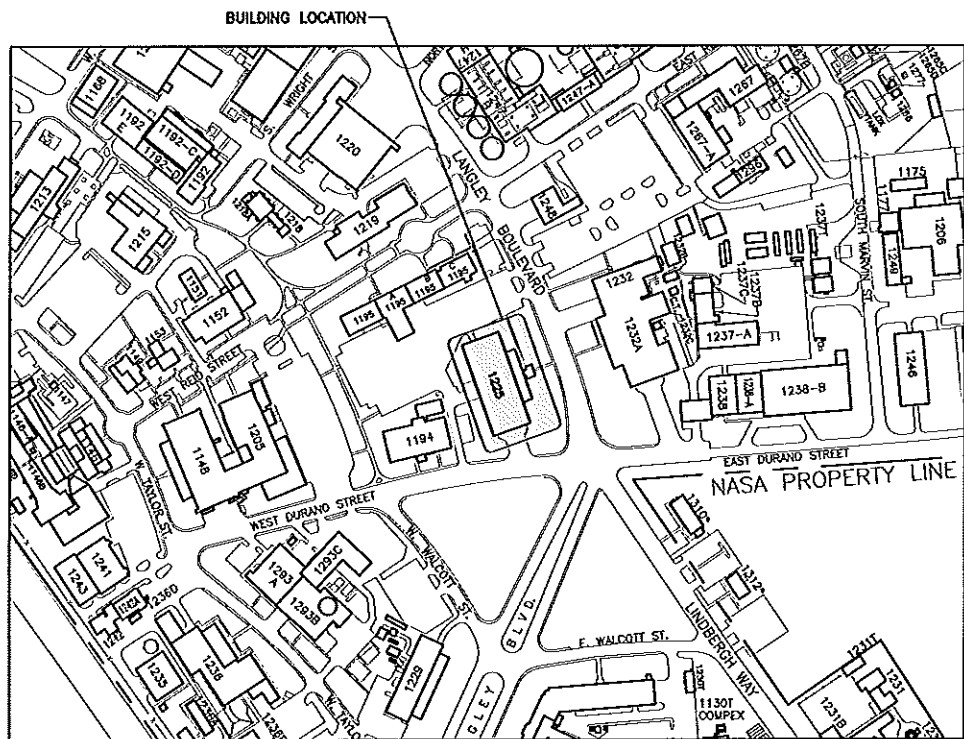


PROVIDE UTILITIES FOR NEW AGIE CHARMELLIS FI 640CCS EDM WIRE MACHINE

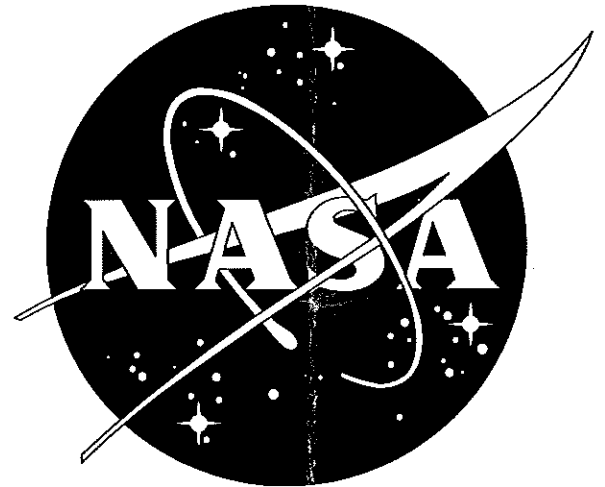
SVERDRUP REVIEW PRINT SIGN-OFF

	NAME	DATE
1. TECHNICAL CHECKER:	<i>R. Sydnor</i>	7-6-10
2. RESPONSIBLE INDIVIDUAL:	<i>Paul M. Barone</i>	7/6/10
3. PROJECT MANAGER (optional):		

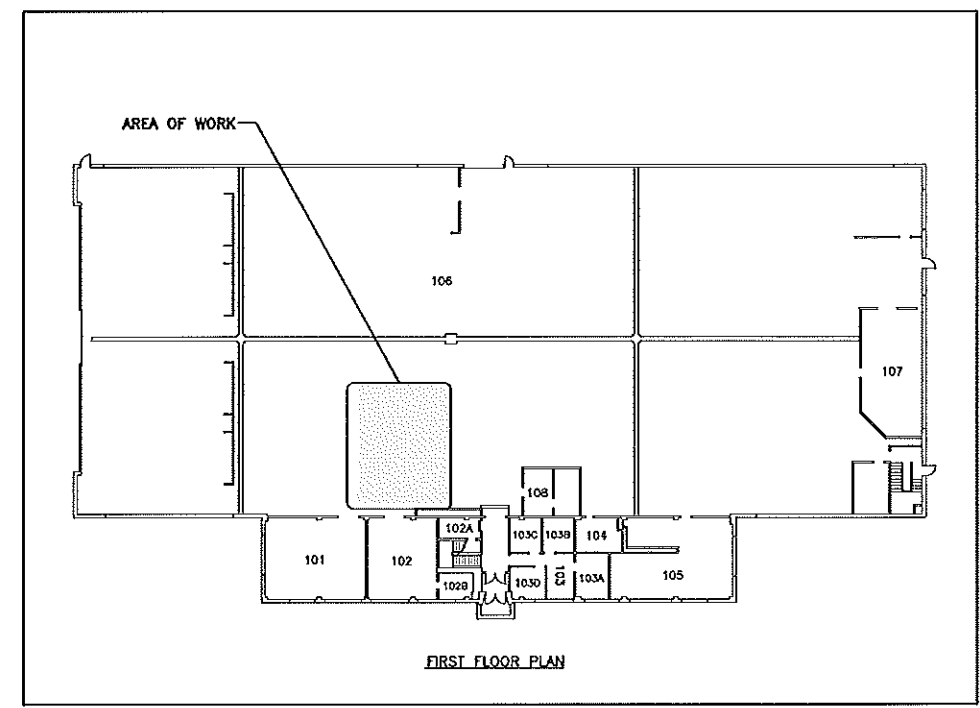
JFD 7/6/10



BLDG. 1225 LOCATION PLAN
NOT TO SCALE



LANGLEY RESEARCH CENTER



KEY PLAN
NOT TO SCALE

DRAWING INDEX		
DRAWING NUMBER	SHEET NO.	TITLE
GENERAL		
1271748	G-001	TITLE SHEET
STRUCTURAL		
1271749	S-101	STRUCTURAL NOTES & PARTIAL PLAN
1271750	S-102	SECTIONS & PHOTO
PROCESS SYSTEMS		
1271751	M-001	MECHANICAL LEGEND, SPECIFICATION, SCHEDULES AND GENERAL NOTES
1271752	M-101	MECHANICAL REMOVAL, NEW WORK AND DIAGRAMS
ELECTRICAL		
1271753	E-101	ELECTRICAL DEMOLITION, NEW WORK AND DIAGRAMS

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REVISIONS						REVISIONS							
DATE	LTR	FRG	DESCRIPTION	BY	CHECK	APPR	DATE	LTR	FRG	DESCRIPTION	BY	CHECK	APPR

JE JACOBS

ROME GROUP
Langley Research Center
Hampton, VA 23681

APPROVALS	
NAME	DATE
DRYAN P. BARONE	06/29/10
ENG/DES J. DOUGHERTY/P. BARONE	06/29/10
CHECK R. SYDNOR	06/29/10
PROJ. MGR J. BRANNICK	06/29/10

