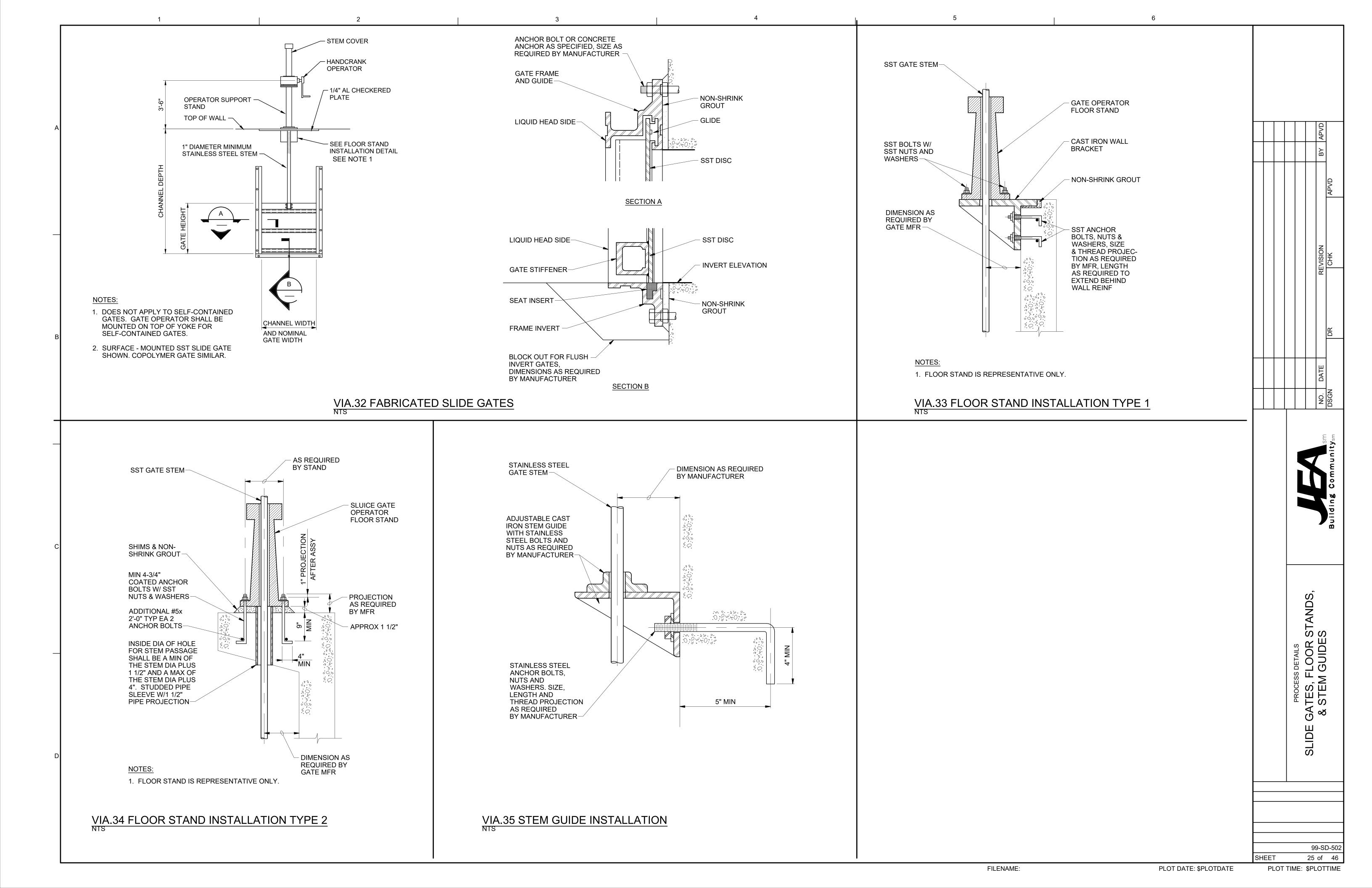
| additional information, as specified (technical data sheets, chemical resistance, application specifications, I configuration details). CRC System No. (From Spec): Coating Supplier: Representative (Name and Telephone) Reinforcing Material: Recommended Joint Material: Substrate Surface Preparation: Component Product Name/Number Application Method Min. Coats/Cover are Coat mediate Coat(s) mediate Coat(s) mediate Coat(s) oat | al information, as specified (technical data sheets, chemical resistance, application specifications, ration details). System No. (From Spec): Coating Supplier: Itative (Name and Telephone) Reinforcing Material: Itrate Surface Preparation: Interview of the surface of th | Coating Supplier: Representative (Name and Telephone) Reinforcing Material: Recommended Joint Material: Substrate Surface Preparation: |
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| configuration details). CRC System No. (From Spec): Coating Supplier: Representative (Name and Telephone) Reinforcing Material: Recommended Joint Material: Substrate Surface Preparation: | System No. (From Spec): Coating Supplier: Itative (Name and Telephone) Reinforcing Material: brommended Joint Material: trate Surface Preparation: Denent Product Name/Number Application Method Min. Coats/Cover | Representative (Name and Telephone) Representative (Name and Telephone) Reinforcing Material: Recommended Joint Material: Substrate Surface Preparation: Component Product Name/Number Application Method Min. Coats/Cover mer se Coat predicted Coat(s) pr |
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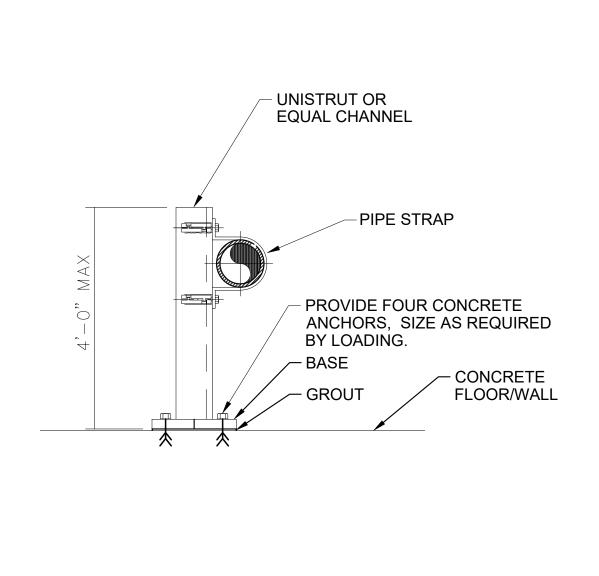
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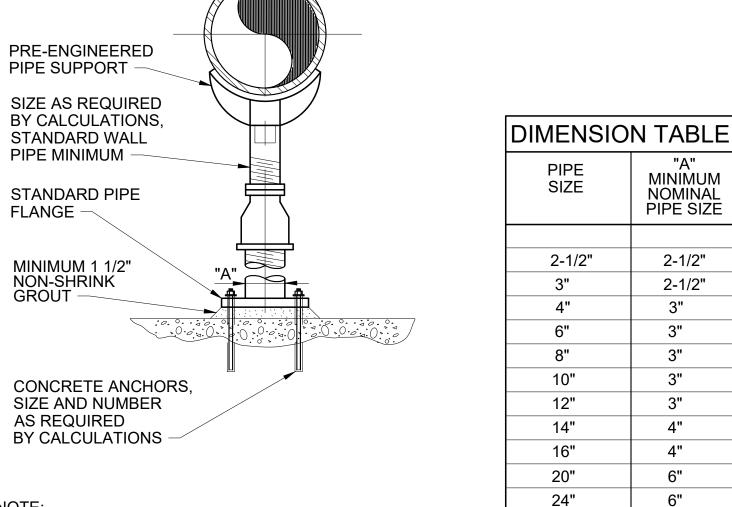


NOTES:

2 1/2" THRU 24" PIPE -

- INCLUDE SAFETY CAP ON CHANNEL. ADD GROUT BETWEEN BASEPLATE AND FLOOR SLAB.
- FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS

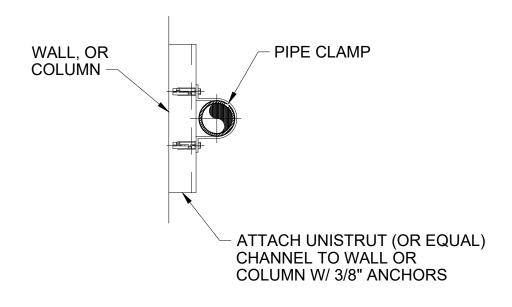
VIA. 36 PIPE SUPPORTS GENERAL TYPE 1



NOTE:

- 1. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
- 2. FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS.

VIA.39 PIPE SUPPORT - SADDLE SUPPORT PEDESTAL TYPE 1



NOTES:

1. FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS. 2. TIGHTEN CLAMP SNUG TO PIPE.

DIMENSION TABLE

SIZE

2-1/2"

3"

4"

10"

12"

14"

16"

20"

24"

30"

36"

MINÍMUM

NOMINAL

PIPE SIZE

2-1/2"

2-1/2"

3"

3"

3"

3"

4"

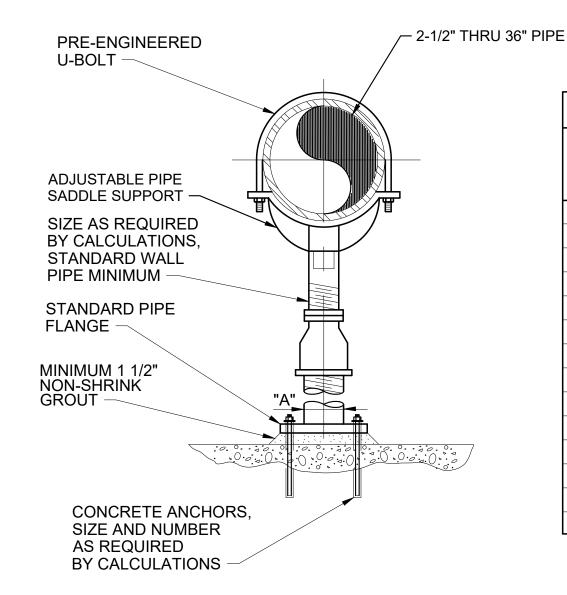
6"

6"

6"

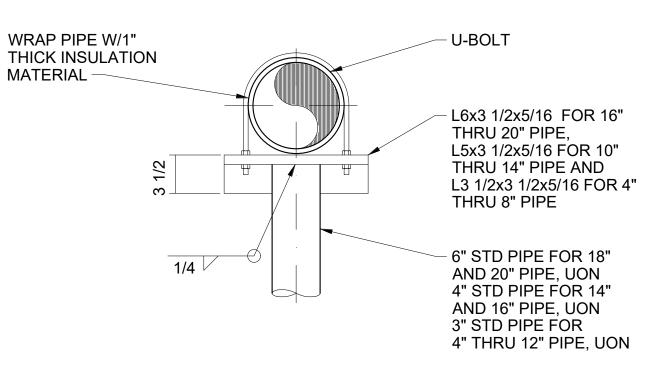
6"

VIA.37 PIPE SUPPORTS GENERAL TYPE 2



- SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
- FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS.

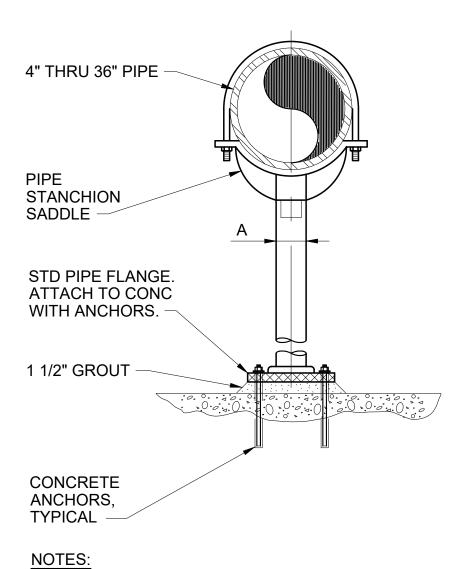
VIA.40 PIPE SUPPORT - SADDLE SUPPORT PEDESTAL TYPE 2



NOTES

- 1. USE STANDARD AWWA RING FLANGE FOR BASE.
- 2. FOR MATERIAS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS
- SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED

VIA.38 PIPE SUPPORTS GENERAL TYPE 3



| DIMENSIO | N TABLE |
|--------------|---------|
| PIPE SIZE | А |
| 2-1/2" | 2-1/2" |
| 3" | 2-1/2" |
| 4" | 3" |
| 6" | 3" |
| 8" | 3" |
| 10" | 3" |
| 12" | 3" |
| 14" | 3" |
| 16" | 3" |
| 20" | 4" |
| 24" | 4" |
| 30" | 4" |
| 36" | 4" |

FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS.

