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**THE VILLAGE OF TINLEY PARK**

**Cook County, Illinois**

**Will County, Illinois**

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**RESOLUTION**

**NO. 2020-R-070**

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**A RESOLUTION APPROVING A CONTRACT BETWEEN THE VILLAGE OF TINLEY PARK  
AND TOTAL AUTOMATION CONCEPTS, INC. FOR THE ANNUAL MAINTENANCE AND  
INSPECTION OF VILLAGE FACILITIES BUILDING AUTOMATION SYSTEMS**

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**JACOB C. VANDENBERG, PRESIDENT  
KRISTIN A. THIRION, VILLAGE CLERK**

**CYNTHIA A. BERG  
WILLIAM P. BRADY  
WILLIAM A. BRENNAN  
DIANE M. GALANTE  
MICHAEL W. GLOTZ  
MICHAEL G. MUELLER  
Board of Trustees**

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Published in pamphlet form by authority of the President and Board of Trustees of the Village of Tinley Park

**RESOLUTION NO. 2020-R-070**

**A RESOLUTION APPROVING A CONTRACT BETWEEN THE VILLAGE OF TINLEY PARK AND TOTAL AUTOMATION CONCEPTS, INC. FOR THE ANNUAL MAINTENANCE AND INSPECTION OF VILLAGE FACILITIES BUILDING AUTOMATION SYSTEMS**

**WHEREAS,** the Village of Tinley Park, Cook and Will Counties, Illinois, is a Home Rule Unit pursuant to the Illinois Constitution of 1970; and

**WHEREAS,** the Corporate Authorities of the Village of Tinley Park, Cook and Will Counties, Illinois, have considered entering into an Agreement with Total Automation Concepts, a true and correct copy of such Agreement being attached hereto and made a part hereof as **EXHIBIT 1**; and

**WHEREAS,** the Corporate Authorities of the Village of Tinley Park, Cook and Will Counties, Illinois, have determined that it is in the best interests of said Village of Tinley Park that said Agreement be entered into by the Village of Tinley Park;

**NOW, THEREFORE, Be It Resolved** by the President and Board of Trustees of the Village of Tinley Park, Cook and Will Counties, Illinois, as follows:

**Section 1:** The Preambles hereto are hereby made a part of, and operative provisions of, this Resolution as fully as if completely repeated at length herein.

**Section 2:** That this President and Board of Trustees of the Village of Tinley Park hereby find that it is in the best interests of the Village of Tinley Park and its residents that the aforesaid "Agreement" be entered into and executed by said Village of Tinley Park, with said Agreement to be substantially in the form attached hereto and made a part hereof as **EXHIBIT 1**, subject to review and revision as to form by the Village Attorney.

**Section 3:** That the President and Clerk of the Village of Tinley Park, Cook and Will Counties, Illinois are hereby authorized to execute for and on behalf of said Village of Tinley Park the aforesaid Agreement.

**Section 4:** That this Resolution shall take effect from and after its adoption and approval.

**ADOPTED** this 21<sup>st</sup> day of July, 2020, by the Corporate Authorities of the Village of Tinley Park on a roll call vote as follows:

**AYES:** Berg, Brady, Brennan. Galante, Glotz, Mueller

**NAYS:** None

**ABSENT:** None

**APPROVED** this 21<sup>st</sup> day of July, 2020, by the President of the Village of Tinley Park.



\_\_\_\_\_  
Village President

ATTEST:



\_\_\_\_\_  
Village Clerk

# EXHIBIT 1

STATE OF ILLINOIS        )  
COUNTY OF COOK         )     SS  
COUNTY OF WILL         )

CERTIFICATE

I, KRISTIN A. THIRION, Village Clerk of the Village of Tinley Park, Counties of Cook and Will and State of Illinois, DO HEREBY CERTIFY that the foregoing is a true and correct copy of Resolution No. 2020-R-070, **“A RESOLUTION APPROVING A CONTRACT BETWEEN THE VILLAGE OF TINLEY PARK AND TOTAL AUTOMATION CONCEPTS, INC. FOR THE ANNUAL MAINTENANCE AND INSPECTION OF VILLAGE FACILITIES BUILDING AUTOMATION SYSTEMS,”** which was adopted by the President and Board of Trustees of the Village of Tinley Park on July 21, 2020.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of the Village of Tinley Park this 21<sup>st</sup> day of July, 2020.

  
\_\_\_\_\_  
KRISTIN A. THIRION, VILLAGE CLERK

## VILLAGE OF TINLEY PARK

### SERVICE CONTRACT

This contract is by and between the **Village of Tinley Park**, an Illinois home-rule municipal corporation (the "Village"), and **Total Automation Concepts, Inc.** (the "Contractor"), for the project or work described in Exhibit A, attached hereto and made a part hereof.

1. In consideration of the compensation stated in paragraph 2, the Contractor shall provide all the services described in the Scope of Services attached hereto as Exhibit "A" and incorporated herein by reference. The express terms of this Contract shall take precedence and control over any term or provision of the Scope of Services (Exhibit A) that in any way conflicts with, differs from, or attempts to alter the terms of this Contract.
2. Except in the event of a duly authorized change order approved by the Village as provided in this Contract, and in consideration of the Contractor's final completion of all work in conformity with this Contract, the Village shall pay the Contractor an amount not to exceed **Thirty Nine Thousand Seven Hundred and Thirty Two 00/100 Dollars (\$39,732)**. Within thirty (30) calendar days of completion of the work, the Contractor shall submit his application for payment to the Village, and the Village shall pay Contractor for the work performed no later than **thirty (30)** calendar days from the date of the Village's receipt and the Village's approval of the work and the application for payment. No payment shall be made by the Village until the Contractor has submitted to the Village (i) a Contractor's Affidavit listing all subcontractors and material suppliers utilized on the project and (ii) final waivers of lien from the Contractor, all subcontractors and all material suppliers.
3. No changes shall be made, nor will invoices for changes, alterations, modifications, deviations, or extra work or services be recognized or paid except upon the prior written order from authorized personnel of the Village. The Contractor shall not execute change orders on behalf of the Village or otherwise alter the financial scope of the Project.
4. Written change orders may be approved by the Village Manager or his designee provided that the change order does not increase the amount set forth in paragraph 2 of this Contract to more than \$10,000.00. Changes in excess of this amount must be approved by the Village Board prior to commencement of the services or work. **If a requested change causes an increase or decrease in the cost of or time required for the performance of the contract, Contractor will agree to an equitable adjustment in the contract price or performance schedule, or both. Neither party is obligated to comply with requested changes unless and until both parties execute a written change order.**
5. **Time is of the essence on this Contract.** The Contractor shall complete all work under this Contract by the dates set forth below:
6. No "Notice to Proceed" may be given nor any work commenced until this Contract is fully executed and all exhibits and other attachments are completely filled out and attached hereto.
7. It is understood and agreed by the parties that the Contractor is an independent contractor retained for the above-mentioned purpose. The Village shall not control the manner nor the means of the Contractor's performance, but shall be entitled to a work product as described herein. The term "subcontractor" shall mean and include only those hired by and having a direct contract with Contractor for performance of work on the Project. The

Village shall have no responsibility to any subcontractor employed by a Contractor for performance of work on the Project, and all subcontractors and material suppliers shall look exclusively to the Contractor for any payments due. The Village will **not** be responsible for reporting or paying employment taxes or other similar levies that may be required by the United States Internal Revenue Service or other State or Federal agencies. Every subcontractor shall be bound by the terms and provisions of this Contract as far as applicable to their work. The Contractor shall be fully responsible to the Village for the acts and omissions of its subcontractors, and shall ensure that any subcontractors perform in accordance with the requirements of this Contract. Nothing contained herein shall create any contractual or employment relations between any subcontractor and the Village. The Contractor is solely responsible for the safety procedures, programs and methods of its employees and agents and shall hold the Village harmless for any and all damages resulting from violations thereof. The Contractor shall comply with all applicable federal, State and local safety laws and regulations.

8. **It is further agreed that the Contractor shall indemnify, hold harmless, and defend the Village, its officers, agents, and employees from and against any and all claims, losses, damages, causes of action, suits, and liability of every kind, including all expenses of litigation, court costs, and attorneys' fees, for injury to or death of any person or for damage to any property arising out of or in connection with the Contractor's negligence under this Contract.**
9. **The Contractor assumes full responsibility for the work to be performed hereunder and hereby releases, relinquishes, and discharges the Village, its officers, agents, and employees from all claims, demands, and causes of action of every kind and character, including the cost of defense thereof, for any injury to or death of any person and any loss of or damage to any property that is caused by, alleged to be caused by, arising out of, or in connection with the Contractor's negligence in its work to be performed hereunder. The Contractor shall maintain insurance coverage in an amount and from a carrier suitable to the Village, and the Village shall be named as an additional insured where required. Certificates of Insurance are attached hereto as Exhibit B.**
10. The Village is exempt from payment of state and local sales and use of taxes on labor and materials incorporated into the project. If necessary, it is the Contractor's responsibility to obtain a sales tax permit, resale certificate, and exemption certificate that shall enable the Contractor to buy any materials to be incorporated into the project and then resale the aforementioned materials to the Village without paying the tax on the materials at the time of purchase. In no event will the Village be liable for or pay any sales or use taxes incurred by the Contractor in performing the services under this contract.
11. The Contractor shall comply with all applicable federal, state, and local statutes, regulations, ordinances, and other laws, including but not limited to the Immigration Reform and Control Act (IRCA). The Contractor may not knowingly obtain the labor or services of an unauthorized alien. The Contractor, not the Village, must verify eligibility for employment as required by IRCA.
12. At any time, the Village may terminate this Contract for convenience, upon written notice to the Contractor. The Contractor shall cease work immediately upon receipt of such notice. The Contractor shall be compensated for services performed and accepted by the Village up to the date of termination.

13. No waiver or deferral by either party of any term or condition of this Contract shall be deemed or construed to be a waiver or deferral of any other term or condition or subsequent wavier or deferral of the same term or condition.
14. This Contract may only be amended by written instrument approved and executed by the parties.
15. This Contract and the rights and obligations contained herein may not be assigned by the Contractor without the prior written approval of Village.
16. The parties hereby state that they have read and understand the terms of this Contract and hereby agree to the conditions contained herein.
17. This Contract has been made under and shall be governed by the laws of the State of Illinois. The parties agree that performance and all matters related thereto shall be in Cook County, Illinois.
18. Contractor, its employees, associates or subcontractors shall perform all the work hereunder. Contractor agrees that all of its associates, employees, or subcontractors who work on this Project shall be fully qualified and competent to do the work described hereunder. Contractor shall undertake the work and complete it in a timely manner.
19. If any provision of this Contract shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court of competent jurisdiction finds that any provision of this Contract is invalid or unenforceable, but that by limiting such provision it may become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.
20. This Contract represents the entire and integrated agreement between the Village and Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral.
21. This Contract will be effective when signed by the last party whose signing makes the Contract fully executed.
22. The Contractor agrees to comply with the Illinois Prevailing Wage Act, if the work to be performed under this Contract is covered by said Act.
23. The Contractor agrees to comply with the Illinois Substance Abuse Prevention on Public Works Projects Act.



## CERTIFICATIONS BY CONTRACTOR

### Affidavit of Compliance

Contractor and all subcontractors shall complete this Affidavit of Compliance ("Affidavit") and submit supporting documentation as required pursuant to *Responsible Bidder Requirements on Public Work Projects*. Contractor must submit this Affidavit and all related evidence with its bid. Contractor shall be responsible for providing this Affidavit to all subcontractors who will perform work on the project. All subcontractors' Affidavits and supporting documentation must be submitted no later than the date and time of the contract award. Failure to comply with all submission requirements may result in a determination that the Contractor is not a responsible bidder.

*For the remainder of this Affidavit, "Contractor" refers to the general contractor and all subcontractors. Each item must be answered. If the question is not applicable, answer "NA." If the answer is none, answer "none."*

The certifications set forth in this Affidavit and all documents attached hereto shall become a part of any contract awarded to the Contractor. Furthermore, Contractor shall comply with these certifications during the term and/or performance of the contract.

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The undersigned Joseph C. Lindemulder, Jr., as President and on behalf  
(Name) (Title)  
of Totac Automation Concepts, Inc. having been duly sworn under oath certifies that:  
(Contractor)

### Business Organization

The form of business organization of the Contractor is (check one):

Sole Proprietor or Partnership       LLC  
 Corporation       Independent Contractor (Individual)

If contractor/subcontractor is a corporation, indicate the state and the date of incorporation:

ILLINOIS

Authorized to do business in the State of Illinois: Yes  No

Describe supporting documentation attached: \_\_\_\_\_

Federal Employer I.D. #: 36-2814872

Social Security # (if an individual or sole proprietor): \_\_\_\_\_

Registered with Illinois Department of Revenue: Yes  No

Describe supporting documentation attached (if "No," explain): 36-28144872-000

Registered with Illinois Department of Employment Security: Yes  No

Describe supporting documentation attached (if "No," explain): 0521945

**Tax liens or tax delinquencies**

Disclosure of any federal, state or local tax liens or tax delinquencies against the contractor or any officers of the contractor in the last five (5) years Yes  No

"No" means "not applicable." If "yes," describe lien/delinquencies and resolution:

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**EOE Compliance**

Contractor is in compliance with provisions of Section 2000e of Chapter 21, Title 42 of the United States Code and Federal Executive Order No. 11246 as amended by Executive Order No. 11375 (known as the Equal Opportunity Employer provisions). Yes  No

**Employee Classification**

Contractor's employees who will perform work on the project are properly classified as an employee or independent contractor under all applicable state and federal laws and local ordinances (Form B). N/A  Yes  No

**Professional or Trade Licenses**

Contractor will possess all applicable professional and trade licenses required for performing the Contract work: Yes  No

License	Number	Date Issued	Current Expiration	Holder of License

If any of the above license(s) have been revoked or suspended, state the date and reason for suspension/revocation:

**Documentation Attached** (Contractor must initial next to each item):

Form A: Name and address of subcontractors from whom Contractor has accepted a bid or intends to hire to perform work on any part of the project.

NOTE: All subcontractors shall complete and submit an Affidavit of Compliance no later than the date the subcontractor commences work on the project.

Form B: List of individuals who will perform work on the project on behalf of the Contractor, verifying that each individual is properly classified as an employee or independent contractor. Contractor also verifies that all Contractor's employees are covered under a current workers' compensation policy, properly classified under the workers' compensation policy, and covered by a health and welfare and retirement plan.

Form C Additional Information (if required)

Certificate of Good Standing  
(or other evidence of compliance with laws pre-requisite to doing business in the state)

Illinois Department of Revenue registration

Illinois Department of Employment Security registration

Standards of Apprenticeship/Apprentice Agreements

Substance Abuse Prevention program (or applicable provision from CBA in effect)

Written Safety Policy Statement signed by company representative

OSHA cards evidencing 10-hour or greater safety program completed, if requested

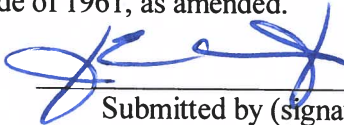
Workers' Compensation Coverage

Professional or Trade Licenses

**Eligibility to Contract**

The undersigned hereby certifies that the Contractor is not barred from bidding on or entering into this contractor as a result of a violation of either the bid-rigging or bid-rotating provisions of Article 33E of the Criminal Code of 1961, as amended.

Total Automation Concepts, Inc.  
Name of Contractor (please print)

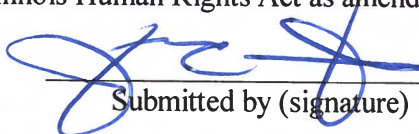
  
Submitted by (signature)

President  
Title

**Certificate of Compliance with Illinois Human Rights Act**

The undersigned hereby certifies that the Contractor is in compliance with Title 7 of the 1964 Civil Rights Act as amended and the Illinois Human Rights Act as amended.

Total Automation Concepts, Inc.  
Name of Contractor (please print)

  
Submitted by (signature)

President  
Title

**Certificate of Compliance with Illinois Drug-Free Workplace Act**

The undersigned, **having 25 or more employees**, does hereby certify pursuant to section 3 of the Illinois Drug Free Workplace Act (30 ILCS 580/3) that it shall provide a drug-free workplace for all employees engaged in the performance of the work under the contract by complying with the requirements of the Illinois Drug-Free Workplace Act and, further certifies, that it is not ineligible for award of this contract by reason of debarment for a violation of the Illinois Drug-Free Workplace Act.

Total Automation Concepts, Inc.  
Name of Contractor (please print)

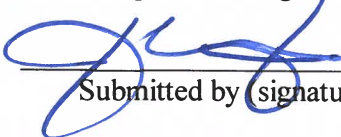
  
Submitted by (signature)

President  
Title

**Certificate Regarding Sexual Harassment Policy**

The undersigned does hereby certify pursuant to section 2-105 of the Illinois Human Rights Act (775 ILCS 5/2-105) that it has a written sexual harassment policy that includes, at a minimum, the following information: (i) the illegality of sexual harassment; (ii) the definition of sexual harassment under State law; (iii) a description of sexual harassment, utilizing examples; (iv) an internal complaint process including penalties; (v) the legal recourse, investigative and complaint process available through the Department of Human Rights and Human Rights Commission; (vi) direction on how to contact the Department of Human Rights and Human Rights Commission; and (vii) protection against retaliation.

Total Automation Concepts, Inc.  
Name of Contractor (please print)

  
Submitted by (signature)

President  
Title

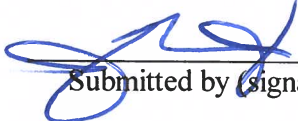
**Certificate of Compliance with Substance Abuse Prevention on Public Works Projects Act**

The undersigned hereby certifies that:

- A. There is in place a written program which meets or exceeds the program requirements of the Substance Abuse Prevention on Public Works Projects Act (P.A. 95-0635), and has provided a written copy thereof to the Village of Tinley Park.
- B. There is in place a collective bargaining agreement which deals with the subject matter of the Substance Abuse Prevention on Public Works Projects Act (P.A. 95-0635)

(Cross out either A or B depending upon which certification is correct)

Total Automation Concepts, Inc.  
Name of Contractor (please print)

  
Submitted by (signature)

President  
Title

**Certificate of Compliance with Prevailing Wage Requirements**

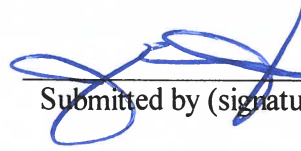
The undersigned hereby certifies that:

This contract calls for the construction of a "public work," within the meaning of the Illinois Prevailing Wage Act, 820 ILCS 130/.01 et seq. ("the Act"). The Act requires contractors and subcontractors to pay laborers, workers and mechanics performing services on public works projects no less than the current "prevailing rate of wages" (hourly cash wages plus amount for fringe benefits) in the county where the work is performed. The Department publishes the prevailing wage rates on its website at <http://www.state.il.us/agency/idol/rates/rates.HTM>. The Department revises the prevailing wage rates and the contractor/subcontractor has an obligation to check the Department's web site for revisions to prevailing wage rates. For information regarding

current prevailing wage rates, please refer to the Illinois Department of Labor's website. All contractors and subcontractors rendering services under this contract must comply with all requirements of the Act, including but not limited to, all wage requirements and notice and record keeping duties.

Total Automation Concepts, Inc.  
Name of Contractor (please print)

President  
Title

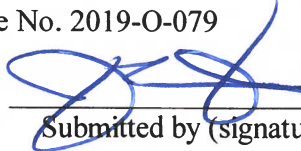
  
Submitted by (signature)

**Certificate of Compliance with the Village of Tinley Park Responsible Bidder Ordinance**

The undersigned or the entity making the proposal or bid has reviewed and is in compliance with the Village of Tinley Park Responsible Bidder Ordinance No. 2019-O-079

Total Automation Concepts, Inc.  
Name of Contractor (please print)

President  
Title

  
Submitted by (signature)

*[Signature Page to Follow]*

**Total Automation Concepts, Inc.**

BY: 

7-31-2020

Date

Printed Name: Jacob C. Vandenberg

Title: President

**VILLAGE OF TINLEY PARK**

BY: 

7-21-2020

Date

Jacob C. Vandenberg, Village President  
*(required if Contract is \$20,000 or more)*

ATTEST:



7-21-2020

Date

Village Clerk  
*(required if Contract is \$20,000 or more)*

**VILLAGE OF TINLEY PARK**

BY: \_\_\_\_\_

Village Manager

\_\_\_\_\_

Date

## **SCOPE OF SERVICES**

**Attached Scope of work for Village Facilities Building Temperature Controls as detailed in:**

- **Proposal titled: Building Automation Service Agreement #TINLP1 Commercial**



**BUILDING AUTOMATION SERVICE AGREEMENT #TINLPK1  
COMMERCIAL**

Page 1 of 3

**Purchaser**

Village of Tinley Park  
16250 Oak Park Ave  
Tinley Park, Illinois 60477

This agreement includes planned maintenance services on your Schneider Electric building automation systems at the following locations:

- Village Hall – 16250 Oak Park Ave, Tinley Park, IL
- Police Department – 7850 W. 183<sup>rd</sup> Street, Tinley Park, IL
- Public Works – 7980 W. 183<sup>rd</sup> Street, Tinley Park, IL
- Oak Park Ave Train Station – 6700 South Street, Tinley Park, IL
- 80<sup>th</sup> Ave Train Station – 18001 80<sup>th</sup> Ave, Tinley Park, IL
- Fire Station 1 (Safety Building) – 17255 68<sup>th</sup> Court, Tinley Park, IL
- Fire Station 47 – 7825 W. 167<sup>th</sup> Street, Tinley Park, IL
- Fire Station 3 – 9191 175<sup>th</sup> Street, Tinley Park, IL
- Fire Station 4 – 7801 W. 191<sup>st</sup> Street, Tinley Park, IL

Total Automation Concepts will check all field devices, controllers and network elements as indicated below. This is recommended for all sites to maintain original condition of the installed and commissioned systems. This is accomplished by providing necessary testing and calibration, identifying detects and potential problem areas and reducing the likelihood that emergencies will occur.

This agreement will be performed during normal business hours (7:00am to 4:00pm, Monday thru Friday)

This agreement will be scheduled during the month of 9/2020.

This agreement is in effect for a period of one (1) year beginning **6/30/20** and ending **6/30/21**.

This agreement will include (3) additional quarterly inspections scheduled for 12/2020, 3/2021, 6/2021.

**This agreement includes:**

System Software Upgrades:

- This includes system and security software upgrades. You will receive the latest software and security revisions and documentation.
- All field devices will receive the latest necessary firmware upgrades.
- We will update your system once a year with these updates. At that time we will include on-site training to familiarize you with these new features as they are added to your system to be sure that you gain the full benefit of the latest product enhancements.

Database Protection:

- The database protection prepares your system to be restored in the event of damage to the system or the information contained within it. Upon completion of the system backup you will receive a copy of the backup and another copy will be stored off-site (with your approval) at our local office. This provides additional protection in the event of damage to your on-site copy.
- This agreement will include (1) backup routine a year, performed on the entire building automation system, including the front end work station or servers as well as your entire network of field controllers.

Building Automation Network Equipment and Field Controller Inspections:

- This includes planned maintenance routines performed on network interfaces, routers and field controllers.
- Checking the battery backup circuit, scan times and verifying control loops.



**System Testing:**

- System testing involves testing individual systems and validating items such as critical alarms, smoke control sequences and safety circuits. Results of this testing will verify proper operation of critical systems and identify any potential problems.

**Remote Support Service:**

- A service engineer or system programmer will assist you with troubleshooting software programs, PID loops and any other issues with which you need assistance.
- This includes (1) hour per month of remote support services. Additional remote services will be billed at preferred rates.
- You the customer are responsible for local system communication cost and access.

**Priority Telephone Assistance:**

- We will provide access to our emergency service call line which enables you to access our pool of on-call engineers, upon placing a call you will be asked details about your site, system and your contact number. An engineer will then contact you to discuss the problem and will attempt to identify the solution over the remote access.
- Should the engineer be unable to identify the solution remotely then he will advise you of the initial cost of a site visit and the availability of a service engineer.

This agreement provides you with preferential treatment as a Service Agreement Customer, and guarantees you same day service for Normal and Emergency Service calls.

This agreement gives you preferred labor rates which is 10% off Total Automation Concepts standard labor rates.

This agreement gives you 10% off all parts and labor on all repair service while under agreement.

This agreement maintain records of service inspections, indicating type of service, or adjustments made on the system by our technicians.

Any items found in need of repair or replacement during our inspections will be quoted to the customer for authorization to proceed.

**This agreement does not include:**

The items below are not included in this agreement, Labor and material will be billed at preferred rates with a four (4) hour minimum charge.

**Repair/Emergency Services:**

- Labor and material repair/replacement cost to your system.
- Labor and material repair/replacement will be performed during normal business hours (7:00am thru 4:00pm, Monday thru Friday) and will be billed at preferred rates with a (4) four hour minimum charge.
- **24 Hour Emergency Repair Service** including Saturdays, Sundays, and Holidays, labor and material preformed after normal working hours will be billed at premium rates with a (4) four hour minimum charge.

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**Short Term Cancellation Provision:**

If the Purchaser cancels this Agreement short of the Full Term, the Return Premium shall be based upon 90% of the unearned Pro-Rated Premium less any service calls that have been performed and any equipment/material installed





5602 W. 120th Street  
Alsip, Illinois 60803  
Phone: 708-597-3143  
Fax: 708-824-3845  
www.ta-concepts.com

under this Agreement. If Total Automation Concepts cancels the Agreement short of full term, the Return Premium shall be based upon 100% of the Pro-Rated Premium

Agreement Cost: Monthly

The cost of this Agreement is **\$39,732.00**, payable in (12) equal monthly installments of **\$3,311.00** throughout the term of the Agreement.

Or

Agreement Cost: Quarterly

The cost of this Agreement is **\$39,732.00**, payable in (4) equal quarterly installments of **\$9,933.00** throughout the term of the Agreement.

**Terms:**

All invoices are due by the 10th of the month.

We will provide Certificates of Insurance upon request.

**Acceptance:**

Accepted Date: \_\_\_\_\_

**Village of Tinley Park**

Title: \_\_\_\_\_

**Agreement #TINLPK1**

Respectfully Submitted:

**Total Automation Concepts, Inc.**

Robert E. Chlum  
Sales Engineer

**Site Contact Information**

Name:  
Position:  
Office Phone:  
Cell Phone:  
Fax #:  
Email:  
Special site notes:

**Billing Information**

Contact Name:  
Position:  
Office Phone:  
Cell Phone:  
Fax #:  
Email:

Bill to address:

Attention to:

Billing Cycle: Monthly \_\_\_\_\_ Quarterly \_\_\_\_\_ Semiannually \_\_\_\_\_ Annually \_\_\_\_\_









List any determinations by a court or governmental agency for violations of federal, state or local laws, including but not limited to violations of contracting or antitrust laws, tax or licensing laws, environmental laws, the Occupational Safety and Health Act (OSHA), the National Labor Relations Act (NLRA), or federal Davis-Bacon and related Acts.

Date	Law	Determination	Penalty
W/A			

**Exhibit B**

**INSURANCE REQUIREMENTS**

(See Risk Manager for Insurance Requirements)





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
3/27/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Assurance Agency, Ltd. 20 North Martingale Road Suite 100 Schaumburg IL 60173		<b>CONTACT NAME:</b> Lindsey Todt
		<b>PHONE (A/C, No, Ext):</b> (847) 598-8753 <b>FAX (A/C, No):</b> (847) 440-9123 <b>E-MAIL ADDRESS:</b> ltodt@assuranceagency.com
<b>INSURED</b> Total Automation Concepts Inc. 5602 W. 120th Street Alsip IL 60803		<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A :</b> Hanover Insurance Co.
		<b>INSURER B :</b> Amerisure Insurance Company
		<b>INSURER C :</b>
		<b>INSURER D :</b>
		<b>INSURER E :</b>
		<b>INSURER F :</b>

**COVERAGES**      **CERTIFICATE NUMBER:** 571428008      **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSR   WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input checked="" type="checkbox"/> LOC		CPP21115720001	4/1/2020	4/1/2021	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 500,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 4,000,000 PRODUCTS - COMP/OP AGG \$ 4,000,000 \$
	<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS NON-OWNED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/>		CA21115710001	4/1/2020	4/1/2021	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED    RETENTION \$		CU21115730002	4/1/2020	4/1/2021	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$ 10,000,000 \$
B	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N    N/A <input checked="" type="checkbox"/> N    N/A	WC21142640001	4/1/2020	4/1/2021	<input checked="" type="checkbox"/> WC STATUTORY LIMITS    OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
A	Leased & Rented		IHCA25725706	4/1/2020	4/1/2021	Limit \$100,000 Deductible \$1,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)  
 RE: Work performed by the named insured on behalf of the certificate holder.

It is agreed that the following are added as Additional Insured on the General Liability and Automobile Liability on a Primary and Non-Contributory basis, when required by written contract, as respects to operations performed by the Named Insured in connection with this project:

-Village and its officers, officials, Village President and Board of Trustees, agents, employees, volunteers, representatives, assigns, successors, transferees, licensees, invitees, and attorneys.

<b>CERTIFICATE HOLDER</b>  Village of Tinley Park Village Manager 16250 S. Oak Park Ave. Tinley Park IL 60477	<b>CANCELLATION</b> SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE 
--	--

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Office of the Secretary of State Jesse White  
**CYBERDRIVEILLINOIS.COM**

## Corporation/LLC Search/Certificate of Good Standing

### Corporation File Detail Report

File Number 49459629

Entity Name AMBER MECHANICAL CONTRACTORS INC.

Status  
ACTIVE

#### Entity Information

Entity Type  
CORPORATION

Type of Corp  
DOMESTIC BCA

Incorporation Date (Domestic)  
Tuesday, 25 February 1969

State  
ILLINOIS

Duration Date  
PERPETUAL

#### Agent Information

Name  
ROBERT D GOLDSTINE

Address

835 MCCLINTOCK DRIVE  
BURR RIDGE , IL 60527

Change Date  
Wednesday, 4 August 1999

### Annual Report

Filing Date  
Monday, 27 January 2020

For Year  
2020

### Officers

President  
Name & Address  
JOHN C LINDEMULDER, JR. 11950SCENTRAL AVE, ALSIP IL 60803

Secretary  
Name & Address  
ROBERT A BOER, 11950 S CENTRALAVE, ALSIP IL 60803

### Assumed Name

ACTIVE  
AMBER HEATING & AIR CONDITIONING

ACTIVE  
TOTAL AUTOMATION CONCEPTS, INC.

### Old Corp Name

10/15/1987  
AMBER/BLOEM HEATING AND AIR CONDITIONING, INC.