APPROVALS			
NAME	ORGANIZATION	DATE	DATE

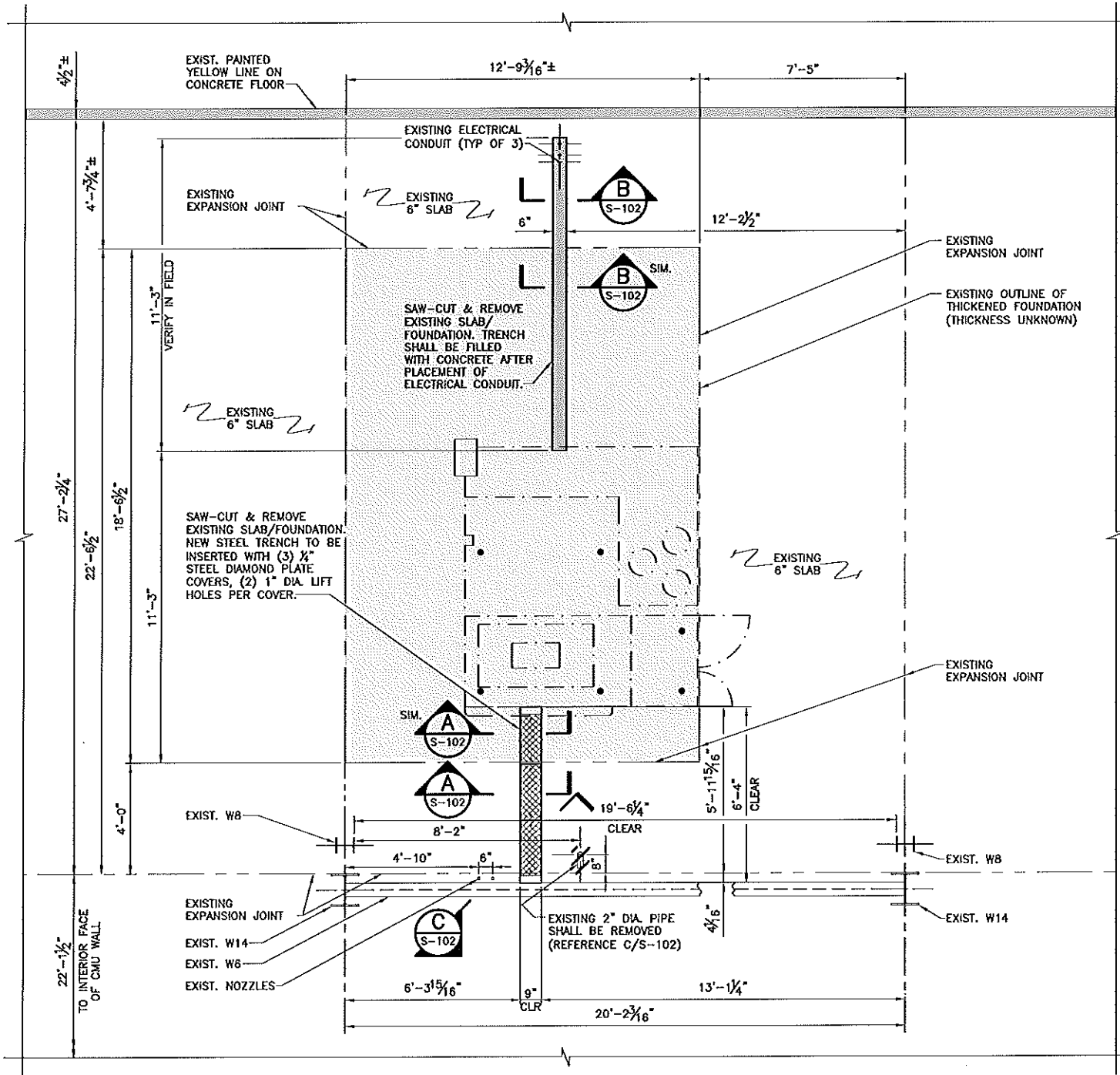
NATIONAL AERONAUTICS & SPACE ADMINISTRATION LANGLEY RESEARCH CENTER HAMPTON, VIRGINIA 23681-2199			
PROJECT TITLE: PROVIDE UTILITIES FOR NEW AGIE CHARMELLIS FI 640CCS EDM WIRE MACHINE			
DRAWING TITLE: TITLE SHEET			
BUILDING NO. 1225	SIZE D	DRAWING NO. 1271748	LATEST REV.
SHEET NO. G-001			

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1. TECHNICAL CHECKER: *R. Sydnor*
 2. RESPONSIBLE INDIVIDUAL: *Paul M. Barone*
 3. PROJECT MANAGER (optional):



PARTIAL PLAN - B1225
 SCALE: 3/8"=1'-0"



STRUCTURAL NOTES

1. GENERAL

- A. CONTRACTOR SHALL PROVIDE A METHOD TO ENCLOSE AND VENTILATE THE WORK AREA TO PREVENT DUST AND DEBRIS FROM COMING IN CONTACT WITH PERSONNEL AND ADJACENT MACHINERY.
- B. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING MACHINERY AND EQUIPMENT FROM DAMAGE, WHICH IS ADJACENT TO WORK AREA.
- C. VERIFY THE LOCATION OF NEW WORK WITH FACILITY COORDINATOR AND CONSTRUCTION MANAGER.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DIMENSIONS, ELEVATIONS, ETC. NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE STRUCTURE TO THE EXISTING STRUCTURE. THE CONTRACTOR SHALL MAKE ALL FIELD MEASUREMENTS NECESSARY FOR PROPER FABRICATION AND ERECTION OF STRUCTURAL MEMBERS. THE CONTRACTOR SHALL MAINTAIN A RED-LINED SET OF CONTRACT DRAWINGS THAT REFLECT CURRENT "AS-BUILT" CONDITIONS AND SUBMIT THE DRAWINGS TO THE CONTRACTING OFFICER AFTER COMPLETION OF CONSTRUCTION.

2. STEEL

- A. DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION.
- B. STRUCTURAL STEEL SHALL CONFORM TO ASTM SPECIFICATION A36.
- C. ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123. ABRASED SURFACES AND CUT ENDS OF GALVANIZED MEMBERS SHALL BE TOUCHED UP WITH ZINC-DUST, ZINC-OXIDE PRIMER, OR AN APPROVED GALVANIZING REPAIR COMPOUND.
- D. SPECIFIC QUALIFICATIONS FOR ALL STRUCTURAL STEEL WELDING STRUCTURAL COMPONENTS HAVING THICKNESSES OF 1/2" OR GREATER: THE CONTRACTOR SHALL CONDUCT BEND TESTS AND REDUCED-SECTION TENSION TESTS FOR THE QUALIFICATION DOCUMENTS (WPS-WELDING PROCEDURE SPECIFICATIONS, PQR-(CERTIFIED) PROCEDURE QUALIFICATION RECORDS AND WPO-(CERTIFIED) WELDER PERFORMANCE QUALIFICATIONS) IN ACCORDANCE WITH ANSI/AWS D1.1/D1.1M STRUCTURAL STEEL WELDING CODE. THESE TESTS SHALL SATISFY THE ACCEPTANCE CRITERIA OF THIS CODE FOR COMPLETE JOINT PENETRATION GROOVE WELDS. STRUCTURAL COMPONENTS HAVING THICKNESS OF LESS THAN 1/2": THE QUALIFICATION DOCUMENTS (WPS, PQR AND WPO) SHALL BE IN ACCORDANCE WITH THE ANSI/AWS D1.3, STRUCTURAL WELDING CODE, SHEET STEEL. THE APPLICABLE DESTRUCTIVE TESTS AND RECORDED RESULTS SHALL SATISFY THE CRITERIA OF THIS CODE. PRE-QUALIFIED WELD PROCEDURES ARE UNACCEPTABLE. THE CONTRACTOR SHALL FOLLOW THE ACCEPTABLE CONSTRUCTION PROCEDURES AS SPECIFIED IN THE APPLICABLE CODE. ALL WELDS SHALL BE VISUALLY INSPECTED (VI) IN ACCORDANCE WITH THE APPLICABLE CODE. INSPECTORS SHALL BE QUALIFIED IN ACCORDANCE WITH THE APPLICABLE CODE. A VISUAL INSPECTION REPORT (VI) SHALL BE SUBMITTED TO THE GOVERNMENT WITHIN 7 DAYS OF THE ACCEPTANCE OF ALL WELDS. THE WPS, PQR AND WPO SHALL BE SUBMITTED TO THE GOVERNMENT FOR APPROVAL PRIOR TO WELDING ON PROJECT MATERIALS.

3. CONCRETE

- A. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF A.C.I. 301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", EXCEPT AS MAY BE MODIFIED HEREIN.
- B. USING A RADAR SCANNING TECHNIQUE THE CONCRETE FLOOR SHALL BE SCANNED AT EACH TRENCH LOCATION PRIOR TO SAWCUTTING FOR TRENCH INSTALLATION. ROME CONSTRUCTION MANAGER SHALL BE NOTIFIED OF SCANNING RESULTS BEFORE TRENCH INSTALLATION.
- C. SAWCUTTING OF CONCRETE SHALL NOT BEGIN UNTIL COMPLETION OF SCANNING AND APPROVAL OF THE ROME CONSTRUCTION MANAGER.
- D. NEW CONCRETE FLOOR SURFACE SHALL BE PAINTED TO MATCH THE EXISTING ADJACENT FLOOR SURFACE. ADJACENT EXISTING FLOOR SURFACE SHALL BE TOUCH-UP PAINTED AT THE DISCRETION OF THE ROME CONSTRUCTION MANAGER. PAINT SYSTEM SHALL BE SUBMITTED FOR APPROVAL.
- E. CEMENT GROUT SHALL CONFORM TO ASTM SPECIFICATION C150 TYPE I. AGGREGATE FOR CEMENT GROUT SHALL BE CLEAN, SHARP, UNIFORMLY GRADED NATURAL ABRASIVE CONFORMING TO ASTM SPECIFICATION C404, SIZE NO. 2. MIXING WATER SHALL BE POTABLE. GROUT MIX SHALL BE COMPOSED OF 1 PART CEMENT GROUT, 2-1/2 PARTS AGGREGATE, AND NOT MORE THAN 4-1/2 GALLONS OF WATER PER 94 POUND BAG OF CEMENT.
- F. CONCRETE SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO ASTM SPECIFICATION C150 TYPE I, IA, II OR IIA. COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN 4000 PSI. SLUMP SHALL BE 3 TO 5 INCHES. CONTRACTOR SHALL SUBMIT CONCRETE TESTING RESULTS. TESTING FOR SLUMP AND COMPRESSIVE STRENGTH SHALL BE IN ACCORDANCE WITH ASTM C172, ASTM C143, ASTM C31 & ASTM C39.
- G. CONTRACTOR SHALL PROTECT THE FINISHED CONCRETE SURFACE TO ENSURE THAT THE SPECIFIED FINISH SURFACE IS NOT DAMAGED, SCARRED, OR SCRATCHED TO THE EXTENT THAT THE FINISH IS COMPROMISED OR IMPAIRED. ALL DAMAGE TO THE FINISHED SURFACE SHALL BE REMOVED AND REPLACED OR REPAIRED AT THE CONTRACTING OFFICER'S OPTION, AT NO ADDITIONAL COST TO THE GOVERNMENT.

4. MISCELLANEOUS

- A. INSTALLATION OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS. REFERENCE MECHANICAL AND ELECTRICAL DRAWINGS.
- B. INSTALLATION OF ELECTRICAL EQUIPMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NFPA 70. REFERENCE ELECTRICAL DRAWINGS.