VIA.41 PIPE SUPPORT - SADDLE SUPPORT PEDESTAL TYPE 3

PLOT DATE: \$PLOTDATE

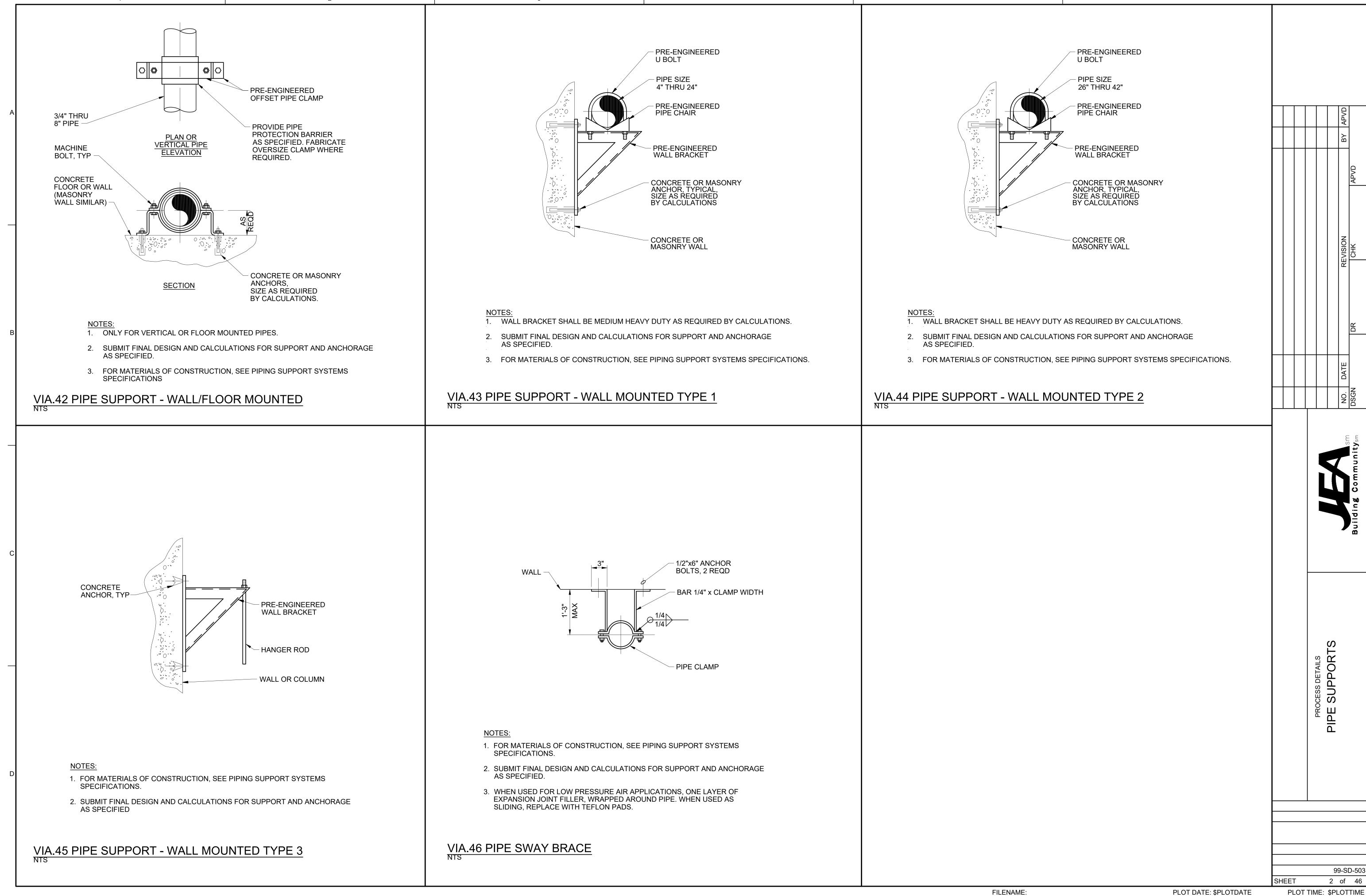
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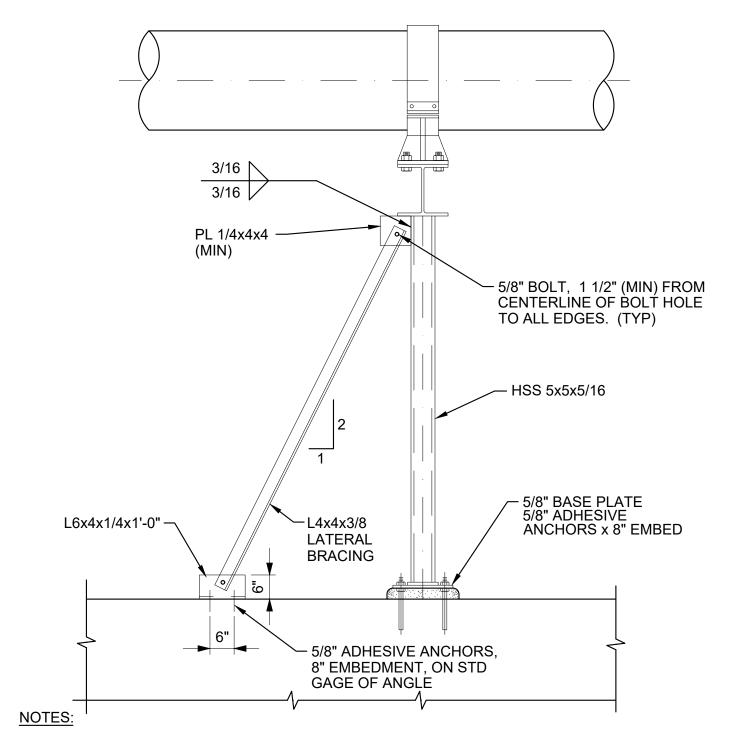
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- 1. LATERAL BRACING REQUIRED ONLY FOR FIXED PIPE SUPPORTS. LATERAL BRACING NOT REQUIRED FOR SLIDING SUPPORTS.
- 2. FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS
- 3. SIZES OF MEMBERS, BOLTS, AND ANCHORS ARE PRELIMINARY. FINAL DESIGN SHALL BE PROVIDED IN ACCORDANCE WITH PIPING SUPPORT SYSTEMS SPECIFICATIONS.

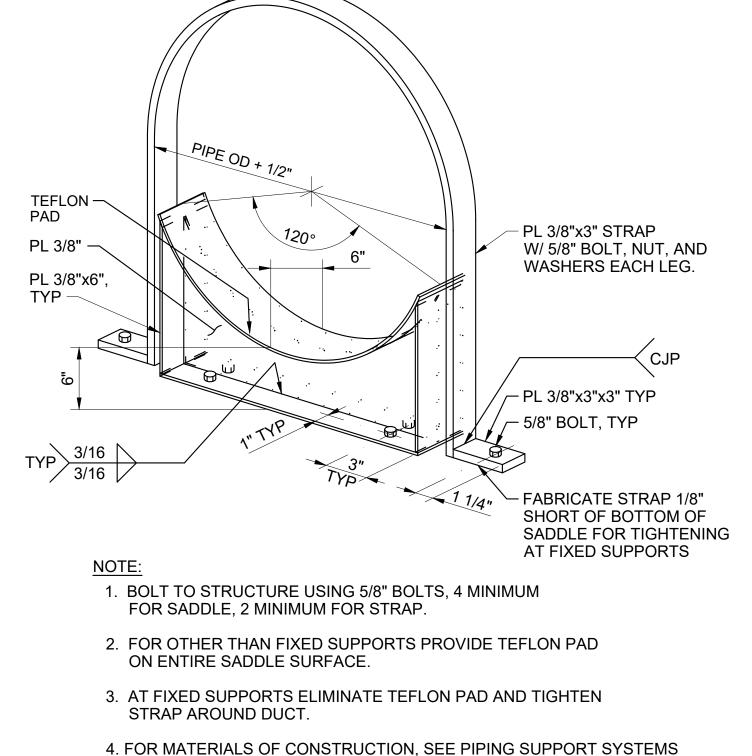
| | ONE LAYER OF EXPANSION JOINT FILLER. WRAP AROUNI PIPE. WHEN USED AS SLIDING SUPPORT, REPLACE WITH TEFLON PADS. 17/8" 17/8" 17/8" PPE OD 1/4 TYP 1/4 TYP 1/4 TYP 1/4 ADDITIONAL STIFFENERS AT BOTH ENDS FOR PIPE SIZES 42" AND LARGER W6x15 |
|---|---|
| TWO 1/2" HEX BOLTS W/NUTS WHEN STRAP IS USED (TYP) | FLAT BAR, FOR THICKNESS SEE TABLE 'B' 'A' (TYP) 'D' DIAMETER A325N BOLTS W/ HEX NUTS TYP OF 4 |

VIA.47 PIPE SUPPORT - FIXED OR SLIDING

| | DII | MEI | NSI | ONS IN | INCH | <u>ES</u> | | | |
|----------------------|-----|-----|-----|--------|------------|-----------|-------|-----|--|
| | | | | | SUPPORTING | | | | |
| NOMINAL PIPE SIZE | | | | | PIPE | | FLANG | E | |
| PIPE SIZE | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'E' | 'F' | |
| 6 | 4 | 6 | 3/8 | 5/8 | 4 1/2 | 10 | 6 1/2 | 13 | |
| 8 | 4 | 6 | 3/8 | 5/8 | 5 | 11 | 7 1/2 | 14 | |
| 10 | 4 | 6 | 3/8 | 5/8 | 6 | 12 | 9 | 15 | |
| 12 | 4 | 6 | 3/8 | 5/8 | 7 | 13 | 10 | 16 | |
| 14 | 4 | 6 | 3/8 | 5/8 | 8 | 14 | 11 | 17 | |
| 16 | 4 | 6 | 3/8 | 5/8 | 9 | 15 | 12 | 18 | |
| 18 | 4 | 6 | 3/8 | 5/8 | 10 | 16 | 13 | 19 | |
| 20 | 5 | 6 | 3/8 | 5/8 | 10 | 17 | 15 | 21 | |
| 22 | 5 | 6 | 3/8 | 5/8 | 12 | 18 | 16 | 22 | |
| 24 | 5 | 6 | 3/8 | 5/8 | 13 | 19 | 16 | 23 | |
| 26 | 5 | 6 | 3/8 | 3/4 | 14 | 20 | 18 | 24 | |
| 30 | 5 | 6 | 3/8 | 3/4 | 16 | 22 | 20 | 26 | |
| 34 | 5 | 6 | 3/8 | 3/4 | 18 | 24 | 22 | 29 | |
| 36 | 6 | 6 | 3/8 | 3/4 | 19 25 | | 24 | 30 | |
| 42 | 6 | 8 | 1/2 | 1 | 21 | 28 | 27 | 33 | |
| 48 | 6 | 8 | 1/2 | 1 | 24 | 31 | 30 | 37 | |
| 54 | 6 | 8 | 1/2 | 1 | 28 | 34 | 34 | 40 | |
| 60 | 6 | 8 | 1/2 | 1 1/8 | 32 | 37 | 36 | 44 | |
| 66 | 6 | 8 | 1/2 | 1 1/8 | 33 | 40 | 40 | 47 | |
| 72 | 6 | 8 | 1/2 | 1 1/8 | 36 | 43 | 44 | 50 | |