**Certificate of Registration**  
**STATE BOARD OF ELECTIONS**

Registration No. 15738

**AMBER MECHANICAL CONTRACTORS INC**  
11950 S CENTRAL AVE  
ALSIP IL 60803

Information for this business last updated on:  
Friday, April 14, 2017

Certificate produced on Friday, April 14, 2017 at 11:13 AM



# CITY OF CHICAGO

## LICENSE CERTIFICATE

NON-TRANSFERABLE

BY THE AUTHORITY OF THE CITY OF CHICAGO, THE FOLLOWING SPECIFIED LICENSE IS HEREBY GRANTED TO

NAME:

AMBER MECHANICAL CONTRACTORS

PRINTED ON:  
01/27/2020

AMBER MECHANICAL CONTRACTORS  
11950 S. CENTRAL AVE.  
ALSIP, IL 60803

LICENSE NO.: 1ST

CODE:

FEE:  
\$\*\*\*\*250.00

19866

1010

Limited Business License

PRESIDENT: JOHN C. LINDEMULDER  
SECRETARY: WILLIAM J. BEUKEMA

This license is a privilege granted and not a property right. This license is the property of the City of Chicago.

THIS LICENSE IS ISSUED AND ACCEPTED SUBJECT TO THE REPRESENTATIONS MADE ON THE APPLICATION THEREOF, AND MAY BE SUSPENDED OR REVOKED FOR CAUSE AS PROVIDED BY LAW. LICENSEE SHALL OBSERVE AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS OF THE UNITED STATES GOVERNMENT, STATE OF ILLINOIS, COUNTY OF COOK, CITY OF CHICAGO AND ALL AGENCIES THEREOF.

WITNESS THE HAND OF THE MAYOR OF SAID CITY AND THE CORPORATE SEAL THEREOF

THIS 5 DAY OF FEBRUARY, 2020

EXPIRATION DATE: February 15, 2022

ATTEST:

*Luci E. Johnson*

*Anna M. Valencia*

ACCOUNT NO. 28897

ITEM: 1

CITY CLERK

TRANS. NO.

THIS LICENSE MUST BE POSTED IN A CONSPICUOUS PLACE UPON THE LICENSED PREMISES.





# Village of Alsip License

4500 W. 123rd STREET · ALSIP, IL 60803



Business Name: **AMBER MECHANICAL CONTRACTORS**  
Phone Number: **708-597-9700**  
Location Address: **11950 S CENTRAL AVE**  
Lic Nbr / Class: **20-00003907 / 0003000**  
Issue Date: **April 16, 2020**  
Expiration Date: **April 30, 2021**  
Lic Fee: **\$150.00**  
Penalty: **\$0.00**  
Total: **\$250.00**

\*\*\*\*\* PLEASE DISPLAY LICENSE IN VIEW FOR CUSTOMERS \*\*\*\*\*

Mayor John Ryan:

Clerk Susan Petzel:



International Association of Sheet Metal, Air, Rail and Transportation  
CHICAGO, COOK COUNTY AND LAKE COUNTY, ILLINOIS  
Regular Union Meeting First Friday of each month at 7 p.m.  
Executive Board Meetings Third Thursday of each month



**Sheet Metal Workers'  
Local 73**

4550 ROOSEVELT ROAD  
HILLSIDE, IL 60162-2053  
708.449.0073  
FAX 708.449.7337  
www.smw73.org

**DANIEL M. AHERN**  
Financial Secretary-Treasurer

**RAYMOND SUGGS**  
President and Business Manager

**MICHAEL A. VITORIO**  
Recording Secretary

July 22, 2020

Amber Mechanical Contractors, Inc.  
11950 S. Central Avenue  
Alsip, IL. 60803

To Whom It May Concern:

Amber Mechanical Contractors, Inc. as of today's, date has been signatory with Local 73 since May of 2002. Amber Mechanical Contractors, Inc. is current and in compliance with their reporting, including union fringe benefits and payments through May 31, 2020.

They are in good standing with Local 73.

Sincerely,

A handwritten signature in cursive script that reads "Samantha Torres".

Samantha Torres  
Contract Coordinator/Savings

# CHICAGO Pipefitters LOCAL 597

10090 GEORGIA STREET, SUITE #1 • CROWN POINT, IN 46307-9849  
PHONE 219-795-1566 • FAX 219-795-1575 • www.pf597.org

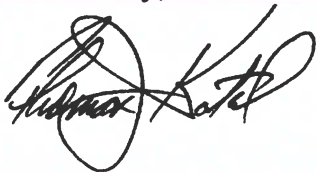
July 21, 2020

Re: Amber Mechanical Contractors

Please be advised that Amber Mechanical Contractors has fulfilled its obligations under the applicable collective bargaining agreement. They are a signatory contractor in good standing through June 2020 with Pipe Fitters Association Local Union 597.

If you have any further questions or require additional information, please call me.

Sincerely,



Thomas J. Kotel  
Recording Secretary

TJK/tm



The United States Department of Labor

Office of Apprenticeship

Certificate of Registration of Apprenticeship Program

Pipe Fitters' Training Fund Local 597

Mokena, Illinois

For the Trades of: Pipe Fitter

Registered as part of the National Apprenticeship System  
in accordance with the basic standards of apprenticeship  
established by the Secretary of Labor

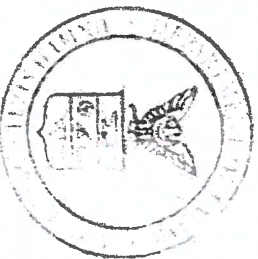
December 31, 1978

Date

Revised: May 13, 2014

IL017780093

Registration No.



*Handwritten signature*

Secretary of Labor

*Handwritten signature: J. V. Holt*

Administrative Officer of Apprenticeship



# Certificate of Registration

CHICAGO SHEET METAL WORKERS AREA JOINT APPRENTICESHIP COMMITTEE  
(Cook and Lake Counties)

Chicago, Illinois

for the trade classification of SHEET-METAL WORKER

*Issued in recognition of the above apprenticeship system, registered as part of the National  
Apprenticeship Program, in accordance with the standards recommended by the*

FEDERAL COMMITTEE ON APPRENTICESHIP

and the National Apprenticeship and Training Standards for the Sheet Metal Industry

June 29, 1942

Date Rev. 4/23/65

*W. C. Chidmore*  
Secretary of Labor

*Frank O. Murphy*  
Administrator, Bureau of Apprenticeship and Training

Registry No. 1 2 9 3 8



## *SAFETY MANUAL*

January 1, 2012

**Total Automation Concepts, Inc. Safety Manual Change Page Changes in this manual are indicated by a vertical line on the left side of page**

Section #	Section Title	Description of Change	Page #	Date of Change
4	Training	Addition of Job Hazard Analysis Form (JHA) 4.4.2	13	01/01/2012
5	Drug and alcohol	Added existing TAC policy to safety manual	15	01/01/2012
7	Emergency Response plan	Safety Plan of Action Form	23	01/01/2012
8	Accident Investigation	Addition of Incident Reporting Guideline (this form was already in use)	36	01/01/2012
11	OSHA Inspection Procedures	New section added to manual	41	01/01/2012
12	Fleet policy	New section added to manual	45	01/01/2012
14	Fall Protection	Added language and procedures for Fall / Travel restraint systems	61, 63, 65, 69, 70	01/01/2012
14	Fall Protection	Added Job Safety Analysis (JSA) provisions for site specific fall protection plans	69	01/01/2012
14	Fall Protection	Revised documentation requirements for training	70	01/01/2012
15	Ladders	Revised inspection requirements for ladders to include the tool room/shop as part of the process	73, 75	01/01/2012
15	Ladders	Language to not use a step ladder as a straight ladder	73	01/01/2012
17	PPE	New section added to manual	83	01/01/2012
18	Scaffolding	New section added to manual	85	01/01/2012
19	Crane Safety Program	Added power line safety requirements that are in line with new OSHA Crane Standard.	91	01/01/2012
19	Crane Safety Program	Revised requirements for crane operators that are in line with new OSHA crane standard.	94, 95	01/01/2012
19	Crane Safety Program	Added provisions for power line safety for signalmen	95	01/01/2012
19	Crane Safety Program	Added "new signals" as an option for signaling that are in line new OSHA crane Standard	96	01/01/2012
19	Crane Safety Program	Added Signal person training and qualification requirements that are in line with new OSHA crane standard.	97	01/01/2012
19	Crane Safety Program	Added rigger training and qualification requirements that are in line with new OSHA crane standard	99, 100	01/01/2012

**Total Automation Concepts, Inc. Safety Manual**  
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## INTRODUCTION

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The well-being of all employees working on Total Automation Concepts, Inc. job sites is the highest priority at Total Automation Concepts, Inc. While we must provide quality work at a fair price for our customers in order to survive as a business, we refuse to accept that anyone must be injured in the process. We believe that productive work habits and safe work habits are one in the same.

Many accidents happen when people are in a hurry to get something done, or when they get into habits and think that it won't happen to them. None of us have the ability to predict when, where, or how an accident will happen. The tragedy is that most accidents would take but a few seconds to avoid. No matter how busy or experienced you feel you are, you **MUST** consistently take that little bit of time to do it safely. You cannot coast; you have got to do it every day. Victims of accidents wish they had.

1. Avoid accidents and other unplanned occurrences that result in injury to employees, interruption of production, or damage to equipment and property.
2. Take all action necessary in engineering, planning, designing, assigning and supervising work operations to establish and maintain safe and healthful working conditions on all projects.

This Manual outlines the minimum requirements for a safe work environment. Certain jobs will require additional protections. It is extremely important that you understand **HOW** each task is to be done in a safe manner. If you do not know, **STOP** and **ASK** before you begin to work. Your safety and well-being as well as the safety of those around you, can be accomplished only through your constant, sincere effort. Merely talking about safety is not sufficient. It is everyone's responsibility to act, think, and perform safely. We must work together to maintain a safe work environment. Together we can achieve our goal of accident-free job sites.

---

## APPROVALS

---

This safety and health program is approved for use by Amber Mechanical Contractors Inc. It is reviewed and revised at least annually. The Sample Company competent person or Supervisor assigned to the project has full responsibility and authority to implement the portions of this program that are applicable to the project.

Co. President

Construction:

Company: Amber Mechanical Contractors Inc.

Date: JANUARY 1, 2012

Co. President

Service:

Company: Amber Mechanical Contractors Inc.

Date: JANUARY 1, 2012

---

## **1.0 OBJECTIVES**

---

- 1.1 This manual establishes procedures that provide a safety and healthful working environment for all employees. These procedures apply to all contracting work done on any job site that is managed, or operated by Total Automation Concepts, Inc.
  - 1.1.1 To provide guidelines for implementing a safety plan that will direct safety and health programs on Total Automation Concepts, Inc. job sites and to maintain compliance with federal, state and/or local statutory requirements or regulations.
  - 1.1.2 To minimize occupational injury and illnesses, reduce equipment and property damage, and eliminate recurrences.
  - 1.1.3 To establish responsibility and accountability for the safety program at the facility.
  - 1.1.4 This manual is intended to list some of the policies, procedures and practices of Total Automation Concepts, Inc. and is subject to change, revision, or revocation at any time without notice. It is not to be construed either as an employment contract or a guaranty of employment.

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## **2.0 APPLICABILITY / SCOPE**

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- 2.1 This program applies to all employees, all work places and work projects, and all subcontractors under the direct control of Total Automation Concepts, Inc. Subcontractors must provide all the manpower, supplies, equipment, medical examinations/ and testing necessary to comply with this program.
- 2.2 This program is used in conjunction with the current copy of the OSHA (Construction Industry Standards, 29 CFR 1926). This program addresses the primary hazards associated with Total Automation Concepts, Inc. Each section of the program summarizes the major requirements of OSHA pertaining to a particular subject area or work activity. Where appropriate, a brief review of the important items to remember is provided within the section to help the competent person or project supervisor understand the OSHA requirements. If additional information is required or a particular subject is not addressed, then the OSHA standards should be referenced for more detail.
- 2.3 This program is adapted to meet site or project-specific needs using the appended forms.
- 2.4 Implementation of this program is under the direct control of the competent person or supervisor assigned to the project.

---

## **3.0 ACCOUNTABILITY**

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- 3.1 Total Automation Concepts, Inc. provides for a safe and healthful work environment for all its employees and subcontractors.
- 3.2 Safety provides the best form of quality performance and productivity.

- 3.3 Every employee has a right to refuse to work due to unsafe conditions, unsafe work practices, or with unsafe equipment, or if directed to perform work that violates the requirements of this policy or applicable OSHA standards.
- 3.4 Management, at all levels, is responsible and held accountable for implementing the requirements of this policy.
  - 3.4.1 The President of Total Automation Concepts, Inc. shall demonstrate a positive attitude toward the achievement of a strong safety program, with the objective of preventing personal injury and property damage through direct and active support.
    - 3.4.1.1 Know the safety records of all supervisors and insist on accountability.
    - 3.4.1.2 Communicate about safety on pre-bid planning and visits to the job sites, in the same way you communicate about costs and schedules.
    - 3.4.1.3 Include the discussion of safety programs at staff meetings.
    - 3.4.1.4 Request status reports (monthly) on safety activities and progress within Total Automation Concepts, Inc.
    - 3.4.1.5 Insist newly hired employees receive training in safe work methods.
    - 3.4.1.6 Make the necessary appropriations to meet the requirements of an effective safety program.
    - 3.4.1.7 Continually support and enforce Total Automation Concepts, Inc. Safety Program.
    - 3.4.1.8 Practice safety through good example.
  - 3.4.2 The Project Managers are responsible for identifying the hazards of their projects and communicating to contractors on their worksites. Weekly toolbox talks will be required of all contractors working under the management of Total Automation Concepts, Inc.
    - 3.4.2.1 Promote full support of the safety program by enthusiastically advocating the program during the project planning stages.
    - 3.4.2.2 Ensure that all employees and subcontractors are aware of and are following safety procedures established by Total Automation Concepts, Inc. by reviewing jobs safety meeting notes, daily inspection reports, and letters to subcontractor regarding their safety performance during the project.
    - 3.4.2.3 Monitor safety records of their job sites.
    - 3.4.2.4 Establish safety procedures with special attention to unusual conditions identified during project planning and hazard assessments.
    - 3.4.2.5 Visit the job sites frequently with special attention to hazard recognition and accident prevention.



- 3.4.2.6 Practice safety through good example.
- 3.4.3 Field Supervisors are directly responsible for the control and activities of their employees. They play a key role in the implementation and maintenance of an effective safety program.
  - 3.4.3.1 Field Supervisors must plan their safety activity with the same care and effort as they do other portions of their work.
  - 3.4.3.2 Provide, and require the use of, other personal protective equipment deemed necessary by the process, equipment or materials.
  - 3.4.3.3 Make their own worksite safety inspections and hazard corrections on a daily basis, making notations in the daily log.
  - 3.4.3.4 Hold regular safety meetings with their crews. Receive copies of all subcontractor toolbox talks.
  - 3.4.3.5 Provide all accident reports to the Total Automation Concepts, Inc. main office the day of the accident.
  - 3.4.3.6 Assist with accident investigations to ensure proper reporting and documentation. Follow accidents with prompt corrections to eliminate recurrences.
  - 3.4.3.7 Insist on compliance with the Hazard Communication Program.
  - 3.4.3.8 Monitor compliance with the confined space program when applicable.
  - 3.4.3.9 Ensure prompt first aid is administered to injured employees and that necessary medical treatment is pursued.
  - 3.4.3.10 Insist on compliance with established safety regulations.
  - 3.4.3.11 Practice safety through good example.

## **EMPLOYEE RULES**

3.4.4 Each employee is responsible to perform his or her job safely.

Good safety practices and accident prevention is the responsibility of every Total Automation Concepts, Inc. employee. Each employee is responsible to know and to follow the general provisions of the Total Automation Concepts, Inc. safety policy, the specific rules of their trade or worksite and the rules enumerated below.

### **ALL EMPLOYEES WILL ABIDE BY THE FOLLOWING RULES**

- 3.4.4.1 Report unsafe conditions and “near misses” to your supervisor.
- 3.4.4.2 Immediately report all injuries to your supervisor.
- 3.4.4.3 Employees who will miss work must report by calling the office within one hour of your normal starting time of the day missed. Employees failing to report any absence after the second missed day are presumed to have abandoned their job.
- 3.4.4.4 Employees involved in a work related accident, regardless of injury, are required to fill out and sign an Accident/Incident Report Form.
- 3.4.4.5 Wear hard hats and safety glasses on all designated job sites at all times. Chemical splash goggles and hearing protection must be with you and ready for use. Your personal protection equipment must be on the job each workday.
- 3.4.4.6 Use safety glasses, goggles, or face shields during operations involving concrete breaking, metal chipping/cutting, welding, power actuated tools, grinding, or dusty conditions. Use eye and ear protection for operations involving powder actuated tools, saw cuts with metal, and all other high noise level operations.
- 3.4.4.7 Wear appropriate work clothes: long sleeves, gloves, and construction grade boots. Loose clothing or jewelry (especially rings) should not be worn.
- 3.4.4.8 Properly care for, and be responsible for, all personal and company PPE. Replace lost or damaged equipment.
- 3.4.4.9 During an emergency, evacuation employees are to report to their foremen at the pre-established safe re-grouping location.
- 3.4.4.10 Report all theft immediately to your supervisor. Mark all personal tools with your identifying mark. Make sure that company tools are marked. All theft will be prosecuted to the fullest extent of the law. Lock Total Automation Concepts, Inc. gang boxes and storage locations, at all times.
- 3.4.4.11 The use of or being under the influence of intoxicating beverages or illegal drugs while on the job is prohibited. Prescription drugs that may cause drowsiness must be reported to your supervisor.

- 3.4.4.12 Horseplay or practical jokes shall not be permitted on the job, before, during, and after work hours. Fighting on the job is grounds for dismissal.
- 3.4.4.13 Be alert and keep out from under overhead loads.
- 3.4.4.14 All employees working on Total Automation Concepts, Inc.'s job sites shall practice good housekeeping. Excess material shall be properly stacked and stored in a secure place. Protruding nails, wire, etc., shall be bent over, cut, or pulled. Debris shall not be allowed to accumulate in aisles and will be frequently removed.
- 3.4.4.15 Gasoline must be stored and securely transported in proper safety containers with flashback liners in place. Engines must be shut off when refueling. No smoking anywhere near flammable liquids.
- 3.4.4.16 Compressed gas cylinders (propane, oxygen, acetylene, etc.) must be secured in an upright position. When not in use, caps must be on securely. Oxygen and acetylene shall not be stored together.
- 3.4.4.17 Never operate any machine or equipment unless all guards and safety devices are in place and in proper operating condition.
- 3.4.4.18 Keep all tools in safe working condition. Never use defective tools or equipment. Report all defective equipment to your foremen.
- 3.4.4.19 Machinery shall be properly oiled, cleaned, adjusted, refueled, and operated only by authorized operators. Shut off, disconnect power, and lock out equipment under repair.
- 3.4.4.20 No person shall ride any boom, forklift, or material handling equipment.
- 3.4.4.21 When burning, welding, cutting, or soldering operations are being performed, a fire extinguisher must be close at hand at all times. Only authorized persons shall burn, weld, cut, or solder and shall wear a protective face shield, eye protection, and appropriate clothing (no polyester). Training or review of burning, welding, cutting, or soldering operations and hot work permits are to be issued on each job by the foremen.
- 3.4.4.22 Scaffold units are to be used in preference to ladders. Ladders shall be used only in the open and locked position. The last step prior to the top will never be used. Place ladders on a substantial base and do not use ladders with broken, split, or missing rungs or rails. All access ladders are to extend at least three feet above the landing platform and be securely fastened. Proper ladder placement is 1/4 base/height.
- 3.4.4.23 Elevated work platforms are to be used ONLY by the contractors who erected them. Only companies with written approval from the erecting contractor may use scaffolding erected by that contractor.
- 3.4.4.24 Lift correctly, using your legs to take the strain. Turn by placing the proper foot into direction of the turn (do not twist with the back). Lock your lower back curve and tighten stomach muscles before you lift. Stretch your muscles before lifting.

- 3.4.4.25 Running on the job is always prohibited. Jumping off any ladder, scaffold, or height is grounds for dismissal. While ascending any ladder the three point contact rule (2 hands - 1 foot; 2 feet - 1 hand) must be used. Use a rope to lift tools. Ladder should be set up using the 4:1 rule.
- 3.4.4.26 Total Automation Concepts, Inc. has a Hazardous Communication Program (HCP). The purpose of this program is to inform you of the hazards of the chemicals we work with in order to reduce chemical source injuries and illness. If you have a question about any chemical you work with see your foreman.
- 3.4.4.27 You must understand the foreman's instruction. If you do not know how to do the job safely, ask your foreman.
- 3.4.4.28 Never seek medical attention concerning a work related injury or illness after work hours without first attempting to notify a project manager, foreman, or office manager.
- 3.4.4.29 If you are injured away from the job, notify your supervisor, especially if it may affect your job performance or worsen the injury.
- 3.4.4.30 If your state driver's license becomes suspended or revoked or changes in your medical condition would negate your license, notify your foreman immediately.
- 3.4.4.31 All electrical cable, welding cables, or torch hoses that run across aisles and through work areas shall be covered by a protective ramp or run overhead wherever practical.

Violation of any of these rules may be cause for immediate disciplinary action.

I have read and understand the rules stated above and accept them as a condition of continued employment.

---

Employee Signature                      Date

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## **4.0 TRAINING**

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### **4.1 OBJECTIVE**

- 4.1.1 The purpose of this program is to ensure those employees of Total Automation Concepts, Inc. are trained in recognized hazards associated with tools, job conditions, work procedures, and the environment in which work is performed.

### **4.2 APPLICABILITY / SCOPE**

- 4.2.1 Job hazards shall be assessed by a competent person using specific hazard assessment such as equipment manuals. Sections of this policy related to specific exposures such as Hazard Communication can be used to define work rules. Documented training will be given as determined by the competent person. Follow-up evaluation will be performed and a determination made for either retraining or disciplinary action according to Section 6 of this policy.

### **4.3 ACCOUNTABILITY**

- 4.3.1 Total Automation Concepts, Inc. provides safety training for job site hazard awareness and control to all affected employees. In general, training is provided as follows:

4.3.1.1 All affected employees are trained in general job site safety and health issues.

4.3.1.2 All employees have been trained in the safe working practices of their respective trade. Total Automation Concepts, Inc. provides for additional training as appropriate depending on job-specific requirements.

4.3.1.3 All affected employees receive supplementary safety training at weekly toolbox talks.

### **4.4 FORMS**

4.4.1 Competent Person Acknowledgment Form

4.4.2 Job Hazard Analysis Form

**FORM 4.4.1 COMPETENT PERSON ACKNOWLEDGMENT FORM**

I, \_\_\_\_\_, have received the Total Automation Concepts, Inc. Corporate Workers Safety & Health Program issued \_\_\_\_\_ . I will be responsible as a “competent person” to familiarize myself with the contents of this manual and to instruct all employees under my supervision as to the contents of this policy. All forms with the Appendices will be utilized on all Total Automation Concepts, Inc. projects.

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Date*

**FORM 4.4.2 JOB HAZARD ANALYSIS FORM (JHA)**

<b>Job Hazard Analysis (JHA) Form</b>	<b>Job/Task:</b>	<b>Date:</b>
	<b>Job Title:</b>	<b>Analysis Conducted By:</b>
<b>Department:</b>		<b>Reviewed By:</b>
<b>Required PPE:</b>		
<b>Specific Job Steps</b> (How people get hurt)	<b>Hazard Identification</b> (What causes people to get hurt)	<b>Recommended Corrective Actions</b> (What safe practices, procedures, and PPE are needed to prevent someone from getting hurt)
1.	1a. 1b.	1a. 1b.
2.	2.	2.
3.	3. 3a.	3. 3a.
4.	4a. 4b. 4c.	4a. 4b. 4c.
5.	5a. 5b. 5c.	5a. 5b. 5c.
6.	6a. 6b. 6c.	6a. 6b. 6c.
7.	7.	7.
8.	8a. 8b.	8a. 8b.

**NOTE:** Every Job Hazard Analysis (JHA) should be machine/task/site specific and is not all encompassing of the recommended action items that will prevent an injury from occurring. All workers should be trained and verify that they understand all the requirements of this Job Hazard Analysis.

**I have reviewed the above JHA, and am familiar with the required job tasks.**

<b>Print Name</b>	<b>Date</b>	<b>Sign Name</b>	<b>Supervisor</b>

**FORM 4.4.2 JOB HAZARD ANALYSIS FORM (JHA)**

**EXAMPLE**

<b>Job Hazard Analysis (JHA) Form</b>	<b>Job/Task:</b> Changing Light Bulb	<b>Date:</b> 04/13/10
	<b>Job Title:</b> Maintenance Person	<b>Analysis Conducted By:</b> Joe Lumens
<b>Department:</b> Maintenance		<b>Reviewed by:</b>
<b>Required PPE:</b> Safety glasses and cut-resistant gloves.		
<b>Specific Job Steps</b> (How people get hurt)	<b>Hazard Identification</b> (What causes people to get hurt)	<b>Recommended Corrective Actions</b> (What safe practices, procedures, and PPE are needed to prevent someone from getting hurt)
1. Obtain ladder	1a. Trip while carrying ladder 1b. Muscle strain from carrying ladder	1a. Clear walking path 1b. Use proper lifting techniques 1b. Get help carrying ladder
2. Get bulb	2. Cut if bulb breaks	2. Wear protective gloves Hold bulb gently
3. Ensure power is off	3. Electrical shock 3a. Fall as result of reaction injury	3 & 3a. Lock out Tag out
4. Climb ladder	4a. Fall from ladder 4b. Pinch fingers 4c. Sliver from ladder railing	4a. Inspect ladder prior to use 4a. Climb using 3-pt of contact Wear proper footwear 4b. Keep hands clear of pinch points when setting up ladder 4c. Don't slide hands along ladder railing
5. Remove/replace bulb	5a. Electric shock 5b. Burn from hot bulb 5c. Eye injury or hand laceration from broken bulb	5a. Turn off light switch and breaker 5b. Allow bulb to cool before removing 5c. Wear tacky, cut-resistant gloves so bulb does not need to be squeezed while twisting
6. Climb down ladder	6a. Fall from ladder 6b. Pinch fingers 6c. Sliver from ladder railing	6a. Climb using 3-pt of contact Wear proper footwear 6b. Keep hands clear of pinch points when setting up ladder 6c. Don't slide hands along ladder railing
7. Discard of old bulb	7. Cut if bulb breaks	7. Wear protective gloves Hold bulb gently
8. Put ladder away	8a. Trip while carrying ladder 8b. Muscle strain from carrying ladder	8a. Clear walking path 8b. Use proper lifting techniques 8b. Get help carrying ladder

**NOTE:** Every Job Hazard Analysis (JHA) should be machine/task/site specific and is not all encompassing of the recommended action items that will prevent an injury from occurring. All workers should be trained and verify that they understand all the requirements of this Job Hazard Analysis.

**I have reviewed the above JHA, and am familiar with the required job tasks.**

Print Name	Date	Sign Name	Supervisor



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## **5.0 DRUG AND ALCOHOL POLICY**

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### **5.1 PREFACE**

5.1.1 The problems that drug and alcohol abuse have inflicted upon our society are numerous. Fifty four percent (54%) of all highway fatalities are alcohol related. More than 100,000 Americans die each year from alcohol consumption. Thousands of American workers are either seriously injured or killed each year on the job due to alcohol and substance abuse. The competitive edge that the United States once held over other countries because of the high productivity of its workforce has disappeared, causing the loss of thousands of jobs. There is no denying the fact that alcohol and substance abuse on the job has caused a decline in the overall well-being of American business and the American family.

5.1.2 It is widely recognized the alcohol/substance abuse is a treatable illness. Persons afflicted by alcohol/substance abuse illness are legally considered disabled and are protected from discrimination under the Americans with Disabilities Act. Nothing in this policy is intended to be in conflict with the Americans with Disabilities Act. Neither is it the intent of Total Automation Concepts, Inc. to discriminate against any person with a disability that is qualified and capable of performing their duty for which he/she is applying or was hired for, even if reasonable accommodation is necessary. However, because the safety and well-being of our employees is of utmost importance, reasonable accommodation does not mean that alcohol and/or drug use will ever be tolerated on the job.

### **5.2 POLICY STATEMENT**

5.2.1 The directors of Total Automation Concepts, Inc. recognize the problems created by drug and alcohol abuse and the need to develop prevention and treatment programs. Total Automation Concepts, Inc. has a commitment to protect people and property and to provide a safe working environment. The purpose of the following program is to establish and maintain a drug free, alcohol free, safe, and healthy work environment for all of its employees.

### **5.3 DEFINITIONS**

5.3.1 **Company Premises** - the term "Company Premises" as used in this policy includes all property, facilities, land, buildings, structures, automobiles, trucks and other vehicles owned, leased, or used by the company. This includes private automobiles used by employees while on official company business at construction job sites, service calls, and service contract sites, and any and all work sites for which Total Automation Concepts, Inc. has responsibility.

5.3.2 **Prohibited Items and Substances** - Prohibited substances include illegal drugs (including controlled substances, look alike drugs and designer drugs), alcoholic beverages, and drug paraphernalia in the possession of or being used by an employee on the job.

5.3.3 **Employee** - Individuals who perform work for Total Automation Concepts, Inc. to include management, supervision, engineering, tradesmen, and clerical personnel.

5.3.4 **Accident** - Any event resulting in injury to a person or property to which an employee or contractor/contractor's employee contributed to as a direct or indirect cause.

5.3.5 **Incident** - An event which has all the attributes of an accident, except that no harm was caused to person or property.

5.3.6 **Reasonable Cause** - Reasonable cause shall be defined as tardiness, excessive absenteeism, and erratic behavior such as noticeable imbalance, incoherence, and disorientation.

#### 5.4 **CONFIDENTIALITY**

5.4.1 All parties to this policy and program have only the interests of employees in mind, therefore, we encourage any employee with a substance abuse problem to come forward and voluntarily accept our assistance in dealing with the illness. An employee assistance program will provide guidance and direction for you during your recovery period. If you volunteer for help, the company will make every reasonable effort to return you to work upon your recovery. The company will also take action to assure that your illness is handled in a confidential manner.

5.4.2 All actions taken under this policy and program will be confidential and disclosed only to those with a "need to know."

5.4.3 When a test is required, the specimen will be identified by a code number, not by name, to insure confidentiality of the donor. Each specimen container will be properly labeled and made tamper proof. The donor must witness this procedure.

5.4.4 Unless an initial positive result is confirmed as positive, it shall be deemed negative and reported by the laboratory as such.