5. PAINT

- A. PAINTING SYSTEM FOR CONCRETE SHALL CONSIST OF A PIGMENTED SEALER AND A WATER-BASE ACRYLIC ENAMEL UNDERCOAT AND FINISH COAT. COLOR AND SHEEN OF FINISH COAT SHALL CLOSELY MATCH EXISTING NEARBY PAINTED SURFACES. SURFACES TO BE PAINTED SHALL BE CLEAN, DRY, AND FREE FROM DIRT, OIL, GREASE, WAX, AND OTHER CONTAMINANTS AND FOREIGN MATTER. ALL COATINGS, THINNERS, AND CLEANERS SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. EACH SUCCESSIVE COATING SHALL BE OF A CONTRASTING COLOR TO PROVIDE A VISUAL ASSURANCE OF COMPLETE COVERAGE. COLOR AND SHEEN OF FINISH COAT SHALL CLOSELY MATCH EXISTING NEARBY PAINTED SURFACES. SEALER AND PAINT USED SHALL BE WITHIN THE SHELF LIFE OF THE PRODUCT. STORAGE, MIXING, APPLICATION AND CLEANUP SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PRIMER AND PAINTING SYSTEM SHALL COMPLY WITH AISC, SECTION 09900.
- B. PAINTING SYSTEM FOR INTERIOR STEEL ITEMS SHALL CONSIST OF AN INHIBITIVE METAL PRIMER AND A WATER-BASE ACRYLIC ENAMEL UNDERCOAT AND FINISH COAT. SURFACES TO BE PAINTED SHALL BE CLEAN, DRY, AND FREE FROM DIRT, OIL, GREASE, WAX, AND OTHER CONTAMINANTS AND FOREIGN MATTER (SSPC-SP 3; POWER TOOL CLEANING). ALL COATINGS, THINNERS, AND CLEANERS SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. EACH SUCCESSIVE COATING SHALL BE OF A CONTRASTING COLOR TO PROVIDE A VISUAL ASSURANCE OF COMPLETE COVERAGE. COLOR AND SHEEN OF FINISH COAT SHALL CLOSELY MATCH EXISTING NEARBY PAINTED SURFACES. PRIMER AND PAINT USED SHALL BE WITHIN THE SHELF LIFE OF THE PRODUCT. STORAGE, MIXING, APPLICATION AND CLEANUP SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

REVISIONS				REVISIONS			
DATE	LTR	FREQ	DESCRIPTION	DATE	LTR	FREQ	DESCRIPTION

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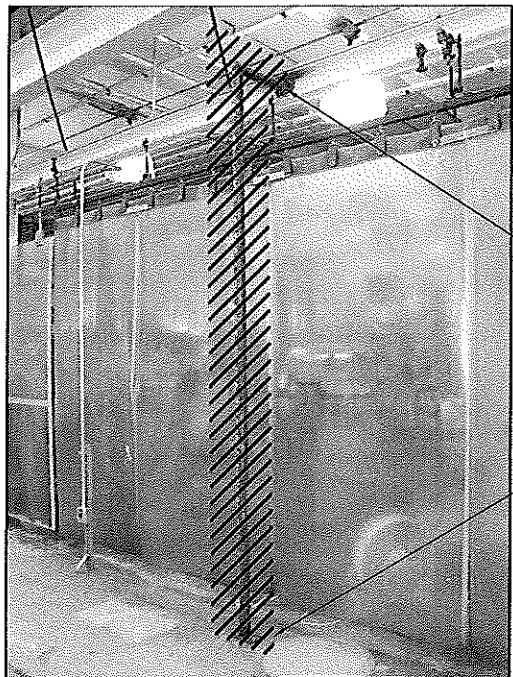
WORK ORDER NO.	AE02737
APPROVALS	DATE
ORGAN	P. BARONE 06/29/10
ENR/DES	J. DOUGHERTY/P. BARONE 06/29/10
CHECK	R. SYDNOR 06/29/10
PROJ. MGR.	J. BRANNICK 06/29/10
SUPVSR	

APPROVALS			
NAME	ORGANIZATION	DATE	DATE

FOR DRAWING INDEX SEE DRAWING 1271748			
NATIONAL AERONAUTICS & SPACE ADMINISTRATION LANGLEY RESEARCH CENTER HAMPTON, VIRGINIA 23681-2199			
PROJECT TITLE: PROVIDE UTILITIES FOR NEW AGE CHARMELLS FI 6400CS EDM WIRE MACHINE			
DRAWING TITLE: STRUCTURAL NOTES & PARTIAL PLAN			
BUILDING NO.	1225	SIZE	D
DRAWING NO.	1271749	LATEST REV.	
SHEET NO.	S-101		

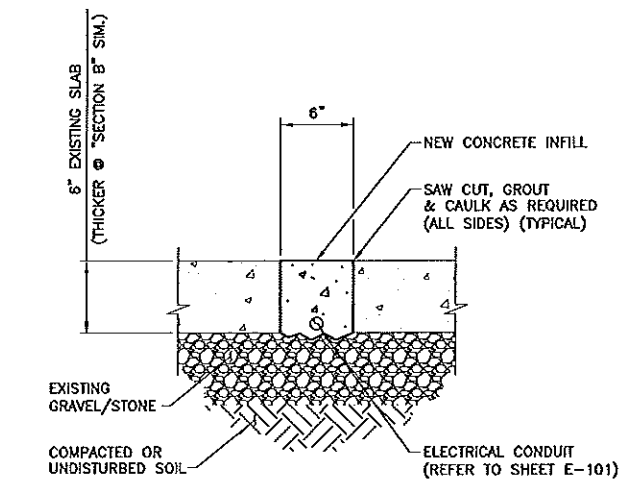
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1. TECHNICAL CHECKER: <i>R. Sydnor</i>	7-6-10
2. RESPONSIBLE INDIVIDUAL: <i>Paul M. Deane</i>	7/6/10
3. PROJECT MANAGER (optional):	

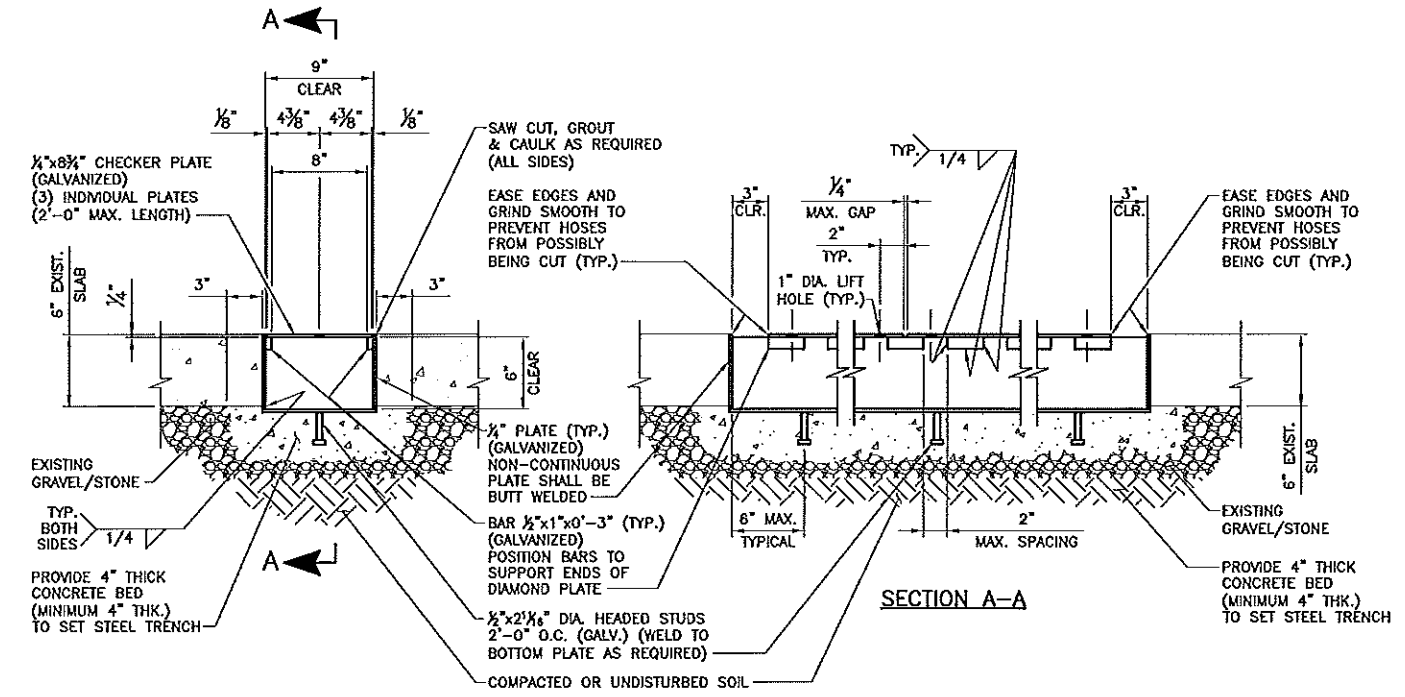


EXISTING 2" DIA. PIPE (2.375" O.D.) SHALL BE REMOVED FROM EXISTING BEAM, EXISTING STRUCTURAL STEEL BEAM SHALL BE TOUCHED UP WITH NEW PAINT, MATCHING THE COLOR OF EXISTING PAINT.

EXISTING EXPANSION BOLTS SHALL BE CUT FLUSH WITH EXISTING SLAB. CUT ENDS SHALL BE COATED WITH ZINC-DUST, ZINC-OXIDE PRIMER, OR AN APPROVED GALVANIZING REPAIR COMPOUND. GROUT AS REQUIRED.