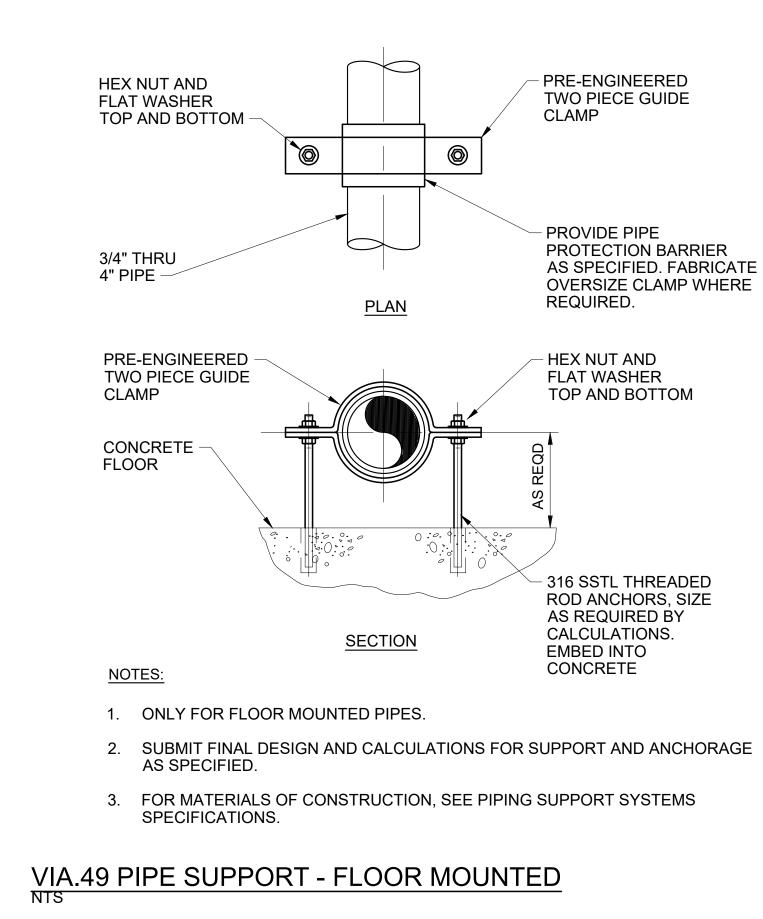
NOTES:

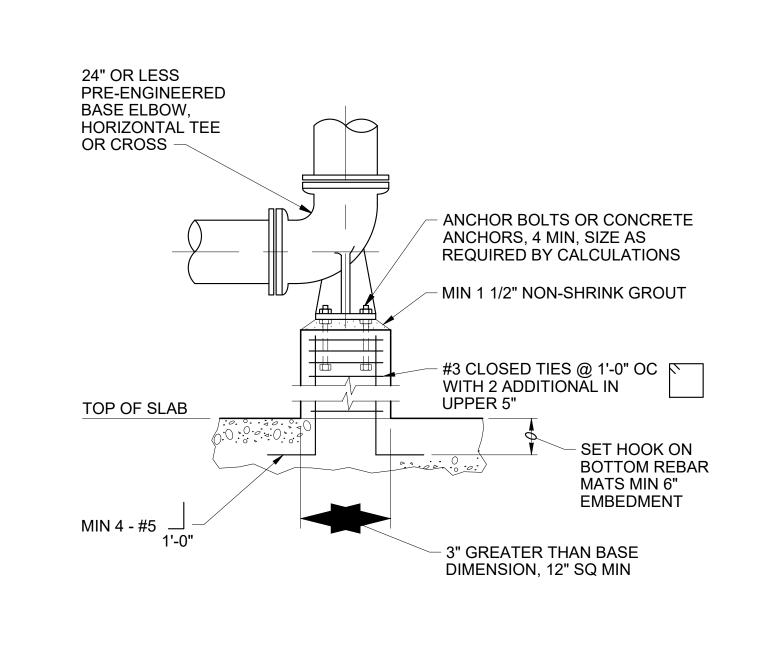
- 1. CONFIRM SUPPORTING BEAM FLANGE WIDTH MEETS OR EXCEEDS SADDLE WIDTH 'B'
- 2. USE A325 BOLTS AND ANCHOR BOLTS.



SPECIFICATIONS.

VIA.48 PIPE/DUCT SUPPORT - FIXED OR SLIDING



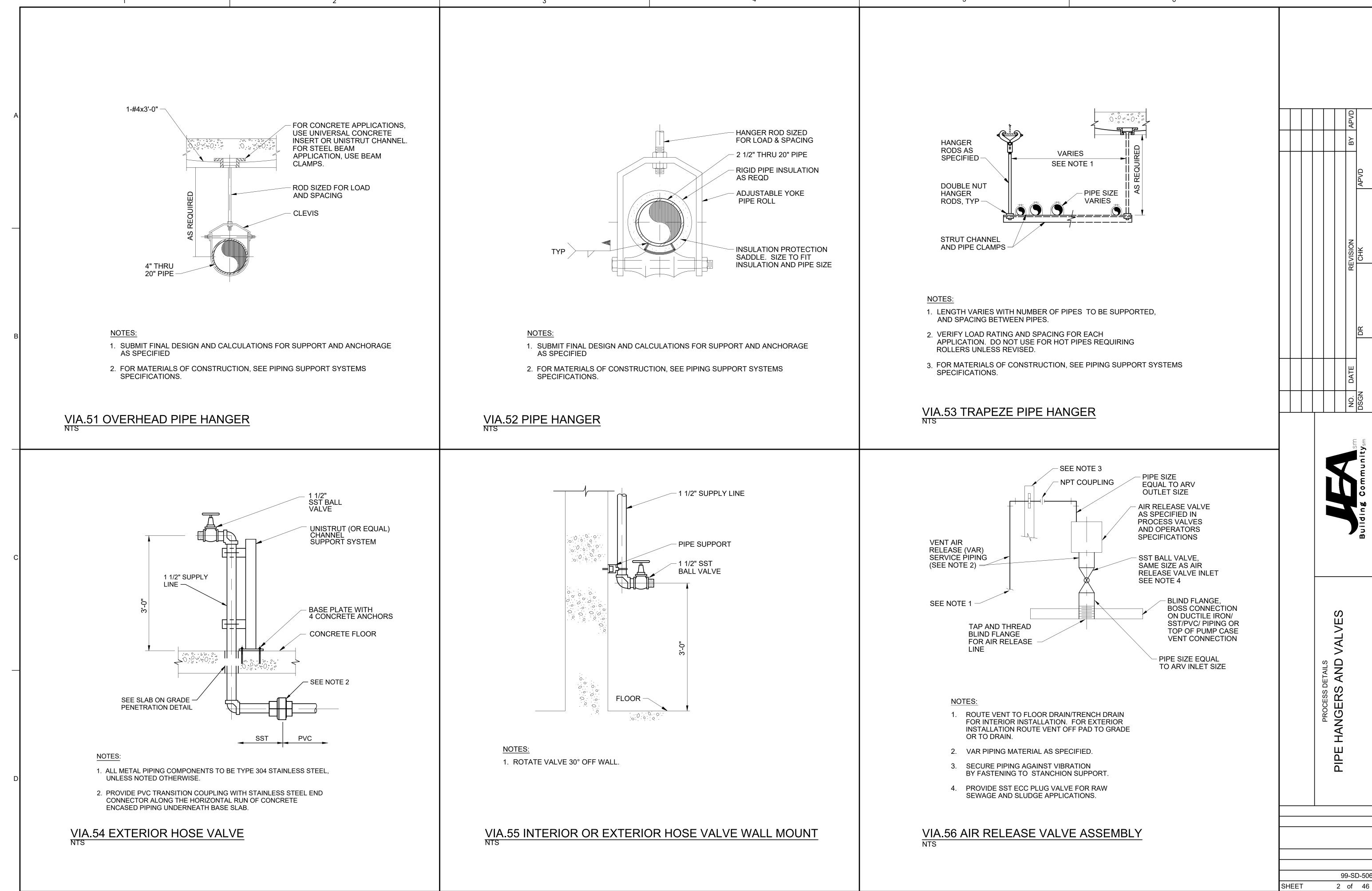


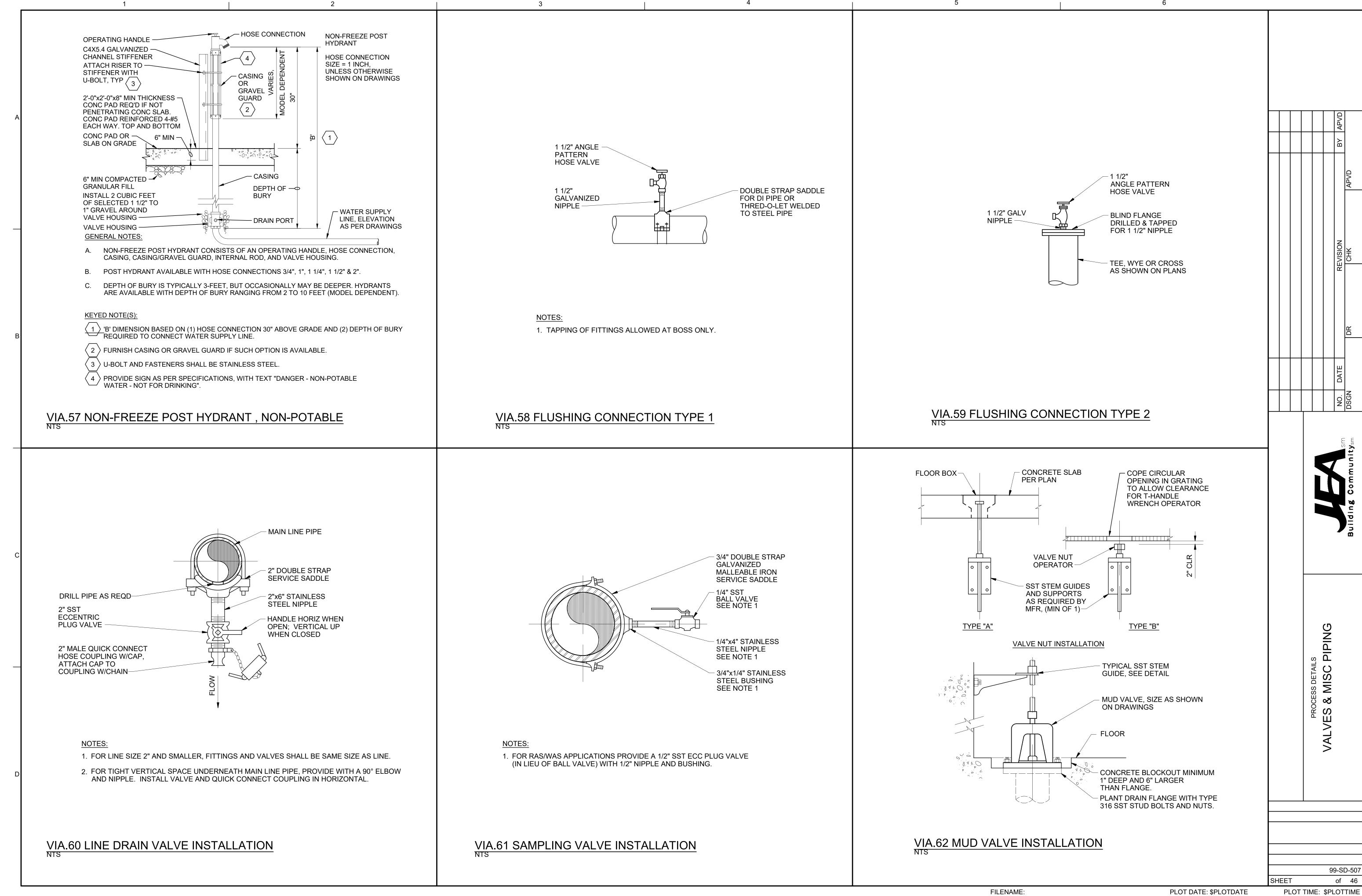
- 1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.
- 2. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
- 3. FOR MATERIALS OF CONSTRUCTION, SEE PIPING SUPPORT SYSTEMS SPECIFICATIONS.