5.4.5 The handling and transportation of each specimen will be properly documented through the strict chain of custody procedures.

#### 5.5 **RULES, DISCIPLINARY ACTIONS – GRIEVANCE PROCEDURES**

##### 5.5.1 Rules

5.5.1.1 All employees must report to work in a physical condition that will enable them to perform their jobs in a safe and efficient manner. Employees shall not:

5.5.1.1.1 Use, possess, dispense or receive prohibited substances on or at the job site; or

5.5.1.1.2 Report to work with any measurable amount of prohibited substances in their system.

##### 5.5.1.2 Discipline

5.5.1.2.1 When Total Automation Concepts, Inc. has reasonable cause to believe an employee is under the influence of a prohibited substance, for reasons of safety, the employee may be suspended until the results are available. If no test results are received after three working days, the employee, if available, shall be returned to work with back pay. If the test results prove negative, the employee shall be reinstated with back pay. In all other cases:

5.5.1.2.1.1 Applicants testing positive for drug use will not be hired.

5.5.1.2.1.2 Employees who have not voluntarily come forward, and who test positive for a drug use, will be terminated.

5.5.1.2.1.3 Employees who refuse to cooperate with testing procedures will be terminated.

5.5.1.2.1.4 Employees found in possession of drugs or drug paraphernalia will be terminated.

- 5.5.1.2.1.5 Employees found selling or distributing drugs will be terminated.
- 5.5.1.2.1.6 Employees found under the influence of alcohol while on duty, or while operating a company vehicle, will be subject to termination.
- 5.5.1.2.1.7 Employees while on duty that are found in possession of legitimate prescription medication which may impair the performance of job duties, but who fail to report such medication to their supervisor, will be subject to termination.

## 5.5.2 Prescription Drugs

- 5.5.2.1 Employees using a prescribed medication, which may impair the performance of job duties, either mental or motor functions, must immediately inform their supervisor of such prescription drug use. For the safety of all employees, the company will consult with you and your physician to determine if a re-assignment of duties is necessary.
- 5.5.2.2 The company will attempt to accommodate your needs by making an appropriate re-assignment. However, if a re-assignment is not possible, you will be placed on temporary medical leave until released as fit for duty by the prescribing physician.

## 5.5.3 Grievances

- 5.5.3.1 All aspects of this policy and program shall be subject to the grievance procedure of the applicable collective bargaining agreements.

## 5.6 DRUG AND ALCOHOL TESTING

- 5.6.1 The parties to this policy and program agree that under certain circumstances, the company will find it necessary to conduct drug and alcohol testing. While "random" testing is not necessary for the proper operation of this policy and program, it may be necessary to require testing under the following conditions:
  - 5.6.1.1 A pre-employment drug and alcohol test will be administered to all applicants for employment.
  - 5.6.1.2 A test may be administered in the event a supervisor has a reasonable cause to believe that the employee has reported to work under the influence, or is or has been under the influence while on the job, or has violated this drug policy. During the process of establishing reasonable cause for testing, the employee has the right to request his on-site representative to be present.
  - 5.6.1.3 Testing may be required if an employee is involved in a workplace accident/incident or if there is a workplace injury.
  - 5.6.1.4 Testing may be required as a part of a follow-up to counseling or rehabilitation for substance abuse, for up to a 1-year period.
  - 5.6.1.5 Employees may also be tested as required by union agreement.
- 5.6.2 Each employee will be required to sign a consent and chain of custody form, assuring proper documentation and accuracy. If an employee refuses to sign a consent form authorizing the test, ongoing employment by the company will be terminated.
- 5.6.3 Drug testing will be conducted by an independent accredited laboratory (designated by the labor union) and may consist of either blood or urine tests, or both, as required. Blood tests will be utilized for post-accident investigation only.

5.6.4 The company will bear the costs of all testing procedures.

**5.7 REHABILITATION AND EMPLOYEE ASSISTANCE PROGRAM**

5.7.1 Employees are encouraged to seek help for a drug or alcohol problem before it deteriorates into a disciplinary matter. If an employee voluntarily notifies supervision that he or she may have a substance abuse problem, the company will assist in locating a suitable employee assistance program for treatment, and will counsel the employee regarding medical benefits available under the company or union health and welfare/insurance program.

5.7.2 If treatment necessitates time away from work, the company shall provide the employee an unpaid leave of absence for purposes of participation in an agreed upon treatment program. An employee who successfully completes a rehabilitation program shall be reinstated to his/her former employment status, if work for which he/she is qualified exists.

5.7.3 Employees returning to work after successfully completing the rehabilitation program will be subject to drug tests without prior notice for a period of one year. A positive test will then result in disciplinary action as previously outlined in this policy and program.

**5.8 DISCLAIMER**

5.8.1 The provisions of the drug and alcohol policy shall be considered of no force effect to the extent which the making or enforcement of such provisions is contrary to any law or public policy or is in conflict with certain labor agreements to which Total Automation Concepts, Inc. is signatory.

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## **6.0 DISCIPLINE AND ENFORCEMENT OF SAFETY RULES**

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### **6.1 OBJECTIVE**

6.1.1 This procedure is established to provide a mechanism for the discipline of contractors who repeatedly violate safety rules. Safety rules are written and enforced to protect employees from injury and provide a “safe and healthful place of employment.”

### **6.2 APPLICABILITY/ SCOPE**

6.2.1 This applies to all Total Automation Concepts, Inc. employees on Total Automation Concepts, Inc. job sites.

### **6.3 ACCOUNTABILITY**

6.3.1 Superintendents are responsible for the enforcement of the safety and health program at Total Automation Concepts, Inc. In order to accomplish this, they must ensure that each employee is properly instructed in the use of safety equipment and safe work practices, warn employees when they violate a safety rule, and issue a written warning or fine to any employee who refuses to comply with the rules.

6.3.2 Each written warning will advise the employee of the nature of the violation and the correct safe practice and procedure.

6.3.3 The listing of infractions and penalties above is intended only as a general guideline. Total Automation Concepts, Inc. specifically retains the right to modify the penalties and/or impose the appropriate disciplinary action or other forms of discipline, based upon the specific circumstances involved in each individual case, including discipline or termination on the first offense.

6.3.4 When an employee violates a safety rule, the superintendent will enforce the following discipline as the employer may deem appropriate:

6.3.4.1 First Offense - Verbal warning

6.3.4.2 Second offense - Written warning

6.3.4.3 Third Offense - Suspension without pay or immediate termination

### **6.4 TRAINING**

6.4.1 Training will be performed in the new hire orientation.

### **6.5 FORMS**

6.5.1 Employee Warning Record

**NOTE: DOCUMENTATION OF THE ABOVE ACTION IS NECESSARY TO COMPLY WITH GOVERNMENT REGULATIONS AND ANY PERTINENT LABOR AGREEMENT.**

**FORM 6.5.1 EMPLOYEE WARNING RECORD**

Oral   
Written

Employee's Name: \_\_\_\_\_ Clock or Payroll No: \_\_\_\_\_

Date of Warning: \_\_\_\_\_ Department: \_\_\_\_\_ Shift: \_\_\_\_\_

**VIOLATION**

**REASON FOR WARNING**

Date: \_\_\_\_\_  Absence  Substandard Work  Disobedience  
 Time: \_\_\_\_\_  Tardiness  Carelessness  Safety  
 Place: \_\_\_\_\_  Other \_\_\_\_\_

**COMPANY REMARKS**—Explain pertinent facts in detail: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**EMPLOYEE REMARKS**—Absence of statement by EMPLOYEE indicates agreement with this report. \_\_\_\_\_  
 \_\_\_\_\_

I have entered my version of the matter above.

Employee's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**ACTION TO BE TAKEN:** \_\_\_\_\_  
 \_\_\_\_\_

<b>PREVIOUS WARNINGS</b>	
When and By Whom	
<b>1st Warning</b>	
Date: _____	
Oral <input type="checkbox"/>	Written <input type="checkbox"/>
By Whom: _____	
<b>2nd Warning</b>	
Date: _____	
Oral <input type="checkbox"/>	Written <input type="checkbox"/>
By Whom: _____	
<b>3rd Warning</b>	
Date: _____	
Oral <input type="checkbox"/>	Written <input type="checkbox"/>
By Whom: _____	

I have read this "Warning Record" and understand it.

\_\_\_\_\_  
Employee's Signature Date

\_\_\_\_\_  
Signature of person who prepared warning—Title Date

\_\_\_\_\_  
Supervisor's Signature Date

\_\_\_\_\_  
Signature of witness if employee refuses to sign

**DISTRIBUTION**

Original - Personnel File  
 2nd Copy - Employee  
 3rd Copy - Supervisor

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## **7.0 EMERGENCY RESPONSE PLAN**

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### **7.1 OBJECTIVE**

- 7.1.1 The objective of this plan is to provide Total Automation Concepts, Inc. with guidelines to follow in the event of an emergency involving an employee injury where first aid/medical attention is needed.

### **7.2 APPLICABILITY/SCOPE**

- 7.2.1 This section applies to all Total Automation Concepts, Inc. personnel working on construction job sites.

### **7.3 ACCOUNTABILITY**

- 7.3.1 Field Foreman is responsible to plan the first aid, medical services, and emergency transportation provided for employees who incur occupational injuries arising out of and in the course of employment on Total Automation Concepts, Inc. job sites.
- 7.3.2 Project Manager must also identify the nearest occupational clinic and post the emergency phone numbers in the trailer (Form 7.5.1).

### **7.4 MEDICAL PROCEDURE**

- 7.4.1 ALL MAJOR ACCIDENTS INVOLVING UNCONSCIOUSNESS OR MAJOR TRAUMA REQUIRE PARAMEDICS!

#### **7.4.2 Major Accidents**

- 7.4.2.1 Secure the injured person: DO NOT MOVE SERIOUSLY INJURED OR UNCONSCIOUS PERSONS unless he/she is in further danger.

#### **7.4.2.2 KNOW THIS INFORMATION AND TELL THE PARAMEDICS:**

- 7.4.2.2.1 Location of the job site (This address is \_\_\_\_\_.)

- 7.4.2.2.2 Location at the job site of the injured employee (floor, etc.).

- 7.4.2.2.3 General nature of the injury (shock, amputation, fall, etc.).

- 7.4.2.2.4 Send for HELP: 'Anyone' available should make a call for help. Send someone to wait at the job entrance to direct the paramedics.

- 7.4.2.2.5 Contact the Safety Program Facilitator, Norma Chamis, at 708-597-9700 Ext 222.

- 7.4.2.2.6 After hours contact your supervisor.

#### **7.4.3 Minor Accidents**

- 7.4.3.1 Minor accidents which do not impair the ability to work, such as cuts or muscle strains, receive first aid on the job. Record these in your logbook and mention them to the safety coordinator upon his next visit.

- 7.4.3.2 All job injuries which restrict work or stops work must be directed to the company medical location and called in to the office immediately.

- 7.4.3.2.1 CALL the CLINIC as indicated in the job packet. Eye injuries are to be sent to this clinic as well. Hours: 8:00 a.m. to 4:30 p.m.

- 7.4.3.2.2 OFF-HOUR ACCIDENTS AND WEEKEND ACCIDENTS: Injured employees must be accompanied to the nearest emergency room only.

7.4.3.2.3 Contact your Supervisor, the Safety Coordinator, and the Office Manager. After securing the injured, immediately investigate: WHO, WHAT, WHEN, WHERE, AND WHY.

7.4.3.2.4 A written investigation form signed by the foreman should be turned in to the safety office. Witness statement forms from the job kit should be filled out at the time of the accident.

#### **7.4.4 Transportation**

7.4.4.1 Employees should not be permitted to leave the job site without the foreman or Superintendent's approval.

7.4.4.2 Employees will not provide their own transportation for the initial visit to the doctor for a job-related injury.

7.4.4.3 Supervisors within Total Automation Concepts, Inc. will decide what type of transportation will be used. If medical attention is necessary during transport, the ambulance will be used. If there is any doubt, the ambulance will always be the first choice. The ambulance phone number is 911.

7.4.4.4 The hospital emergency room or the clinic will be notified when the transportation vehicle leaves the job site. All available information regarding the nature and extent of the injury should be given to the emergency room staff.

7.4.4.5 The injured employee shall be accompanied by their foreman/supervisor or designee when being transported to a clinic or hospital (non-ambulance).

7.4.4.6 The Authorization for Medical Information Form 7.5.2 must accompany the employee to the clinic or hospital.

7.4.4.7 Their office manager must notify the injured employee's nearest relative after first aid has been rendered and he/she is on their way to the hospital.

7.4.4.8 Injured employee's tools and personal items will be secured in a locked job site location.

#### **7.4.5 Reporting of Non-referred Medical Treatment**

7.4.5.1 Employees who obtain medical treatment for alleged work-related injuries without being referred by Total Automation Concepts, Inc. foreman /superintendent or their designee should be aware that this MAY RESULT IN THE DENIAL of any claim for Worker's Compensation benefits and may be cause for discharge.

#### **7.4.6. First Aid and Supplies**

7.4.6.1 Every Total Automation Concepts, Inc. job site will be equipped with a first aid kit. Other medical and first aid supplies will be ordered as necessary for the employees' safety.

7.4.6.2 Personnel of Total Automation Concepts, Inc. shall not dispense medication.

### **7.5 FORMS**

7.5.1 Site Safety Plan of Action Form

7.5.2 Authorization for Medical Information



## FORM 7.5.1 SITE SAFETY PLAN OF ACTION FORM

Foreman: \_\_\_\_\_

Date: \_\_\_\_\_

**NOTE:** To be filled out by the foreman at the beginning of the job and updated as the job conditions change. This should be the first toolbox talk given. All new employees joining the job site SHALL be trained and SHALL sign their name indicating that they understand the information contained in this plan.

<b>Job Title:</b>	<b>Job Number:</b>	<b>Job Location:</b>
<b>Superintendent:</b>	<b>General Contractor:</b>	<b>G/C Point of Contact:</b>
<b>Important Phone Numbers:</b>		
1.	2.	3.
4.	5.	6. Terry Konell CSP, USN Ret 414-897-1177
<b>Location of Safety Policy:</b>		
<b>Location of MSDS File:</b>		
<b>Site-Specific Safety Concerns:</b>		
<b>Crane Safety Checklist (competent person):</b>		<b>Qualified Signalman:</b>
Location & Name of nearest Occupational Clinic:		
Designated Meeting Place:		
Fall Protection Plan (competent person):		
Scaffolds (competent person):		
Aerial Lifts (competent person):		
Equipment/Portable Electrical & Hand Tools:		
Other Hazards/General Conditions:		
<b>Items to consider:</b>		
<ol style="list-style-type: none"> <li>1. Report unsafe conditions and "near misses" to your Supervisor.</li> <li>2. Immediately report all injuries to the Site Supervisor.</li> <li>3. If you are injured away from the job, notify your supervisor; it may affect your job performance or worsen the injury.</li> <li>4. You must understand the Supervisor's instruction. If you do not know how to do the job safely, ask your Supervisor.</li> <li>5. Employees involved in a work related accident, regardless of injury, are required to fill out and sign an Accident/Incident Report Form.</li> <li>6. Wear designated PPE according to company policy.</li> <li>7. Wear appropriate work clothes as designated by company policy. Loose clothing or jewelry (especially rings) should not be worn.</li> </ol>		

8. Properly care for, and be responsible for, all personal and company protective equipment. Report lost or damaged equipment.
9. The use of or being under the influence of intoxicating beverages or illegal drugs while on company premise is prohibited. Prescription drugs, which may cause drowsiness, must be reported to your supervisor.
10. Horseplay or practical jokes shall not be permitted. Fighting is grounds for dismissal.
11. Good housekeeping shall be practiced by all employees. Excess material shall be properly stacked and stored. Protruding nails, wire, etc., shall be bent over, cut or pulled. Debris shall not be allowed to accumulate in aisles and will be frequently removed.
12. Never operate any machines or equipment unless authorized and all guards and safety devices are in place and in proper operating condition.
13. Keep all tools in safe working condition. Never use defective tools or equipment. Report all defective equipment to your Operations Managers.
14. Machinery shall be properly oiled, cleaned, adjusted, refueled and operated only by authorized operators. Shut off and lock out equipment under repair.
15. No person shall ride any forklift or material handling equipment.
16. Ladders shall be used only in the open and locked position. The last step prior to the top will never be used. Place ladders on a substantial base and do not use ladders with broken, split, or missing rungs or rails. All access ladders are to extend at least three feet above the landing platform and be securely fastened.
17. Lift correctly, using your legs to take the strain. Turn by placing the proper foot into direction of the turn (do not twist with the back). Lock your lower back curve and tighten stomach muscles before you lift. Stretch your muscles before lifting.
18. Running on the job is always prohibited. Jumping off any ladder or height is grounds for dismissal. While ascending any ladder the three point contact rule (2 hands - 1 foot; 2 feet - 1 hand) must be used. Use a rope to lift tools using the 4:1 rule.

Printed Name:	Signature:	Printed Name:	Signature:

**FORM 7.5.2 AUTHORIZATION FOR MEDICAL INFORMATION**

TO PROVIDER: \_\_\_\_\_

I hereby request and authorize you to disclose the following medical information:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

To the below listed REQUESTER:

NAME: \_\_\_\_\_  
COMPANY: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_

and copies may be provided to:

\_\_\_\_\_  
\_\_\_\_\_

The purpose(s) for which the requested medical information may be used is:

\_\_\_\_\_  
\_\_\_\_\_

This authorization will remain valid until \_\_\_\_\_ (date).

The below named PATIENT has a right to receive a copy of this completed authorization, and by executing his/her signature here \_\_\_\_\_, acknowledges receipt of a completed copy. A photocopy of this form shall be as valid as the original.

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
Patient

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
Parent, Guardian, or Personal Representative

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## **8.0 ACCIDENT REPORTING PROCEDURES**

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### **8.1 OBJECTIVE**

8.1.1 To effectively document all necessary information regarding an employee injury. By doing so, true causes of the accident can be identified in order to develop controls, so that similar accidents can be prevented. Additionally, this investigation or fact-finding process will prepare accurate documentation in case of possible litigation.

### **8.2 APPLICABILITY/SCOPE**

8.2.1 This program applies to all Total Automation Concepts, Inc. employees injured on an Total Automation Concepts, Inc. job site.

### **8.3 ACCOUNTABILITY**

8.3.1 The applicable superintendent will ensure that the field foreman/supervisor is held accountable of ensuring that all accidents are properly investigated and that all necessary forms are filled out.

8.3.2 All accident investigation paper work shall be turned into the Safety Program Facilitator, Norma Chamis, within 48 hours of the incident.

8.3.3 It is the employee's responsibility to report all injuries, no matter how minor, to his/her immediate supervisor.

8.3.4 Investigating and Reporting Accidents

#### **8.3.4.1 Minor Accidents**

8.3.4.1.1 If an employee is involved in a personal accident, his/her supervisor shall complete a Personal Injury Form 8.4.1. After first aid or medical attention is given to the employee, an accident report must be completed and delivered to the Total Automation Concepts, Inc. job site trailer or an Total Automation Concepts, Inc. Superintendent the day of the accident.

#### **8.3.4.2 Serious Accidents**

8.3.4.2.1 After the employee has been provided with urgent medical care, the supervisor must follow the Medical Emergency Response Plan. By following the Medical Emergency Response Plan (Section 7), all of the necessary personnel will be properly notified. The next step is to fill out the Personal Injury form completely. The form must be delivered to the Total Automation Concepts, Inc. job site trailer or an Total Automation Concepts, Inc. Superintendent/ Project Manager that day. It is essential that the accident form be completed accurately with all of the information that is requested.

#### **8.3.4.3 Accident Investigation**

8.3.4.3.1 Accident investigation must be fact finding, not fault finding. From the investigation, a written report will be completed for all serious accidents. The Supervisor who has investigated the accident should complete the report. The report should contain the following:

8.3.4.3.1.1 Detailed description of the accident, including answers to the following:

8.3.4.3.1.1.1 What happened?

8.3.4.3.1.1.2 Who (individuals and companies) was involved?

- 8.3.4.3.1.1.3 When did the accident occur?
- 8.3.4.3.1.1.4 What injuries/property damage resulted?
- 8.3.4.3.1.1.5 Photographs taken.
- 8.3.4.3.1.1.6 Diagrams drawn of the scene.
- 8.3.4.3.1.1.7 Statement(s) from witness(es).
- 8.3.4.3.1.1.8 Conclusions should be developed regarding the physical cause of the accident, but should not deal with the placement of legal liability upon any party.

**NOTE: NO PART OF THE REPORT SHALL BE GIVEN TO ANY PARTY, INCLUDING THE INJURED EMPLOYEE UNLESS AUTHORIZED BY THE TOTAL AUTOMATION CONCEPTS, INC. MANAGEMENT OR LEGAL COUNSEL.**

#### **8.3.4.4 KEY POINTS TO REMEMBER**

- 8.3.4.4.1 Get medical attention for all injured parties and notify the Project Manager immediately.
- 8.3.4.4.2 Protect the scene's physical evidence.
- 8.3.4.4.3 Confiscate all faulty equipment or materials.
- 8.3.4.4.4 Take photographs of accident scene.
- 8.3.4.4.5 Obtain the names, addresses, and phone numbers of all witnesses.
- 8.3.4.4.6 Discourage all Total Automation Concepts, Inc. personnel from making any statements to the media.
- 8.3.4.5 The job foreman will fill out Form 8.4.1 for any injury reported to him/her for employees, other trades or public persons.
  - 8.3.4.5.1 Report must be filled out completely.
  - 8.3.4.5.2 Have the injured person read and initial the report if at all possible.
  - 8.3.4.5.3 Return the report to the Superintendent the day of the accident.

**NOTE: THE MORE TIME SPENT IN PREPARING THIS REPORT WILL REDUCE THE TIME SPENT IN LITIGATION.**

- 8.3.4.6 The Superintendent will fill out Form 8.4.2 evaluating the accident, its causes, and its remedies.
  - 8.3.4.6.1 The report must be filled out completely.
  - 8.3.4.6.2 The report must be returned to the main office within 24 hours of the accident.
  - 8.3.4.6.3 The report must be signed, dated and kept confidential.
- 8.3.4.7 The Superintendent or his designee must document (Form 8.4.3) all employees working in the area of any accident involving medical treatment.
  - 8.3.4.7.1 All employees listed in 8.4.3, regardless of whether they observed the accident must fill out and sign Form 8.4.3 (Witness Accident Report) and return it to the Field Foreman/Supervisor the day of the accident.
  - 8.3.4.7.2 The report must be filled out completely.
  - 8.3.4.7.3 The report must be returned to the main office within 24 hours of the accident.

- 8.3.4.7.4 The report must be signed, dated and kept confidential.
- 8.3.4.8 The employee injured in the accident or any employee who is suspected of causing an accident must fill out Form 8.4.4 (Employee Accident Report Form).
  - 8.3.4.8.1 The report must be filled out completely.
  - 8.3.4.8.2 The report must be returned to the main office within 24 hours of the accident.
  - 8.3.4.8.3 The report must be signed, dated and kept confidential.
- 8.3.4.9 The Field Foreman/Supervisor will photograph the accident scene, all pertinent measurements, equipment, and contributing conditions.
  - 8.3.4.9.1 The report must be filled out completely (Form 8.4.5).
  - 8.3.4.9.2 The report must be returned to the main office within 24 hours of the accident.
  - 8.3.4.9.3 The report must be signed, dated and kept confidential.
- 8.3.4.10 The Superintendent will request all employees missing work due to a home injury to submit Form 8.4.6 before returning them to work.
  - 8.3.4.10.1 The report must be filled out completely.
  - 8.3.4.10.2 The report must be returned to the main office within 24 hours of the accident.
  - 8.3.4.10.3 The report must be signed, dated and kept confidential.

#### **8.4 FORMS**

- 8.4.1 Report of Accident—Personal Injury
- 8.4.2 Supervisor’s Incident Investigation Report
- 8.4.3 Witness Accident Report
- 8.4.4 Photo Mount Display
- 8.4.5 Home Injury Status Report
- 8.4.6 Employee Accident/Incident Report
- | 8.4.7 Incident Reporting Guideline

**FORM 8.4.1 REPORT OF ACCIDENT—PERSONAL INJURY**  
*(Please Print)*

JOB NAME _____		JOB NO. _____	PERSONAL INJURY <input type="checkbox"/> Employee <input type="checkbox"/> Other Than Employee <small>Employee</small>	
SUPERINTENDENT AND FOREMAN _____			JOB PHONE _____	
<b>WHO WAS INJURED?</b>	Name _____ Date of Birth _____ Occupation _____		Address of Injured _____ Phone # _____	
	Street _____ City _____ Zip Code _____			
	Marital Status _____ Children Under 18 _____ Social Security # _____			
<b>TIME AND PLACE</b>	Date of Accident _____ Hour _____ <input type="checkbox"/> AM <input type="checkbox"/> PM		Location _____	
	Name of Doctor or Hospital _____ Address _____			
<b>INJURED EMPLOYED BY</b>	_____			
<b>IF INJURED IS AN EMPLOYEE</b>	Did injured leave work? Time _____ <input type="checkbox"/> AM <input type="checkbox"/> PM		Did injured return to work? Time _____ <input type="checkbox"/> AM <input type="checkbox"/> PM	
	(If injured person did NOT return to work the same day, please notify Project Manager when injured person DOES return.)			
	Witness, if any _____			
	Occupation when injured _____			
	Was injured acting in regular line of work? _____			
Who gave first aid, if any? _____				
<b>DESCRIBE INJURY</b>	_____			
(If accident is fatal or involves serious injury, telephone immediately to company's office.)				
<b>WHAT HAPPENED?</b>	_____			
<b>WERE PHOTOS TAKEN?</b>	_____			

\_\_\_\_\_  
Date

\_\_\_\_\_  
Foreman's Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Superintendent's Signature

\_\_\_\_\_  
Printed Name

*This form must be completed in full and sent to the Project Manager within 24 hours of injury and must be signed by the Foreman and Superintendent.*

## FORM 8.4.2 SUPERVISOR'S INCIDENT INVESTIGATION REPORT

1. COMPANY OR BRANCH			2. DEPARTMENT		
3. EXACT LOCATION			4. DATE OF OCCURRENCE		5. TIME <input type="checkbox"/> AM <input type="checkbox"/> PM
6. DATE REPORTED					
INJURY OR ILLNESS		PROPERTY DAMAGE		OTHER INCIDENT	
7. INJURED'S NAME		13. PROPERTY DAMAGED		19. PERSON REPORTING INCIDENT	
8. OCCUPATION	9. PART OF BODY AFFECTED?	14. ESTIMATED COSTS \$	15. ACTUAL COSTS \$	20. OCCUPATION	21. COST (if applicable) \$
10. NATURE OF INJURY/ILLNESS		16. NATURE OF DAMAGE		22. NATURE OF INCIDENT	
11. OBJECT/EQUIPMENT/SUBSTANCE INFLECTING INJURY/ILLNESS		17. OBJECT/EQUIPMENT/SUBSTANCE INFLECTING DAMAGE		23. OBJECT/EQUIPMENT/SUBSTANCE RELATED	
12. PERSON WITH MOST CONTROL OF ITEM 11.		18. PERSON WITH MOST CONTROL OF ITEM 17.		24. PERSON WITH MOST CONTROL OF ITEM 23.	

D E S C R I P T I O N	25. DESCRIBE CLEARLY HOW THE INCIDENT OCCURRED.	
Date:		Supervisor:
		Reviewed by:



EVALUATION:	26. LOSS SEVERITY POTENTIAL	27. PROBABLE RECURRENCE RATE
	<input type="checkbox"/> Major <input type="checkbox"/> Serious <input type="checkbox"/> Minor	<input type="checkbox"/> Frequent <input type="checkbox"/> Occasional <input type="checkbox"/> Rare

A N A L Y S I S	28. WHAT ACTS, FAILURES TO ACT, AND/OR CONDITIONS CONTRIBUTED MOST DIRECTLY TO THIS INCIDENT?	
	29. WHAT ARE THE BASIC OR FUNDAMENTAL REASONS FOR THE EXISTENCE OF THESE ACTS AND/OR CONDITIONS?	
Date:	Supervisor:	Reviewed by:

**FORM 8.4.3 WITNESS ACCIDENT REPORT**

Total Automation Concepts, Inc. is vitally interested in the health and safety of all employees. We, therefore, request your assistance in completing this report to help us prevent future accidents to yourself or your fellow employees.

Name of Injured Person: \_\_\_\_\_

Date of Accident: \_\_\_\_\_ Hour: \_\_\_\_\_

Witness: \_\_\_\_\_ Job Title: \_\_\_\_\_

Department: \_\_\_\_\_ Supervisor: \_\_\_\_\_

How Did You First Learn of This Incident: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
*(Date)*

\_\_\_\_\_  
*(Witness/Injured Signature)*

All reports must be signed.

**FORM 8.4.4 PHOTO MOUNT DISPLAY**

Insured	Claimant	Claim #
		Date Taken
		Time
		By
		Location
Description		
		Date Taken
		Time
		By
		Location
Description		

**FORM 8.4.5 HOME INJURY STATUS REPORT**

DATE: \_\_\_\_\_ NAME: \_\_\_\_\_ COMPANY: \_\_\_\_\_

INITIAL VISIT: \_\_\_\_\_ FOLLOW-UP VISIT: \_\_\_\_\_

**WORK STATUS**

- |   |   |
|---|---|
| <input type="checkbox"/> Return-to-work—NO restriction on _____ | <input type="checkbox"/> Return-to-work on _____ with the following restriction:        |
| <input type="checkbox"/> Unable to return-to-work (see below)   | <input type="checkbox"/> No frequent lifting, bending, or twisting of the trunk.        |
|   | <input type="checkbox"/> Lifting restriction of _____ lbs.                              |
|   | <input type="checkbox"/> Keep wound clean and dry.                                      |
|   | <input type="checkbox"/> Must use protective device.                                    |
|   | <input type="checkbox"/> No repetitive motion of affected area.                         |
|   | <input type="checkbox"/> No prolonged standing or walking limit to _____ hours per day. |
|   | <input type="checkbox"/> No overhead work.  |
|   | <input type="checkbox"/> No use of ladders.   |
|   | <input type="checkbox"/> No kneeling.   |
|   | <input type="checkbox"/> Other: _____   |

**ESTIMATED DURATION OF RESTRICTED DUTY**

\_\_\_\_\_ At least until visit when we will reevaluate and notify of changes in restrictions.

\_\_\_\_\_ Until date: \_\_\_\_\_

\*\*\*\*NOTE: These restrictions are based on medical criteria only. If such restricted duty is not available, the company may at their option send the employee home until the next evaluation at our office.