SECTION B - NEW CONCRETE INFILL
SCALE: 1 1/2"=1'-0"



SECTION A-A - NEW STEEL TRENCH
SCALE: 1 1/2"=1'-0"

PHOTO - REMOVAL
SCALE: N/A

REVISIONS				REVISIONS			
DATE	LTR	FREQ	DESCRIPTION	DATE	LTR	FREQ	DESCRIPTION

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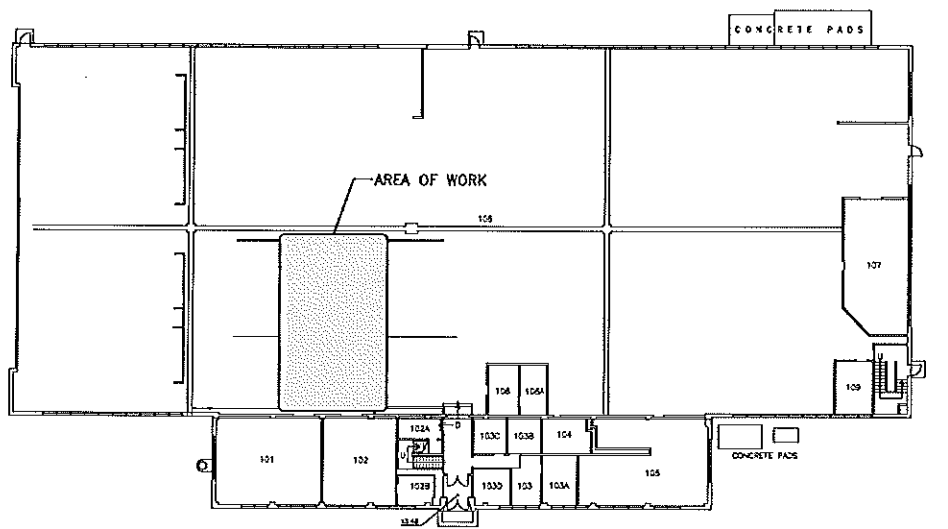
ROME GROUP
Langley Research Center
Hampton, VA 23681

WORK ORDER NO.	AE02737
APPROVALS	DATE
DRWN P. BARONE	06/29/10
ENG/DES J. DOUGHERTY/P. BARONE	06/29/10
CHECK R. SYDNOR	06/29/10
PROJ MGR J. BRANNICK	06/29/10
SUPVN	

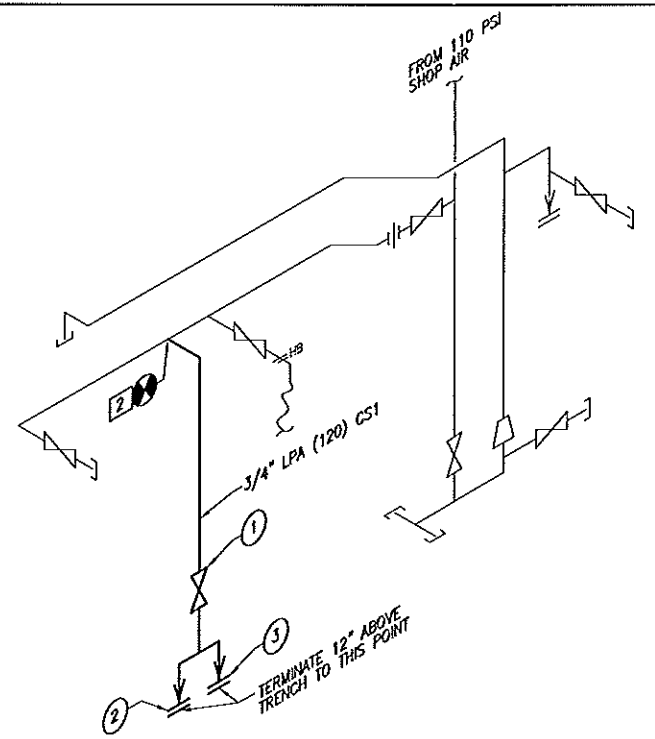
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NAME	ORGANIZATION	DATE	DATE

FOR DRAWING INDEX SEE DRAWING 1271748			
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PROJECT TITLE PROMDE UTILITIES FOR NEW AGIE CHARMELLIS FI 6400CS EDM WIRE MACHINE			
DRAWING TITLE SECTIONS & PHOTO			
BUILDING NO.	1225	SIZE	D
SHEET NO.	S-102	DRAWING NO.	1271750
TOLERANCE ON DIMENSIONS UNLESS SHOWN OTHERWISE		SURFACE FINISH IN MICROINCHES R.M.S. UNLESS SHOWN OTHERWISE	

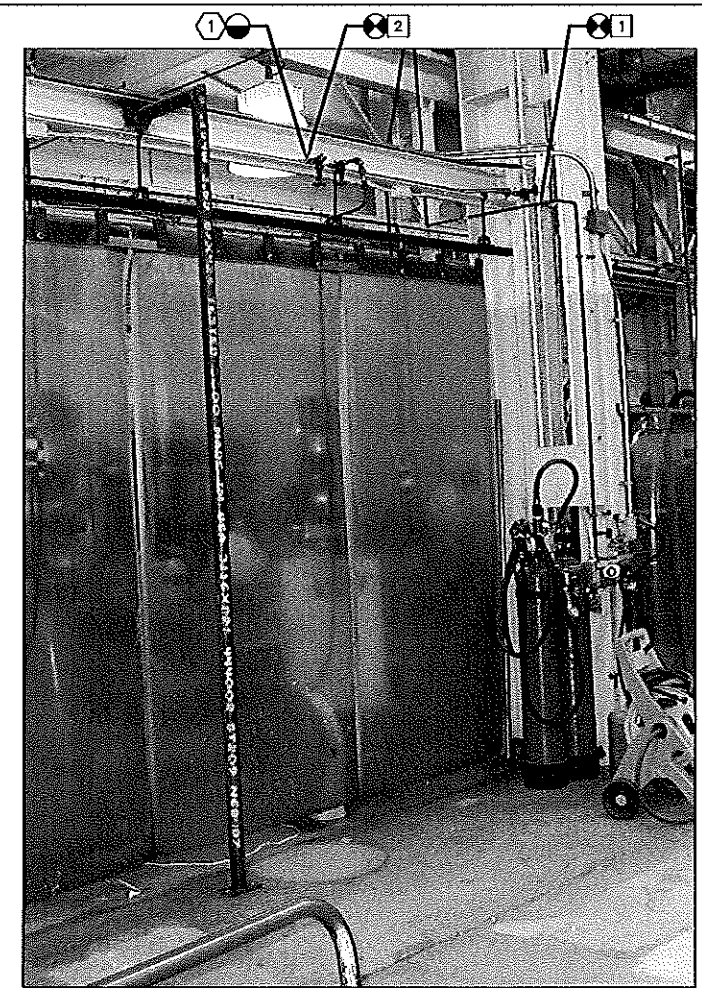
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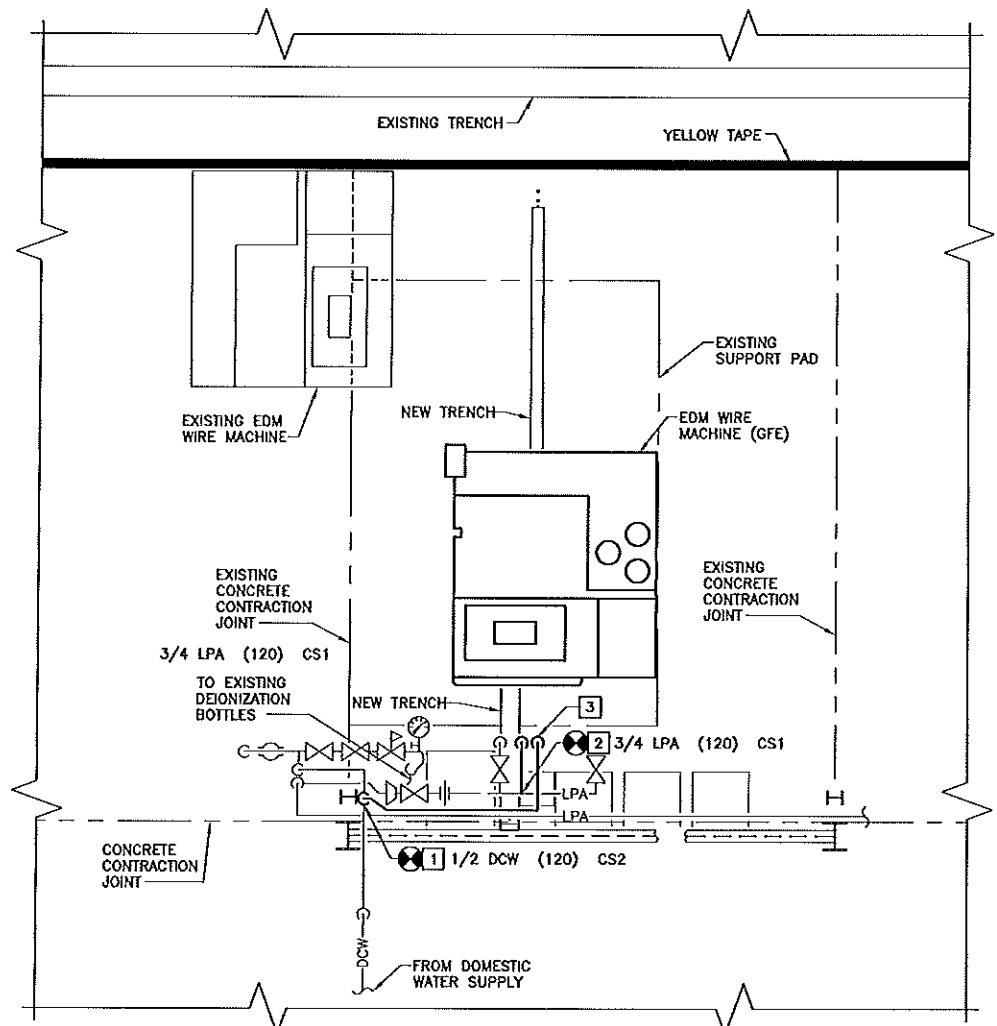
AREA OF WORK
NOT TO SCALE