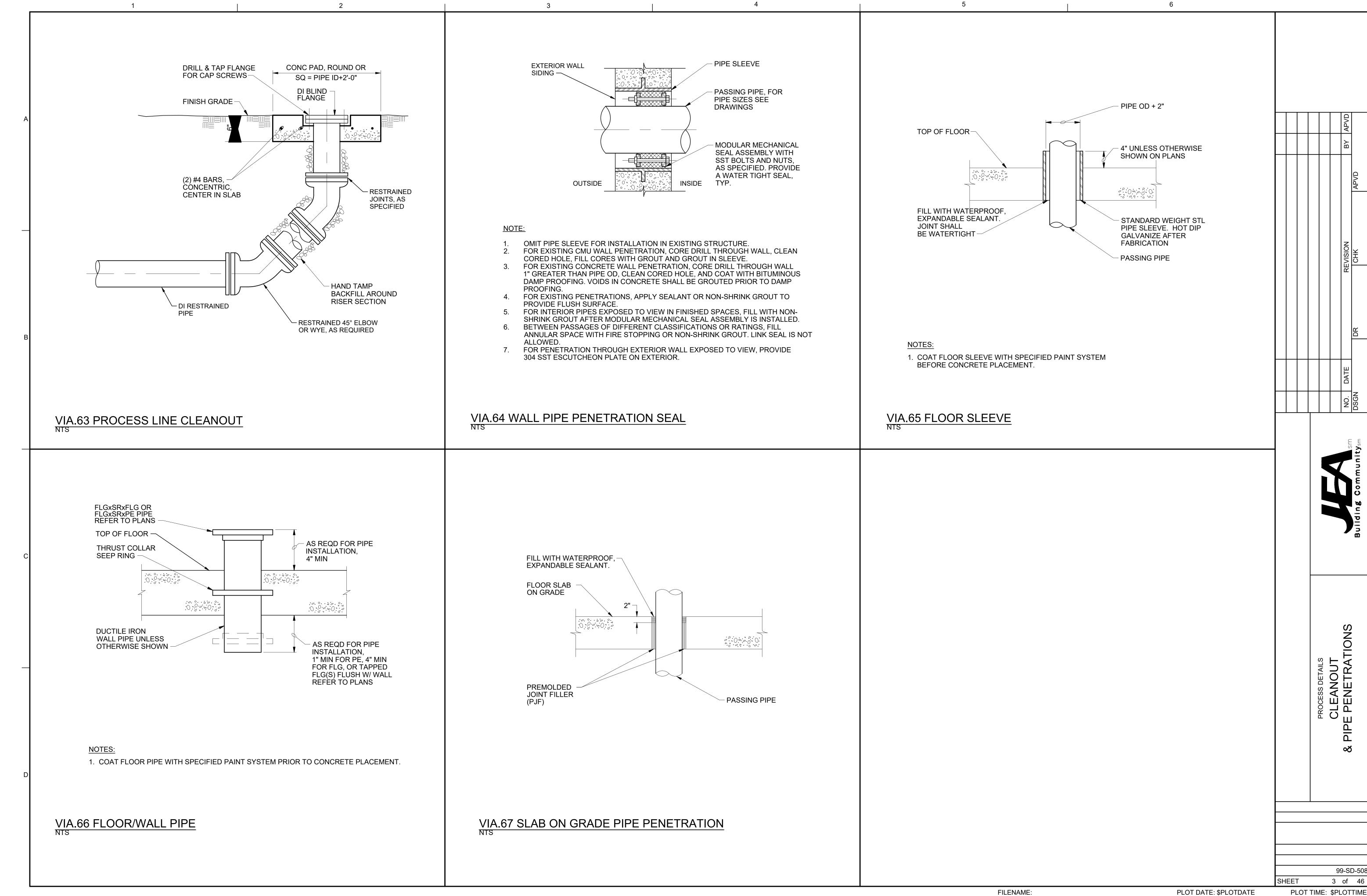
VIA.50 PIPE SUPPORT - BASE BEND

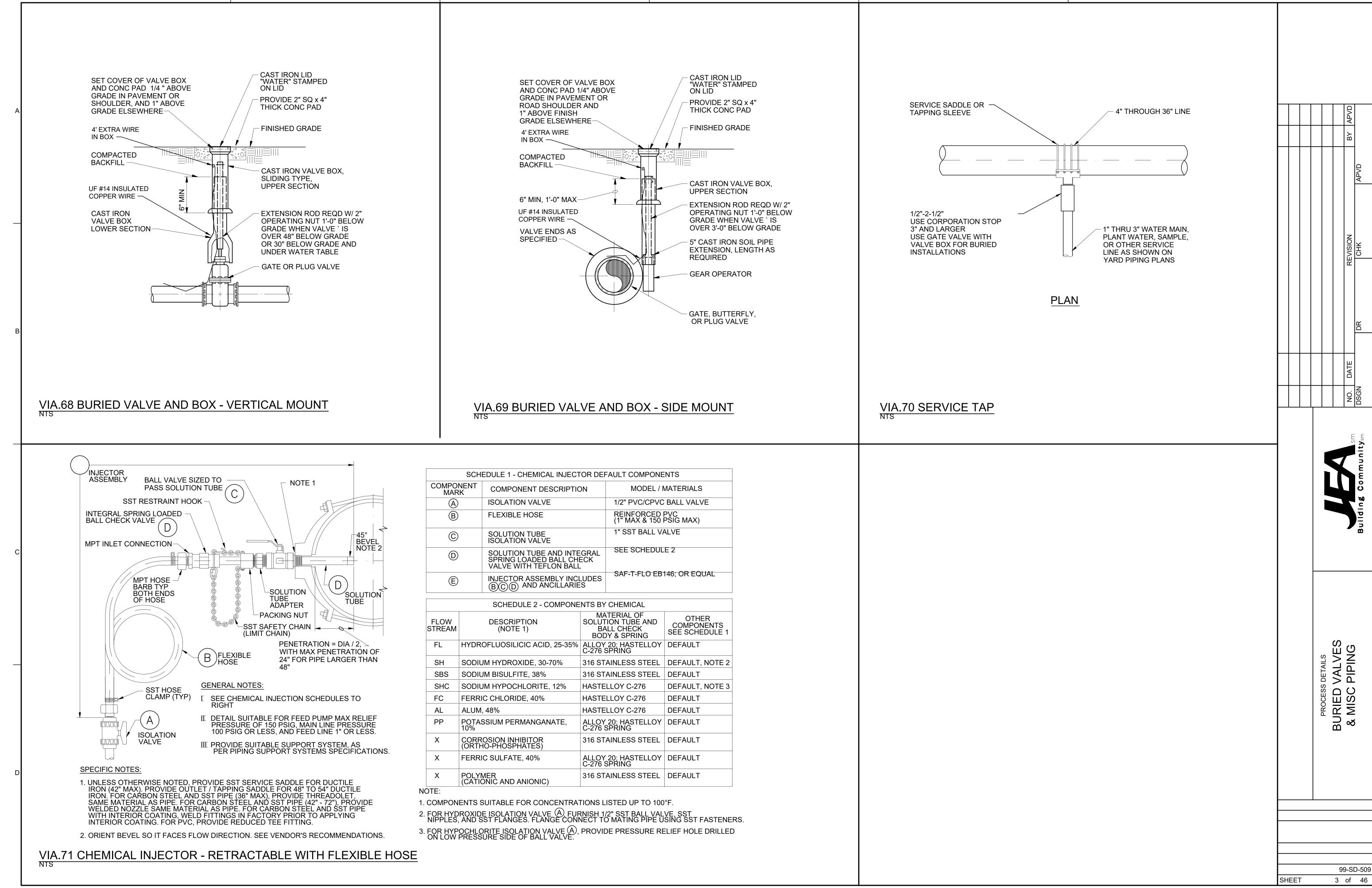
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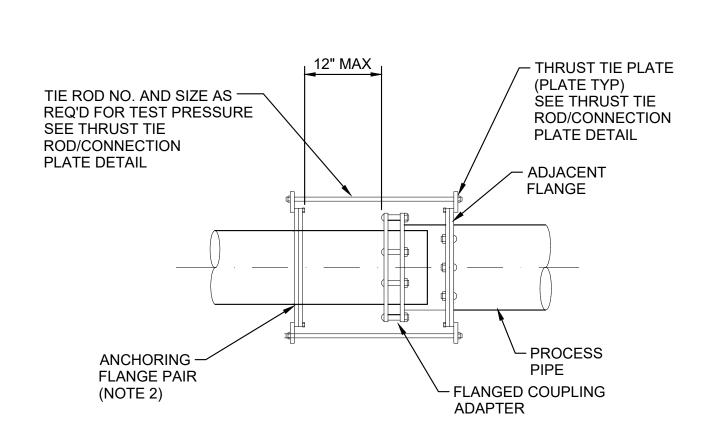
99-SD-505 2 of 46







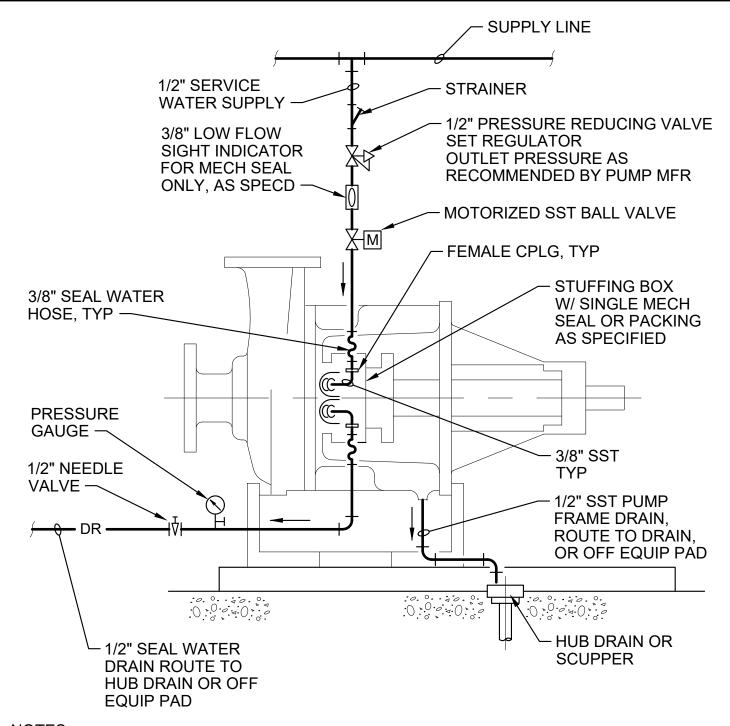




NOTES:

1. ANCHORING FLANGE PAIR ON PROCESS PIPE REQUIRED WHETHER OR NOT SHOWN ON REFERENCED MECHANICAL DRAWING. ANCHORING TO FLANGES OF FLOW METERS, STATIC MIXERS, PUMPS, ETC. PROHIBITED.

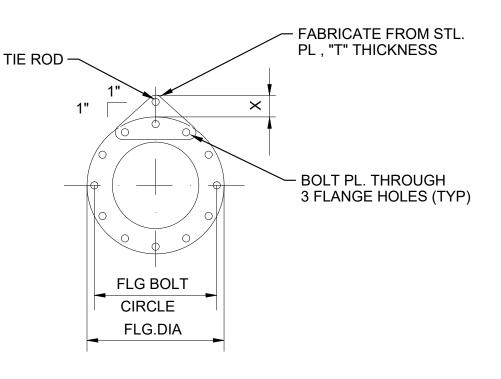
VIA.72 RESTRAINED FLANGED COUPLING ADAPTER



NOTES:

- 1. USE STAINLESS STEEL TUBE ADAPTERS AND BUSHINGS AS REQUIRED FOR ALLCONNECTIONS TO PUMP.
- 2. REFERENCE PUMP MANUFACTURERS INSTALLATION INSTRUCTIONS CONCERNING RECOMMENDED SEAL WATER CONFIGURATION.