\_\_\_\_\_  
Physician's Signature

**FORM 8.4.6 EMPLOYEE ACCIDENT/INCIDENT REPORT**

Total Automation Concepts, Inc. is committed to safety. Your cooperation in providing an accurate description of the event helps the safety department to prevent future accidents. Your cooperation in filling out and signing this form is required under the Total Automation Concepts, Inc. safety policy you have signed.

Name		Date of Occurrence	Time AM PM	Date Reported	Exact Location
Nature of Accident	Please indicate with a (✓)	Witnesses	Nature of Injury	Part of Body	Source of Injury
<input type="checkbox"/> Personal injury	<input type="checkbox"/> Property damage only				
<input type="checkbox"/> Personal injury and property damage	<input type="checkbox"/> Near accident—Could have resulted in personal injury or property damage	Nature of Damage	Source of Damage (object/equipment causing damage)		Equipment #
Describe the event: (Step 1)					
(Step 2)					
(Step 3)					
(Step 4)					
(Step 5)					
Names of persons/places/objects in diagram: (mark on the diagram) (note your location)				Draw a diagram of the event:	
A.					
B.					
C.					
D.					
E.					
F.					
G.					
H.					
Reasons you refuse to complete this form: _____					
Signature	Date	Reviewed by	Date	Reviewed by	Date

## FORM 8.4.7 INCIDENT REPORTING GUIDELINES

**Note: Check Boxes as they are completed to ensure all incidents are reported timely and completely.**

- \_\_\_ 1. All incidents involving injuries, property damage, or near misses are immediately reported to your supervisor/superintendent.
- \_\_\_ 2. Supervisors must evaluate injury to determine treatment level needed for injured employee and provide first aid and/or first aid supplies, as necessary.
- \_\_\_ 3. Designated Occupational Medical Centers approved by the corporate office should be used as the medical provider for treatment of injured employees, whenever possible. If you have any questions, please call Norma Chamis at (708) 597-3143 EXT. 222.
- \_\_\_ 4. Supervisors must transport or accompany injured employee to designated medical provider.
- \_\_\_ 5. Supervisors must authorize treatment by preparing and signing the form **Referral for Medical Treatment for Reported Work Injury for Total Automation Concepts, Inc.** and distribute it to the medical provider if TAC is to be responsible for treatment expense.
- \_\_\_ 6. Supervisors must report to Norma Chamis (708) 597-3143 EXT. 222 ASAP and advise where the injured employee is being taken for treatment.
- \_\_\_ 7. When possible the superintendent/safety representative will go to the medical provider, meet with the supervisor and release him/her to return to the job site.
- \_\_\_ 8. The injured employee is required to fill out and sign the **Employee Accident/Incident Report (Form 8.4.6)**.
- \_\_\_ 9. Employees must sign the **Medical Authorization Form** before receiving treatment.
- \_\_\_ 10. Supervisors must complete the **Report of Accident--Personal Injury (Form 8.4.1)** for all personal injuries reported.
- \_\_\_ 11. Supervisors must obtain the completed **Witness Accident Report (Form 8.4.3)** from all employees on the job site and others working in the area where the incident occurred. The form must be completed in their own hand writing.
- \_\_\_ 13. All paperwork must be promptly sent to Norma Chamis, Safety Program Facilitator, by fax at (708) 824-3822 or by scanned email to [norma@TA.Concepts.com](mailto:norma@TA.Concepts.com).
- \_\_\_ 14. All reported incidents must be investigated by the job site supervisor and one or more members of the **TAC Safety Committee**.

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## **9.0 SUPERVISOR'S EMERGENCY PROCEDURES**

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### **9.1 OBJECTIVE**

9.1.1 The objective of the Supervisor's Emergency Procedures is to provide a protocol to be followed in the event of a serious injury to workers, the general public, or property.

### **9.2 APPLICABILITY/ SCOPE**

9.2.1 Emergencies would include:

9.2.1.1 Any serious injury on an Total Automation Concepts, Inc. job site (serious = requiring ambulance).

9.2.1.2 Major loss of any equipment or property located on Total Automation Concepts, Inc. job sites.

9.2.2 The key points of the Total Automation Concepts, Inc. Emergency Policy include the following:

9.2.2.1 These procedures are to be adhered to in the event of:

9.2.2.1.1 Serious injury to an employee working on an Total Automation Concepts, Inc. job site.

9.2.2.1.2 Serious injury to a non-employee or visitor on an Total Automation Concepts, Inc. job site.

9.2.2.1.3 Serious damage to Total Automation Concepts, Inc. equipment.

9.2.2.1.4 Serious damage or structural failure to the construction site or service location.

9.2.2.2 Administering first aid or arranging for medical treatment (911) is the first response.

9.2.2.3 Notify the appropriate Total Automation Concepts, Inc. personnel according to the Emergency Policy.

9.2.2.4 Make no statement to the media other than an accident has occurred.

9.2.2.5 Investigate the accident as outlined in the Emergency Policy.

### **9.3 ACCOUNTABILITY**

9.3.1 It is the field foreman's responsibility to ensure that the Total Automation Concepts, Inc. policy is followed.

9.3.2 The Total Automation Concepts, Inc. policy for reacting to emergencies is as follows:

9.3.2.1 See that the injured are cared for—THE FIRST CONCERN at an accident scene, regardless of its seriousness, is care of the injured.

9.3.2.2 Request the necessary emergency response team, paramedics, and/or Fire Department, and supervisor.

9.3.2.3 Protect other people and property.

9.3.2.4 Notify the Total Automation Concepts, Inc. Safety Program Facilitator, Norma Chamis. The Safety Program Facilitator will notify the Executive Officers of Total Automation Concepts, Inc.

9.3.2.5 Keep the press and news media as far away as possible from the scene.

- 9.3.2.6 When the press and television media arrive:
  - 9.3.2.6.1 Make NO statement, other than an accident has occurred.
  - 9.3.2.6.2 The ONLY person to make a statement for Total Automation Concepts, Inc. will be the President of the company.
- 9.3.2.7 After all the injured are cared for, the foreman will begin the investigation immediately.
  - 9.3.2.7.1 Preserve the scene as it was after the accident.
  - 9.3.2.7.2 Obtain the identity of all the people who might have information about the accident.
    - 9.3.2.7.2.1 Record their names.
  - 9.3.2.7.3 Confiscate all materials involved such as tools, etc.
  - 9.3.2.7.4 Take photographs of the incident.
    - 9.3.2.7.4.1 General uses of photographs:
      - 9.3.2.7.4.1.1 Orientation to the scene of the accident.
      - 9.3.2.7.4.1.2 Record of the detail of injury and damage.
      - 9.3.2.7.4.1.3 Record of relative positions of large numbers of items or damage fragments.
      - 9.3.2.7.4.1.4 Evidence of deterioration, abuse, or lack of proper maintenance.
      - 9.3.2.7.4.1.5 Location of parts or other evidence overlooked during early stages of investigation.
  - 9.3.2.7.5 Marking photographs.
    - 9.3.2.7.5.1 Following information:
      - 9.3.2.7.5.1.1 Date Taken.
      - 9.3.2.7.5.1.2 Area.
      - 9.3.2.7.5.1.3 Photo Of.
      - 9.3.2.7.5.1.4 Taken By (signature).
        - 9.3.2.7.5.1.4.1 All photographs will be delivered to the Total Automation Concepts, Inc. Project Manager.
  - 9.3.2.7.6 Distribution of photographs.
    - 9.3.2.7.6.1 No photographs shall be released to any party, insurance company, vendor, lawyer, subcontractor, or owner without authorization of the Total Automation Concepts, Inc. legal counsel.
  - 9.3.2.7.7 Fill out the proper accident report and forward to the Total Automation Concepts, Inc. main office.



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## **10.0 SAFETY POLICY FOR SUBCONTRACTORS**

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### **10.1 OBJECTIVE**

10.1.1 All Total Automation Concepts, Inc. subcontractors are required per the terms of the standard subcontract agreement to comply with Total Automation Concepts, Inc. safety requirements, any specified project safety requirements, and all federal, state, and local safety laws and regulations applicable to the work covered in the Contract Documents.

### **10.2 APPLICABILITY/ SCOPE**

10.2.1 Subcontractor safety responsibilities during pre-construction will be to provide:

10.2.1.1 Safety related information to the Project Superintendent consisting of:

10.2.1.1.1 Subcontractor's Company Safety Program.

10.2.1.1.2 Hazard Specific Work Plan, if required.

10.2.1.1.3 MSDS Sheets and Hazcom Program.

10.2.1.1.4 Designation of Subcontractor's Project Safety Coordinator.

10.2.1.1.5 Designation of Subcontractor's personnel trained in First Aid/CPR.

10.2.1.1.6 Submit Job Safety Control Plan for any fall exposures, excavation, scaffolding, controlled access zones, or crane usage.

10.2.1.2 Presentation at the pre-construction safety meeting.

10.2.1.3 Subcontractor Safety responsibilities during construction phase activities will be complying with:

10.2.1.3.1 Applicable local, state, and federal safety standards.

10.2.1.3.2 Total Automation Concepts, Inc. project safety requirements.

10.2.1.3.3 Owner's project safety requirements, if any.

10.2.1.3.4 Actively participating in project safety program and attend all required safety meetings.

10.2.1.3.5 Maintaining a first aid kit on-site.

10.2.1.3.6 Maintaining and replacing safety protection systems damaged or removed by their operations.

10.2.1.3.7 Submitting accident, injury, and incident reports within 24 hours.

10.2.1.3.8 Installing contractually required general conditions for safety (i.e., guardrail, fence, fall protection systems, floor opening covers, etc.).

10.2.1.3.9 Conducting weekly employee safety toolbox meetings and providing copies of appropriate documentation to Total Automation Concepts, Inc.

10.2.1.3.10 Conducting new employee orientation.

10.2.1.3.11 Maintaining a complete set of MSDS's on-site for each chemical brought on to the job site.

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## **11.0 OSHA INSPECTION PROCEDURE**

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### **11.1 OBJECTIVE**

11.1.1 To provide guidelines to be followed in the event of an OSHA inspection on an Total Automation Concepts, Inc. job site.

### **11.2 APPLICABILITY/ SCOPE**

11.2.1 These guidelines should be followed in the event of an OSHA inspection on an Total Automation Concepts, Inc. job site.

### **11.3 ACCOUNTABILITY**

11.3.1 The superintendent is responsible that the guidelines in this program are followed.

### **11.4 STANDARD PROCEDURES FOR AN OSHA INSPECTION**

11.4.1 OSHA Inspector will announce that they are on-site to do an inspection.

11.4.2 Foreman or most senior man present will inform OSHA compliance officer that it is Total Automation Concepts, Inc. policy to notify the corporate office if OSHA arrives on-site.

11.4.3 Foreman or most senior man present shall call corporate office, superintendent, and safety representative.

11.4.4 Request to see the inspector's credentials and obtain a business card or simply write down his/her name and their office information.

11.4.5 Inquire as to the reason for the visit

11.4.5.1 Employee complaint.

11.4.5.2 General or scheduled inspection.

11.4.5.3 Referral.

11.4.5.4 Fatality or catastrophe investigation.

11.4.6 Inspection Procedures

11.4.6.1 Opening Conference

11.4.6.1.1 The purpose of the opening conference is to inform management of their purpose and outline inspection plans.

11.4.6.1.2 An Total Automation Concepts, Inc. employee should begin taking notes.

11.4.6.1.3 The supervisor will be the management's representative at this time.

11.4.6.1.4 If requested be prepared to show the inspector the OSHA 300 Log and OSHA poster.

11.4.6.2 Walk-around

11.4.6.2.1 Try to correct the violation immediately, if possible.

11.4.6.2.2 Direct the inspector to the area of the volatile condition. Try not to walk the entire job site with the inspector and always have someone taking notes.

11.4.6.2.3 Take pictures every time the inspector takes pictures.

**11.4.6.3 Closing Conference**

11.4.6.3.1 The inspector will review all violations.

11.4.6.3.2 Take good notes pertaining to alleged violations.

11.4.6.3.3 Do not argue with the inspector.

**11.4.7 Other Precautions**

11.4.7.1 Be knowledgeable of what is contained in the safety manual.

11.4.7.2 Note in what areas pictures were taken.

11.4.7.3 Be certain as to the time allowed for abatement of the alleged violation.

**11.5 FORMS**

11.5.1 Loss Control Program—OSHA Job Site Visit

**FORM 11.5.1 LOSS CONTROL PROGRAM – OSHA JOB SITE VISIT**

JOB NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**OPENING CONFERENCE**

Compliance Officers \_\_\_\_\_ & \_\_\_\_\_  
 \_\_\_\_\_

Nature of the Inspection: (attach copy of complaint)		Schedule General _____		Complaint _____
Industrial Hygiene _____		Target Industry _____		
Date Inspection began _____	Completed _____	Closing Conference _____		
Warrant for Inspection Requested:		Yes _____	No _____	
Attendees: (Contractors, union representatives, etc.)				
NAME	COMPANY	ADDRESS	POSITION	PHONE NUMBER

Opening Conference Narrative:

**CLOSING CONFERENCE**

**OSHA Inspector's Report on Hazards:**

**Corporate Representative's Responses:**

**Other Respondents Input:**

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## **12.0 VEHICLE FLEET SAFETY POLICY**

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### **12.1 OBJECTIVE**

12.1.1 The purpose of this policy is to ensure the safety of those individuals who drive company vehicles. Vehicle accidents are costly to our company, but more importantly, they may result in injury to you or others. It is the driver's responsibility to operate the vehicle in a safe manner and to drive defensively to prevent injuries and property damage. As such, Total Automation Concepts, Inc. endorses all applicable state motor vehicle regulations relating to driver responsibility. Total Automation Concepts, Inc. expects each driver to drive in a safe and courteous manner pursuant to the following safety rules. The attitude you take when behind the wheel is the single most important factor in driving safely.

### **12.2 APPLICABILITY/SCOPE**

12.2.1 This policy applies to all Total Automation Concepts, Inc. employees who drive Total Automation Concepts, Inc. vehicles.

### **12.3 ACCOUNTABILITY**

12.3.1 The President is responsible to ensure that the guidelines set forth in this policy are followed.

### **12.4 DRIVER ELIGIBILITY**

12.4.1 Total Automation Concepts, Inc. company vehicles are to be driven by authorized employees only, except in emergencies, or in case of repair testing by a mechanic. Spouses and other family members are not authorized to drive the company vehicle.

12.4.2 Any employee who has a driver's license revoked or suspended shall immediately notify their supervisor and discontinue operation of the company vehicle. Failure to do so may result in disciplinary action, including dismissal.

12.4.3 All accidents, regardless of severity, must be reported to the police and to the safety manager. Failing to stop after an accident and/or failure to report an accident may result in disciplinary action, including dismissal.

12.4.4 Drivers must immediately report all summonses received for moving violations during the operation of a company vehicle to the safety manager.

12.4.5 All CDL drivers must comply with all applicable D.O.T. regulations, including successful completion of medical, drug, and alcohol evaluations.

12.4.6 Motor Vehicle Reports (MVR) will be ordered periodically to assess employees' driving records. An unfavorable record could result in a loss of the privilege of driving a company vehicle. The following will be used as a guide to determine eligibility to operate a company vehicle:

**NOTE: ALL TYPE 'A' VIOLATIONS (as defined below) WILL RESULT IN TERMINATION OF DRIVING PRIVILEGES FOR EMPLOYEES AND WILL DISQUALIFY ANY POTENTIAL DRIVER EMPLOYEES.**

### **12.5 TYPE 'A' VIOLATIONS**

12.5.1 Driving while intoxicated.

12.5.2 Driving while under the influence of drugs.

12.5.3 Negligent homicide arising out of the use of a motor vehicle (gross negligence).

- 12.5.4 Operating during a period of suspension or revocation.
- 12.5.5 Using a motor vehicle for the commission of a felony.
- 12.5.6 Aggravated assault with a motor vehicle.
- 12.5.7 Operating a motor vehicle without the owners authority (grand theft).
- 12.5.8 Permitting an unlicensed person to drive.
- 12.5.9 Reckless driving.
- 12.5.10 Hit and run (bodily injury or property damage).

## **12.6 TYPE 'B' VIOLATIONS**

- 12.6.1 All moving violations not listed as type 'A' violations.

## **12.7 DRIVER SAFETY RULES**

- 12.7.1 The use of a company vehicle while under the influence of intoxicants and/or other drugs is forbidden and is sufficient cause for discipline, including dismissal.
- 12.7.2 No driver shall operate a company vehicle when his/her ability to do so safely has been impaired by illness, fatigue, injury, or prescription medication.
- 12.7.3 All drivers and passengers operating or riding in company vehicles must wear seat belts, at all times.
- 12.7.4 Cell phone use, texting, emailing, looking up information, etc. while operating a company vehicle is strictly prohibited.
- 12.7.5 No unauthorized personnel (e.g., hitch-hikers) are allowed to ride in company vehicles.
- 12.7.6 Drivers are responsible for the security of company vehicles assigned to them. The vehicle engine must be shut off, ignition keys removed, and vehicle doors locked whenever the vehicle is left unattended. If the vehicle is left with a parking attendant, only the ignition key is to be left.
- 12.7.7 Headlights shall be used 1/2-hour before sunset and 1/2-hour after sunrise, or during inclement weather, or at any time when a distance of 500 feet ahead of the vehicle cannot be seen clearly.
- 12.7.8 All other state laws, local laws, or D.O.T. Motor Carrier Safety Regulations must be obeyed.

## **12.8 GENERAL DEFENSIVE DRIVING RULES**

- 12.8.1 Drivers are required to maintain a safe following distance at all times. To estimate your following distance, pick a stationary object ahead of you. As the vehicle in front of you passes the object, begin counting 1001, 1002, 1003, etc. until you reach the same object. This counts the number of seconds between you and vehicle ahead of you.
- 12.8.2 Drivers of passenger vehicles should keep a two-second interval between their vehicle and the vehicle immediately ahead. During slippery road conditions, the following distance should be increased to at least four seconds.
- 12.8.3 Drivers of heavy trucks should keep a minimum of a three-second interval when not carrying cargo, and at least four seconds when fully loaded. Following distance should also be increased when adverse conditions exist.

- 12.8.4 Drivers must yield the right of way at all traffic control signals and signs requiring them to do so. Drivers should also be prepared to yield for safety's sake at any time. Pedestrians and bicycles in the roadway always have the right of way.
- 12.8.5 Avoid driving in other driver's blind spots. Attempt to maintain eye contact with the other driver, either directly or through mirrors.
- 12.8.6 Drivers must honor posted speed limits. In adverse driving conditions, reduce speed to a safe operating speed that is consistent with the conditions of the road, weather, lighting, and volume of traffic. Tires can hydroplane on wet pavement at speeds as low as 40 MPH.
- 12.8.7 Turn signals must be used to show where you are heading—going into traffic and before every turn or lane change.
- 12.8.8 When passing or changing lanes, view the entire vehicle in your rear view mirror before pulling back into that lane.
- 12.8.9 Be alert of other vehicles, pedestrians, and bicyclists when approaching intersections. Never speed through an intersection on a caution light. Approach a stale green light with your foot poised over the brake to reduce your reaction time should it be necessary to stop. When the traffic light turns green, look both ways for oncoming traffic before proceeding.
- 12.8.10 When waiting to make left turns, keep your wheels facing straight ahead. If rear-ended, you will not be pushed into the lane of oncoming traffic.
- 12.8.11 When stopping behind another vehicle, leave enough space so you can see the rear wheels of the car in front. This allows room to go around the vehicle if necessary, and may prevent you from being pushed into the car in front of you if you are rear-ended.
- 12.8.12 Avoiding backing where possible, but when necessary, keep the distance traveled to a minimum and be particularly careful.
- 12.8.13 Check behind your vehicle. Operators of heavy trucks should walk around their vehicle before backing and/or have someone guide you.
- 12.8.14 Back to the driver's side. Do not back around a corner or into an area of no visibility.

## **12.9 WHAT TO DO IN CASE OF AN ACCIDENT**

- 12.9.1 In an attempt to minimize the results of an accident, the driver must prevent further damages or injuries and obtain all pertinent information and report it accurately.
- 12.9.2 Call for medical aid, if necessary.
- 12.9.3 Secure accident scene—pull onto shoulder or side of road, redirect traffic, set up road flares/reflectors, etc.
- 12.9.4 Call the police. All accidents, regardless of severity, must be reported to the police. If the driver cannot get to the phone, he/she should write a note giving location to a reliable appearing motorist and ask him/her to notify the police.
- 12.9.5 Record names and addresses of driver, witnesses, and occupants of the other vehicles and any medical personnel who may arrive at the scene.



**12.9.6 Complete the form located in the insurance carrier Vehicle Accident Packet. Pertinent information to obtain includes:**

- 12.9.6.1 License number of other drivers.**
- 12.9.6.2 Insurance company names and policy numbers of other vehicles.**
- 12.9.6.3 Make, year, and model of other vehicles.**
- 12.9.6.4 Date and time of accident.**
- 12.9.6.5 Overall road and weather conditions.**
- 12.9.6.6 Draw a diagram of the accident scene and note the street names and locations of traffic signs, signals, etc.**
- 12.9.6.7 Do not discuss the accident with anyone at the scene except the police.**
- 12.9.6.8 Do NOT accept any responsibility for the accident. DON'T argue with anyone.**
- 12.9.6.9 Provide the other party with your name, address, and phone number, driver's license number, and insurance information.**
- 12.9.6.10 Immediately report the accident to your supervisor. Provide a copy of the accident record and/or your written description of the accident to the President ASAP.**
- 12.9.6.11 Cooperate fully with any follow-up from insurance carrier claims personnel.**

## **12.10 VEHICLE MAINTENANCE**

- 12.10.1 Proper vehicle maintenance is a basic element of any fleet safety program, not only to ensure a safe, road worthy vehicle, but also to avoid costly repair expenses and unexpected breakdowns.**
- 12.10.2 Location and inspection is the responsibility of the assigned driver.**
- 12.10.3 Drivers of D.O.T. regulated vehicles are required to inspect their vehicle prior to usage, documenting and notifying the company mechanic of deficiencies found.**
- 12.10.4 In addition to inspections required by law for passenger vehicles, drivers of passenger vehicles must also complete routine inspections of critical items, such as brakes, lights, tires, wipers, etc.**
- 12.10.5 The vehicle should be cleaned (interior and exterior) regularly to help maintain its good appearance for you and Total Automation Concepts, Inc. A clean vehicle makes a good impression on customers.**
- 12.10.6 The vehicle manufacturer's maintenance schedule should be referenced and closely followed regarding recommended maintenance intervals.**
- 12.10.7 Discuss responsibilities for maintenance**
  - 12.10.7.1 Who is responsible for scheduling repairs?**
  - 12.10.7.2 Is prior approval required; if so, from whom?**
  - 12.10.7.3 Who is responsible for authorizing repairs and expenses quoted by repair facility?**
- 12.10.8 Discuss where to obtain service—both preventative maintenance and emergency repairs.**

12.10.9 Discuss any specific maintenance requirements (i.e., oil changes every 3,000 miles, engine tune-up every 20,000 miles, winterizing requirements, windshield wipers replaced at least annually, etc.)

12.10.10 Discuss type, care, replacement of tires, and where to obtain new tires—specify type required, including snow tires, rotation, and replacement schedule.

12.10.11 Note any specific type/grade of gasoline required.

**12.11 VEHICLE EXPENSES & RECORD KEEPING**

12.11.1 Discuss any reporting or tracking of mileage required.

12.11.2 Discuss reporting requirements and/or records the driver must maintain for maintenance and repairs performed on the vehicle assigned to them.

12.11.3 Discuss expense reporting and reimbursement for gasoline and maintenance.

12.11.4 Discuss any personal use charges that may apply.

**12.12 VEHICLE FLEET SAFETY POLICY RULES**

I acknowledge that the information contained in Total Automation Concepts, Inc. Vehicle Fleet Safety Policy has been reviewed with me and a copy of the policy and driver rules have been furnished to me. As a driver of a company vehicle, I understand that it is my responsibility to operate the vehicle in a safe manner and to drive defensively to prevent injuries and property damage.

\_\_\_\_\_  
*Print—Employee's Name*

\_\_\_\_\_  
*Employee's Signature*

\_\_\_\_\_  
*Date*

\_\_\_\_\_  
*Reviewer's Signature*  
*(Sign and retain the original copy in the employee's file)*

\_\_\_\_\_  
*Date*

### **12.13 VEHICLE ASSIGNMENT AGREEMENT**

The undersigned hereby acknowledges receipt of a company-owned or leased automobile. I understand this vehicle is to be regularly maintained and serviced, according to the service schedule outlined in the Owner's Manual or the instructions issued by the Vehicle Safety Coordinator, whichever is appropriate.

Further, it is agreed this vehicle will be operated in a safe manner. I agree to wear my seat belt whenever the vehicle is in motion and will require other occupants to do so. I agree to be responsible for all traffic and parking violations that occur while the vehicle is assigned to me.

I agree to promptly report all accidents or incidents resulting in injury or damage to the vehicle or other property, no matter how slight.

I understand I am required to maintain a valid driver's license. Further, I herewith grant Total Automation Concepts, Inc. the right to investigate my motor vehicle driving record any time. My current driver's license is issued from the State of \_\_\_\_\_ and the license number is: \_\_\_\_\_.

If my driving record contains two moving violations within a one-year period, my record will be brought up before the Company Accident Review Board for consideration of remedial training and/or loss of driving privileges.

I will be required to attend a safe driving class on my own time and at my expense, and to provide the Safety Facilitator with confirmation of attendance within thirty days of notification if decided by the review board.

I understand I am not to modify the vehicle in any way without written permission. This specifically applies to the installation of cellular telephones, radios, CBs, speakers, etc. Trailer hitches and towing trailers are specifically prohibited. Further, I will not take this vehicle out of the United States without written permission from the Safety Facilitator.

I agree to reimburse Total Automation Concepts, Inc. for damages done to this vehicle because of my negligence. In the event of an accident, which has been determined to have been my fault by citation, traffic court conviction, by my own admission, or determination by management, I recognize that I am responsible for the first 50% of the repair cost, up to a maximum reimbursement of \$250 per accident, if the vehicle is repairable. If the vehicle is a total loss, I agree to be responsible for \$250 as reimbursement for the loss.

I understand the operation of this vehicle in a safe operating condition is my responsibility. If this vehicle becomes unsafe, it is my responsibility to notify my supervisor immediately.

**I have read and agree to the provisions of this Vehicle Assignment Agreement and the requirements of the Motor Vehicle Safety Program.**

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

**VEHICLE ASSIGNED:** \_\_\_\_\_

**VIN NUMBER:** \_\_\_\_\_

**PLATE NUMBER:** \_\_\_\_\_

**MILEAGE:** \_\_\_\_\_

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## **13.0 MOLD PREVENTION POLICY**

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### **13.1 OBJECTIVE**

- 13.1.1 Molds can be found almost anywhere. They can grow on virtually any organic substance, as long as moisture and oxygen are present. Mold has recently presented challenges in almost every type of construction, including residential, school, health care, and commercial buildings. There is much speculation as to the reason for this change. Some of the reasons for this change are construction defects, the porous nature of newer building materials, modern building techniques, which conserve energy, but also seal in moisture, or simply the litigious culture that has developed throughout the 20<sup>th</sup> century in the United States.
- 13.1.2 Whatever the cause, mold is a problem and must be dealt with as soon as possible. The most effective way to control mold growth is to minimize or eliminate sources of moisture.

### **13.2 APPLICABILITY/ SCOPE**

- 13.2.1 This policy focuses on the identification, prevention, and remediation of mold contamination found on typical building components (walls, ventilation systems, support beams, etc.) during the construction phase. When a project is determined to have a greater risk, a job safety analysis will be performed prior to starting work. The purpose of this policy is to establish responsibilities and procedures for effectively managing water/mold conditions associated with the work of Total Automation Concepts, Inc. in the construction process. This will be accomplished through proper selection of building materials, monitoring for the presence of moisture due to water infiltration, and remediation of mold contamination when the cause of moisture is the responsibility of Total Automation Concepts, Inc.

### **13.3 ACCOUNTABILITY**

- 13.3.1 The President will oversee the implementation of this program. In addition, management must also:
- 13.3.1.1 Ensure that all employees receive training on the directives of this policy.
  - 13.3.1.2 Communicate with interested parties at initial incident, cleanup, and closure, etc.
  - 13.3.1.3 Only hire companies who are qualified and properly trained in water and mold investigation and remediation.
- 13.3.2 Superintendents will be responsible for ensuring that industry accepted guidelines for the installation of building materials are followed. In addition, project superintendents must also:
- 13.3.2.1 Oversee the work of their foremen to ensure compliance with this policy.
  - 13.3.2.2 Act as a communication liaison between management and all interested parties at initial incident, cleanup, and closure, etc.
  - 13.3.2.3 Write work orders for water or mold remediation to track all work.
- 13.3.3 Foremen are responsible for overseeing the work of the employees that they supervise. They are also responsible for periodically inspecting installations for the

presence of water accumulation, moisture, and/or mold. Additional responsibilities of foremen include the following:

- 13.3.3.1 Inspection and documentation of water or mold-like conditions.
  - 13.3.3.2 Investigate direct cause of water or mold condition in an effort to identify responsible parties.
  - 13.3.3.3 Photograph all water or mold-like conditions.
  - 13.3.3.4 Identify immediate corrective actions or cleanup strategies to be taken.
  - 13.3.3.5 Document actions taken to prevent reoccurrence.
- 13.3.4 Employees are to report any sightings of mold or conditions that might produce mold immediately to their foreman. These conditions include water infiltration, excessive moisture, and/or the presence of mold on or near Total Automation Concepts, Inc. building components.

#### **13.4 TRAINING**

- 13.4.1 All supervisors of Total Automation Concepts, Inc. will be trained to identify mold-like substances and conditions, which contribute to the formation/development of mold, in addition to, completing an awareness training on MOISTURE CONTROL BASIC RESPONSE.
- 13.4.2 The following section provides guidance on how to respond to a moisture control or water incident. At a minimum, the following steps should be taken:
  - 13.4.2.1 See section 13.8 Form for guidance..