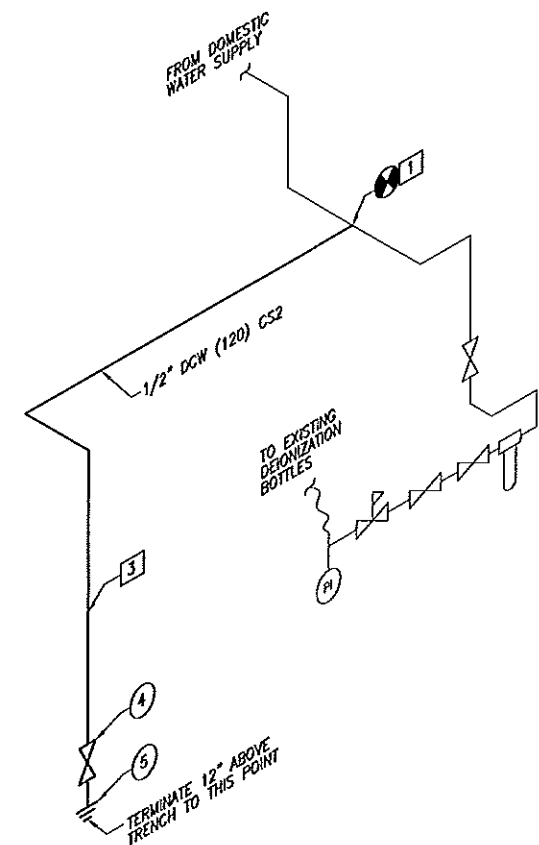
LPA CONNECTION DIAGRAM
NOT TO SCALE



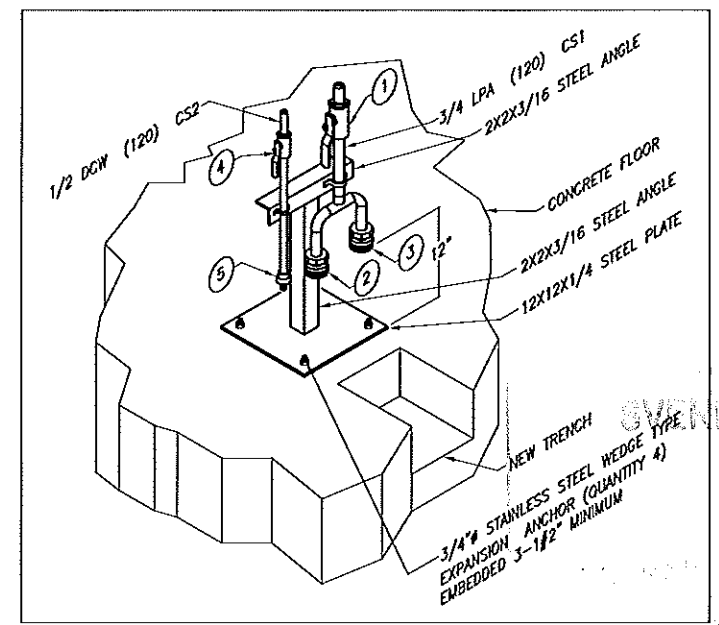
MECHANICAL TIE-IN POINTS
NOT TO SCALE



MECHANICAL NEW WORK PLAN - FIRST FLOOR
SCALE: 1/4" = 1'-0"



DOMESTIC WATER CONNECTION DIAGRAM
NOT TO SCALE



PIPE MOUNTING DETAIL
NOT TO SCALE

MECHANICAL REMOVAL NOTES

- 1 REMOVE VALVE AND PIPE BACK TO MAIN PIPE. PREPARE THREADED FOR RECONNECTION.

MECHANICAL NEW WORK NOTES

- 1 PROVIDE NEW DOMESTIC WATER SUPPLY.
- 2 PROVIDE NEW 3/4" LPA. CONNECT TO EXISTING TEE FITTING. RUN PIPE DOWN TO 12" ABOVE NEW TRENCH. COORDINATE WITH STRUCTURAL TRADE. PROVIDE NEW BALL VALVE, TEE FITTING AND TWO QUICK CONNECTS. REFER TO LPA CONNECTION DIAGRAM. SUPPORT PIPE IN ACCORDANCE WITH MSS SP-58 AND MSS SP-69. REFER TO PIPE MOUNTING DETAIL THIS SHEET.
- 3 TURN DCW PIPE DOWN TO 12" ABOVE TRENCH. PROVIDE BALL VALVE AND BARBED END CONNECTION FOR SOFT TUBING. REFER TO DOMESTIC WATER CONNECTION DIAGRAM THIS SHEET. SUPPORT PIPE IN ACCORDANCE WITH MSS SP-58 AND MSS SP-69. REFER TO PIPE MOUNTING DETAIL THIS SHEET.

NOTE: SEE PHOTO THIS SHEET

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NAME: *J. Menke* DATE: *6/22/10*

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Langley Research Center
Hampton, VA 23681

WORK ORDER NO.	AE02737	APPROVALS			
APPROVALS	DATE	NAME	ORGANIZATION	DATE	DATE
DRWN	R. MARTIN	06/21/10	<i>J. Menke</i>	ENG.	7/6/10
ENG/DES	J. MENKE	06/21/10	<i>Jeff Brannick</i>	ENG.	6-JUL-10
CHECK	R. CRAIG	06/21/10			
PRD. WDR	J. BRANNICK	06/21/10			
SUPVN					

FOR DRAWING INDEX SEE DRAWING 1271748			
NATIONAL AERONAUTICS & SPACE ADMINISTRATION LANGLEY RESEARCH CENTER HAMPTON, VIRGINIA 23681-2199			
PROJECT TITLE PROMDE UTILITIES FOR NEW AGE CHARMELLIS FI 6400CS EDM WIRE MACHINE			
DRAWING TITLE MECHANICAL REMOVAL, NEW WORK AND DIAGRAMS			
BUILDING NO.	1225	SIZE	D
DRAWING NO.	1271752	LATEST REV.	
SHEET NO.	M-101		

MECHANICAL SPECIFICATIONS

BALL VALVES
BALL VALVES SHALL CONFORM TO MSS SP-72 OR MSS SP-110 AND SHALL BE BRONZE FULL PORT DESIGN WITH THREADED ENDS, BLOWOUT PROOF STEM, 316 STAINLESS STEEL BALL AND STEM, ADJUSTABLE PACKING, RATED FOR 125 WSP.

PAINTING SPECIFICATIONS
ALL NEW STEEL PIPING SHALL BE PAINTED TO MATCH EXISTING ADJACENT PIPE COLOR. COATINGS SHALL BE ALKYD RESIN-BASED MATERIALS. APPLY A MINIMUM TWO COATS OF COATING WITH A DRY-FILM THICKNESS OF A MINIMUM 4 MILS. FIRST COAT MUST BE AN EPOXY ZINC PRIMER CONFORMING TO MPI, No. 20 WITH THE RESIN SOLIDS AND ZINC PIGMENT NOT LESS THAN 80% OF THE TOTAL WEIGHT OF THE MATERIAL. WHITE AND COLOR PIGMENTED FINISH COATS MUST BE AN ALKYD RESIN-BASED MATERIAL WITH THE RESIN SOLIDS AND PIGMENTS NOT LESS THAN 85% OF THE TOTAL WEIGHT OF THE MATERIAL. APPLY COATINGS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PRIME AND PAINT IN ACCORDANCE WITH LPR 1740.2. THE CONTRACTOR SHALL PROVIDE TOUCH-UP PAINT ON EXISTING PIPING WITHIN 12" OF WORK AREA AS NECESSARY AFTER INSTALLATION AND INSPECTION FOR LEAKS IS COMPLETE.

TESTING (LEAKAGE TEST)
1. PRIOR TO ACCEPTANCE OF THE WORK, SYSTEMS SHALL BE TESTED IN THE PRESENCE OF THE CONTRACTING OFFICER OR CONSTRUCTION MANAGER.
2. ALL NEW CONNECTION POINTS SHALL BE VISUALLY INSPECTED FOR LEAKS (USING SOAP/BUBBLE METHOD) DURING A FULL OPERATIONAL TEST, AND REPAIRED IF NECESSARY AT NO COST TO THE GOVERNMENT.