VIA.74 PUMP SEAL WATER PIPING



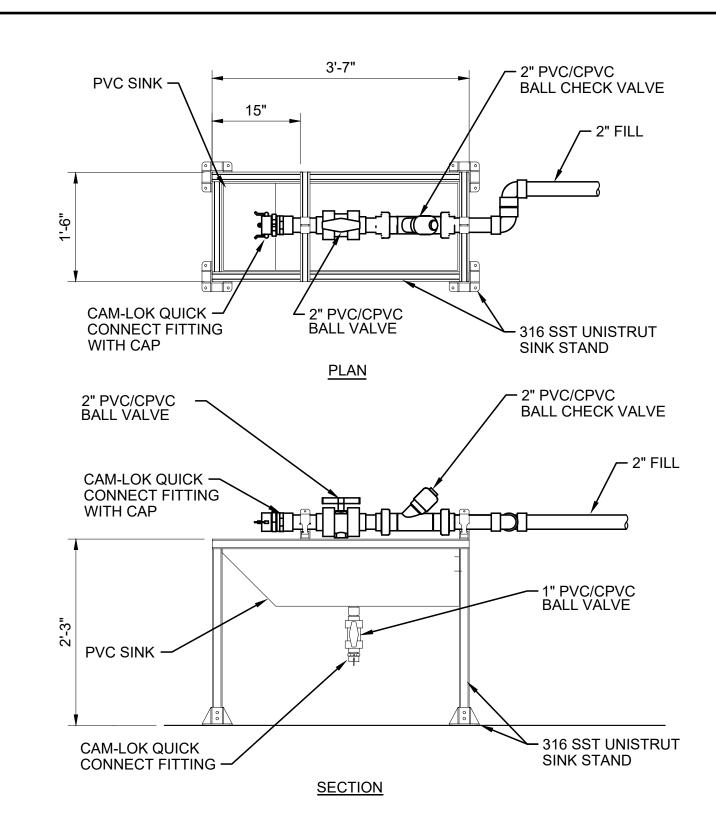
| DIDE CIZE | V | T @ TEST | T @ TEST |
|-----------|---------|----------------|---------------------|
| PIPE SIZE | X | PRESS <150 PSI | 150< PRESS <375 PSI |
| 6" | 2 3/4 " | 5/8 " | 5/8 " |
| 8" | 2 3/4 " | 5/8 " | 3/4 " |
| 10" | 2 3/4 " | 5/8 " | 1" |
| 12" | 3" | 3/4 " | 1" |
| 14" | 3 1/4 " | 3/4 " | 1" |
| 16" | 3 1/4 " | 1" | 1" |
| 18" | 3 1/2 " | 1" | 1" |
| 20" | 3 3/4 " | 1" | 1 1/2 " |
| 22" | 4" | 1" | 1 3/4 " |
| 24" | 4 1/4 " | 1 1/4 " | 1 3/4 " |
| 30" | 4 1/4 " | 1 1/4 " | 1 3/4 " |
| 36" | 4 1/2 " | 1 1/2 " | 1 3/4 " |
| 42" | 4 3/4 " | 1 1/2 " | 1 7/8 " |
| 48" | 4 3/4 " | 1 1/2 " | 1 7/8 " |
| 54" | 4 3/4 " | 1 1/2 " | 1 7/8 " |
| 60" | 4 3/4 " | 1 1/2 " | 1 7/8 " |
| | | | |
| | | | |

NOTES:

- 1. TIE RODS SHALL CONFORM TO ASTM A193 GRADE B7.
- 2. NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
- 3. PLATE SHALL CONFORM TO ASTM A283 GRADE D.
- 4. TIE ROD NUTS SHALL BE TIGHTENED GRADUALLY AND EQUALLY IN STAGES TO PREVENT UNEVEN ALIGNMENT AND TO ALLOW EQUAL STRESS ON ALL TIE RODS UNDER PRESSURE. TIGHTEN UNTIL SNUG. THREADS SHALL PROTRUDE FROM NUTS. PEEN THREADS AFTER TIGHTENING NUTS.
- 5. CONTRACTOR SHALL USE DATA FOR ONLY THOSE PIPE SIZES AND TEST PRESSURES SPECIFIED IN THIS CONTRACT.

| | | | | Т | IE ROD | SCHE | DULE | | | | | | |
|----------------|---------------------------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|
| TEST | PRESSURE | 25 F | PSI | 50 F | PSI | 100 | PSI | 150 | PSI | 225 | PSI | 375 | PSI |
| PIPE | MINIMUM | TIE | RODS |
| DIAM. (IN.) | PIPE WALL THICKNESS (IN.) | DIA. (IN.) | NO. REQ'D |
| 6 | 3/16 | _ | _ | _ | _ | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 |
| 8 | 3/16 | _ | _ | _ | _ | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 |
| 10 | 3/16 | _ | _ | 1 | _ | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 7/8 | 2 |
| 12 | 3/16 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 7/8 | 4 |
| 14 | 3/16 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 | 3/4 | 2 | 3/4 | 4 | 1 | 4 |
| 16 | 3/16 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 | 7/8 | 2 | 7/8 | 4 | 1 | 4 |
| 18 | 1/4 | 5/8 | 2 | 5/8 | 2 | 7/8 | 2 | 1 | 2 | 1 | 4 | 1-1/4 | 4 |
| 20 | 1/4 | 5/8 | 2 | 3/4 | 2 | 7/8 | 2 | 7/8 | 4 | 7/8 | 4 | 1-1/4 | 4 |
| 22 | 1/4 | 5/8 | 2 | 3/4 | 2 | 3/4 | 4 | 7/8 | 4 | 7/8 | 4 | 1-1/2 | 4 |
| 24 | 1/4 | 5/8 | 2 | 3/4 | 2 | 7/8 | 4 | 1 | 4 | 1 | 6 | 1-1/2 | 6 |
| 30 | 1/4 | 5/8 | 4 | 3/4 | 4 | 7/8 | 6 | 1 | 6 | 1 | 8 | 1-1/2 | 8 |
| 36 | 1/4 | 3/4 | 4 | 7/8 | 4 | 1 | 6 | 1 | 8 | 1 | 8 | 1-1/2 | 10 |
| 42 | 1/4 | 3/4 | 4 | 1 | 4 | 1 | 8 | 1-1/4 | 8 | 1-1/4 | 8 | 1-3/4 | 10 |
| 48 | 5/16 | 7/8 | 4 | 7/8 | 8 | 1 | 10 | 1-1/4 | 10 | 1-1/4 | 10 | 1-3/4 | 12 |
| 54 | 5/16 | 3/4 | 6 | 7/8 | 8 | 1 | 12 | 1-1/4 | 12 | 1-1/4 | 12 | 1-3/4 | 14 |
| 60 | 11/32 | 7/8 | 6 | 1 | 8 | 1-1/4 | 10 | 1-1/4 | 14 | 1-1/4 | 14 | 1-3/4 | 16 |

VIA.73 THRUST TIE ROD/CONNECTION PLATE



NOTE: VALVE BODY, BALL AND STEM MATERIALS SHALL MATCH THE MATERIAL OF THE ADJOINING PIPELINE.

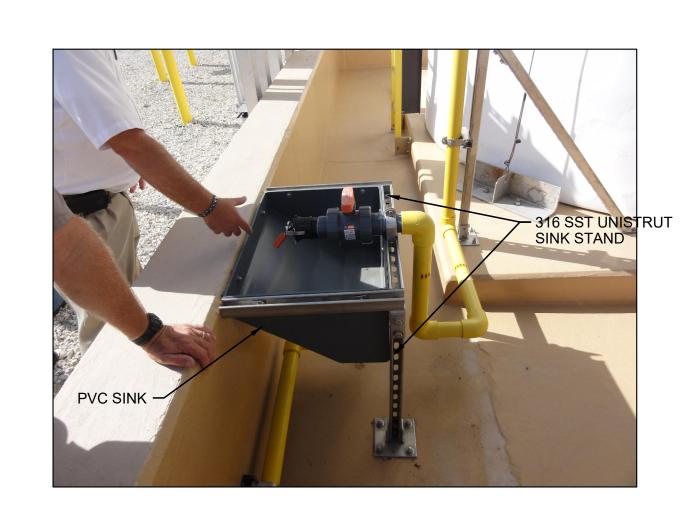


PHOTO (SIMILAR)

FILENAME:

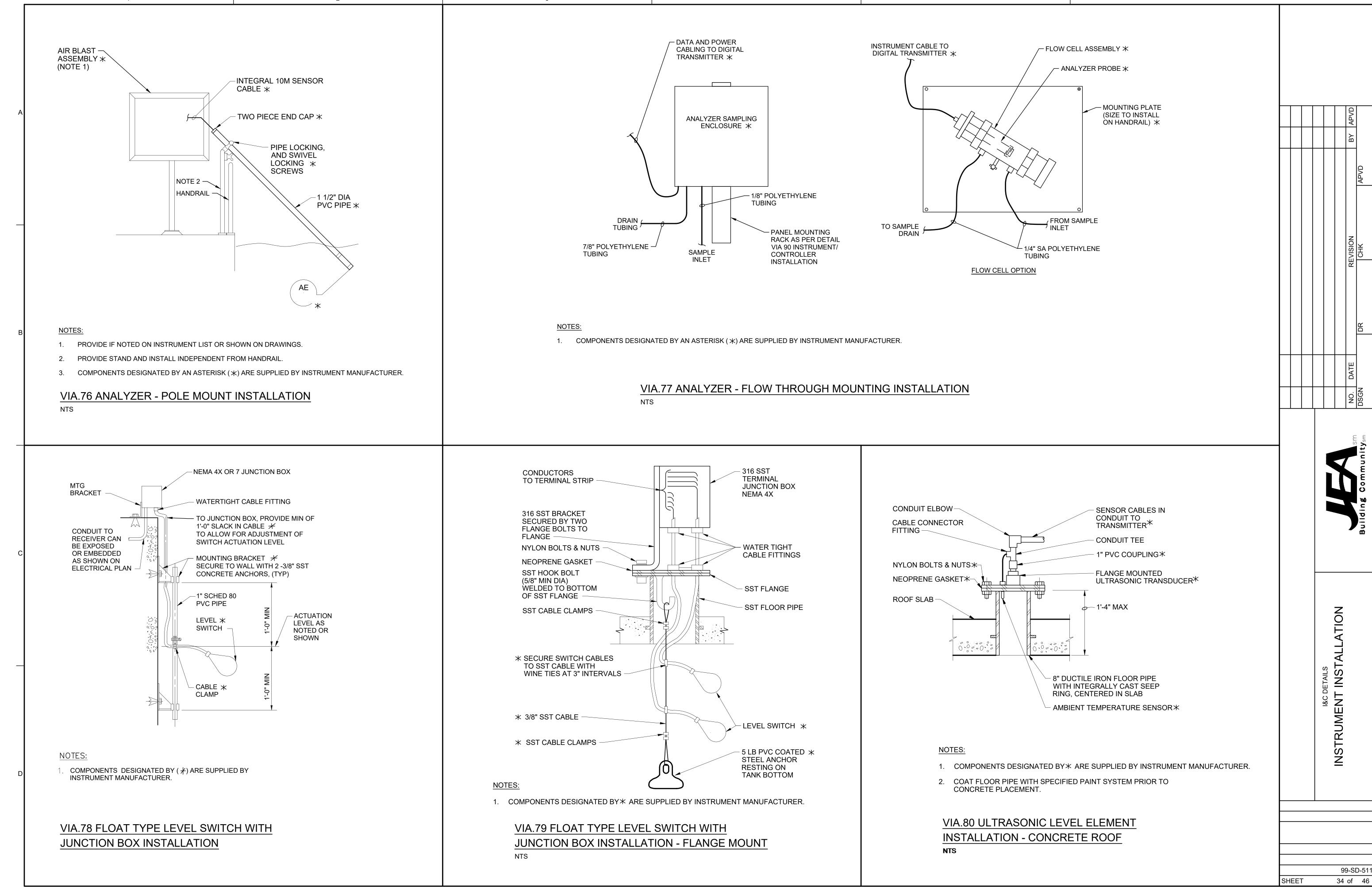
VIA.75 BULK CHEMICAL TRUCK UNLOADING STATION