#### **13.5 DISCOVERY**

- 13.5.1 Immediate response to all water intrusion incidents. GET IT DRY NOW!
- 13.5.2 Follow-up inspection within 24 to 48 hours after exposure incidents.
- 13.5.3 Initiate a work order.
- 13.5.4 Corrective Action:
  - 13.5.4.1 Stop the flow of water if it is a mechanical problem.
  - 13.5.4.2 Implement corrective action within 24 to 48 hours to stop the intrusion at the source to prevent water damage, as well as, removal or drying of all impacted materials.
- 13.5.5 Re-inspection and Closure:
  - 13.5.5.1 Inspect affected areas following corrective action and cleanup to verify effectiveness of activities.
  - 13.5.5.2 Inspect for hidden mold.
- 13.5.6 Documentation:
  - 13.5.6.1 Initiate a work order for the event and photograph and document in writing all communications and course of action. (form 13.3.1 and/or 13.4.1)
  - 13.5.6.2 Maintain complete incident reports and work orders on file (form 13.3.1 and/or 13.4.1)

## **13.6 EVALUATION**

- 13.6.1 An evaluation must take place to determine the cause of the water/mold presence. If water infiltration is determined to be the problem, the responsible party must assess and fix the problem before building materials are re-installed by Total Automation Concepts, Inc. employees. Subcontractors will be required to correct problems, which are determined to be within the scope of their contract.
- 13.6.2 If the source of water is elevated humidity, relative humidity should be maintained at levels below 60% to inhibit mold growth. The controlling contractor must ensure that moisture levels will be maintained below 60% before building materials are re-installed by Total Automation Concepts, Inc. employees. Owner/Client will maintain moisture control responsibilities once the contractual project is completed.
- 13.6.3 If the source of water/mold presence is not evident through visual inspection, a representative from Total Automation Concepts, Inc. safety department should be contacted. An environmental/construction consultant may need to complete a thorough inspection to determine the cause of moisture/mold buildup. Subcontractors will be held accountable for remediation where applicable.

## **13.7 REMEDIATION**

- 13.7.1 If the presence of mold is detected during the construction process, immediate remediation is necessary. Building components installed by Total Automation Concepts, Inc. affected by water/mold should be remediated as soon as possible. Total Automation Concepts, Inc. will manage the remediation process ensuring that the responsible parties have complied with this policy.
- 13.7.2 Building owners will be provided the warranty, O&M materials, and the mold prevention detail and be responsible to maintain the system once installed to manufacturers specifications.
- 13.7.3 The EPA guidelines for water/mold remediation (Tables 13.8.1 & 2) should be followed, given the square footage of the mold found. These guidelines establish four methods of cleanup that should be followed in the event that the area affected by mold is no more than 100 square feet in size. Qualified subcontractors will be hired to remediate areas that have more than 100 square feet of mold.
- 13.7.4 Only trained employees are allowed to use the following remediation techniques:
- 13.7.4.1 Method 1: Wet vacuum (in the case of porous materials, some mold spores/fragments will remain in the material but will not grow if the material is completely dried). Steam cleaning may be an alternative for carpets and some upholstered furniture.
  - 13.7.4.2 Method 2: Damp wipe surfaces with plain water or with water and detergent solution (except wood – use wood floor cleaner) and scrub as needed.
  - 13.7.4.3 Method 3: Use a High-Efficiency Particulate Air (HEPA) vacuum after the material has been thoroughly dried. Dispose of the contents of the HEPA vacuum in well-sealed plastic bags.
  - 13.7.4.4 Method 4: Discard and remove water damaged materials and seal in plastic bags while inside of containment, if present. Dispose of as normal waste. HEPA vacuum area after it is dried.

### 13.7.5 Personal Protective Equipment

- 13.7.5.1 Only employees wearing proper personal protective equipment can remediate mold. If a mold exposure greater than 100 square feet is identified, a qualified subcontractor will be identified to complete the remediation.
- 13.7.5.2 PPE recommended by the EPA for the removal of mold contamination is given in three categories. These categories are as follows:
  - 13.7.5.2.1 Minimum: Gloves, N-95 Respirator, and goggles/eye protection.
  - 13.7.5.2.2 Limited: Gloves, N-95 Respirator or half-face respirator with HEPA filter, disposable overalls, and goggles/eye protection.
  - 13.7.5.2.3 Full: Gloves, disposable full body clothing, headgear, foot coverings, and full-face respirator with HEPA filter.

### 13.8 FORMS

- 13.8.1 Table 1 Water Damage – Cleanup and Mold Prevention
- 13.8.2 Table 2 Guidelines for Remediating Building Materials with Mold Growth Caused by Clean Water
- 13.8.3 Moisture/Water Incident Report & Follow-Up
- 13.8.4 Mold Incident Report & Follow-Up



**13.8.1 TABLE 1**

**Table 1: Water Damage – Cleanup and Mold Prevention**

<b><i>Guidelines for Response to Clean Water Damage within 24 to 48 Hours to Prevent Mold Growth<sup>1</sup></i></b>	
<b>Water Damaged Materials<sup>2</sup></b>	<b>Actions</b>
Books and Papers	<ul style="list-style-type: none"> <li>• For non-valuable items, discard books and papers</li> <li>• Photocopy valuable/important items, discard originals</li> <li>• Freeze (in frost-free freezer or meat locker) or freeze dry</li> </ul>
Carpet and Backing	<ul style="list-style-type: none"> <li>• Remove water with water extraction vacuum.</li> <li>• Reduce ambient humidity levels with dehumidifier</li> <li>• Accelerate drying process with fans.</li> </ul>
Ceiling Tiles	<ul style="list-style-type: none"> <li>• Discard and Replace</li> </ul>
Cellulose Insulation	<ul style="list-style-type: none"> <li>• Discard and Replace</li> </ul>
Concrete or Cinder Block surfaces	<ul style="list-style-type: none"> <li>• Remove water with water extraction vacuum.</li> <li>• Accelerate drying process with fans, and/or heaters.</li> </ul>
Fiberglass Insulation	<ul style="list-style-type: none"> <li>• Discard and Replace</li> </ul>
Hard Surface, Porous Flooring <sup>3</sup> (linoleum, ceramic tile, vinyl)	<ul style="list-style-type: none"> <li>• Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.</li> <li>• Check to make sure under flooring is dry; dry under flooring if necessary.</li> </ul>
Non-porous, Hard Surfaces (plastics, metals)	<ul style="list-style-type: none"> <li>• Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.</li> </ul>
Upholstered furniture	<ul style="list-style-type: none"> <li>• Remove water with water extraction vacuum.</li> <li>• Accelerate drying process with dehumidifiers, fans, and/or heaters.</li> <li>• May be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture.</li> </ul>
Wallboard (drywall and gypsum board)	<ul style="list-style-type: none"> <li>• May be dried in place if there is no obvious swelling and the seams are intact. If not, remove, discard, and replace</li> <li>• Ventilate the wall cavity, if possible</li> </ul>
Window Drapes	<ul style="list-style-type: none"> <li>• Follow laundering or cleaning instructions recommended by the manufacturer.</li> </ul>
Wood Surfaces	<ul style="list-style-type: none"> <li>• Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. (Use caution when applying heat to hardwood)</li> <li>• Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry.</li> <li>• Wet paneling should be pried away from the wall for drying.</li> </ul>

If mold growth has occurred or materials have been wet for more than 48 hours, consult table 2 guidelines. Even if materials are dried within 48 hours, mold growth may have occurred. Professionals may test items if there is doubt. Note that mold growth will not always occur after 48 hours; this is only a guideline.

These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then OSHA requires Personal Protective Equipment and containment. An experienced professional should be consulted if you and/or your remediators do not have expertise remediating in contaminated water situations. Do not use fans before determining that the water is clean or sanitary.

2 If a particular item(s) has high monetary or sentimental value, you may wish to consult a restoration/water damage specialist.

3 The subfloor under the carpet or other flooring material must also be cleaned and dried. See the appropriate section of this table for recommended actions depending on the composition of the subfloor.

Ref.: "Mold Remediation in Schools and Commercial Buildings," U.S. Environmental Protection Agency

**Any remediation requiring full PPE and/or full containment will require consultation with a certified Industrial Hygienist**

## 13.8.2 TABLE 2

Table 2: Guidelines for Remediating Building Materials with Mold Growth Caused by Clean Water			
Material or Furnishing Affected	Cleanup Methods*	Personal Protective Equipment**	Containment
<b><i>SMALL – Total Surface Area Affected Less Than 10 Square feet (ft²)</i></b>			
Books and Papers	3	Minimum	None Required
Carpet and Backing	1,3	Minimum	None Required
Concrete or Cinder Block	1,3	Minimum	None Required
Hard Surface, Porous Flooring (linoleum, ceramic tile, vinyl)	1,2,3	Minimum	None Required
Non-porous, Hard Surfaces (plastics, metals)	1,2,3	Minimum	None Required
Upholstered furniture & drapes	1,3	Minimum	None Required
Wallboard (drywall and gypsum board)	3	Minimum	None Required
Wood Surfaces	1,2,3	Minimum	None Required
<b><i>MEDIUM – Total Surface Area Affected Between 10 and 100 (ft²)</i></b>			
Books and Papers	3	Limited or Full	Limited
Carpet and Backing	1,3,4	Limited or Full	Limited
Concrete or Cinder Block	1,3	Limited or Full	Limited
Hard Surface, Porous Flooring (linoleum, ceramic tile, vinyl)	1,2,3	Limited or Full	Limited
Non-porous, Hard Surfaces (plastics, metals)	1,2,3	Limited or Full	Limited
Upholstered furniture & drapes	1,3,4	Limited or Full	Limited
Wallboard (drywall and gypsum board)	3,4	Limited or Full	Limited
Wood Surfaces	1,2,3	Limited or Full	Limited
<b><i>LARGE – Total Surface Area Affected Greater Than 100 (ft²) or Potential for Increased Occupant or Remediator Exposure During Remediation Estimated to be Significant</i></b>			
Books and Papers	3	Full	Full
Carpet and Backing	1,3,4	Full	Full
Concrete or Cinder Block	1,3	Full	Full
Hard Surface, Porous Flooring (linoleum, ceramic tile, vinyl)	1,2,3,4	Full	Full
Non-porous, Hard Surfaces (plastics, metals)	1,2,3	Full	Full
Upholstered furniture & drapes	1,3,4	Full	Full
Wallboard (drywall and gypsum board)	3,4	Full	Full
Wood Surfaces	1,2,3,4	Full	Full
*Cleanup methods can be found in the Remediation section of this policy			
**Description of PPE can be found in the Personal Protective Equipment section of this policy			
f: “Mold Remediation in Schools and Commercial Buildings,” U.S. Environmental Protection Agency			
Any remediation requiring full PPE and/or full containment will require consultation with a certified Industrial Hygienist			

**FORM 13.8.3 MOISTURE/WATER INCIDENT REPORT & FOLLOW-UP**

Job Site Location: \_\_\_\_\_ Date: \_\_\_\_\_

Exact Location: \_\_\_\_\_ Reported By: \_\_\_\_\_

Date/Time of Incident: \_\_\_\_\_ Date Inspected: \_\_\_\_\_

***Witnesses to Incident***

Name: \_\_\_\_\_ Name: \_\_\_\_\_

Address: \_\_\_\_\_ Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Phone Number: \_\_\_\_\_

***Description of Moisture/Water Incident***

Provide detailed information regarding the nature of the moisture/water intrusion including property damage/concerns and sources of moisture/water (use additional paper if needed):

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***Evaluation of Moisture/Water Incident***

Provide detailed information relating to cause(s) of moisture/water intrusion (if known):

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***Moisture/Water Incident Follow-Up***

What corrective actions have been taken to stop the source of moisture/water?

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What corrective actions have been taken to remove moisture/water accumulation?

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What has been done to prevent the incident from reoccurring?

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Pictures Taken?     Yes     No    (if yes, use photo mount display)

Follow-Up Inspection Date: \_\_\_\_\_

Current Site Status: \_\_\_\_\_

Date of Future Follow-Up? \_\_\_\_\_

**FORM 13.8.3 MOLD INCIDENT REPORT & FOLLOW-UP**

Job Site Location: \_\_\_\_\_ Date: \_\_\_\_\_

Exact Location: \_\_\_\_\_ Reported By: \_\_\_\_\_

Date/Time of Incident: \_\_\_\_\_ Date Inspected: \_\_\_\_\_

***Witnesses to Incident***

Name: \_\_\_\_\_ Name: \_\_\_\_\_

Address: \_\_\_\_\_ Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Phone Number: \_\_\_\_\_

***Description of Mold Incident***

Provide detailed information regarding the nature of the moisture/water intrusion including property damage/concerns and sources of moisture/water (use additional paper if needed):

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***Evaluation of Mold Incident***

Provide detailed information relating to cause(s) of moisture/water intrusion (if known):

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***Mold Incident Follow-Up***

What corrective actions have been taken?

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What has been done to prevent the incident from reoccurring?

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Pictures Taken?       Yes       No      (if yes, use photo mount display)

Follow-Up Inspection Date: \_\_\_\_\_

Current Site Status: \_\_\_\_\_  
\_\_\_\_\_

Date of Future Follow-up? \_\_\_\_\_

**FORM 13.8.4      OWNER/CLIENT INCIDENT REPORT**

1. Job site Location: \_\_\_\_\_ Date: \_\_\_\_\_
2. Exact Location: \_\_\_\_\_
3. Reported By: \_\_\_\_\_
4. Date/Time of Incident: \_\_\_\_\_
5. Date Inspected: \_\_\_\_\_
  
6. Owner/Client Contacted: \_\_\_\_\_  
Date: \_\_\_\_\_ Time: \_\_\_\_\_  
By Whom: \_\_\_\_\_  
How: written \_\_\_ email \_\_\_ phone \_\_\_ other \_\_\_\_\_
  
7. Estimated Square Footage Affected: \_\_\_\_\_
  
8. HVAC evaluation as effected by the incident performed:  
Date: \_\_\_\_\_ By Whom: \_\_\_\_\_
  
9. Client Signature as to Completion:  
\_\_\_\_\_  
Printed Name:  
\_\_\_\_\_  
Date of Closure: \_\_\_\_\_

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## 14.0 FALL PROTECTION

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### 14.1 OBJECTIVE

14.1.1 The fall protection standard covered under 29 CFR part 1926 (OSHA's Code of Federal Regulations for the construction industry) is generally designed to protect those working in areas where the risk of falling is present. This document is to be used as a guide to comply with the standard for easier implementation of fall protection programs.

### 14.2 APPLICABILITY/ SCOPE

14.2.1 This program applies to all employees on an Total Automation Concepts, Inc. job site.

### 14.3 DEFINITIONS

- 14.3.1 **Anchorage**—a secure point of attachment for lifelines, lanyards or deceleration devices.
- 14.3.2 **Body Belt**—a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device. This device cannot be used for fall arrest.
- 14.3.3 **Body Harness**—straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.
- 14.3.4 **Buckle**—any device for holding the body belt or body harness closed around the employees' body.
- 14.3.5 **Competent Person**—one who has specific training in and is knowledgeable about fall protection, the use of protective systems, and the requirements set forth in 29 CFR 1926.500-503. In addition, the "competent person" must have the authority to take immediate action if a hazard exists.
- 14.3.6 **Connector**—a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system, such as a buckle or "D"-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard.
- 14.3.7 **Controlled Access Zone (CAZ)**—an area in which certain work (e.g., overhand bricklaying) may take place without the use of a guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.
- 14.3.8 **Dangerous Equipment**—equipment (such as picking or galvanizing tanks, degreasing units, machinery, electric equipment, and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.
- 14.3.9 **Deceleration Devices**—any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
- 14.3.10 **Equivalent**—alternate designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in the standard.

- 14.3.11 **Failure**—load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
- 14.3.12 **Fall Restraint**—the technique of securing an authorized person to an anchorage using a lanyard short enough to prevent the person’s center of gravity from reaching the fall hazard.
- 14.3.13 **Fall Restraint System**—A device or devices, including any necessary components, that prevents an authorized person from reaching a fall hazard.
- 14.3.14 **Free Fall**—the act of falling before a personal fall arrest system begins to apply force to arrest the fall.
- 14.3.15 **Free Fall Distance**—the vertical displacement of the fall arrest attachment point on the employee’s body belt or a body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.
- 14.3.16 **Guardrail System**—a passive system that is a barrier erected to prevent employees from falling to lower levels.
- 14.3.17 **Hole**—a gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.
- 14.3.18 **Infeasible**—impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.
- 14.3.19 **Lanyard**—a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.
- 14.3.20 **Leading Edge**—the edge of a floor, roof, or formwork for a floor, or other walking/working surface (such as the deck) which changes location when additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an “unprotected side and edge” during periods when it is not actively and continuously under construction.
- 14.3.21 **Lifeline**—a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to an anchorage at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
- 14.3.22 **Low-Slope Roof**—a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).
- 14.3.23 **Lower Levels**—those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
- 14.3.24 **Mechanical Equipment**—all motor or human propelled wheeled equipment used for work, except wheelbarrows and mop carts.

- 14.3.25 **Opening**—a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.
- 14.3.26 **Personal Fall Arrest System**—a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, full body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.
- 14.3.27 **Rope Grab**—a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.
- 14.3.28 **Roof**—the exterior surface on the top of a building. This does not include floors or framework which temporarily becomes the top surface of a building because a building has not been completed.
- 14.3.29 **Roofing Work**—the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.
- 14.3.30 **Self-Retracting Lifeline/Lanyard**—a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.
- 14.3.31 **Snaphook**—a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types:
- 14.3.31.1 The locking type with a self-closing, self-locking keeper, which remains, closed and locked until unlocked and pressed open for connection or disconnection.
- 14.3.31.2 The nonlocking type with a self-closing keeper that remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a nonlocking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.
- 14.3.32 **Step Roof**—a roof having a slope greater than 4 in 12 (vertical to horizontal).
- 14.3.33 **Toeboard**—a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.
- 14.3.34 **Travel Restraint System**—a combination of anchorage, anchorage connector, lanyard (or other means of connection), and body support that limits travel in such a manner that the user is not exposed to a fall hazard.
- 14.3.34.1 A travel restraint system allows a person to approach the edge, but eliminates the possibility of going over the edge.
- 14.3.35 **Unprotected Sides and Edges**—any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches high.



14.3.36 ***Walking/Working Surface***—any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, and runways.

14.3.37 ***Work Area***—that portion of a walking/working surface where job duties are being performed.

#### 14.4 **ACCOUNTABILITY**

14.4.1 The **project managers**, **superintendents**, and **field foremen** are responsible to see that this program is followed.

#### 14.5 **REQUIREMENTS**

14.5.1 This section covers the requirements for employers to provide fall protection systems. This section designates circumstances where fall protection systems are required, such as areas with unprotected sides and edges or areas where employees are exposed to falling objects.

14.5.2 Unprotected Sides and Edges - Each employee on a walking/working surface (horizontal and vertical surfaces) with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of (a) guardrail systems, (b) safety net systems, (c) travel/fall restraint systems, or (d) personal fall arrest systems. The following are areas with unprotected sides and edges:

14.5.2.1 Leading edges.

14.5.2.2 Hoist areas.

14.5.2.3 Holes.

14.5.2.4 Formwork and reinforced steel.

14.5.2.5 Ramps, runways, and other walkways.

14.5.2.6 Excavations.

14.5.2.7 Dangers involving equipment.

14.5.2.8 Steep roofs.

14.5.2.9 Wall openings.

14.5.2.10 Walking/working surfaces not otherwise addressed.

14.5.3 Protection From Falling Objects - When an employee is exposed to falling objects, the employer shall have each employee wear a hard hat and shall implement one of the following measures:

14.5.3.1 Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels.

14.5.3.2 Erect a canopy structure and keep potential falling objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced.

14.5.3.3 Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the

edge of a higher level so that those objects would not go over the edge if they were accidentally displaced.

## **14.6 SYSTEM CRITERIA & PRACTICES**

**14.6.1 The systems' criteria and practices for fall protection are covered in this section. Employers shall provide all fall protection systems required by this standard for an employee, and shall comply with all other pertinent requirements of this standard before that employee begins the work that necessitates the fall protection. The following are requirements for the various systems of fall protection.**

### **14.6.1.1 Guardrail systems**

#### **14.6.1.1.1 Top rail**

- 14.6.1.1.1.1 Must be 42 inches high (plus or minus 3 inches).**
- 14.6.1.1.1.2 Must withstand a force of at least 200 lbs. in any outward or downward direction at any point along the top rail.**
- 14.6.1.1.1.3 When 200 lbs. of force is exerted on the top rail during inspection the top rail must not deflect to a height less than 39 inches above the working level.**
- 14.6.1.1.1.4 The ends of all top rails shall not overhang the terminal posts, except where the overhang does not present a projection hazard.**
- 14.6.1.1.1.5 Steel or plastic banding shall not be used as top rails.**
- 14.6.1.1.1.6 Must be at least 1/4 inch nominal diameter or thickness.**
- 14.6.1.1.1.7 If wire rope is used as a top rail, it must be flagged every 6 feet with highly visible material.**
- 14.6.1.1.1.8 Manila, plastic, or synthetic rope being used for top rails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements.**

#### **14.6.1.1.2 Mid rail**

- 14.6.1.1.2.1 Shall be used when there is no wall or parapet wall at least 21 inches high.**
- 14.6.1.1.2.2 Shall be installed at a height midway between the top rail and the walking/working level.**
- 14.6.1.1.2.3 Must withstand, without failure, a force of 150 lbs. in any outward or downward direction at any point along the mid rail.**
- 14.6.1.1.2.4 The ends of the mid rails shall not overhang the terminal posts, except where the overhang does not present a projection hazard.**
- 14.6.1.1.2.5 Steel or plastic banding shall not be used as mid rails.**

### **14.6.1.2 Travel/Fall Restraint Systems**

- 14.6.1.2.1 The following summarizes provisions and limitation for component specifications on material make-up and anchorages that are found in the ANSI 359.3 standard.
- 14.6.1.2.2 Travel/Fall Restraint System shall be set up in such a manner that the user is not exposed to a fall hazard in any direction of travel on surfaces greater than 6 ft. above a lower level. The use of approved rope grabs and/or non-shock absorbing lanyards, along with a full body harness shall be used for this purpose.
- 14.6.1.2.3 Shock absorbing lanyards and/or self-retracting devices shall not be used for a Travel/Fall Restraint System.
- 14.6.1.2.4 Travel/Fall Restraint Systems shall be used only if appropriately attached to anchorage point with a minimum strength of 1000 lbs.
- 14.6.1.2.5 The use of a travel restraint system is only permitted on a walking working surface that has a maximum slope of 18.4 degrees (approximately a 4:12 pitch roof).
- 14.6.1.3 Personal Fall Arrest Systems
  - 14.6.1.3.1 The following summarizes provisions for component specifications on material make-up, forces applied to the equipment, and strength that are found in the OSHA regulations.
  - 14.6.1.3.2 Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:
    - 14.6.1.3.2.1 Directly to webbing, rope, or wire rope.
    - 14.6.1.3.2.2 To each other.
    - 14.6.1.3.2.3 To a "D"-ring to which another snaphook or other connector is attached.
    - 14.6.1.3.2.4 To a horizontal lifeline.
    - 14.6.1.3.2.5 To an object which is incompatibly shaped or dimensioned in relation to the snaphook.
    - 14.6.1.3.2.6 When vertical lifelines are used, each employee shall be attached to a separate lifeline.
  - 14.6.1.3.3 Two employees may be attached to same lifeline only during the construction of elevator shafts provided the following provisions are taken:
    - 14.6.1.3.3.1 Employees are working atop a false car that is equipped with guardrails.
    - 14.6.1.3.3.2 The strength of the lifeline is 10,000 lbs.
    - 14.6.1.3.3.3 All other criteria specified in this section have been met.
  - 14.6.1.3.4 Lifelines shall be protected against being cut or abraded.

- 14.6.1.3.5 The attachment point of the body belt shall be located in the center of the wearer's back. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level or above the wearer's head.
- 14.6.1.3.6 Body belts, harnesses, and components shall be used only for employee protection and not to hoist materials.
- 14.6.1.3.7 Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
- 14.6.1.3.8 The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
- 14.6.1.3.9 Personal fall arrest systems shall be inspected prior to each use for wear, damage, and other deterioration. Defective components shall be removed from service.
- 14.6.1.3.10 Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists except as specified in other subparts of this standard.
- 14.6.1.3.11 When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.
- 14.6.1.4 Positioning Device System
  - 14.6.1.4.1 Positioning devices
    - 14.6.1.4.1.1 Shall be rigged such that an employee cannot free fall more than 2 feet.
    - 14.6.1.4.1.2 Shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 lbs., whichever is greater.
  - 14.6.1.4.2 Systems shall be inspected prior to each use for wear, damage, and other deterioration and defective components shall be removed from service.
- 14.6.1.5 Connectors
  - 14.6.1.5.1 Shall be drop forged pressed or formed steel, or made of equivalent materials.
  - 14.6.1.5.2 Shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system.
  - 14.6.1.5.3 Assemblies shall have a minimum tensile strength of 5,000 pounds.
- 14.6.1.6 "D"-rings and snaphooks
  - 14.6.1.6.1 Shall be proof-tested to a minimum tensile load of 3,600 lbs. without cracking, breaking, or taking permanent deformation.

14.6.1.6.2 Snaphooks shall be sized to be compatible with the member to whom they are connected to prevent unintentional disengagement of the snaphook by depression of the snaphook keeper or shall be a locking type snaphook.

14.6.1.6.3 Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:

14.6.1.6.3.1 Directly to webbing.

14.6.1.6.3.2 To each other.

14.6.1.6.3.3 To a "D"-ring to which another snaphook or other connector is attached.

14.6.1.6.3.4 A horizontal lifeline.

14.6.1.6.3.5 To any object which is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

#### 14.6.1.7 Covers

14.6.1.7.1 Covers located in roadways and vehicular traffic aisles shall be capable of supporting, without failure, twice the maximum axle load of the largest vehicle expected to cross over the cover.

14.6.1.7.2 All covers shall be capable of supporting, without failure, twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

14.6.1.7.3 All covers shall be secured when installed to inhibit its accidental movement.

14.6.1.7.4 All covers shall be color coded or marked with the words "HOLE" or "COVER" to provide a sufficient warning for the hazard.

#### 14.6.1.8 Protection from Falling Objects

##### 14.6.1.8.1 Toeboards

14.6.1.8.1.1 Shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

14.6.1.8.1.2 Shall be able to withstand, without failure, 50 lbs. of force applied outward or downward at any point along the toeboard.

14.6.1.8.1.3 Shall be a minimum of 3 1/2 inches vertically from the walking/working surface and shall have no more than 1/4 inch clearance from the walking/working surface.

14.6.1.8.1.4 Shall be solid or have openings no more than a 1 inch in greatest dimension.

#### 14.6.1.9 Site Specific Fall Protection Plan

14.6.1.9.1 A site specific fall protection plan may only be used as an option when employees are engaged in leading edge work, precast concrete erection work, or residential construction work. This option can only be used when

conventional fall protection is proved infeasible or creates a greater hazard.

- 14.6.1.9.2 Shall be prepared by a qualified person and developed specifically for a particular job site. A comprehensive Job Hazard Analysis (JHA) will meet this requirement (see section 4 for details on JHA's).
- 14.6.1.9.3 Shall be kept up-to-date, with changes approved only by a qualified person.
- 14.6.1.9.4 Shall be kept on the job site at all times.
- 14.6.1.9.5 Shall be implemented under the supervision of a competent person.
- 14.6.1.9.6 Shall contain documented reasons why conventional fall protection is infeasible.
- 14.6.1.9.7 Shall include a written discussion of other measures taken to reduce or eliminate fall hazards.
- 14.6.1.9.8 Shall identify the locations where conventional fall protection cannot be used.
- 14.6.1.9.9 Shall identify employees who are designated to work in controlled access zones. No other employees may enter these zones.
- 14.6.1.9.10 In the event an employee falls or some other related, serious incident occurs (i.e., near miss), Total Automation Concepts, Inc. shall investigate the circumstances of the incident and determine if a change is needed for the plan and shall implement this change to prevent similar occurrences.

## **14.7 TRAINING**

14.7.1 The following training provisions are a required part of the fall protection program:

### **14.7.1.1 Training Program**

14.7.1.1.1 Total Automation Concepts, Inc. shall provide a training program for each employee who might be exposed to fall hazards.

14.7.1.1.2 The program shall enable employees to identify the hazards of falling.

14.7.1.1.3 The program shall train employees in the procedures to be followed in order to minimize these hazards.

14.7.1.1.4 The employees shall be trained in the following areas:

14.7.1.1.4.1 The nature of fall hazards in the work area.

14.7.1.1.4.2 Correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection system.

14.7.1.1.4.3 The use and operation of all the systems of fall protection.

14.7.1.1.4.4 The role of each employee in the safety monitoring system, when used.

14.7.1.1.4.5 The correct procedures for handling and storage of equipment and materials and the erection of the overhead projection.

14.7.1.1.4.6 The role of employees in fall protection plans.

#### 14.7.1.1.5 Certification of Training

14.7.1.1.5.1 The employer shall provide a written certification record of all employees who have completed training in fall protection. It shall include the following:

14.7.1.1.5.2 Employees' names.

14.7.1.1.5.3 The date(s) of training.

14.7.1.1.5.4 The content of the training and the signature of the person who conducted the training or the employer's signature.

14.7.1.1.5.5 The latest training certification shall be maintained.

#### 14.7.1.1.6 Retraining

14.7.1.1.6.1 When Total Automation Concepts, Inc. has reason to believe that employees no longer possess the necessary understanding and skill required, the employer shall retrain these employees.

14.7.1.1.6.2 Changes in the workplace render previous training obsolete.

14.7.1.1.6.3 Changes in the types of fall protection systems or equipment to be used render previous training obsolete.

14.7.1.1.6.4 When it is evident that the employee did not retain the knowledge or understanding provided in the training session.

### 14.8 **FORMS**

14.8.1 Fall Protection Selection Chart

14.8.2 Training Guide for Lanyards

14.8.3 Guide for Selecting Anchorage Points

#### 14.8.1 FALL PROTECTION SELECTION CHART

The following chart should be used as a guide for determining the type of fall protection needed in certain working circumstances where there is a 6 foot separation between the employee and the fall hazard.

TYPES OF WORKING SITUATIONS	PROTECTION NEEDED
Leading edges	a, b, c, l, m
Hoist Areas	a, c, or m
Holes	a, c, d, or m
Formwork and Reinforced Steel	a, b, or c
Ramps, Runways, and Other Walkways	a
Excavations	a or f
Edge of a Well, Pit, or Shaft	a, f, or d
Dangerous Equipment (used within 6 feet below walking/working surfaces)	a or g
Dangerous Equipment (used > 6 feet below walking/working surfaces)	a, b, c, or m
Overhand Bricklaying and Related Work	a, b, c, or h
Overhand Bricklaying and Related Work (reaching > 10 in. below surface)	a, b, or c
Roofing Work on Low-slope Roofs	a, b, c, j, i, or m
Steep Roof Work	b, c, or k
Precast Concrete Erection	a, b, c, or l
Residential Construction	a, b, c, or l
Wall Openings	a, b, c, or m
Walking/working Surfaces Not Otherwise Addressed	a, b, c or m

- |                                 |                                  |                                    |
|---------------------------------|----------------------------------|------------------------------------|
| a. Guardrail systems            | f. Fences or Barricades          | k. Guardrail systems w/toeboards   |
| b. Safety net systems           | g. Equipment guards              | l. Fall protection plan <b>xxx</b> |
| c. Personal fall arrest systems | h. Control access zones <b>x</b> | m. Fall Restraint/Travel system    |
| d. Hole covers                  | i. Warning line <b>xx</b>        |                                    |
| e. Positioning device systems   | j. Safety monitoring systems     |                                    |

**“x”** in addition to the control access zone system of fall protection, the safety monitoring system must also be used to protect those working inside the CAZ.