MECHANICAL GENERAL NOTES

- THE CONTRACTOR SHALL COORDINATE ALL WORK WITH APPLICABLE TRADES TO PROVIDE A FINISHED PRODUCT THAT COMPLIES WITH CONTRACT REQUIREMENTS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND DISPOSE OF ALL EQUIPMENT IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS. CONTRACTOR SHALL ALSO ADHERE TO NASA LMS-CP-2722 PROPERTY DISPOSAL (REFER TO CONTRACT SPECIFICATION SECTION 01 11 00.00 40, PARAGRAPH 1.8).
- DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO BE SCALED TO PROVIDE EXACT LOCATION OF EQUIPMENT, LAYOUT OR ROUTING OF PIPE. DRAWINGS MAY NOT SHOW ALL OFFSETS AND BENDS REQUIRED TO AVOID BUILDING STRUCTURE OR EXISTING COMPONENTS. CONTRACTOR SHALL FIELD VERIFY ALL SITE CONDITIONS, DIMENSIONS, EQUIPMENT LAYOUT, CLEARANCES AND PIPING PRIOR TO PURCHASING MATERIALS OR BEGINNING INSTALLATION OF NEW WORK. ALL DEVIATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER.
- EQUIPMENT SELECTIONS INDICATED FROM A SPECIFIC MANUFACTURER IS BASIS FOR DESIGN AND FOR REFERENCE ONLY. EQUIPMENT OF EQUAL QUALITY AND PERFORMANCE FROM OTHER MANUFACTURERS MAY BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL BY THE ENGINEER. CONTRACTOR SHALL SUBMIT REVISED DESIGN INCLUDING LAYOUT, STRUCTURAL SUPPORT AND ANY OTHER DESIGN CHANGES FOR EQUIPMENT OTHER THAN INDICATED. ALL EQUIPMENT INSTALLATION SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. THE REDESIGN COST SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING EXISTING EQUIPMENT AND FINISHES PRIOR TO COMMENCING WORK, AND RECORDING AND REPORTING ANY DAMAGE TO THE CONTRACTING OFFICER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE INCURRED DURING THE WORK EFFORT. SUCH DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR, TO THE CONTRACTING OFFICER'S SATISFACTION.
- PIPE ENDS THAT ARE EXPOSED BY DEMOLITION AND ARE TO BE REUSED IN THE NEW WORK SHALL BE COVERED AND PROTECTED FROM CONTAMINATION AND DAMAGE.
- CONTRACTOR SHALL PERFORM TO GREATEST EXTENT POSSIBLE, ALL OF THE FABRICATION, EXAMINATION, AND TESTING WORK IN SHOP TO LIMIT THE TIME OF FIELD WORK AND DOWNTIME OF FACILITY OPERATIONS.
- THE CONTRACTOR SHALL PROVIDE TOUCH-UP PAINT ON PIPING, FITTINGS AND SUPPORTS AS NECESSARY AFTER INSTALLATION AND INSPECTION FOR LEAKS IS COMPLETE. SURFACES SHALL BE CLEANED, PRIMED AND PAINTED WITH ONE COAT INHIBITIVE METAL PRIMER AND TWO COATS OF ENAMEL PAINT (COLOR SHALL MATCH EXISTING). PAINT MATERIALS SHALL BE APPROVED BY THE CONSTRUCTION MANAGER.
- ALL PIPING SHALL BE LABELED TO DESIGNATE SERVICE AND PRESSURE. EACH LABEL SHALL INCLUDE AN ARROW TO INDICATE FLOW DIRECTION. ALL LABELS SHALL BE VISIBLE AND LEGIBLE FROM THE PRIMARY SERVICE AND OPERATING AREA. LABELS SHALL BE MADE OF SELF-STICKING PLASTIC FILM DESIGNED FOR PERMANENT INSTALLATION. LABELING SHALL BE IN ACCORDANCE WITH LPR 1740.2, FACILITY SAFETY REQUIREMENTS, CHAPTER 2 AND APPENDIX A. REFER TO PIPING SYSTEM DESIGN REQUIREMENTS SCHEDULE THIS SHEET.
- THE CONTRACTOR SHALL SALVAGE EXISTING VALVE TAGS AND REUSE TO TAG ALL NEW VALVES AND COMPONENTS FOR EACH SYSTEM WITH THE NUMBERS AS GIVEN ON THE DRAWINGS.
- THE CONTRACTOR SHALL TAG ALL NEW VALVES AND COMPONENTS FOR EACH SYSTEM WITH THE NUMBERS AS GIVEN ON THE DRAWINGS. VALVE AND COMPONENT TAGS SHALL BE IN ACCORDANCE WITH NASA LANGLEY HANDBOOK LPR 1710.40, PRESSURE SYSTEMS HANDBOOK. THE BUILDING NUMBER IDENTIFIER FOR BUILDING 1225 IS 044. THIS NUMBER SHALL APPEAR ON ALL VALVE AND COMPONENT TAGS WITHIN THE FACILITY.
 - VALVE AND EQUIPMENT IDENTIFICATION TAGS SHALL BE MADE OF BRASS OR ALUMINUM, SHALL BE 2 INCHES IN DIAMETER AND MARKING SHALL BE STAMPED. DESIGNATION NUMBER SHALL MATCH DRAWING OR CONTROL DIAGRAM DESIGNATION. TAGS SHALL BE WIRED TO VALVE OR EQUIPMENT ITEMS WITH NO. 12 AWG 0.0808-INCH DIAMETER CORROSION-RESISTANT STEEL WIRE.
- PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH MSS SP-58 AND MSS SP-69.
- HYDROSTATIC TESTING PER ASME B31.3 SHALL BE PERFORMED ON ALL PIPING. ALL LEAKS OR FAILURES SHALL BE REPAIRED AND THE TEST(S) REPEATED AT NO ADDITIONAL COST. THE CONTRACTOR SHALL SUPPLY ALL THE EQUIPMENT AND MATERIALS NEEDED TO PERFORM THE HYDROSTATIC TESTING. HYDROSTATICALLY TEST SYSTEM AT 1.5 TIMES MAXIMUM ALLOWABLE WORKING PRESSURE. HYDROSTATIC TEST PLANS AND PROCEDURES SHALL BE APPROVED BY THE NASA STANDARD PRACTICE ENGINEER FOR PRESSURE SYSTEMS (LPR 1710.40, CHAPTER 8.2(i)).

LINE LEGEND

NEW PIPING/EQUIPMENT
EXISTING PIPING & EQUIPMENT TO REMOVE
EXISTING PIPING, STRUCTURE & EQUIPMENT

GENERAL MECHANICAL SYMBOL LEGEND

POINT OF DISCONNECT
NEW TO EXISTING CONNECTION
GATE VALVE
PRESSURE REDUCING VALVE
REDUCER/INCREASER

NEW WORK NOTE
REMOVAL NOTE
PRESSURE GAGE
UNION

LINE DESIGNATOR

PIPE SPECIFICATION
DESIGN PRESSURE
SYSTEM DESIGNATOR
LINE SIZE
3/4 LPA (120) CS1

ABBREVIATIONS / SYSTEM DESIGNATOR

APPROX	APPROXIMATELY	LPA	LOW PRESSURE AIR
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIAL	MIN.	MINIMUM
BLDG	BUILDING	NPT	NATIONAL PIPE THREAD
C.S.	CARBON STEEL	PC	PUMPED CONDENSATE
DCW	DOMESTIC COLD WATER	PI	PRESSURE INDICATOR
EXIST	EXISTING	P/N	PART NUMBER
GFE	GOVERNMENT FURNISHED EQUIPMENT	REQ'D	REQUIRED
LIR	SCHEDULED INFORMATION	SCH	SCHEDULE
		TYP	TYPICAL

VALVE AND FITTING SCHEDULE

ITEM NO.	SIZE	SERVICE	FUNCTION	TYPE	ACTUATION	END CONNECTION	POSITION	DESIGN PRESSURE RATING	NOTES
1	3/4"	AIR	ISOLATION	BALL VALVE	MANUAL	SOLDERED	IN-POSITION	150	NIBCO MODEL S-590-Y-66
2	3/4"	AIR	COUPLING	QUICK CONNECTION FOR AIR HOSE	-	NPT	-	150	SWAGelok MODEL B-QF12-B-12PF
3	3/4"	AIR	COUPLING	QUICK CONNECTION FOR AIR HOSE	-	NPT	-	150	SWAGelok MODEL B-QF12-B-12PF
4	1/2"	WATER	ISOLATION	BALL VALVE	MANUAL	SOLDERED	-	150	NIBCO MODEL S-590-Y-66
5	1/2"	WATER	CONNECTION	END CONNECTION FOR SOFT TUBING	-	NPT	-	150	SWAGelok MODEL B-8-HC-1-8

PIPING SPECIFICATION TABLE

PIPE SPECIFICATION	SYSTEM	APPLICABLE PIPE CODE	PIPE SIZE	PIPE	PIPE FITTINGS	TESTING	EXAMINATION
CS1	LPA DESIGN PRESSURE: 120 PSIG DESIGN TEMPERATURE: 100°F	FABRICATE ASSEMBLE, ERECT, TEST, & EXAMINE TO ASME B31.3 FOR A NORMAL FLUID	3/4"	SCHEDULE 40 SEAMLESS CARBON STEEL IN ACCORDANCE WITH ASTM A106 GR. B	PRESSURE CLASS 150# THREADED FITTINGS IN ACCORDANCE WITH ASTM A105 AND ASME B16.11. OTHER FITTINGS AS SPECIFIED	OPERATION LEAK CHECK	100% VISUAL INSPECTION
CS2	DOMESTIC COLD WATER DESIGN PRESSURE: 100 PSIG DESIGN TEMPERATURE: 100°F	FABRICATE ASSEMBLE, ERECT, TEST, & EXAMINE TO ASME B31.3 FOR A NORMAL FLUID	1/2"	TYPE L COPPER IN ACCORDANCE WITH ASTM A106 GR. B		OPERATION LEAK CHECK	100% VISUAL INSPECTION

PIPING SYSTEM DESIGN REQUIREMENTS

SYSTEM DESIGNATOR:	DOMESTIC COLD WATER
SYSTEM FLUID:	DCW
DESIGN PRESSURE:	COLD WATER
DESIGN TEMPERATURE:	100 PSIG
SYSTEM PIPE LABEL:	100°F
PIPE BAND COLOR:	DOM COLD WTR
	NONE

SYSTEM DESIGNATOR:	LOW PRESSURE AIR
SYSTEM FLUID:	LPA
DESIGN PRESSURE:	AIR
DESIGN TEMPERATURE:	120 PSIG
SYSTEM PIPE LABEL:	100°F
PIPE BAND COLOR:	AIR SHOP 110 PSI
	NONE

1. ALL PIPING SHALL BE LABELED AND BANDED, AS REQUIRED, TO DESIGNATE SERVICE, PRESSURE, AND TEMPERATURE. EACH LABEL SHALL INCLUDE AN ARROW TO INDICATE FLOW DIRECTION. ALL LABELS SHALL BE VISIBLE AND LEGIBLE FROM THE PRIMARY SERVICE AND OPERATING AREA. LABELS SHALL BE MADE OF SELF-STICKING PLASTIC FILM DESIGNED FOR PERMANENT INSTALLATION. LABELING AND BANDING SHALL BE AS INDICATED IN TABLE ABOVE, IN ACCORDANCE WITH NASA LANGLEY DOCUMENT LPR 1740.2, FACILITY SAFETY REQUIREMENTS, CHAPTER 2 AND APPENDIX A.