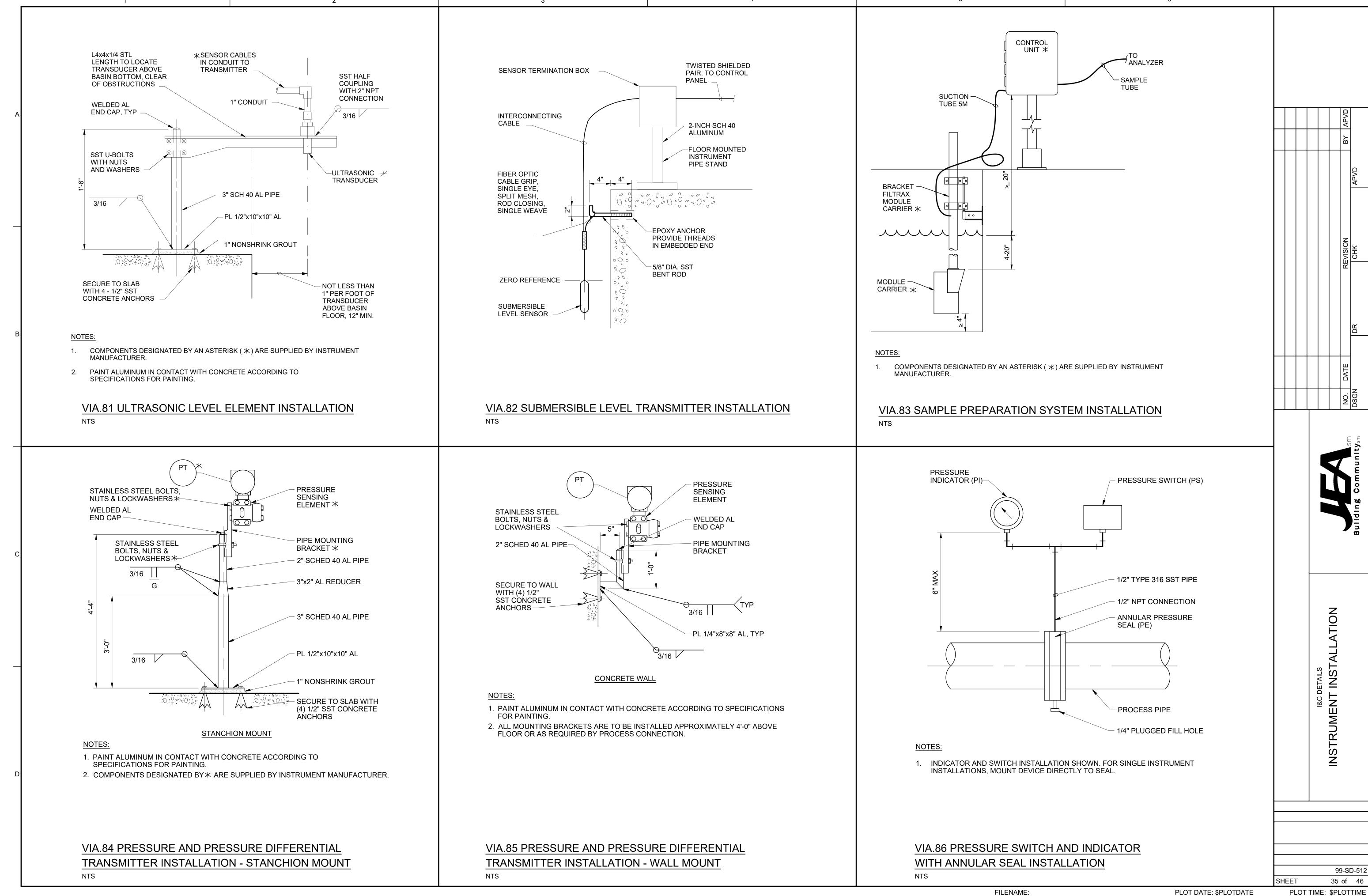
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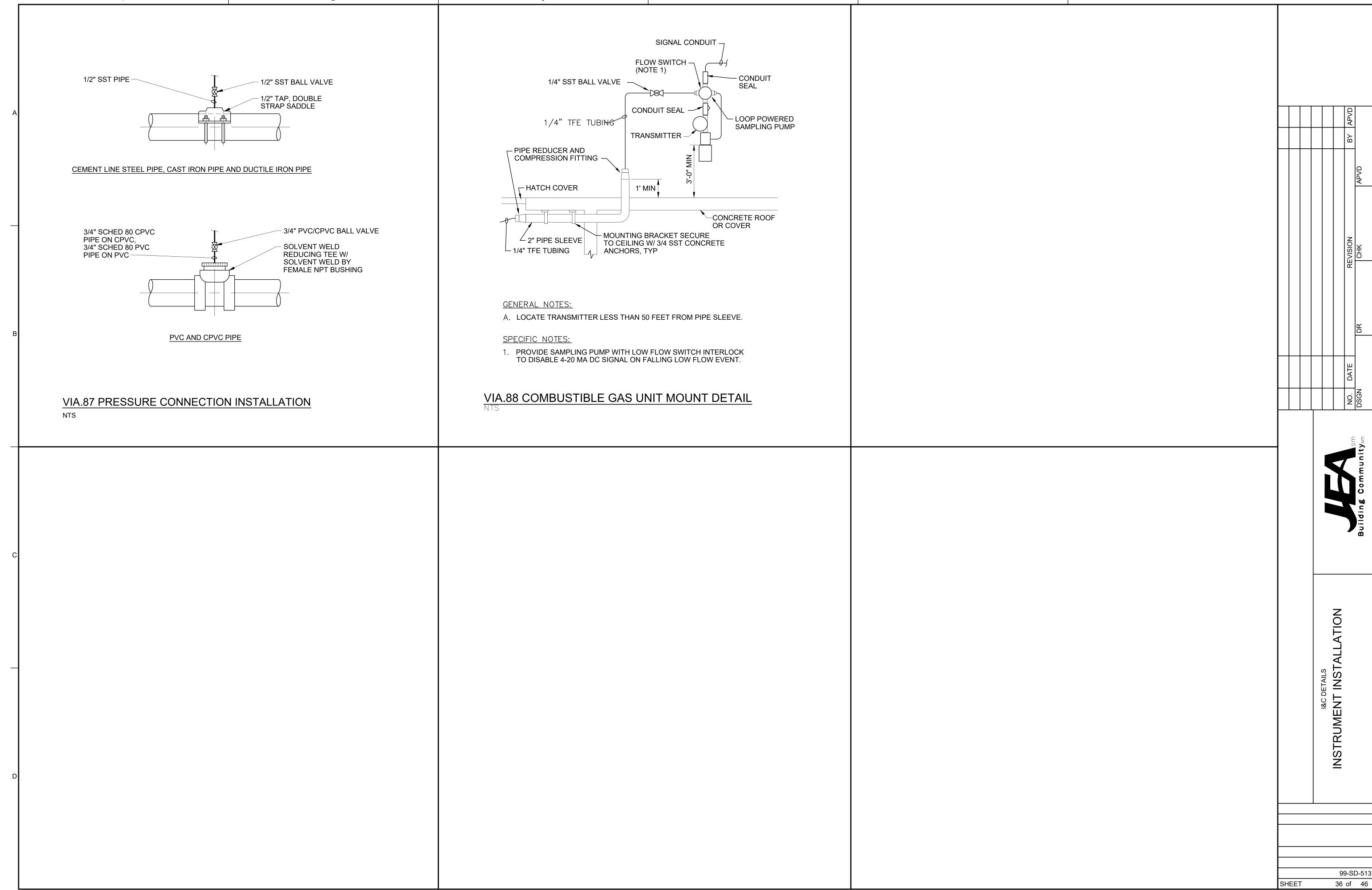
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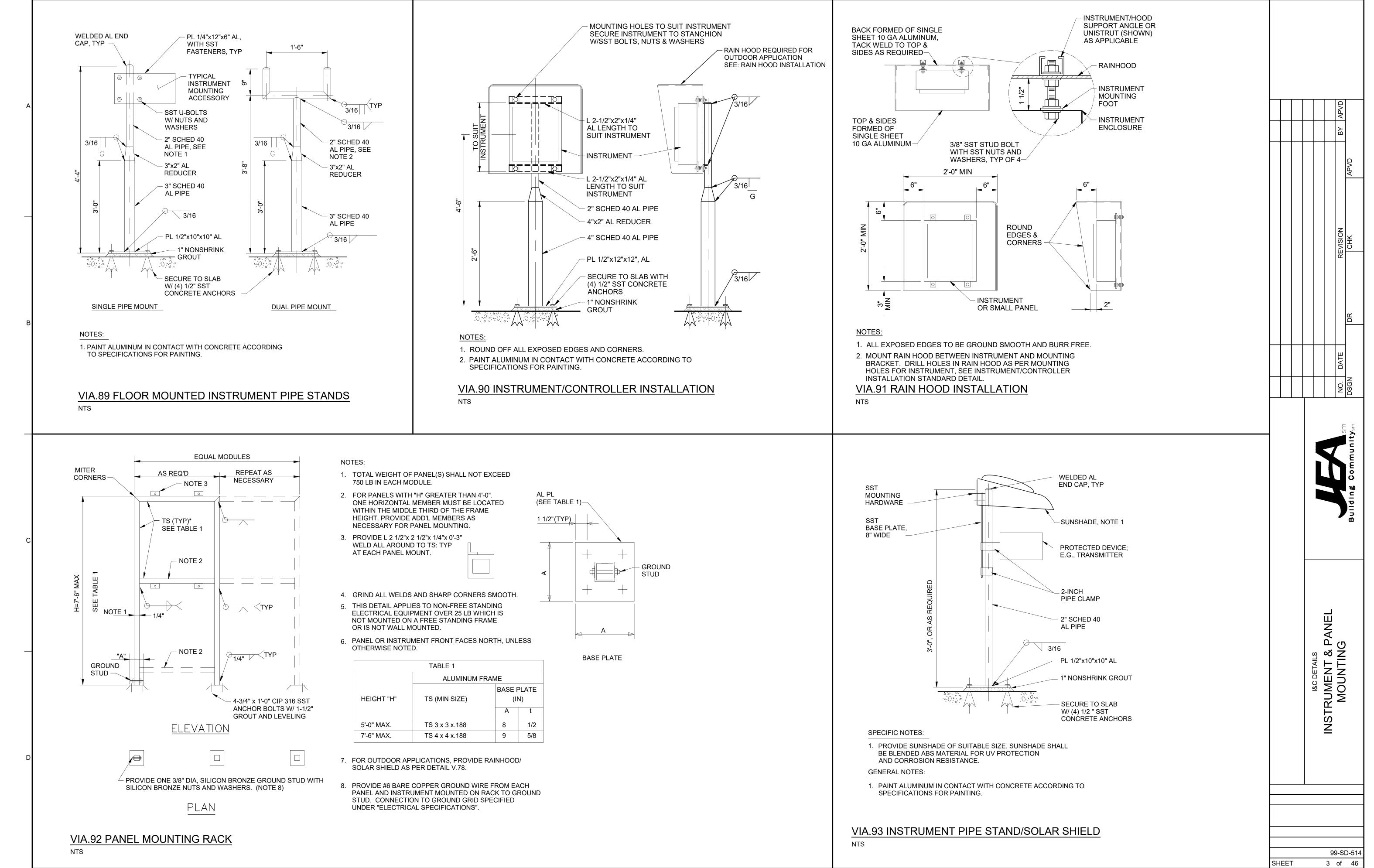
PROCESS MISCELL