**“xx”** this system can only be used when accompanied by one of the other protection systems listed for the type of work.

**“xxx”** this system can only be used when the other systems are proved to be infeasible or create a greater hazard.



## 14.8.2 TRAINING GUIDE FOR LANYARDS

When using different forms of personal fall protection equipment, certain guidelines must be followed in order for that equipment to be effective. Following these guidelines will ensure that your equipment will work properly when needed.

### *Shock Absorbing Lanyards*

When using shock-absorbing lanyards, be sure to connect the shock absorbing end of the lanyard to the D-ring located on the back of your full body harness. If this device is not connected in this manner it will not be effective.

### *Manila Rope Lanyards and Body Belts*

When using manila rope lanyards with body belts, you should tie off in a manner that only allows a two-foot fall. OSHA requires that the body cannot be subjected to more than 900 lbs. of force to the body when using belts. If a manila lanyard is connected in a manner that allows more than a two-foot fall, the average 200 lb. person would exceed the limit of 900 lbs. of force to the body during a free fall.

**NOTE:** Employees wearing full body harnesses may not be exposed to over 1800 lbs. of force during a fall.

Body belts may be used for positioning work or tethering work only. When positioning, additional fall protection must be used.

### 14.8.3 GUIDE FOR SELECTING ANCHORAGE POINTS

#### **Tie-Off Points (*Anchorage*)**

When anchoring any fall protection, the following questions should be asked to see if these anchorage points are reliable. An answer of “NO” to any of these questions signifies a deficiency.

1. Does the anchor-point height reduce free fall distance to the shortest distance possible?
2. Is the anchor point away from possible collisions with the body or the head?
3. Is the anchor point unaffected by local environment or contamination such as overspray?
4. Is swing fall reduced to a reasonably safe minimum to reduce the potential for collision injury and allow for self-recovery?
5. Is the anchorage reachable to permit connection without a hazard?
6. Is the anchorage point compatible with the attachment method of the deceleration device? (Many shapes are not attachable with snaphooks, including certain eyebolt shapes).
7. Will the likely method of attachment cause damage or failure to the deceleration device? (Looping a lanyard around an angle iron could cut the lanyard in a fall).
8. Is the anchorage point tested or permitted for its intended use (multiple or single tie-offs)?
9. Are load bearing suspension line and the life line attached to separate support systems?
10. Are tying knots prohibited to provide an anchor point attachment?
11. Is the practice of attaching lanyards together at their snaphooks prohibited?
12. Is the practice of using snaphooks for attaching loads to the structure or pulling loads prohibited?
13. Is the practice of attaching lanyards to eyebeams with snaphooks prohibited?
14. Are the anchorage points independent?
15. Is the fall protection system, in use, engineered properly?
16. If horizontal lifelines are used, have they been engineered for this purpose?
17. Are anchorage points capable of supporting at least 5,000 lbs. for each employee attached?

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## **15.0 LADDERS**

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### **15.1 OBJECTIVE**

15.1.1 The purpose of this plan is to provide guidelines to be followed to protect employees from injuries when using ladders.

### **15.2 APPLICABILITY/SCOPE**

15.2.1 This plan applies to all Total Automation Concepts, Inc. employees on all job sites.

### **15.3 ACCOUNTABILITY**

15.3.1 The supervisor is responsible to see that the guidelines set forth in this plan are followed.

### **15.4 BASIC REQUIREMENTS**

15.4.1 All portable ladders will be equipped with slip-resistant bases.

15.4.2 Ladders shall be inspected for conformity to safety regulations by the tool room before putting them into service in the field.

15.4.3 All Total Automation Concepts, Inc. employees shall inspect ladders prior to each use.

### **15.5 USE OF LADDERS**

15.5.1 Inspect ladder for defects prior to each use. Defective ladders shall be removed from service and sent back to the shop immediately.

15.5.2 Never place a ladder in front of a door that opens toward the ladder unless the door is locked, blocked, or guarded.

15.5.3 Place a portable ladder so that both side rails have secure footings.

15.5.4 Never lean a ladder against unsecured backing, such as boxes.

15.5.5 Do not place a ladder close to electric wiring or any operational piping (acid, chemical, sprinkler systems, etc.) where damage may be done.

15.5.6 Ladders are for only one person at a time.

15.5.7 Be sure that a stepladder is fully open and the metal spreader is locked before you start to climb it.

15.5.8 Never use a stepladder as a straight ladder.

15.5.9 Do not climb higher than the third rung from the top on straight or extension ladders.

15.5.10 Do not climb higher than the second tread from the top on stepladders.

15.5.11 When setting up a straight or extension ladder, the base should be one-fourth the ladder length from the vertical plane of the top support.

15.5.12 Keep ladders clean and free from dirt and grease, which can hide defects and cause falls.

15.5.13 Ladders shall never be used in a horizontal position as a runway, ramp, or scaffold platform.

#### 15.5.14 Ascending or Descending Ladders

- 15.5.14.1 Always maintain a three point contact when climbing up or down ladders (i.e., 2 feet with one hand/2 hands with 1 foot).
- 15.5.14.2 Always keep your center of gravity between the side rails of the ladder (i.e., your belt buckle).
- 15.5.14.3 If material must be handled, raise or lower it with a rope either before going down or after climbing to the desired level.
- 15.5.14.4 Tools may be carried on a tool belt.
- 15.5.14.5 Always face the ladder when ascending or descending.

#### 15.6 INSPECTION OF LADDERS

- 15.6.1 All ladders will be inspected before every use.
- 15.6.2 Ladders that are weak, improperly repaired, damaged, have missing rungs, or appear unsafe, shall be removed from the work site and returned to the shop for repair or disposal.
- 15.6.3 If the ladder is to be disposed of, it must be destroyed so that no one can use it (i.e., rungs cut in half).
- 15.6.4 All ladders shall be inspected for:
  - 15.6.4.1 Loose steps or rungs.
  - 15.6.4.2 Cracked, split, or broken uprights, braces, steps, or rungs.
  - 15.6.4.3 Damaged or worn nonslip braces.
- 15.6.5 Stepladders should be inspected for:
  - 15.6.5.1 Stability.
  - 15.6.5.2 Loose or bent hinge spreaders.
  - 15.6.5.3 Broken, split, or worn steps.
  - 15.6.5.4 Loose hinges.
- 15.6.6 General Requirements:
  - 15.6.6.1 The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited.
  - 15.6.6.2 The feet of portable ladders shall be placed on a solid base and the area around the top and bottom of the ladder shall be kept clear.
  - 15.6.6.3 Portable ladders shall be used at such a pitch of 4 to 1.
  - 15.6.6.4 The side rails of the ladder shall extend at least 36" above the landing or work platform.
  - 15.6.6.5 Portable ladders in use shall be tied off, blocked, or otherwise secured at the top to prevent being displaced.
  - 15.6.6.6 No employee is allowed to step higher than the third rung from the top of a straight ladder or higher than the second step from the top of a step ladder.

15.6.6.7 All ladders will be turned into the tool room and inspected periodically. This inspection shall be documented.

**15.7 FORMS**

15.7.1 Ladder Use Checklist

15.7.2 Ladder Inspection Checklist

### 15.7.1 LADDER USE CHECKLIST

	<u>Yes</u>	<u>No</u>
1. Are ladders being used where other means of access would be safer or more economical?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the ladders in use properly suited to the task?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are bases on firm footing such as compacted soil or mud sills?	<input type="checkbox"/>	<input type="checkbox"/>
4. Are bases secured against slippage?	<input type="checkbox"/>	<input type="checkbox"/>
5. Are ladders tied off at the top, blocked, secured, or held by a second worker when in use?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are areas around the top and bottom clear of material, debris, or obstruction?	<input type="checkbox"/>	<input type="checkbox"/>
7. Are metal ladders being used where electrical contact is possible near electrical equipment or wires?	<input type="checkbox"/>	<input type="checkbox"/>
8. Are ladders being used horizontally or for some other wrong purpose?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are workers 3 meters (10 feet) or more off the ground and using both hands for the work tying off with a safety belt and lanyard to a structurally safe means of support?	<input type="checkbox"/>	<input type="checkbox"/>
10. Are ladders inspected before being used?	<input type="checkbox"/>	<input type="checkbox"/>
11. Do the side rails of straight ladders extend at least 914 millimeters (3 feet) above the landing level?	<input type="checkbox"/>	<input type="checkbox"/>
12. Are the job-built wooden ladders properly constructed?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are the personnel familiar with the ladder safety policies of the company?	<input type="checkbox"/>	<input type="checkbox"/>
14. Are straight ladders being erected at the proper angle?	<input type="checkbox"/>	<input type="checkbox"/>
15. Are ladders being used in passageways where they can be affected by adjacent activities?	<input type="checkbox"/>	<input type="checkbox"/>
16. Unless the ladder is a job-built, double-width ladder, is more than one person on a ladder at a time?	<input type="checkbox"/>	<input type="checkbox"/>
17. Are ladders being stored and transported by methods that avoid damage?	<input type="checkbox"/>	<input type="checkbox"/>
18. Are workers carrying tools, equipment, or materials in their hands while climbing up or down ladders?	<input type="checkbox"/>	<input type="checkbox"/>
19. Do workers face the ladder when ascending, descending, or working from it?	<input type="checkbox"/>	<input type="checkbox"/>
20. Do personnel use fall-arresting devices when climbing up or down long vertical ladders?	<input type="checkbox"/>	<input type="checkbox"/>
21. Are ladders being supported on their rungs?	<input type="checkbox"/>	<input type="checkbox"/>
22. Are two or more people used to erect long or heavy ladders?	<input type="checkbox"/>	<input type="checkbox"/>

## 15.7.2 LADDER INSPECTION CHECKLIST

	<u>Yes</u>	<u>No</u>
1. Are any wooden parts splintered?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are there any defects in side rails, rungs, or other similar parts?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are there any missing or broken rungs?	<input type="checkbox"/>	<input type="checkbox"/>
4. Are there any broken, split, or cracked rails repaired with wire, sheet metal, or other makeshift materials?	<input type="checkbox"/>	<input type="checkbox"/>
5. Are there any worn, damaged, or missing feet?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are there any worn, damaged, or unworkable extension ladder locks, pulleys, or other similar fittings?	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the rope on extension ladders worn, broken, or frayed?	<input type="checkbox"/>	<input type="checkbox"/>
8. Has the rope on extension ladders been replaced by material inferior to the ladder manufacturer's original rope?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are the spreader arms on step ladders bent, worn, broken, or otherwise rendered partly or totally ineffective?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer is "YES" to any of the questions on the Inspection Checklist, the ladder should be tagged so that workers will know it is defective and should not be used. It should be taken out of service immediately and placed in a location where it will not be used until repairs are completed. If the ladder is not to be repaired it should be destroyed.

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## **16.0 MATERIAL HANDLING AND STORAGE**

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### **16.1 OBJECTIVE**

16.1.1 The purpose of this plan is to provide guidelines to be followed in order to reduce the exposure to material handling-related injuries on Total Automation Concepts, Inc. job sites.

### **16.2 APPLICABILITY/SCOPE**

16.2.1 This plan applies to all Total Automation Concepts, Inc. employees on Total Automation Concepts, Inc. job sites.

### **16.3 ACCOUNTABILITY**

16.3.1 The field foreman is responsible to see that the guidelines set forth in this plan are followed.

### **16.4 GENERAL PRECAUTIONS**

16.4.1 General precautions that must be followed to prevent injuries while handling materials are:

16.4.1.1 Inspect materials for splinters, jagged, or sharp edges, burns, rough, or slippery surface.

16.4.1.2 Grasp the object with a firm grip.

16.4.1.3 Keep fingers away from pinch and shear points, especially when setting down materials.

16.4.1.4 Wipe off greasy, wet, slippery, or dirty objects before trying to handle them.

### **16.5 MANUAL LIFTING TECHNIQUES**

#### **16.5.1 Squat Lifting**

16.5.1.1 Maintain lower back curve. Tighten stomach muscles.

16.5.1.2 Keep back straight and nearly vertical.

16.5.1.3 Tuck elbows and arms in and hold load close to body.

16.5.1.4 Grasp the object with the whole hand.

16.5.1.5 Look up to where you will move next.

16.5.1.6 Keep body weight directly over feet.

#### **16.5.2 Assisted One-Hand Lift**

16.5.2.1 In this method, the worker rests one hand on top of the container, bends over to grasp an object in the container, and then pushes down with the non-lifting hand resting on top of the container to force the upper body back to a vertical position.

16.5.2.2 The basic techniques are:

16.5.2.2.1 Place the non-lifting hand on the container top, bend over container, and assume lift position.



- 16.5.2.2.2 While bending over, back the foot on the same side as the non-lifting hand rearward to provide body balance.
- 16.5.2.2.3 Reach and grasp object to be lifted.
- 16.5.2.2.4 Push down with the non-lifting hand on the container top and raise the upper body to a vertical position.
- 16.5.2.2.5 Be sure to let the non-lifting hand, not the back, do the work.

### 16.5.3 Team Lifting and Carrying

16.5.3.1 When two or more people carry one object:

- 16.5.3.1.1 They should adjust the load so that it rides level so that each person carries an equal part of the load.
- 16.5.3.1.2 Test lifts should be made before proceeding.
- 16.5.3.1.3 When carrying long sections of pipe, lumber, or steel, they should carry them on the same shoulder.

### 16.5.4 Handling Specific Shapes

16.5.4.1 Boxes, Cartons, and Sacks.

- 16.5.4.1.1 Grasp the alternate top and bottom corner.
- 16.5.4.1.2 Draw a corner between the legs.
- 16.5.4.1.3 Sacked materials should be grasped at opposite corners.
- 16.5.4.1.4 Upon reaching an erect position, let the sack rest against the hip and belly. Then swing the sack to one shoulder
- 16.5.4.1.5 As the sack reaches the shoulder, the worker should stoop slightly while putting a hand on the hip so that the sack rests partly on the shoulder and partly on the arm and back.

### 16.5.5 Barrels and Drums

- 16.5.5.1 When handling a drum, one should request assistance, use a drum tilter, or other mechanical assistance (two-wheeled dolly equipped for drums).
- 16.5.5.2 If necessary to roll a barrel or drum, the worker should push against the sides with the hands.

### 16.5.6 Hand Trucks, Carts and Dollies

16.5.6.1 Safe procedures for using two-wheeled trucks or carts are:

- 16.5.6.1.1 Tip the load to be lifted forward slightly so that the tongue of the truck goes under the load.
- 16.5.6.1.2 Push the truck all the way under the load to be moved.
- 16.5.6.1.3 Keep the center of gravity of the load as low as possible. Place heavy objects below lighter objects.
- 16.5.6.1.4 Place the load well forward so the weight will be carried by the axle, not by the handles.

- 16.5.6.1.5 Place the load so it will not slip, shift, or fall.
- 16.5.6.1.6 Load only to a height that will allow a clear view ahead.
- 16.5.6.1.7 Let the truck carry the load. The operator should only balance and push.
- 16.5.6.1.8 Never walk backwards with a hand truck.
- 16.5.6.1.9 For extremely bulky items or pressurized items, such as gas cylinders, strap or chain the item to the truck.
- 16.5.6.1.10 When going down an incline, keep the truck ahead so that it can be observed at all times.

#### 16.5.7 Four-Wheel Trucks, Carts, or Gondolas

- 16.5.7.1 Trucks, carts or gondolas should be evenly loaded to prevent tipping.
- 16.5.7.2 They should be pushed rather than pulled.
- 16.5.7.3 They should be loaded so that the operators can see where they are going.
- 16.5.7.4 Contents of load should be arranged so that they will not fall.

### 16.6 LIFT TRUCKS

#### 16.6.1 Basic Lift Truck Facts

- 16.6.1.1 Generally steered by the rear wheels.
- 16.6.1.2 Steers more easily loaded than empty.
- 16.6.1.3 Usually driven in reverse direction as often as in the forward direction.
- 16.6.1.4 Often steered with one hand—the other hand being used to operate the controls.

#### 16.6.2 Basic Operating Rules

- 16.6.2.1 The swing of the rear of the truck must always be carefully watched.
- 16.6.2.2 The truck must be operated at a safe rate of speed.
- 16.6.2.3 Operators should look in the direction of travel and maintain a clear view.
- 16.6.2.4 Operators should stop at blind corners and before going through doorways.
- 16.6.2.5 Bridge plates must be properly secured before entering the trailers.
- 16.6.2.6 Trailers should have their wheels chocked before load or unloading.
- 16.6.2.7 The lift truck driver is personally responsible to inspect the wheel chocks.
- 16.6.2.8 The operator should leave the truck only if the controls are in neutral, the power shut off, brakes set, and the load is lowered to ground level.
- 16.6.2.9 Loads should be stabilized (neatly piled, cross-tied, or shrink-wrapped).
- 16.6.2.10 Loads should not be raised or lowered en route.
- 16.6.2.11 Loaded or empty, the forks should be carried as low as possible, but high enough not to strike any raised or uneven surface.
- 16.6.2.12 Tilting back the upright keeps the load steady and secure.
- 16.6.2.13 The truck should be driven backward if the load is obstructing the view.

16.6.2.14 Low gear should be used when descending a grade.

16.6.2.15 Placing extra weight on the rear of a lift truck to counterbalance a load is prohibited.

### 16.6.3 Lift Truck Training

16.6.3.1 Only authorized and trained personnel should be permitted to operate a lift truck.

16.6.3.2 All new operators will receive the basic operator's course that includes a road test before operating a powered industrial truck.

16.6.3.3 All operators will be given a refresher course every three years.

16.6.3.4 All training shall be documented.

### 16.6.4 Inspection and Maintenance

16.6.4.1 The following areas of the powered industrial lift trucks will be inspected at the start of each shift by the operators:

16.6.4.1.1 Controls.

16.6.4.1.2 Brakes.

16.6.4.1.3 Tires.

16.6.4.1.4 Other moving parts.

16.6.4.2 Only trained and qualified persons will perform inspections on the powered lift trucks on a regular monthly basis.

### 16.6.5 Liquefied Petroleum (L-P) Gas Trucks

16.6.5.1 Storage of fuel containers must be outside.

16.6.5.2 The container shutoff valve must be closed after the shift or the vehicle is out of service.

16.6.5.3 After changing fuel containers, the driver should check for leaks.

16.6.5.4 A properly adjusted engine burning L-P gas will generally produce a substantially lower concentration of carbon monoxide.

16.6.5.5 If the carbon monoxide concentration is suspicious, air monitoring will be utilized. The ACGIH TLV is 35 PPM of carbon monoxide for an eight-hour exposure.

## 16.7 PALLETS

16.7.1 Splintered, broken, or loose parts should be repaired or replaced. Loose nails or chunks of wood can cause injury to workers and damage to the trucks.

16.7.2 Pallets should be neatly stacked so that they are stable and secure against falling.

16.7.3 They should not be left standing on edge or in a leaning position from which they may topple onto our workers.

16.7.4 Large stacks of pallets should be maintained outside.

16.7.5 Pallets should be hoisted with powered or hand trucks.

16.7.6 The pallets should be inspected for defects by the operator before loading or stacking.

**16.8 GENERAL**

16.8.1 All equipment shall be inspected on a daily basis by the operator. The checklist is to be completed and returned to supervisor.

16.8.2 Employees shall never walk under a suspended load nor should a suspended load be moved over workers.

16.8.3 Material handling equipment shall not be loaded beyond its rated capacity.

16.8.4 Tag lines shall be used on all suspended loads that are liable to swing. Slings shall be inspected prior to each use and shall not be left on the ground.

16.8.5 A 10 foot minimum clearance shall be maintained between hauling equipment and power lines.

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## **17.0 PERSONAL PROTECTIVE EQUIPMENT**

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### **17.1 OBJECTIVE**

17.1.1 All personal protective equipment shall be of safe design and construction for the work to be performed.

### **17.2 PURPOSE**

17.2.1 To determine the proper personal protective equipment to use for the given hazard identified.

17.2.2 To recognize that engineering controls, proper work methods, and administrative controls should be implemented before personal protective equipment is used.

17.2.3 To discuss selection, handling, and care of personal protective equipment.

### **17.3 ACCOUNTABILITY**

17.3.1 Where employees provide their own protective equipment, Total Automation Concepts, Inc. shall be responsible to assure its adequacy, including proper maintenance and sanitation of such equipment.

17.3.2 Defective or damaged personal protective equipment shall not be used.

### **17.4 INTRODUCTION**

17.4.1 Personal Protective Equipment (PPE) protects employees from the risk of injury by creating a barrier against workplace hazards. In any instance in which a hazard is recognized, engineering controls, proper work methods, and administrative controls should be adopted to remove or control the hazard.

17.4.2 Only in those instances in which it is infeasible to eliminate the hazards by those means discussed throughout this manual will PPE be employed. Personal Protective Equipment will be used and maintained when it is determined that its use is required and that such use will lessen the likelihood of injury and/or illness.

17.4.3 This section will address eye, face, head, hand, and foot protection. Respiratory and hearing protection will not be addressed as the need for these must be determined through industrial hygiene monitoring. If the need for respiratory protection is determined, each potential wearer must be medically evaluated to ensure that they are fit to wear any device that potentially restricts their breathing.

17.4.4 Supervisors have the primary responsibility for implementation of the PPE program for their department. They must provide appropriate PPE for the hazard posed and make the PPE available to employees. They also must ensure that employees are properly trained on the use and care of PPE.

17.4.5 Employees must wear PPE as required, as well as, care and maintain PPE as required. They must also notify their supervisor of the need to repair or replace PPE.

### **17.5 HAZARD ASSESSMENT & EQUIPMENT SELECTION**

17.5.1 OSHA requires that employers conduct inspections of operations to determine the need for PPE and to help in selecting the proper PPE for each task performed. The information provided in this policy should be helpful in this assessment.

17.5.2 Examples of the types of hazards to be identified and the proper PPE to be used are as follows:

- 17.5.2.1 **Overhead hazards:** Head protection.
- 17.5.2.2 **Handling corrosive chemicals:** Goggles, face shields, proper gloves, aprons, eye wash station in close proximity to work area.
- 17.5.2.3 **Manual material handling:** Gloves for greater grip, safety shoes with impact protection where heavy objects could be dropped.
- 17.5.2.4 **Grinding, sanding, cutting, or any other operation which generates particles that could settle in or impact the eye:** Goggles, face shields.
- 17.5.2.5 **Falls from heights greater than six feet:** Full body harnesses, complete fall arrest system.

## 17.6 **EYE & FACE PROTECTION**

- 17.6.1 All eye and face protection chosen will conform to American National Standards Institute (ANSI) Z87. All persons in eye hazard areas will wear protective eyewear. Suitable protectors shall be used when employees are exposed to hazards from flying particles, molten metal, corrosive liquids, or potentially injurious light radiation. Additionally, the following rules apply:
- 17.6.1.1 Approved side protectors will be used when there is a danger from flying objects.
  - 17.6.1.2 Goggles and face shields will be used when there is a hazard from chemical splash.
  - 17.6.1.3 Face shield will only be worn over primary eye protection (safety glasses or goggles).
  - 17.6.1.4 For employees who wear prescription lenses, eye protection shall either incorporate the prescription in the design or fit properly over the prescription lenses.
  - 17.6.1.5 Equipment fitted with appropriate filter lenses shall be used to protect against light radiation. They must be marked as such.
  - 17.6.1.6 As required, an emergency eyewash facilities, meeting the requirements of ANSI Z358.1 with a 15-minute continuous flush, will be provided in all areas where the employee may be exposed to corrosive materials and must be easily accessible.

## 17.7 **HEAD PROTECTION**

- 17.7.1 All head protection shall conform to ANSI Z89.1-1986. It shall be worn at all times when an overhead hazard exists. The head protection chosen will provide protection against electrical shock in the event that there is a hazard from overhead electrical wires.

## 17.8 **FOOT PROTECTION**

- 17.8.1 Safety shoes or boots with impact protection are required to be worn in work areas where carrying or handling materials which could be dropped on the foot. All safety footwear selected shall comply with ANSI Z41/ASTM F2413-05.

## **17.9 HAND PROTECTION**

- 17.9.1 Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, or harmful temperature extremes are present. Glove selection shall be based on performance characteristics of the gloves, conditions, duration of use, and the hazards present.
- 17.9.2 For those gloves used for protection against chemical contact, the exact hazardous nature of the substances dealt with is to be determined. Instructions on labels and Material Safety Data Sheets should be read prior to use. Recommended glove types are often listed in the section entitled "Personal Protective Equipment".

## **17.10 CLEANING & MAINTENANCE**

- 17.10.1 Personal Protective Equipment should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the proper protection. It is especially important that safety glasses and face shields are kept clean so that vision is not impaired.

## **17.11 TRAINING**

- 17.11.1 All employees required to wear PPE will be trained in the following subjects:
- 17.11.2 When it is necessary to wear PPE.
- 17.11.3 What PPE is necessary.
- 17.11.4 How to properly don, doff, adjust and wear PPE.
- 17.11.5 The limitations of PPE.
- 17.11.6 The proper care, maintenance, and cleaning of PPE.
- 17.11.7 Each employee trained will demonstrate that they grasp the concepts discussed above.

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## **18.0 SCAFFOLDING**

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### **18.1 OBJECTIVE**

18.1.1 The purpose of this plan is to provide guidelines to protect employees from injuries from scaffold work.

### **18.2 APPLICABILITY/ SCOPE**

18.2.1 This plan applies to all Total Automation Concepts, Inc. employees on all job sites and covers all scaffolds. It does not apply to crane or derrick suspended personnel platforms.

### **18.3 ACCOUNTABILITY**

18.3.1 The foreman or his designee must oversee all scaffolding that is erected or used on the Total Automation Concepts, Inc. job sites. The following rules must be followed to maintain a safe work environment.

### **18.4 GENERAL RULES**

18.4.1 The footings or sills for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, loose bricks, or concrete blocks shall not be used to support scaffolding or planks.

18.4.1.1 Guardrails shall be installed on all open sides of scaffolds more than 10 feet above the ground or floor.

18.4.1.2 Scaffolds 4–10 feet in height, with a minimum horizontal dimension in either direction of less than 45 inches, shall have guardrails installed.

18.4.1.3 All working platforms must be fully planked.

18.4.1.4 All planking shall be scaffold grade plank or full dimensional lumber.

18.4.1.5 All planking must be overlapped at least 12 inches.

18.4.1.6 All planking must be secured from movement (cleats).

18.4.1.7 Screw jacks shall be used to level the scaffold.

18.4.1.8 The height of a scaffold cannot exceed 4 times the minimum base dimension without outriggers or being tied off to a stable part of the building.

18.4.1.9 Scaffolds shall be capable of supporting without failure at least 4 times the maximum intended load.

18.4.1.10 Daily inspection of scaffolding on the job site must be made by a competent person. Inspections must be documented.

18.4.1.11 Each working level platform (walkways not included) shall be fully planked or decked between the front uprights and the guardrail supports as follows:

18.4.1.11.1 Each scaffold platform and walkway shall be at least 18 inches wide.

18.4.1.11.2 The front edge of all platforms shall not be more than 14 inches from the face of the work, unless guard rail systems are erected along the front edge and/or personal fall arrest systems are used.



18.4.1.11.3 Scaffolding components from different manufacturers shall not be intermixed unless they fit together without force and the structural integrity is maintained by the user. Components shall not be modified.

18.4.1.11.4 Scaffolding components made of dissimilar metals shall not be used together unless a competent person has determined it will not reduce the strength of any component below what is required.

## **18.5 MOBILE SCAFFOLDS**

18.5.1 Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent rocking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

18.5.2 Scaffolds constructed of fabricated frame components shall also comply with the requirements of the manufacturer.

18.5.3 Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is used in a stationary manner.

18.5.4 Manual force used to move the scaffold shall be applied as close to the base as practicable, but not more than 5 feet (1.5 m) above the supporting surface.

18.5.5 Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles, or add-on motors shall not be used to propel scaffolds unless the scaffold is designed for such propulsion systems.

18.5.6 Scaffolds shall be stabilized to prevent tipping during movement.

18.5.7 Employees shall not be allowed to ride on scaffolds unless the following conditions exist:

18.5.7.1 The surface on which the scaffold is being moved is within 3 degrees of level, and free of pits, holes, and obstructions.

18.5.7.2 The height to base width ratio of the scaffold during movement is two to one or less, unless the scaffold is designed and constructed to meet or exceed nationally recognized stability test requirements.

18.5.7.2.1 Outrigger frames, when used, are installed on both sides of the scaffold.

18.5.7.2.2 When power systems are used, the propelling force is applied directly to the wheels, and does not produce a speed in excess of 1 foot per second (.3 mps).

18.5.7.2.3 No employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.

18.5.7.2.4 Platforms shall not extend outward beyond the base supports of the scaffold unless outrigger frames or equivalent devices are used to ensure stability.

18.5.7.2.5 Where leveling of the scaffold is necessary, screw jacks or equivalent means shall be used.

18.5.7.2.6 Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.

18.5.7.2.7 Before a scaffold is moved, each employee on the scaffold shall be made aware of the move.

## **18.6 USE**

18.6.1 Scaffold and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

18.6.2 A competent person before each work shift, and after any occurrence, which could affect a scaffold's structural integrity, shall inspect scaffolds and scaffold components for visible defects.

18.6.3 Any part of a scaffold damaged or weakened until its strength is less than that, which is required, shall be immediately repaired or replaced, braced to meet strength requirements, or removed from service until repaired.

18.6.4 Scaffolds shall be erected, moved, or altered only under the supervision and direction of a competent person.

18.6.5 Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined it is safe for employees to be on the scaffold.

18.6.6 Debris shall not be allowed to accumulate on platforms.

18.6.7 Ladders shall not be used on scaffolds to increase the working level height of employees.

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## **19.0 CRANE SAFETY PROGRAM**

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### **19.1 OBJECTIVE**

19.1.1 The purpose of this plan is to provide guidelines to be followed, during crane operations, in order to reduce the exposure to hazards during rigging, lifting, movement and landing operations of materials and equipment.