OVERDRAFT REVIEW PRINT SIGN-OFF

NAME: *J. Menke* DATE: *6/22/10*

Reviewed by: *J. Menke*

REVISIONS

DATE	LTR	FREQ	DESCRIPTION	BY	CHECK	APPD

JE JACOBS

ROME GROUP
Langley Research Center
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WORK ORDER NO. **AE02737**

APPROVALS	DATE
R. MARTIN	06/21/10
J. MENKE	06/21/10
R. CRAIG	06/21/10
J. BRANNICK	06/21/10

APPROVALS

NAME	ORGANIZATION	DATE	DATE

FOR DRAWING INDEX SEE DRAWING 1271748

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER
HAMPTON, VIRGINIA 23681-2199

PROJECT TITLE: **PROMDE UTILITIES FOR NEW AGIE CHARMELLIS FI 6400CS EDM WIRE MACHINE**

DRAWING TITLE: **MECHANICAL LEGEND, SPECIFICATION, SCHEDULES AND GENERAL NOTES**

BUILDING NO. **1225** SIZE **D** DRAWING NO. **1271751**

SHEET NO. **M-001**

ELECTRICAL GENERAL NOTES

- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2008 EDITION OF THE NATIONAL ELECTRICAL CODE AND THE LATEST REVISION TO THE FOLLOWING NASA/LARC DOCUMENTS: LPR 1710.6-- ELECTRICAL SAFETY, AND LPR 1740.2-- FACILITY SAFETY REQUIREMENTS.
- CONTRACTOR SHALL COORDINATE WITH THE CONTRACTING OFFICER PRIOR TO ANY WORK INVOLVING THE ELECTRICAL SYSTEM. ELECTRICAL CONTRACTOR SHALL ALSO COORDINATE WITH OTHER TRADES TO AVOID ANY CONFLICT IN LOCATION AND INSTALLATION OF DEVICES AND EQUIPMENT.
- CONTRACTOR SHALL FURNISH ALL EQUIPMENT, TOOLS, MATERIAL, LABOR AND SERVICES NECESSARY FOR OR INCIDENTAL TO A COMPLETE AND FINISHED JOB AS SHOWN ON THE DRAWING. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, CONDUIT OR OTHER SPECIFIC ELEMENTS THAT MAY BE REQUIRED FOR PROPER INSTALLATION OF THE WORK. SUCH WORK SHALL BE VERIFIED AT THE SITE. EXCEPT WHERE SHOWN IN DIMENSIONAL DETAIL, THE LOCATION OF DEVICES, FITTINGS, CONDUIT AND OTHER EQUIPMENT SHOWN ON THE PLANS ARE APPROXIMATE. SUCH ITEMS SHALL BE PLACED TO ELIMINATE INTERFERENCE WITH DUCTS, PIPING AND EQUIPMENT. EXACT LOCATIONS SHALL BE VERIFIED IN THE FIELD.
- PLASTIC, BLACK WITH WHITE LETTERING, TWO LAYER LAMINATED NAMEPLATES SHALL BE PROVIDED FOR EACH NEW ELECTRICAL EQUIPMENT INSTALLED IN THIS PROJECT. PLATE SHALL LIST THE NAME AND FUNCTION OF EACH PIECE OF EQUIPMENT AND ITS POWER SOURCE. AFTER COMPLETION OF ELECTRICAL INSTALLATION, PROVIDE NEW TYPED ELECTRICAL PANEL DIRECTORIES FOR EXISTING PANELS AFFECTED BY THIS PROJECT. PROVIDE A COPY OF THESE PANEL DIRECTORIES TO THE CONTRACTING OFFICER TO BE ENTERED INTO NASA'S ELECTRICAL PANEL DATABASE.
- ALL NEW ELECTRICAL EQUIPMENT SHALL BE UNDERWRITERS LABORATORY LISTED OR NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION APPROVED FOR ITS SPECIFIC USE. ALL ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH APPLICABLE SECTION OF THE NATIONAL ELECTRICAL CODE.
- UNLESS OTHERWISE NOTED ALL CONDUCTORS SHALL BE IN CONDUIT AND COPPER WITH TYPE THHN INSULATION. ALL CONDUIT SHALL BE A MINIMUM OF 3/4" UNLESS OTHERWISE NOTED WITH RIGID GALVANIZED STEEL CONDUIT FOR OUTDOOR LOCATIONS AND ELECTRICAL METALLIC TUBING FOR INDOOR LOCATIONS. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR MOTOR CONNECTIONS.
- THE COMPLETE ELECTRICAL INSTALLATION SHALL BE TESTED FOR FUNCTIONAL AND OPERATIONAL TESTS. SUCCESSFUL OPERATIONAL TEST OBSERVED BY CONTRACTING OFFICER. WILL BE BASIS FOR ACCEPTANCE.

- ELECTRICAL REMOVAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND THE LATEST REVISION TO THE FOLLOWING NASA/LARC DOCUMENTS: LPR 1710.10-- SAFETY CLEARANCE PROCEDURES FOR THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT), LPR 1740.2-- FACILITY SAFETY REQUIREMENTS, AND LPR 8800.1-- ENVIRONMENTAL PROGRAM MANUAL.
- CONTRACTOR SHALL COORDINATE ALL POWER OUTAGES WITH THE CONTRACTING OFFICER. ELECTRICAL CONTRACTOR SHALL ALSO COORDINATE WITH OTHER TRADES TO AVOID ANY CONFLICT IN THE REMOVAL OF DEVICES AND EQUIPMENT.
- LABEL EXISTING WIRING PRIOR TO DEMOLITION WORK WHENEVER CIRCUITRY IS INDICATED TO BE MODIFIED OR RECONNECTED. REMOVE ALL ASSOCIATED WIRING AND ACCESSIBLE CONDUIT FROM EQUIPMENT OR DEVICES INDICATED AS BEING REMOVED BACK TO INDICATED TERMINATION. REMOVE ALL OTHER ASSOCIATED CONDUIT WHICH IS NOT RE-USED. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ELECTRICAL CONTINUITY AND INTEGRITY OF EXISTING DEVICES TO REMAIN. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS.

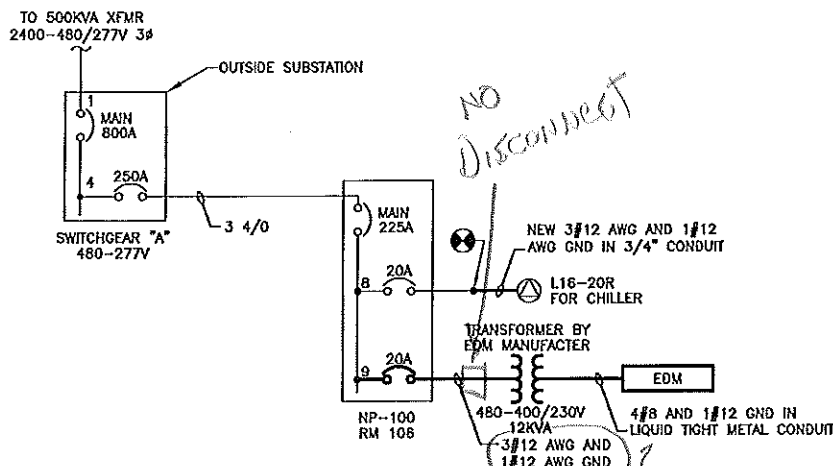
ELECTRICAL REMOVAL NOTES

- EXISTING POWER AND DATA CONDUITS STUB UPS TO BE REMOVED. CUT CONDUITS AT FLOOR LEVEL AND FILL WITH CONCRETE. MAKE FLUSH WITH EXISTING FLOOR.
- EXISTING 480V, 3 POLE, 30 AMP DISCONNECT AND L16-20R TYPE RECEPTACLE TO BE REMOVED AND RELOCATED. REMOVE WIRE FOR DISCONNECT BACK TO SOURCE PANEL. REMOVE CONDUIT FOR BOTH DEVICES BACK TO "T" JOINT LOCATED ABOVE DISCONNECT. PROTECT AND MAINTAIN DEVICES DURING CONSTRUCTION.
- REMOVE EXISTING 30AMP 3POLE 480V CIRCUIT BREAKER IN PANEL NP-100 CIRCUIT 9.