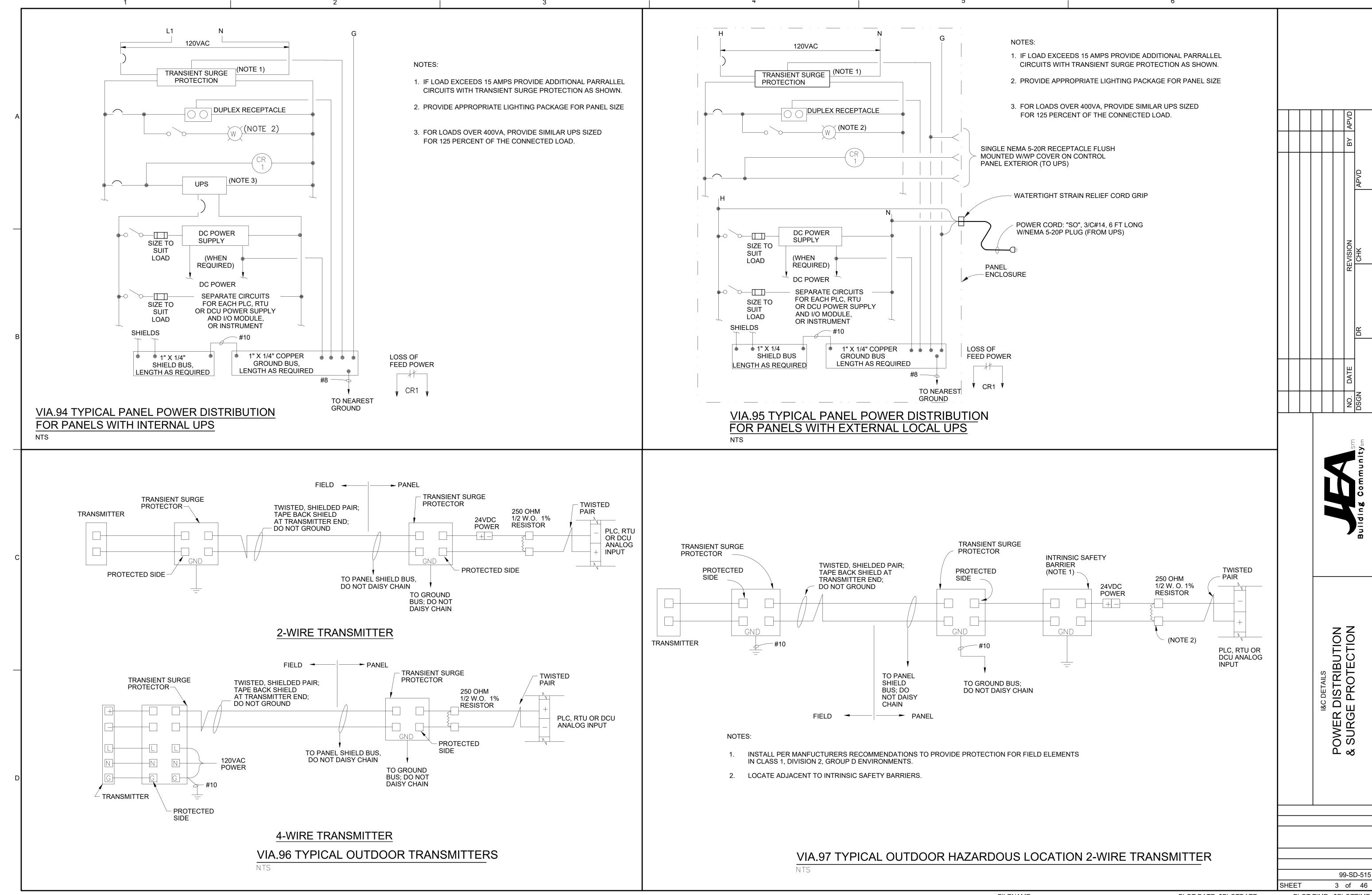
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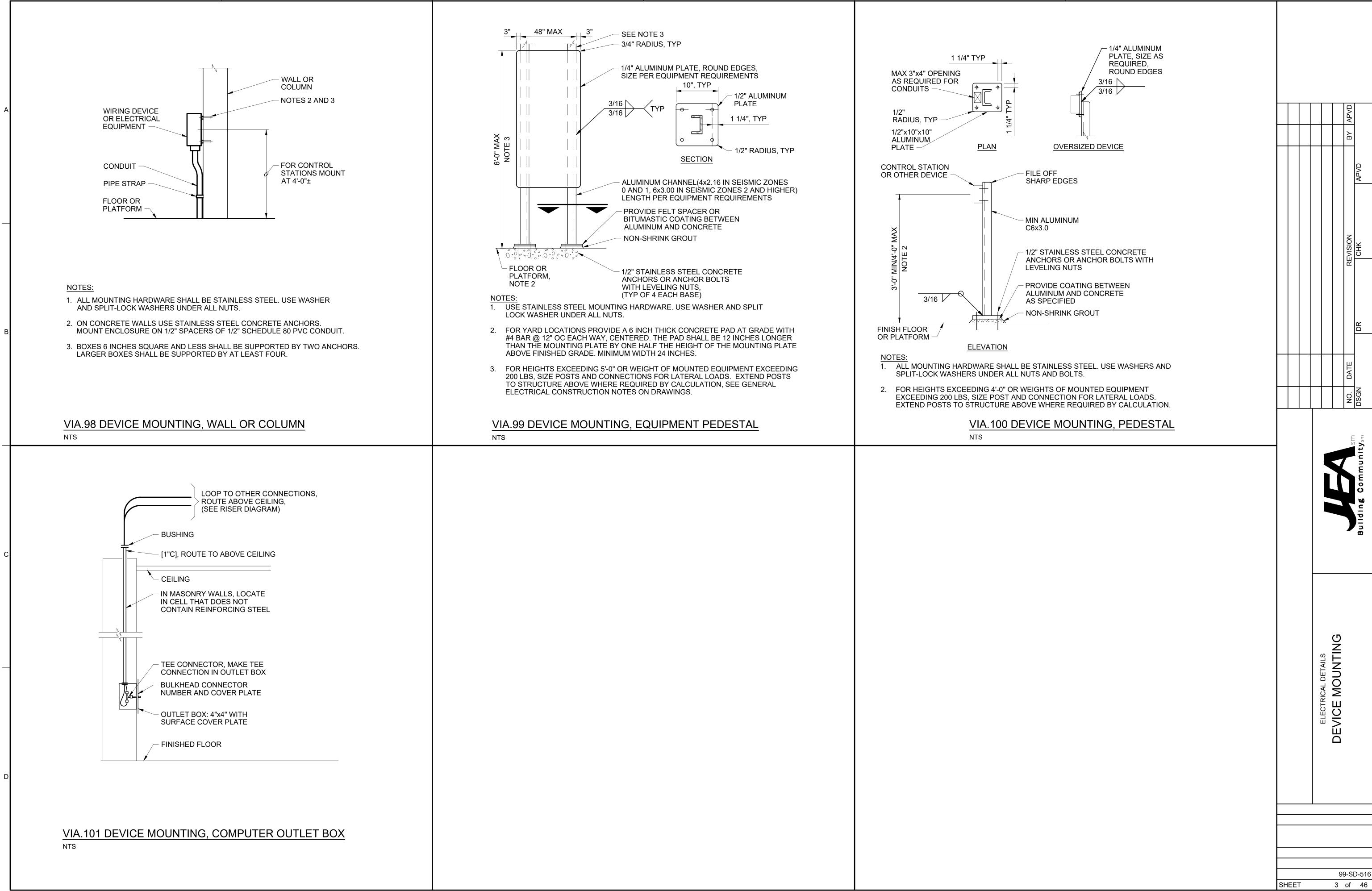