### **19.2 APPLICABILITY / SCOPE**

19.2.1 This plan applies to all Total Automation Concepts, Inc. employees on Total Automation Concepts, Inc. job sites.

### **19.3 ACCOUNTABILITY**

19.3.1 The job site supervisor is responsible to meet the guidelines set forth in this plan and are followed by all personnel on-site.

19.3.2 Site supervision is specifically responsible for:

19.3.2.1 Verifying that the crane certification and inspection records are up to date before allowing the crane on the project.

19.3.2.2 Organizing a pre-lift meeting and ensuring all the appropriate people are present.

19.3.2.3 Preparing and reviewing a lift plan and ensuring it is followed.

19.3.2.4 Providing a well prepared working area for the crane before it arrives on the job. This involves ensuring that:

19.3.2.4.1 Access avenues are adequately prepared.

19.3.2.4.2 There is room to erect and/or extend the boom.

19.3.2.4.3 Operating locations are suitable for crane work.

19.3.2.4.4 Blocking is always used under outriggers.

19.3.2.4.5 The crane supplier will be told if the ground is soft and if hardwood mats or cribbing are needed.

19.3.2.4.6 Operating locations are far enough away from shoring, excavations, trenches, buried utilities, foundations, etc. to eliminate the risk of collapse.

19.3.2.4.7 Operating locations are chosen to ensure the minimum clearances from power lines. Otherwise, power lines must be shut down, relocated, or specially insulated by the utility.

19.3.2.4.8 Ropes or barricades are positioned to prevent entry into hazardous areas around, and especially behind, the crane swing zone.

19.3.2.4.9 Public access to the lift area is prohibited and barricades are available. Where the crane is to be set up on a city street or public road, site supervision must ensure that it is possible to use the required outrigger extension. This may require obtaining approval to shut off one or more lanes of traffic.

19.3.2.5 Supervising all work involving the crane.

- 19.3.2.6 Determining the correct load weight and radius and informing the operator. (Site supervision should know the maximum radius, load weight, and lift height of each lift before ordering the crane).
- 19.3.2.7 Ensuring that the rigging crew is experienced and competent. They must be capable of establishing weights, judging distances, heights, and clearances, selecting tackle and lifting gear suitable for the loads, and rigging the load safely and securely.
- 19.3.2.8 Supervising the rigging crew.
- 19.3.2.9 Ensuring that the load is properly rigged.
- 19.3.2.10 Ensuring that the signalpersons are competent and capable of directing the crane and load to ensure the safety and efficiency of the operation. Knowing the international hand signals is a must.
- 19.3.2.11 Designating signalpersons and ensuring that the operator knows who they are.
- 19.3.2.12 Ensuring the safety of the rigging crew and all other personnel affected by the rigging operation.
- 19.3.2.13 Keeping the public and all non-essential personnel clear of the crane and load during operation. Occupied buildings receiving materials or equipment should be cleared before operations begin. Verify before operations begin.
- 19.3.2.14 Controlling the movements of all personnel within the area affected by the lift.
- 19.3.2.15 Ensuring that all required safety precautions are taken when the lift is in the vicinity of power lines
- 19.3.2.16 Ensuring that all personnel involved in the operation understand their jobs and responsibilities.
- 19.3.2.17 Ensuring that an emergency response plan is in place and is communicated to all relevant personnel.

#### **19.4 ASSESSMENT OF GROUND CONDITIONS**

- 19.4.1 Cranes should only be assembled or utilized on ground that is able to support the equipment, including slope, compaction, and firmness.
- 19.4.2 The equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.
- 19.4.3 The controlling entity of a project (i.e. general contractor, construction manager) must inform Total Automation Concepts, Inc. of the location of hazards beneath the equipment set-up area (such as voids, tanks, utilities) if identified in documents or otherwise known to that controlling entity.
- 19.4.4 If the operator determines that ground conditions are not adequate, Total Automation Concepts, Inc. must have a discussion with the controlling entity regarding the necessary ground preparations.
- 19.4.5 On job sites where Total Automation Concepts, Inc. is the prime contractor, and no other controlling entity exists, Total Automation Concepts, Inc. must ensure that

necessary ground preparations are made so that the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.

## **19.5 POWER LINE SAFETY (CRANE OPERATION)**

19.5.1 Prior to crane operation, Total Automation Concepts, Inc. must ensure:

19.5.1.1 The work zone has been identified by either demarcating boundaries (such as with flags, or a device such as a range limit device or range control warning device) and prohibiting the operator from operating the equipment past those boundaries, or by defining the work zone as the area **360 degrees** around the equipment, up to the equipment's maximum working radius.

19.5.1.2 Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet (50 feet if > 350 kV) to a power line. If so, Total Automation Concepts, Inc. must meet the requirements in Option 1 (5.3.1), Option 2 (5.3.2), or Option 3 (5.3.3), as follows:

19.5.1.2.1 ***De-energize and ground.*** Confirm from the utility owner/operator that the power line has been de-energized and visibly grounded at the worksite.

19.5.1.2.2 ***20 foot clearance (50 foot clearance if > 350kV).*** Ensure that no part of the equipment, load line or load (including rigging and lifting accessories), gets closer than 20 feet (50 feet if > 350 kV) to the power line by implementing *all* of the following procedures:

19.5.1.2.2.1 Conduct a planning meeting with the operator and other workers who will be in the area of the equipment or load to review the location of the power line(s) and the steps that will be implemented to prevent encroachment/electrocution.

19.5.1.2.2.2 If tag lines are used, they must be non-conductive.

19.5.1.2.2.3 Erect and maintain an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings, at 20 feet (50 feet if > 350 kV) from the power line, or at the minimum approach distance under Table A. If the operator is unable to see the elevated warning line, a dedicated spotter must be used as described below, in addition to implementing one of the other measures described below.

19.5.1.3 At least one of the following additional measures must be in place:

19.5.1.3.1 Use a dedicated spotter who is in continuous contact with the equipment operator. The spotter must:

19.5.1.3.1.1 Be equipped with a visual aid to assist in identifying the minimum clearance distance (i.e. clearly visible line of warning line stanchions or painted line on the ground).

19.5.1.3.1.2 Be positioned to effectively gauge the clearance distance.

19.5.1.3.1.3 Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.

- 19.5.1.3.1.4 Give timely information to the operator so that the required clearance distance can be maintained.
- 19.5.1.3.1.5 A proximity alarm set to give the operator sufficient warning to prevent encroachment.
- 19.5.1.3.1.6 A device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device must be set to give the operator sufficient warning to prevent encroachment.
- 19.5.1.3.1.7 A device that automatically limits range of movement, set to prevent encroachment.
- 19.5.1.3.1.8 An insulating link/device installed at a point between the end of the load line (or below) and the load.

19.5.1.4 Table A Clearance

- 19.5.1.4.1 Determine the line's voltage and the minimum clearance distance permitted under Table A (see below).
- 19.5.1.4.2 Determine if any part of the equipment, load line, or load (including rigging and lifting accessories), while operating up to the equipment's maximum working radius in the work zone, could get closer than the minimum clearance distance to the power line permitted under Table A. If so, then the employer must follow the requirements listed under option 2, *20 foot clearance (50 foot clearance if > 350kV) (see above).*

TABLE A—MINIMUM CLEARANCE DISTANCES

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

- 19.5.1.4.3 ***Voltage information.*** Where **Option 3, Table A Clearance** is used, the utility owner/operator of the power lines must provide the requested voltage information within two working days of Total Automation Concepts, Inc. request.
- 19.5.1.4.4 ***Power lines presumed energized.*** Total Automation Concepts, Inc. must assume that all power lines are energized unless the utility owner/operator confirms that the power line has been and continues to be de-energized and visibly grounded at the worksite.

19.5.1.5 When working near transmitter/communication towers where the equipment is close enough for an electrical charge to be induced in the equipment or materials being handled, the transmitter must be de-energized or the following precautions must be taken:

19.5.1.5.1 The equipment must be provided with an electrical ground.

19.5.1.5.2 If tag lines are used, they must be non-conductive.

19.5.1.6 No part of the equipment, load line, or load (including rigging and lifting accessories) is allowed below a power line unless Total Automation Concepts, Inc. has confirmed that the utility owner/operator has de-energized and (at the worksite) visibly grounded the power line, except where one of the following exceptions apply:

19.5.1.6.1 **Exception 1:** The uppermost part of the equipment, with the boom in the fully extended position, at true vertical, would be more than 20 feet (50 feet if > 350kV) below the plane of the power line, or more than the Table A minimum clearance distance below the plane of the power line.

19.5.1.6.2 **Exception 2:** Total Automation Concepts, Inc. demonstrates that it is infeasible to:

19.5.1.6.2.1 Confirm that the utility owner/operator has de-energized and (at the worksite) visibly grounded the power line.

19.5.1.6.2.2 Maintain the 20-foot clearance (50-foot clearance if > 350 kV) below the plane of the power line with the boom in the fully extended position, at true vertical or

19.5.1.6.2.3 Maintain the Table A minimum clearance distance below the plane of the power line with the boom in the fully extended position, at true vertical.

**NOTE:** In utilizing **Exception 2**, Total Automation Concepts, Inc. must meet the requirements of 29 CFR 1926.1410. Before proceeding with Exception 2, contact your supervisor.

## 19.6 **POWER LINES > 1000 kV**

19.6.1 For power lines over 1000 kV, the minimum clearance distance must be established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution.

## 19.7 **TRAINING**

19.7.1 It is very important that each Total Automation Concepts, Inc. employee assigned to work with the equipment be trained on all of the following:

19.7.1.1 The procedures to be followed in the event of electrical contact with a power line. Such training must include:

19.7.1.1.1 Information regarding the danger of electrocution from the operator simultaneously touching the equipment and the ground.

- 19.7.1.1.2 The importance to the operator's safety of remaining inside the cab except where there is an imminent danger of fire, explosion, or other emergency that necessitates leaving the cab.
- 19.7.1.2 The safest means of evacuating from equipment that may be energized.
- 19.7.1.3 The danger of the potentially energized zone around the equipment (step potential).
- 19.7.1.4 The need for crew in the area to avoid approaching or touching the equipment and the load.
- 19.7.1.5 Safe clearance distance from power lines.
- 19.7.1.6 Power lines are presumed to be energized unless the utility owner/operator confirms that the power line has been and continues to be de-energized and visibly grounded at the worksite.
- 19.7.1.7 Power lines are presumed to be un-insulated unless the utility owner/operator or a registered engineer who is a qualified person with respect to electrical power transmission and distribution confirms that a line is insulated.
- 19.7.1.8 The limitations of an insulating link/device, proximity alarm, and range control (and similar) device, if used.
- 19.7.1.9 The procedures to be followed to properly ground equipment and the limitations of grounding.
- 19.7.2 Employees working as dedicated spotters must be trained to enable them to effectively perform their task, including training on the applicable requirements of this section, titled **POWER LINE SAFETY (CRANE OPERATION)**.
- 19.7.3 Employees will be trained and evaluated to confirm an understanding of the material. Refresher training will be conducted when based on the conduct of the employee or an evaluation of the employee's knowledge, there is an indication that retraining is necessary.
- 19.8 CRANE OPERATION**
- 19.8.1 Total Automation Concepts, Inc. shall determine that operators are complying with manufacturer procedures applicable to the operational functions of the equipment, including its use with attachments. If in doubt, contact your supervisor.
- 19.8.2 The procedures applicable to the operation of the equipment, including rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions, and operator's manual, must be readily available in the cab at all times for use by the operator.
- 19.8.3 Total Automation Concepts, Inc. ensure the operator does not engage in any practice or activity that diverts his/her attention while actually engaged in operating the equipment, such as the use of cellular phones (other than when used for signal communications).
- 19.8.4 Total Automation Concepts, Inc. shall ensure the operator does not leave the controls while a load is suspended unless all of the following are met:



- 19.8.4.1 The operator remains adjacent to the equipment and is not engaged in any other duties.
- 19.8.4.2 The load is to be held suspended for a period of time exceeding normal lifting operations.
- 19.8.4.3 The competent person determines that it is safe to do so and implements measures necessary to restrain the boom hoist and telescoping, load, swing, and outrigger or stabilizer functions.
- 19.8.4.4 Barricades or caution lines, and notices, are erected to prevent all employees from entering the fall zone.
- 19.8.4.5 When a **local storm warning** has been issued, Total Automation Concepts, Inc. competent person must determine whether it is necessary to postpone the lift.
- 19.8.4.6 Whenever there is a concern as to safety, anyone including the operator has the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.

## **19.9 CRANE SIGNALS**

19.9.1 A signal person must be provided in the following situations:

- 19.9.1.1 The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.
- 19.9.1.2 When the equipment is traveling, the view in the direction of travel is obstructed.
- 19.9.1.3 Due to site specific safety concerns, either the operator or the person handling the load determines that it is necessary.
- 19.9.1.4 When the lift is within 20 feet of an overhead power line.

19.9.2 The type of signals must be:

### **19.9.2.1 Hand Signal**

- 19.9.2.1.1 Standard Signals required (see Appendix A).
- 19.9.2.1.2 Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations.
- 19.9.2.1.3 Where use of the Standard Signals is infeasible, or where an operation or use of an attachment is not covered in the Standard Method, non-standard hand signals may be used, provided that the signal person, operator, and lift director (where there is one) contact each other prior to the operation and agree on the non-standard hand signals that will be used.

### **19.9.2.2 Voice Signals**

- 19.9.2.2.1 Prior to beginning operations, the operator, signal person, and lift director (if there is one), must contact each other and agree on the voice signals that will be used. Once the voice signals are agreed upon, these workers need not meet again to discuss voice signals unless another

worker is added or substituted, there is confusion about the voice signals, or a voice signal is to be changed.

19.9.2.2.2 Each voice signal must contain the following elements and be given in the following order:

19.9.2.2.2.1 Function (such as hoist, boom, etc.).

19.9.2.2.2.2 Direction, distance and/or speed, function.

19.9.2.2.2.3 Stop command.

19.9.2.2.3 The operator, signal person, and lift director (if there is one), must be able to effectively communicate in the language used.

19.9.2.2.4 The device(s) used to transmit signals must be tested on-site before beginning operations to ensure that the signal transmission is effective, clear, and reliable.

19.9.2.2.5 Signal transmission must be through a dedicated channel, except:

19.9.2.2.5.1 Multiple cranes/derricks and one or more signal persons may share a dedicated channel for the purpose of coordinating operations.

19.9.2.2.5.2 Where a crane is being operated on or adjacent to railroad tracks, and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.

19.9.2.2.6 The operator's reception of signals must be by a hands-free system.

### 19.9.2.3 Audible Signals

19.9.2.3.1 A signal made by a distinct sound or series of sounds. Examples include, but are not limited to, sounds made by a bell, horn, or whistle.

### 19.9.2.4 New Signals

19.9.2.4.1 Signals other than hand, voice, or audible signals may be used where the employer demonstrates that:

19.9.2.4.1.1 The new signals provide at least equally effective communication as voice, audible, or Standard Method hand signals, or

19.9.2.4.1.2 The new signals comply with a national consensus standard that provides at least equally effective communication as voice, audible, or Standard Method hand signals.

19.9.3 The signals used (hand, voice, audible, or new) and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.

19.9.4 During operations requiring signals, the ability to transmit signals between the operator and signal person must be maintained. If that ability is interrupted at any time, the operator must safely stop operations requiring signals until it is reestablished and a proper signal is given and understood.

19.9.5 If the operator becomes aware of a safety problem and needs to communicate with the signal person, the operator must safely stop operations. Operations must not resume until the operator and signal person agree that the problem has been resolved.

19.9.6 Only one person may give signals to a crane/derrick at a time, except in the following circumstances:

19.9.6.1 Anyone who becomes aware of a safety problem must alert the operator or signal person by giving the stop or emergency stop signal.

**NOTE:** Total Automation Concepts, Inc. requires the operator to obey a stop or emergency stop signal, irrespective of who gives it.

19.9.6.2 All directions given to the operator by the signal person must be given from the operator's direction perspective.

## **19.10 SIGNAL PERSON QUALIFICATIONS**

19.10.1 Each signal person must:

19.10.1.1 Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the Standard Method for hand signals.

19.10.1.2 Be competent in the application of the type of signals used.

19.10.1.3 Have a basic understanding of equipment, operation, and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.

19.10.1.4 Demonstrate that he/she meets the above requirements through an oral or written test and through a practical test.

19.10.1.5 Documentation of such qualification must be maintained on-site in the form of a wallet card.

## **19.11 WORK AREA CONTROL**

19.11.1 **Swing Radius Hazards:** Where it is reasonably foreseeable that the equipment's rotating superstructure could strike and injure an employee, or pinch/crush an employee against another part of the equipment, another object, and/or overhead power lines, the following actions must be taken:

19.11.1.1 Total Automation Concepts, Inc. will train each employee assigned to work on or near the equipment in the recognition of struck-by and pinch/crush hazard areas posed by the rotating superstructure.

19.11.1.2 Total Automation Concepts, Inc. supervisor will ensure that control lines, warning lines, railings or similar barriers will be erected and maintained to mark the boundaries of the hazard areas including overhead power lines. If this is not feasible, contact your supervisor.

19.11.1.3 Before anyone goes to a location in the hazard area that is out of view of the operator, the employee (or someone instructed by the employee) must ensure that the operator is informed that he/she is going to that location or a spotter will be placed in the affected area.

- 19.11.1.4 Where the operator knows that an employee went to a location in the hazard area, the operator must not rotate the superstructure until the operator is informed in accordance with a pre-arranged system of communication that the employee is in a safe position.

## **19.12 KEEPING CLEAR OF THE LOAD**

- 19.12.1 The Fall Zone is considered to be the area (including but not limited to the area directly beneath the load) in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident. Only trained and qualified riggers shall be permitted in the Fall Zone during lifting and hoisting operations.
- 19.12.2 Where available, hoisting routes that minimize the exposure of employees to hoisted loads must be used, to the extent consistent with public safety.
- 19.12.3 While the operator is not moving a suspended load, no employee must be within the fall zone, except for employees:
  - 19.12.3.1 Engaged in hooking, unhooking, or guiding a load.
  - 19.12.3.2 Engaged in the initial attachment of the load to a component or structure.
- 19.12.4 When employees are engaged in hooking, unhooking, or guiding the load, or in the initial connection of a load to a component or structure and are within the fall zone, all of the following criteria must be met:
  - 19.12.4.1 The materials being hoisted must be rigged to prevent unintentional displacement.
  - 19.12.4.2 Hooks with self-closing latches or their equivalent must be used.
  - 19.12.4.3 The materials must be rigged by a trained and qualified rigger.
- 19.12.5 Only employees needed to receive a load are permitted to be within the fall zone when a load is being landed when it is essential to the operation if the employee is conducting one of the following operations and the employer can demonstrate it is infeasible for the employee to perform that operation from outside the fall zone:
  - 19.12.5.1 Physically guide the load.
  - 19.12.5.2 Closely monitor and give instructions regarding the load's movement.
  - 19.12.5.3 Either detach it from or initially attach it to another component or structure (such as, but not limited to, making an initial connection or installing bracing).

## **19.13 RIGGING INSPECTION**

- 19.13.1 All rigging will be manually inspected before any equipment or material is to be hoisted into position. A hand over hand inspection of all rigging, strapping or rope is mandatory before utilization.
- 19.13.2 Remove from service any questionable or defective rigging equipment and replace with serviceable equipment.
- 19.13.3 Examples of conditions that may require rigging hardware to be removed from service include the following:
  - 19.13.3.1 Synthetic slings with:

- 19.13.3.1.1 Abnormal wear.
- 19.13.3.1.2 Torn stitching.
- 19.13.3.1.3 Visible red threads from the interior of the sling fabric.
- 19.13.3.1.4 Broken or cut fibers.
- 19.13.3.1.5 Discoloration or deterioration.
- 19.13.3.1.6 Evidence of heat damage.
- 19.13.3.2 Wire-rope slings with:
  - 19.13.3.2.1 Kinking, crushing, bird-caging, or other distortions.
  - 19.13.3.2.2 Evidence of heat damage.
  - 19.13.3.2.3 Cracks, deformation, or worn end attachments.
  - 19.13.3.2.4 Broken wires in excess of regulatory requirements.
  - 19.13.3.2.5 Hooks opened more than 15% at the throat.
  - 19.13.3.2.6 Hooks twisted sideways more than 10° from the plane of the unbent hook.
- 19.13.3.3 Alloy steel chain slings with:
  - 19.13.3.3.1 Cracked, bent, or elongated links or components.
  - 19.13.3.3.2 Cracked hooks.
  - 19.13.3.3.3 Shackles, eye bolts, turnbuckles, or other components that are damaged or deformed.
- 19.13.4 Before using rigging equipment, note the lifting restrictions on the manufacturers label or consult the CFR 1926.251(e) (tables H-1 through H-20) to verify lifting capabilities of the equipment.
- 19.13.5 All unused rigging equipment on the site will be properly stowed or removed from the site to prevent a hazard to employees.
- 19.13.6 All shackles, turnbuckles, eyebolts, links, rings, metal clamps, and other similar rigging hardware shall be checked before each operation for safety.
- 19.14 MATERIAL INSPECTION**
  - 19.14.1 Inspect all materials and equipment to be lifted to ensure its physical soundness before lifting operations begin. Damaged materials should not be utilized.
  - 19.14.2 Remove all crates and shipping materials before lifting into position to prevent any unnecessary waste from falling during movement or from cluttering the landing zone.
- 19.15 RIGGER QUALIFICATION REQUIREMENTS**
  - 19.15.1 Know and understand the limitations of the rigging equipment for material handling.
  - 19.15.2 Ensure all riggings, hooks, attachments are inspected for defects prior to use on each shift and as necessary during its use to ensure that it is safe.
  - 19.15.3 Promptly remove all defective rigging equipment.

- 19.15.4 Ensure all rigging equipment, when not in use, is removed from the immediate work area so as not to present a hazard to employees or damage rigging equipment.
- 19.15.5 Ensure that all special custom design grabs, hooks, clamps, or other lifting accessories used for specific applications, are marked to indicate the safe working loads.
- 19.15.6 Understand and follow the fall protection requirements outlined in the fall protection section (section 14) of this policy.
- 19.15.7 Demonstrate that he/she meets the above requirements through an oral or written test and through a practical test.
- 19.15.8 Documentation of such qualification must be maintained on-site in the form of a wallet card.

#### **19.16 FORMS**

- 19.16.1 Pre-lift Safety Checklist
- 19.16.2 Rescue Plan
- 19.16.3 Hand Signals

FORM 19.6.1	PRE-LIFT SAFETY CHECKLIST
<b>A. THIS SECTION TO BE COMPLETED BY CRANE OPERATOR</b>	
<b>PROJECT NAME &amp; NUMBER:</b>	<b>LIFT DATE:</b>
<b>PAYLOAD NAME:</b>	<b>CRANE LIFT:</b> <input type="checkbox"/> <b>HOIST LIFT:</b> <input type="checkbox"/>
<b>MAX WEIGHT OF PAYLOAD:</b>	<b>DIMENSIONS OF LIFT:</b> x      x
<b>CAPACITY OF CRANE:</b>	<b>ESTIMATED %CAPACITY OF CRANE AT MAX LIFT:</b>
<b>WEATHER CONDITIONS:</b>	<b>IS THIS A CRITICAL LIFT (80%):</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>B. Operator(s) and Signalperson:</b> Please provide verification signature that signals and communication have been reviewed	
Operator's Signature: _____ Signalperson's Signature: _____	
<b>IF this is a critical lift, a critical lift form is required to be completed and followed</b>	
<b>C. PRE-LIFT VERIFICATIONS: (NON-Critical Lifts - Required) COMPLETED BY COMPANY COMPETENT PERSON</b>	
1. Who is providing the rigging? _____	
2. Has the rigging been inspected? <input type="checkbox"/> Yes <input type="checkbox"/> No By whom? _____	
3. Is the rigging adequate for the lift being made? <input type="checkbox"/> Yes <input type="checkbox"/> No <span style="color: red;">If no, stop lift immediately and acquire adequate rigging</span>	
3. What type of communication will be used? Hand signals <input type="checkbox"/> : Radio <input type="checkbox"/> : Hard Line <input type="checkbox"/> : Other <input type="checkbox"/> _____	
4. Fall protection method for signalperson? _____	
5. What fall protection method is being used for persons at elevated location? _____	
6. Will tag lines be used? <input type="checkbox"/> Yes <input type="checkbox"/> No; If not, why? _____	
7. Is the landing platform adequate to support load? <input type="checkbox"/> Yes <input type="checkbox"/> No; <span style="color: red;">If no, stop lift immediately and acquire adequate landing platform</span>	
<b>D. Final Hook Up and Rigging:</b>	
<p>Is the rigging properly secured to prevent slipping, uneven loads, cutting of sling, and damage to equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If no, correct the issue immediately</b></p> <p>Are there any overhead obstructions of concern that could cause issues? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If yes, what precautions are being taken?</b> _____</p> <p>_____</p>	<p>Is load center of gravity centered below the tip of the boom? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If no, stop lift immediately and notify operator</b></p> <p>Is there a safe working distance from overhead power lines? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If no, stop lift immediately and notify operator?</b></p>
<b>E. A brief and final description of the planned sequence of the lifting operation was discussed with ALL individuals involved in the lift?</b>	
<input type="checkbox"/> Yes <input type="checkbox"/> No If no, explain why, or if yes, were there any comments from the discussion that should be noted :	

**A FULL DESCRIPTION OF THE PLANNED LIFTING PROCEDURE HAS BEEN DESCRIBED AND I UNDERSTAND MY ROLES AND RESPONSIBILITIES DURING THIS UPCOMING LIFT.**

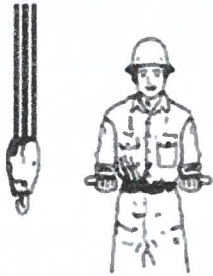
<u>EMPLOYEE NO.</u>	<u>CRAFT/TRADE</u>	<u>NAME (PRINT)</u>	<u>SIGNATURE</u>
	PROJECT RIGGING ENGINEER		
	RIGGING SUPERVISOR		



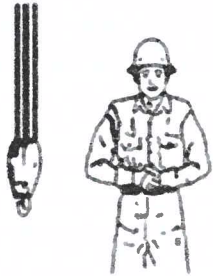
**FORM 19.6.2****RESCUE PLAN**

A rescue plan must be developed whenever fall arrest systems are in use and when personnel may not be able to self-rescue should a fall occur.

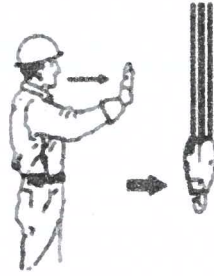
What is the emergency contact information of professional rescue services available, such as the local Fire Department, and what are the instructions for summoning immediate assistance?	
Is rescue equipment immediately available for this location? (Ladders, aerial devices, elevating work platforms, tripods, additional harnesses, controlled descent devices, winches, pulleys, etc.)	
What obstructions are in the way of reaching the suspended worker?	
How will rescue be assured within 15 minutes of the occurrence of a fall to minimize the risk of further injury or death due to suspension trauma?	
How will the safety of the rescuers be assured as well as that of the suspended worker?	
What communication systems will be used between the suspended worker and rescue team?	



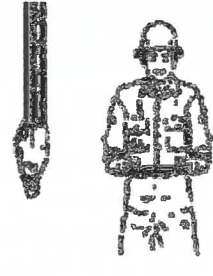
**EXTEND BOOM**



**DOG EVERYTHING**



**TRAVEL**



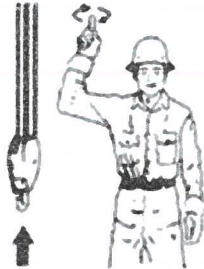
**RETRACT BOOM**



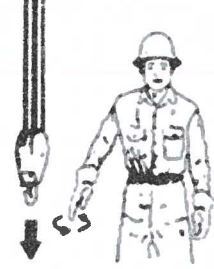
**EXTEND BOOM  
(ONE HAND)**



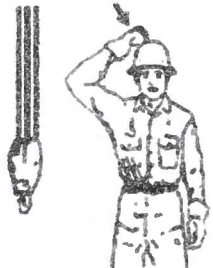
**RETRACT BOOM  
(ONE HAND)**



**HOIST**



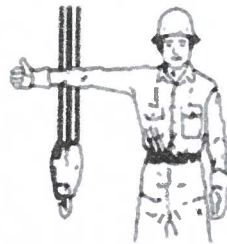
**LOWER**



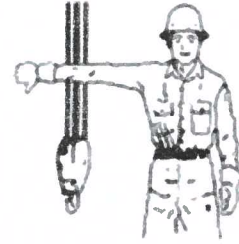
**USE MAIN HOIST**



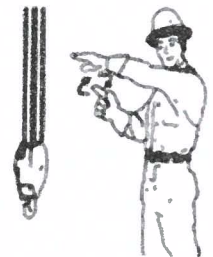
**USE WHIP LINE**



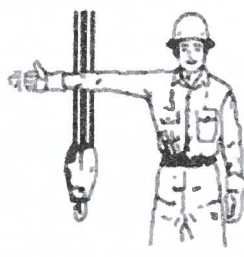
**RAISE BOOM**



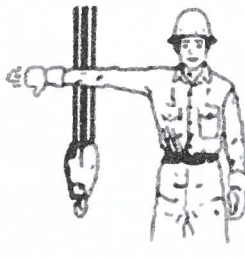
**LOWER BOOM**



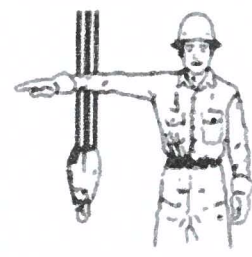
**MOVE SLOWLY**



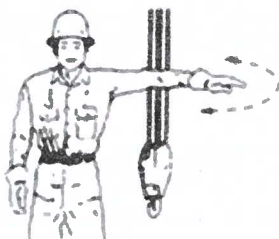
**RAISE THE BOOM &  
LOWER THE LOAD**



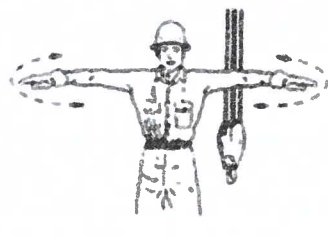
**LOWER THE BOOM &  
RAISE THE LOAD**



**SWING**



**STOP**



**EMERGENCY STOP**

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## **20.0 HAZARD COMMUNICATION PROGRAM (HAZCOM)**

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### **20.1 OBJECTIVE**

20.1.1 The Total Automation Concepts, Inc. Hazard Communication Program is designed to ensure that all our employees are informed of hazardous chemicals known to be present at our property. We will make every effort to provide our employees with a reasonably safe work place. We also intend to instruct our people in proper techniques for handling these chemicals.