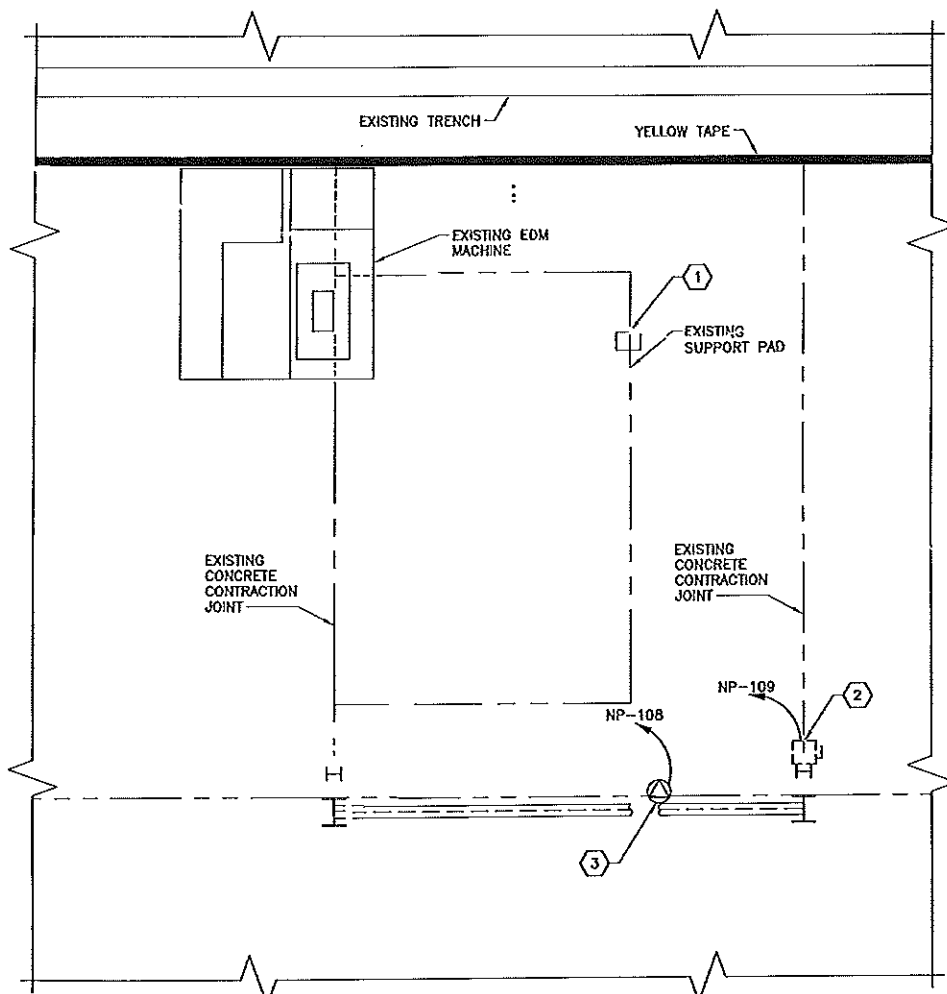
ELECTRICAL NEW WORK NOTES

- PROVIDE NEW 1" RIGID GALVANIZED STEEL CONDUIT FROM EXISTING POWER AND DATA LOCATION TO UNDER NEW EDM MACHINE. STUB CONDUIT UP 6" AT BOTH ENDS. PROVIDE PULL STRING IN CONDUIT.
- EXISTING 30 AMP, 3 POLE, DISCONNECT RELOCATED. MOUNT DISCONNECT TO SIDE OF TRANSFORMER PROVIDED BY MANUFACTURER INTERCEPT AND EXTEND BRANCH CIRCUIT FROM "T" JOINT TO NEW LOCATION. PROVIDE NEW 4#12 AWG AND 1#12 GND BACK TO PANEL NP-100. PROVIDE NEW 20 AMP 3 POLE 480V CIRCUIT BREAKER IN SPACE MADE AVAILABLE DURING DEMOLITION. PROVIDE NEW 20 AMP FUSES FOR DISCONNECT.
- RELOCATE EXISTING 20 AMP, 3 POLE, NEMA L16-20R RECEPTACLE. VERIFY EXACT LOCATION PRIOR TO ROUGH IN WITH CONTRACTING OFFICER. EXTEND EXISTING CONDUIT AND WIRE FROM EXISTING "T" JOINT TO NEW LOCATION.
- PROVIDE 4#8 AWG AND 1#12 GND IN LIQUID TIGHT FLEXIBLE METAL CONDUIT. RUN CONDUIT THROUGH TRENCH TO TOP OF MACHINE. COORDINATE ROUTING WITH CONTRACTING OFFICER PRIOR TO INSTALLATION.

NEW
30-4#12 AWG

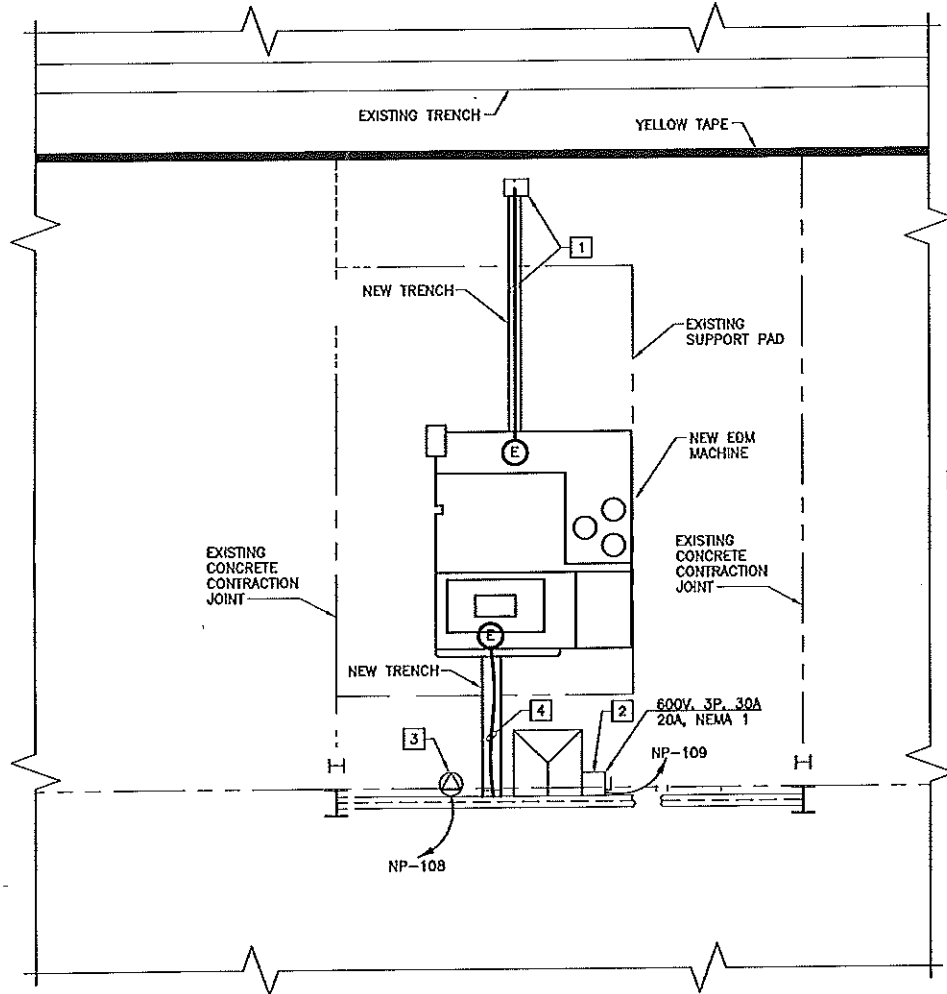


ONE-LINE DIAGRAM - NEW WORK



ELECTRICAL REMOVAL PLAN - FIRST FLOOR

SCALE: 1/4" = 1'-0"



ELECTRICAL NEW WORK PLAN - FIRST FLOOR

SCALE: 1/4" = 1'-0"

LEGEND

- EXISTING TO REMAIN
- NEW WORK
- EXISTING TO BE REMOVED
- SINGLE RECEPTACLE, 480V, 3P
- DISCONNECT SWITCH
- ELECTRICAL EQUIPMENT CONNECTION
- HOME RUN WITH PANEL AND CIRCUIT NUMBER DESIGNATIONS. CONTAINS 2#12 & 1#12 GND, 1/2" C, UON
- POINT OF CONNECTION

OVERDRUP REVIEW PRINT SIGN-OFF

Responsible Individual: *[Signature]* NAME: *[Signature]* DATE: 6/30/2010

REVISIONS				REVISIONS			
DATE	LTR	FREQ	DESCRIPTION	DATE	LTR	FREQ	DESCRIPTION

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WORK ORDER NO. AE02737

APPROVALS	DATE
DRAWN: K. FALZONE	06/29/10
ENG./DES: S. HARMAN	08/29/10
CHECK: J. MEDRANA	06/29/10
PROJ. MGR: J. BRANNICK	06/29/10

APPROVALS			
NAME	ORGANIZATION	DATE	DATE

FOR DRAWING INDEX SEE DRAWING 1271748			
NATIONAL AERONAUTICS & SPACE ADMINISTRATION LANGLEY RESEARCH CENTER HAMPTON, VIRGINIA 23681-2199			
PROJECT TITLE: PROMOTE UTILITIES FOR NEW AGE			
DRAWING TITLE: CHARMELLIS FI 6400CS EDM WIRE MACHINE ELECTRICAL DEMOLITION, NEW WORK AND DIAGRAMS			
BUILDING NO. 1225	SIZE D	DRAWING NO. 1271753	LATEST REV.
SHEET NO. E-101			