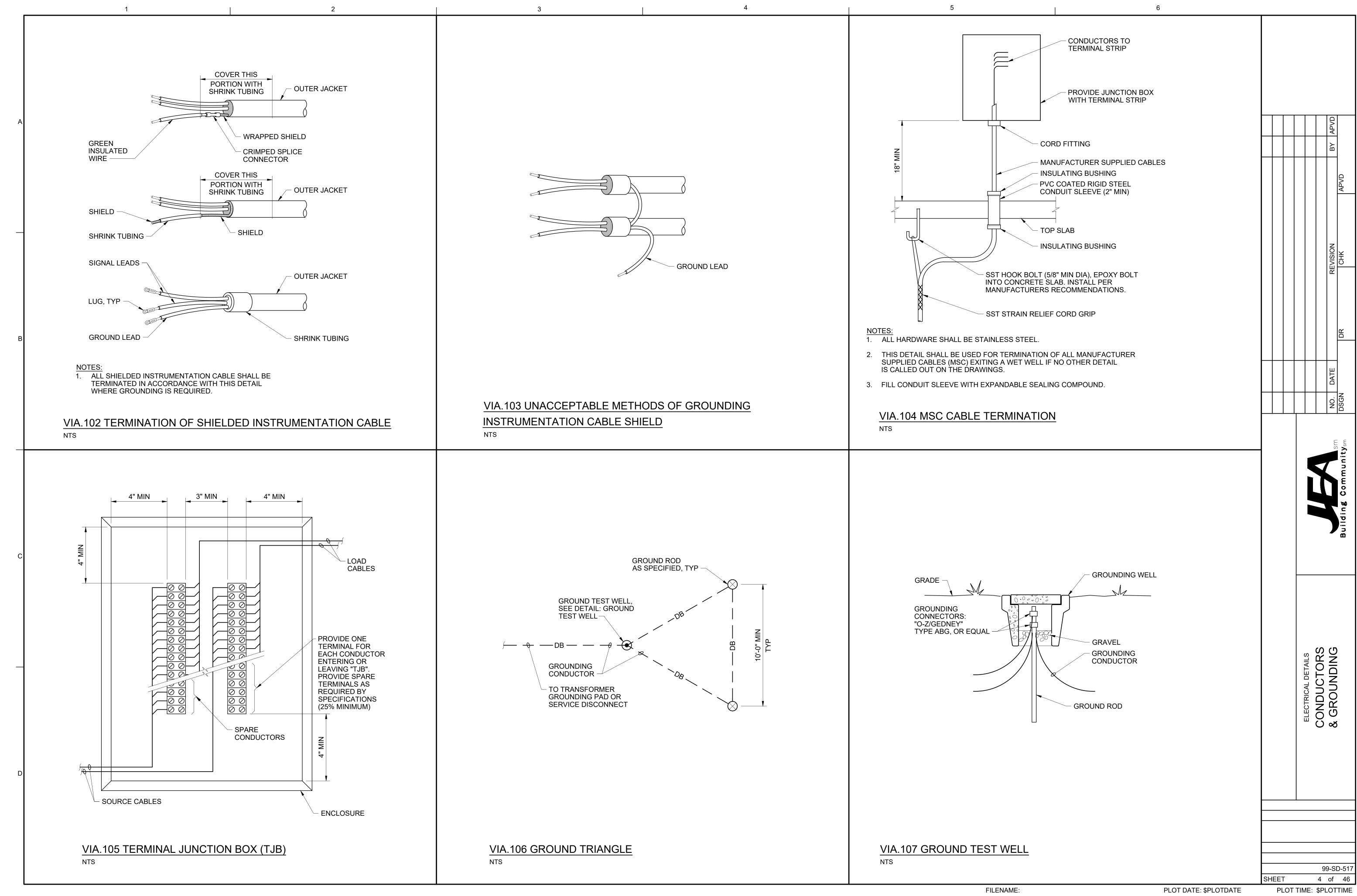


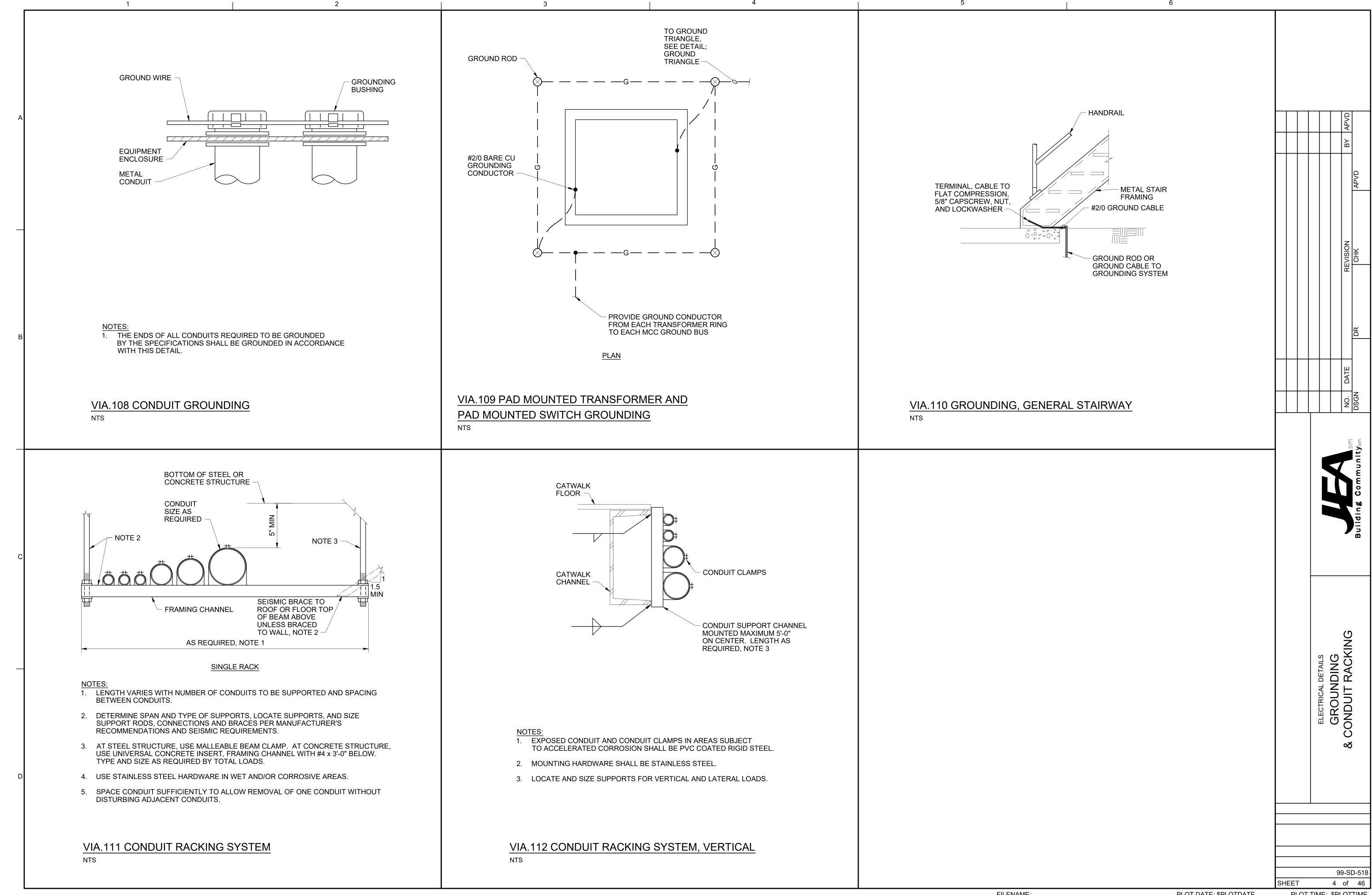


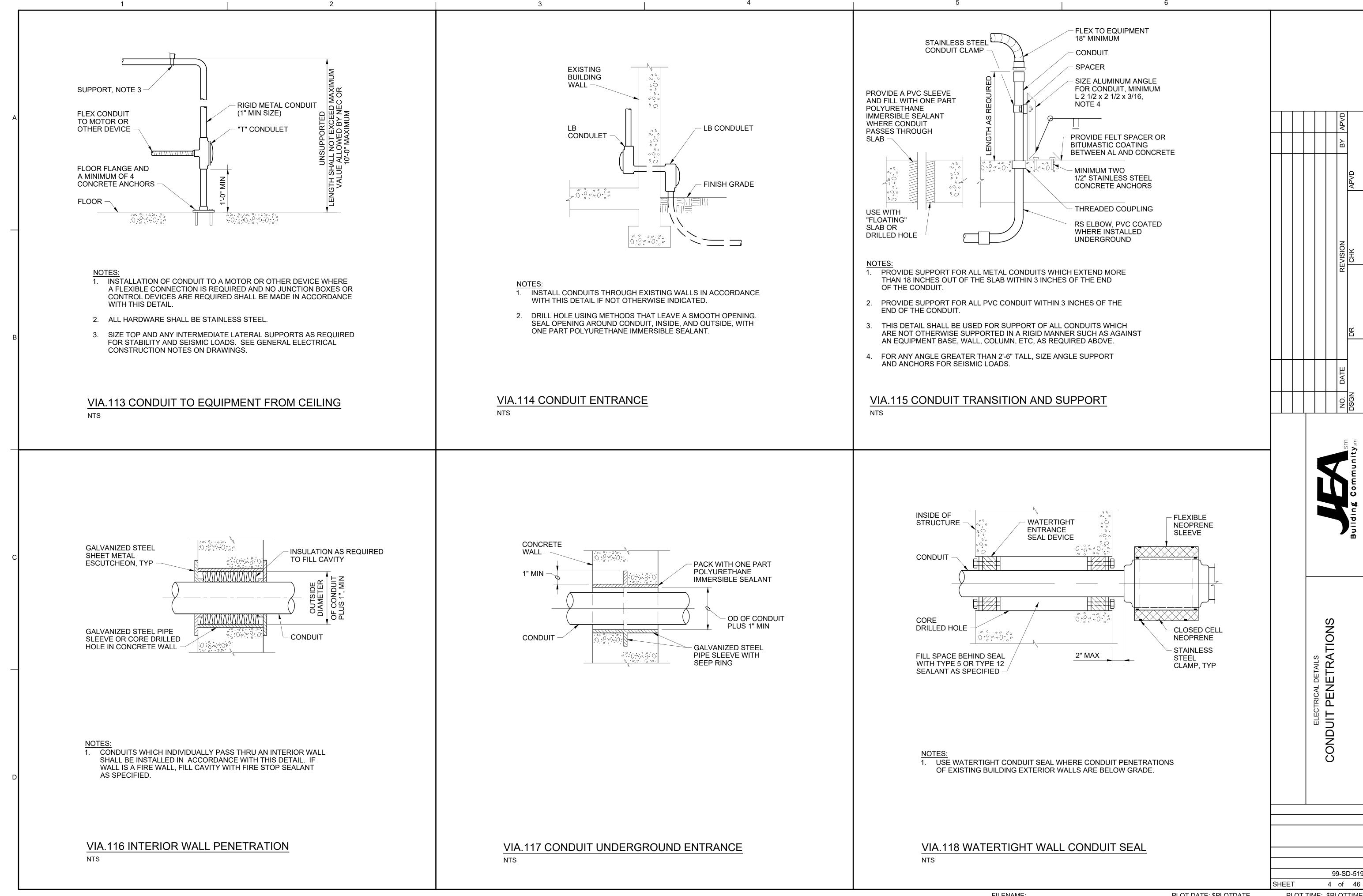


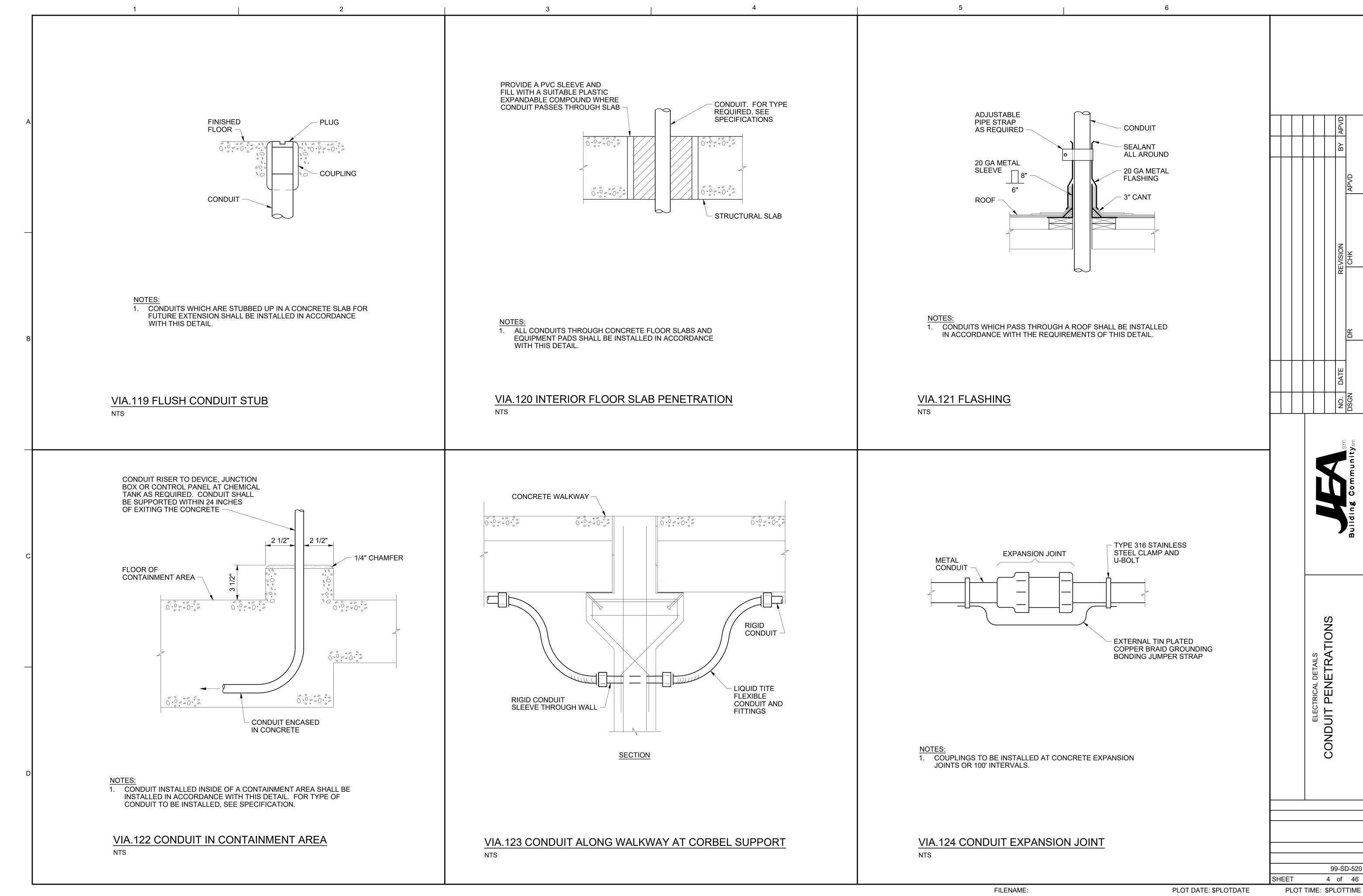


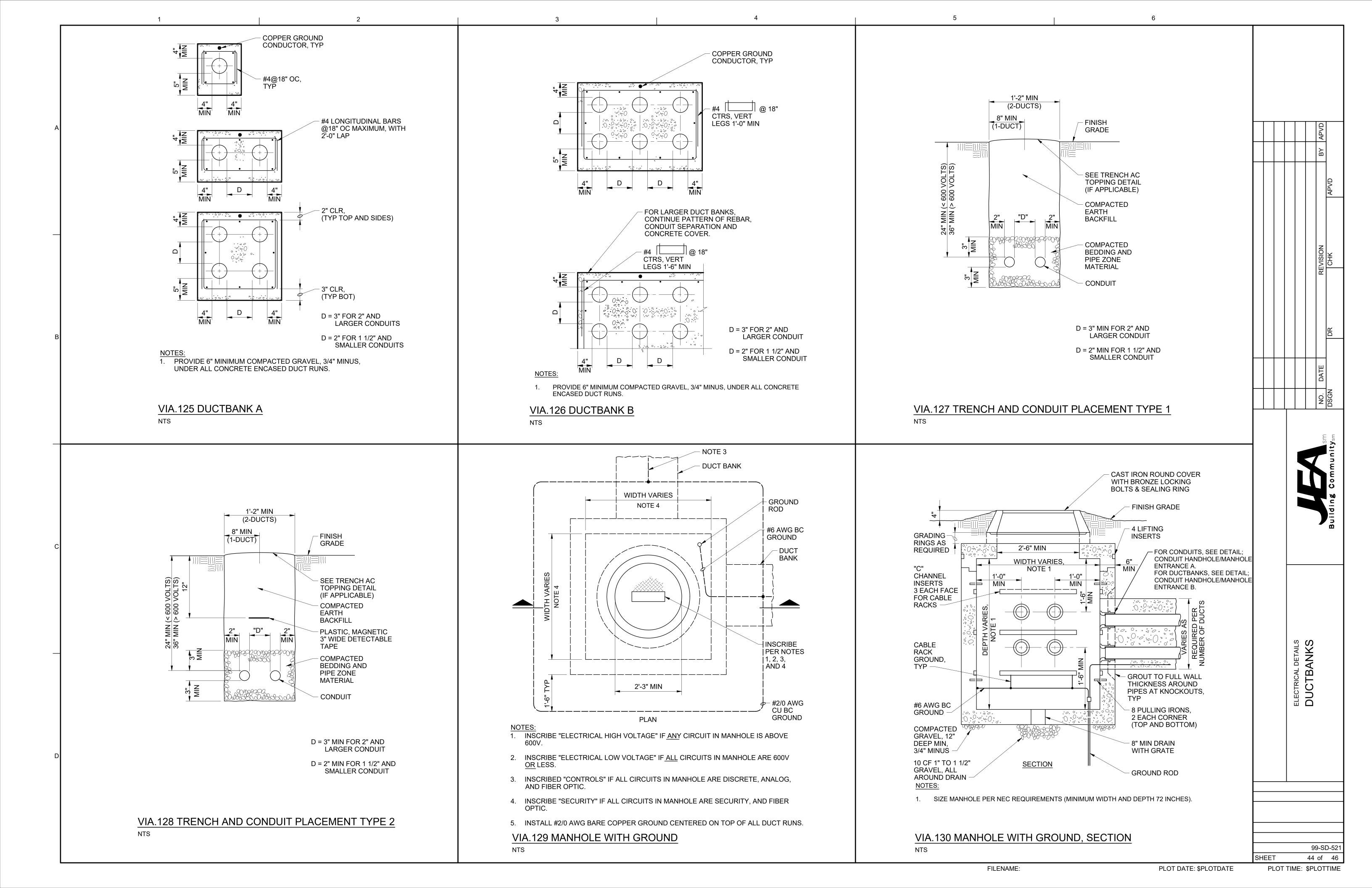












FILENAME: PLOT DATE: \$PLOT DATE: \$PLOT TIME: \$PLOTTIME