### **20.2 APPLICABILITY/ SCOPE**

20.2.1 It will be the responsibility of the management and the supervisor of Total Automation Concepts, Inc. to ensure that the proper information is obtained and disseminated to the appropriate employees. It will be the employees' responsibility to follow safe practices as outlined in the Material Safety Data Sheets.

20.2.2 A copy of Total Automation Concepts, Inc. Hazard Communication Program will be on file in the Property Manager's office. Copies will be available from our Hazard Communication Program Coordinator for employees, their designated representatives, contractors, and representatives of the U.S. Department of Labor.

### **20.3 ACCOUNTABILITY**

20.3.1 The Safety Director has been designated as Total Automation Concepts, Inc. Hazard Communication Program Coordinator (HCPC).

### **20.4 COORDINATOR'S RESPONSIBILITIES**

20.4.1.1 Providing Material Safety Data Sheets (MSDS) to employees if requested.

20.4.1.2 Ensuring that all employees have been trained in the proper use of hazardous substances used in everyday (routine) and infrequent (nonroutine) tasks.

20.4.1.3 Ensuring that all employees have been trained:

20.4.1.3.1 How to read MSDS.

20.4.1.3.2 How to read labels.

20.4.1.4 Verifying that all employees under his/her supervision have received the proper training prior to working with hazardous substances on the job site.

20.4.1.5 Identifying all jobs that require the use of hazardous substances.

20.4.1.6 Provide the required personal protective equipment.

20.4.1.7 Make routine surveys of the work area to ensure that safe practices are being followed.

20.4.1.8 Review the MSDS for the hazardous substance with the employees involved before the non-routine task begins.

20.4.1.9 Ensure that required labeling practices are being followed.

### **20.5 CONTRACTOR'S RESPONSIBILITIES**

20.5.1.1 Obey established rules.

- 20.5.1.2 Provide an MSDS sheet for every substance or chemical that they are using on the job.
- 20.5.1.3 Properly label all containers and buckets used to transport substances or chemicals with product name and hazard ratings.
- 20.5.1.4 Thoroughly train all of their employees on Hazard Communication/Right-to-Know information.

## **20.6 EMPLOYEE'S RESPONSIBILITIES**

- 20.6.1.1 Obey established rules.
- 20.6.1.2 Use personal protective equipment as required by company procedures.
- 20.6.1.3 Inform your foreman of:
  - 20.6.1.3.1 Any symptoms of overexposure that may possibly be related to hazardous substances.
  - 20.6.1.3.2 Missing labels on containers.
  - 20.6.1.3.3 Any questions you may have before starting a task with hazardous materials.

**NOTE:** A list of hazardous substances or materials on Total Automation Concepts, Inc. job sites will be maintained in the field foreman's possession. If an employee finds a chemical or material that is not on the list, report it immediately to Total Automation Concepts, Inc. HCPC. A copy of this list will be supplied upon request by the HCPC.

## **20.7 LABELS AND FORMS OF WARNING**

- 20.7.1 Since chemical manufacturers are required to label their containers of hazardous chemicals, Total Automation Concepts, Inc. will use these labels as our primary means of warning employees about the products.
- 20.7.2 The field foreman is responsible for ensuring that all containers are labeled. Labels are not to be removed from any container or defaced in any manner. If a label is missing or defaced beyond recognition, notify the HCPC or the supervisor.
- 20.7.3 If a label is needed, the HCPC will audit the MSDS for the proper information and a Hazardous Material Information System (HMIS) label will be applied.
- 20.7.4 Material Safety Data Sheets (MSDS)
  - 20.7.4.1 Material Safety Data Sheets are intended to outline the special precautions and controls necessary for handling hazardous materials. Copies of the MSDS will be maintained in HCPC's office for hazardous materials used by Total Automation Concepts, Inc. The field foreman will be responsible for maintaining the MSDS file.
  - 20.7.4.2 Each foreman will monitor employees under his/her direct supervision for proper training and proper precautions prior to working with the hazardous materials. The MSDS will be the primary source of information.
  - 20.7.4.3 If a MSDS is not furnished with the initial shipment from the supplier, the field foreman will notify the HCPC and he will request the MSDS in writing.

## **20.8 TRAINING**

**20.8.1 Training and disseminating information to Total Automation Concepts, Inc. employees relating to the Hazard Communication Standard is the responsibility of the supervisor. The HCPC will assure that all requirements are followed in order to be in compliance with the law. At no time will any of our employees be expected to perform any non-routine tasks involving exposure to hazardous substances without proper instruction. Training will be conducted at the property through special training sessions, safety talks, and additional sessions prior to using the hazardous substance.**

**20.8.2 Information provided to the employees shall include:**

**20.8.2.1 Training requirements of the Hazard Communication Standard.**

**20.8.2.2 Any operations in their work area where hazardous substances are known to be present.**

**20.8.2.3 Location and availability of Total Automation Concepts, Inc. Hazard Communication Program, including the required lists of hazardous substances and MSDS.**

**20.8.3 Training provided to the employees shall include:**

**20.8.3.1 Methods and observations that can be used to detect the presence of hazardous materials on the job site:**

**20.8.3.1.1 Visual appearance.**

**20.8.3.1.2 Odor.**

**20.8.3.1.3 Air monitoring.**

**20.8.3.1.4 Physical hazards.**

**20.8.3.1.5 Health hazards that are:**

**20.8.3.1.5.1 Carcinogen.**

**20.8.3.1.5.2 Toxic.**

**20.8.3.1.6 Corrosives.**

**20.8.3.1.7 Agents that damage lungs, skin, eyes, or mucous membranes.**

**20.8.3.2 Measures for protection.**

**20.8.3.2.1 Appropriate work practices such as:**

**20.8.3.2.1.1 Ventilation.**

**20.8.3.2.1.2 No smoking.**

**20.8.3.3 Emergency procedures including but not limited to:**

**20.8.3.3.1 Spill procedures.**

**20.8.3.3.2 Emergency numbers.**

**20.8.3.4 Personal protective equipment such as:**

**20.8.3.4.1 Gloves.**

**20.8.3.4.2 Goggles.**

- 20.8.3.4.3 Rubber boots.
- 20.8.3.4.4 Respirators.
- 20.8.3.4.5 Disposable clothing.
- 20.8.3.5 Interpretations of MSDS.
  - 20.8.3.5.1 Common name and manufacturer's name.
  - 20.8.3.5.2 Physical and chemical characteristics.
  - 20.8.3.5.3 Fire and explosion data.
  - 20.8.3.5.4 Reactivity data.
  - 20.8.3.5.5 Health hazard data.
  - 20.8.3.5.6 Precautions for safe handling.
  - 20.8.3.5.7 Control measures.
  - 20.8.3.5.8 First aid procedures.
- 20.8.3.6 Explanation of labeling system.
  - 20.8.3.6.1 Health hazard.
  - 20.8.3.6.2 Fire hazard.
  - 20.8.3.6.3 Reactivity.
  - 20.8.3.6.4 Numbering system (0-4).
  - 20.8.3.6.5 Personal protection.
- 20.8.3.7 Total Automation Concepts, Inc. labeling system.
  - 20.8.3.7.1 HMIS (Hazardous Material Information System).
- 20.8.3.8 This training will be the responsibility of and documented by each contractor working on Total Automation Concepts, Inc. job sites. Training sessions will be documented to show date, subject matter, and the name of the employee attending. A copy of the attendance sheet will be kept by Total Automation Concepts, Inc.'s HCPC. Total Automation Concepts, Inc. will provide contractors working on Total Automation Concepts, Inc. job sites with a list of the hazardous materials used on the job site, if requested. Precautionary measures that are needed to protect other employees will be discussed at a pre-job meeting. If there are any questions, be sure to direct them to Total Automation Concepts, Inc. Safety Manager for immediate attention.

## **20.9 FORMS**

- 20.9.1 Chemical Inventory Form 1
- 20.9.2 Chemical Inventory Form 2
- 20.9.3 Supplementary Information—Hazard Categories





**20.9.2 CHEMICAL INVENTORY FORM 2**

Company: \_\_\_\_\_

Date: \_\_\_\_\_

Department: \_\_\_\_\_

Verified By: \_\_\_\_\_

Unit/Location: \_\_\_\_\_

No	Chemical Product Trade Name	Chemical Name Major Components	1-800- #	Hazard Class *				PPE Required	Routes of Entry		MSDS Onsite	Storage/Comments Sat. Or Unsat.
				H	F	R	C		(S)kin (L)ungs	(I)ngestion (I)njection		

\* Hazard Class Rating NFPA (H) Health, (F) Flammability, (R) Reactivity, (C) Corrosivity on a 0-4 scale.

### 20.9.3 Supplementary Information—Hazard Categories

**Health Hazard**—A chemical for which there is statistically significant evidence based on at least one study that acute or chronic health effects may occur upon exposure. The employee should become familiar with such terms as follows:

<b><i>Acute Toxicity:</i></b>	Adverse effects resulting from a <u>single</u> overexposure to a substance.
<b><i>Chronic Toxicity:</i></b>	The adverse effects resulting from <u>prolonged</u> or repeated exposures to a substance.
<b><i>Carcinogen:</i></b>	A substance or agent capable of producing <u>cancer</u> in mammals, including humans.
<b><i>Mutagen:</i></b>	A substance or agent capable of altering the <u>genetic</u> material in a living cell. Normally associated with carcinogens.
<b><i>Tetatogen:</i></b>	A substance or agent, exposure to which by a <u>pregnant</u> female can result in malformations in the fetus.
<b><i>Sensitizer:</i></b>	A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical (skin or respiratory system).
<b><i>Corrosive:</i></b>	A material with the characteristics of causing irreversible harm to living tissue at the site of contact. Many acids and bases are classified as corrosives.
<b><i>Irritant:</i></b>	A chemical which causes a reversible inflammatory effect on the site of contact, however, it is not considered a corrosive (nor irreversible). Normally, irritants affect the eyes, skin, nose, mouth, and respiratory system.

**Physical Hazard**—A chemical for which there is valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric or reactive. The employee should become familiar with such terms as follows:

<b><i>Oxidizer:</i></b>	A substance which yields oxygen readily to <u>stimulate the combustion</u> of an organic material (i.e., nitrate compounds).
<b><i>Flash Point:</i></b>	The lowest temperature at which the chemical's vapors are concentrated enough to ignite. The lower the number the more dangerous it is (i.e., gasoline is -45°F).
<b><i>Flammable:</i></b>	Any liquid that has a flash point below 100°F and/or any solid which can sustain fire and ignite readily.
<b><i>Combustible:</i></b>	A term used to classify liquids, gases, or solids that <u>will burn</u> . This term is often associated with flash point.
<b><i>Explosive:</i></b>	A chemical that causes a sudden, almost <u>instantaneous release of pressure, gas and heat</u> , when subjected to sudden shock, pressure, or high temperature.
<b><i>Unstable/Reactive:</i></b>	Tending toward decomposition or other <u>unwanted chemical change during normal handling</u> or storage.
<b><i>Water-Reactive:</i></b>	A material that <u>reacts with water</u> to release a flammable gas or to present a health hazard.
<b><i>Pyrophoric:</i></b>	Materials that ignite spontaneously in air below 130°F (occasionally friction ignites them).

### Supplementary Information—Labels

The Hazard Communication Standard contains specific labeling requirements. Labeling must be done on all hazardous chemicals that are shipped and that are used in the work place (except portable containers of 10 gallons or less that will be used by one employee who actually makes the transfer during his or her shift).

1. **On Shipped Chemicals**—Chemical manufacturers, importers and distributors shall make sure that each container of hazardous chemicals leaving the work place is labeled, tagged, or marked with the following information:
  - A. The identity of the hazardous chemical.
  - B. Appropriate hazard warnings.
  - C. Name and address of manufacturer.
2. **On In-Plant Chemicals**—Each container of hazardous chemicals used in the work place must also be labeled. These work place labels must contain the following information:
  - A. Identity of the hazardous chemical.
  - B. Appropriate hazard warnings.
3. **Identity**—The term “identity” can refer to any chemical or common name designation for the individual chemical or mixture, as long as the term used is also used on the list of hazardous chemicals (for the particular work place) and the MSDS.
4. **Hazard Warning**—Hazard warnings can be in words, pictures, symbols or any combination which conveys necessary information. The hazard warning on the label must convey the specific physical or health hazard of the chemical. Also supplied should be the target organs that are affected and the handling precautions that are recommended.
5. **National Fire Protection Association**—Employees must be familiar with the NFPA Warning Diamond.

#### **Supplementary Information—Using MSDS**

All employees must have an understanding of the layout of a typical MSDS and know what information is contained in it. When presented with an MSDS, employees should be able to extract the information needed to identify the hazards involved and determine the steps that must be taken to protect themselves.

The federal and state laws and standards established a comprehensive program for disseminating chemical information from the manufacturer, through suppliers and distributors, to the using employers, and ultimately to the using employee. These laws and standards address the health hazards associated with specific chemicals and harmful physical agents (noise, heat, stress, etc.) found in the workplace.

Information about these hazards is provided through a variety of resources including container labels, placards, signs, etc. The most detailed and specific source of information is contained in the Material Safety Data Sheet (MSDS).

It is the intent of Total Automation Concepts, Inc. that employees will understand the general outline of the material safety data sheets. The MSDS's are typically broken down into the following sections:

#### **Material Identification/Heading & General Information:**

This section gives general information about the chemical (such as chemical and common names). This information should link up with the data on labels of the chemical. The manufacturer's name, address, and phone number are included if more information is required. The National Fire Protection Association (NFPA) hazardous rating-fire diamond may appear.

## Hazardous Ingredients

This section is very important because it tells just what is in the container. It tells if it is a mixture, and what part of the whole each ingredient is. The third column will tell you what the six-hour occupational exposure can be.

PEL stands for Permissible Exposure Limit as established by OSHA. The PEL can be expressed as either a time weighted average (TWA) or a ceiling exposure limit that may never be exceeded—by Law.

ACGIH stands for American Conference of Governmental Industrial Hygienists. This organization develops and recommends occupational exposure limits for chemical substances and physical agents that are not enforceable by law.

TLV stands for Threshold Limit Value. This is a term used by the ACGIH to express the airborne concentration of a material to which healthy individuals can be exposed day after day without adverse effects. Young, old, ill, smokers, and other naturally susceptible personnel will have lower exposure tolerances. TLV-TWA pertains to an eight-hour period or 40-hour work week TWA. TLV-STEL pertains to a Short-Term Exposure Limit or maximum concentration for a continuous 15-minute period (with a maximum of four such periods per day with at least 60 minutes between) provided the daily TLV/TWA is not exceeded. TLV-Ceiling Limit is the exposure limit or concentration that should never be exceeded.

Physical/Chemical Characteristics—This section identifies the physical and chemical characteristics of the hazardous chemical (such as boiling point, solubility in water, viscosity, specific gravity, melting point, evaporation rate, etc.). This information may be used as a guide for developing handling procedures. An understanding of the following terms is necessary for all supervisors:

- Evaporation Rate—How long the chemical takes to evaporate. A chemical with a higher rate evaporates faster, a lower number evaporates slower.
- Specific Gravity—The chemical's density compared to water (which has a value of 1). If a chemical has a value higher than 1 it will sink in water).
- Vapor Density—The chemical's density compared to air (which has a density of 1). A density less than 1 will rise, and a density greater than 1 will hang at the ground level or infiltrate into holes and lower areas.
- Vapor Pressure—How volatile (tendency to vaporize) a chemical is. The higher the number the more volatile it is.

Fire & Explosion Hazard—This section will tell you the chemical's potential for fire and explosion, plus identify any special precautions that should be taken during firefighting, any protective clothing, respiratory equipment, and what type of extinguishing materials will work best for firefighters is specified here.

Reactivity Data—This section describes how stable the substance is, how readily does it react with other substances, what type of substances does it react with, and under what conditions is it most likely to react. Some materials react with sunlight, air, water, or themselves, and require special storage precautions. The procedures for handling and storage of the materials are impacted by this data (e.g., if it reacts with metal, wood shelves should be used; if it reacts with rubber, leather gloves and non-rubber respirators must be used). An unstable chemical can generate heat, start a fire, explode, release oxygen or release flammable, explosive, or toxic gases.

Health Hazard Data—This section provides information regarding the health hazards of the chemical. It gives tolerable exposure levels, whether or not the substance is a known cancer-causing agent, how the substance enters the human system (inhalation, absorption through the skin, ingestion, etc.) and the first aid. Acute (immediate) and chronic (long-term) health effects must be stated. It is important that any personnel with pre-existing medical conditions be considered with respect to the hazards they will be subjected to (lower/no levels may be required).

One of the most important portions of this section are the symptoms of exposure to the hazards. This allows personnel to be aware of symptoms and use them as warning signs. This could be the key to preventing a serious injury.

Precautions For Safe Handling and use (Environmental Protection)—This section will give you information on how the substance should be handled as far as the environment is concerned. It will inform you what to do if it spills or leaks. It also tells what recommended disposal method is required (if applicable).

- Spill Response—This indicates any applicable precautions such as avoiding breathing gases and vapors, contact with liquids and solids, removing sources of ignition, etc. It also lists any special equipment that is required for cleaning up the spill (i.e., glass or plastic scoops).
- Waste Disposal Method—This tells what type of disposal method is acceptable for that particular type of material.

Control Measures/Special Protection Information—This section provides additional information that can prove important in reference to the use of personal protective equipment and general control measures to lessen exposure and its effects. The specified equipment and levels of hazards are the law and the employer is required to provide them to the worker. It is the employee's responsibility to utilize them.

Special Precautions—This section identifies any generally applicable precautions for safe handling and use which are known to the chemical manufacturer. The types of labels and containers are described and particular Department of Transportation (DOT) policies for handling the material are listed.

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## 21.0 ELECTRICAL SAFE WORK PRACTICES

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### 21.1 OBJECTIVE

- 21.1.1 The purpose of this policy is to establish safe work practices for Total Automations Concepts, Inc.
- 21.1.2 It is the general policy for Total Automations Concepts, Inc. to conduct no live (energized) electrical work with the exception of testing and trouble shooting.
- 21.1.3 These practices are intended to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized and to comply with OSHA Standards on electrical safe work practices 29 CFR 1910.331 through 1910.335 and NFPA 70E Standard for Electrical Safety in the Work Place.
- 21.1.4 This Policy contains general requirements and information for all electrical work practices at Total Automations Concepts, Inc.
- 21.1.5 All employees and all subcontractors working at Total Automations Concepts, Inc. must comply with the requirements in this policy.

### 21.2 APPLICABILITY / SCOPE

- 21.2.1 This policy applies to both Qualified persons and Unqualified persons, Contractors and alike who are working on, near, or with the following electrical installations:
  - 21.2.1.1 Premises Wiring. Installations of electrical conductors and equipment within or on buildings or other structures, and on other premises such as yards, parking, and other lots and industrial substations.
  - 21.2.1.2 Wiring For Connection to Supply. Installations of conductors that connect to the supply of electricity.
  - 21.2.1.3 Other Wiring. Installations of other outside conductors on the premises.
  - 21.2.1.4 Exposed Energized Parts. Installations that involve work performed by qualified persons on or near exposed energized parts in the area of unqualified workers.
- 21.2.2 This policy applies to testing troubleshooting and voltage measuring which shall be permitted to be performed without an energized electrical work permit provided a hazard analysis is conducted using Form 22.16.2 Table 1 & Form 22.16.3 Table 2 as a guide, to determine the hazard to which personnel will be exposed, boundary requirements, and the personal protective equipment required in order to minimize the possibility of electrical injury.
- 21.2.3 This policy shall be audited to verify that the principles and procedures of this policy are in accordance with current standards and regulations. The frequency of this audit shall not exceed three years.
- 21.2.4 Qualified employees shall be audited to verify that they are following the practices, principles, and requirements of this policy on an annual basis.
- 21.2.5 These audits shall be documented.

**NOTE:** There is no training required to plug or unplug a typical appliance into a wall socket or to switch on an appliance. However, every employee is responsible to ensure that any electrical device they use is in good working condition and the power cords are not frayed or damaged.

**NOTE:** Reading this policy does not qualify the reader to perform electrical work. Guidelines that are beyond the scope of this document must be established at each work area. They should include, as a minimum, the safety concerns outlined in the policy.

### **21.3 GENERAL REQUIREMENTS**

21.3.1 Appropriate safe work practices will be employed to prevent electric shock, arc flash/blast, or other injuries resulting from either direct or indirect contact with electrical components.

21.3.2 When work is performed near or on equipment or circuits that are or may be energized, those specific work practices will be consistent with the nature and extent of the associated electrical hazards.

21.3.3 It is the general policy of Total Automations Concepts, Inc. that:

21.3.3.1 No employee shall work on live (energized) components with the exception of testing and troubleshooting provided safe work practices are followed and proper PPE is worn.

21.3.3.2 All employees, contractors, and alike shall comply with this policy and OSHA regulations, Standard for Electrical Safety in the Workplace (NFPA 70E), National Electrical Code (NFPA 70), and other established safety standards as necessary to reduce or eliminate the dangers associated with the use of electrical energy.

21.3.3.3 All electrically energized equipment will be used in a safe manner as intended by the manufacturer.

21.3.3.4 All electrical wiring and equipment will comply with the National Electrical Code (NFPA 70), OSHA regulations, and other consensus industry standards.

21.3.3.5 All employees have the responsibility to ensure they and others around them are working in a safe manner with the proper equipment.

21.3.3.6 Work on or near equipment, operating within the electrical hazard conditions that are identified in this policy will be performed in an electrically safe state (verified electrically de-energized).

21.3.3.7 Work will only be performed on energized electrical circuits or components operating at greater than 50 volts when:

21.3.3.7.1 It can be demonstrated that de-energizing the circuit introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

21.3.3.7.2 When work on energized electrical circuits or components operating at greater than 50 volts is justified and approved, engineering controls (guards, covers, shields, insulated tools and probes, remote methods) shall be used to reduce the potential for contact with energized components. Additionally:

21.3.3.7.2.1 A documented formal brief shall be conducted with all personnel involved (Form 22.16.7).

21.3.3.7.2.2 An Energized Electrical Work Permit (Form 22.16.5) shall be routed and approved by Total Automations Concepts, Inc. Senior Management prior to conducting any live electrical work.

21.3.3.8 Energized parts that operate at less than 50 volts will not be required to be de-energized if there will be no increased exposure to shock, electrical burns, or to explosion blast due to electric arcs.

## 21.4 HAZARD CONTROL

21.4.1 The following hazard control hierarchy will be used to eliminate electrical hazards:

21.4.1.1 Engineering controls (touch proof panels, shields, or barriers).

21.4.1.1.1 To isolate employees from the energized components.

21.4.1.2 Administrative controls (Energized Electrical Work Permit (Form 22.16.5), assignment of a Safety Watch, and qualification training.)

21.4.1.3 Personal protective equipment (PPE)

21.4.1.3.1 To isolate workers from exposed hazardous electrical conductors.

## 21.5 DEFINITIONS

21.5.1 Arc Flash/Arc Flash Hazard: A dangerous condition associated with the possible release of energy caused by an electric arc. An arc flash hazard may exist when energized electrical conductors or circuit parts are exposed or when they are within equipment in a guarded or enclosed condition, provided a person is interacting with the equipment in such a manner that could cause an electric arc.

21.5.2 Ampere: The unit of measurement for the rate of flow of electricity.

21.5.3 Conductive: Suitable for carrying electric current and offers slight opposition to current flow.

21.5.4 Current: The rate of flow of electricity in circuit that is measured in amperes.

21.5.5 De-energized: Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of the earth.

21.5.6 Enclosed: Surrounded by a case, housing, fence, or wall(s) that prevents persons from accidentally contacting energized parts.

21.5.7 Energized: Electrically connected to or having a source of voltage.

21.5.8 Flash Hazard Analysis: A study that considers a worker's potential exposure to arc flash energy, conducted for the purpose of injury prevention and the determination of safe work practices and the appropriate levels of personal protective equipment (PPE).

21.5.9 Flash Protection Boundary: An approach limit at a distance from exposed live parts within which a person could receive a second-degree burn if an electrical arc flash were to occur.

21.5.10 Grounded: Connected to earth or to some conducting body that serves in place of the earth.

21.5.11 Insulated: Separated from other conducting surfaces by a material that does not give up electrons easily, offering a high resistance to the passage of electric current.



- 21.5.12 **Qualified Person**: is a person who is approved in writing by management (Form 22.16.9) to work on or near exposed energized parts who has been trained in and familiar with:
- 21.5.12.1 The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
  - 21.5.12.2 The skills and techniques necessary to determine the nominal voltage of exposed live parts.
  - 21.5.12.3 The knowledge, skills, and techniques to work safely on energized circuits.
  - 21.5.12.4 The decision making process to determine the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools that will be used for the electrical hazards involved.
  - 21.5.12.5 The clearance distances for work performed near overhead lines that are specified in the OSHA standard that appears in (Form 22.16.2 Table 1), 29 CFR 1910.333(c) and the corresponding voltages to which the person will be exposed.
  - 21.5.12.6 The safe distance and PPE to be used when working on or near energized equipment.
- 21.5.13 **Resistance**: The opposition to the flow of electrons or current flow in a circuit due to the characteristics of the material.
- 21.5.14 **Troubleshooting**: is a systematic diagnostic approach to ascertain the problem with a circuit, and provide a solution to return the suspect circuit or component back to normal operation as soon as reasonably possible.
- 21.5.15 **Unqualified Person**: is a person with little or no training in avoiding the electrical hazards of working on or near exposed energized parts. A person who is not a qualified person.
- 21.5.16 **Voltage**: is the pressure that causes electrons to flow. The difference of potential between any two conductors of the circuit concerned.

## 21.6 **ELECTRICAL HAZARD DEFINITIONS**

- 21.6.1 **Electrical Shock**: Accidental contact with exposed electrical parts.
- 21.6.2 **Delayed Effects**: Damage to internal tissues or organs that may not be apparent immediately after contact with the electrical circuit. Delayed internal tissue swelling, irritation, and or fibrillation are possible.
- 21.6.3 **Arc Flash**: When an electric current passes through the air between two conductors. The temperature can reach 35,000°F. Exposure to these extreme temperatures can result in life threatening burns. Arc flashes can and do kill at distances in excess of 10 ft.
- 21.6.4 **Arc Blast**: The tremendous temperatures of the arc cause an explosive expansion of both metal and the surrounding air in the arc path. The dangers of this explosion are of high blast pressure wave, high decibel levels of sound, and high velocity shrapnel. Finally, the material and molten metal is expelled away from the arc at speeds exceeding 700 miles per hour. Arc blasts often cause severe injuries and death.
- 21.6.5 **Other Burns**: Other burns suffered in electrical accidents are of two basic types:

- 21.6.5.1. **Electrical burns:** In electrical burns, tissue damage occurs because the body is unable to dissipate the heat caused by the current flow.
- 21.6.5.2. **Thermal contact burns:** These are normally experienced from skin contact with the hot surfaces of overheated electric conductors.
- 21.6.6 **Reaction Injury:** This occurs when the electric current through the body is below the values to cause noticeable injury but human reaction can result in falls, or movement into moving machinery.

## **21.7 FLAMMABLE OR IGNITABLE MATERIALS**

- 21.7.1 Flammable materials include, but are not limited to: flammable gases, vapors, or liquids, combustible dust, and ignitable fibers or chips.
  - 21.7.1.1 In those situations where flammable materials are present only occasionally, electric equipment capable of igniting them will not be used, unless measures are taken to prevent hazardous conditions from developing.
  - 21.7.1.2 In those situations where flammable vapors, liquids or gases, or combustible dusts or fibers are (or may be) present on a regular basis, the electrical installation requirements shall be observed as follows:
    - 21.7.1.2.1 Intrinsically safe.
    - 21.7.1.2.2 Approved for the hazardous location.
  - 21.7.1.3 Safe work practices (safe work rules and electrical safety considerations) to support the development of safe working habits.

## **21.8 PERSONAL PROTECTION SAFEGUARDS**

- 21.8.1 Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.
- 21.8.2 Protective equipment will be maintained in a safe, reliable condition, and will be periodically inspected and/or tested.
- 21.8.3 Flame Resistant Clothing (FRC) shall be listed as arc rated with the appropriate ATPV or HRC level for which the garments are rated. Electrical safety gloves shall be listed for the voltage they are rated for and worn with leather protectors at all time when working on or near voltages greater than 50 volts.
- 21.8.4 All electrical safety PPE supplied by Total Automations Concepts, Inc. shall be inspected prior to use for wear and tear by the user and when, in the judgment of the user, the protection the garment affords is impaired in any way. The garment shall be replaced by Total Automations Concepts, Inc.
- 21.8.5 Electrical safety gloves shall be worn in accordance with the study labels posted on the electrical devices. They shall be inspected prior to each use and turned in for testing every 6 months. Leather protectors shall only be worn with electrical safety gloves. They shall not be used as general work gloves.
- 21.8.6 Arc rated clothing shall be worn in accordance with the arc flash study labels posted on the electrical devices. If labels are not posted on the device and the voltage is greater than 50 volts, Forms 22.16.2, 22.16.3, and 22.16.4 shall be used to determine the Shock Hazard, the Flash Hazard Classification, and the PPE required for the task being conducted.

21.8.7 Total Automations Concepts, Inc. will provide training to each employee who is required by this section to use PPE.

**NOTE:** FR/Arc rated garments supplied by Total Automations Concepts, Inc. shall be returned to Total Automations Concepts, Inc. upon any of the occurrences 1) upon request by the company, 2) at the termination of a uniform contract, or 3) upon separation of the employee from the company. The cost of the garment(s) not returned to Total Automations Concepts, Inc. shall be borne by the employee.

21.8.8 Shock Protection: Unless otherwise specified when a qualified person is working within the restricted approach boundary, the worker shall wear personal protective equipment (electrical safety gloves) in accordance with the label posted on the device/equipment.

21.8.8.1 If no label exists, Form 22.16.2 Table 1 shall be used to determine the restricted approach boundary.

21.8.9 Arc Flash Protection: Unless otherwise specified – when a qualified person is working inside the arc flash protection boundary the qualified person shall wear personal protective equipment (arc rated gear) in accordance with the label posted on the device/equipment.

21.8.9.1 If no label exists, Form 22.16.3 Table 2 & Form 22.16.4 Table 3 shall be used to determine the arc flash protection required and the arc flash boundary. Once inside the arc flash protection boundary all parts of the body shall be protected.

21.8.10 If no arc hazard label exists on the device/equipment the following shall be used to determine the hazard.

21.8.10.1 Once a hazard/risk category has been identified from Form 22.16.2 Table 1 & Form 22.16.3 Table 2, including associated notes, Form 22.16.4 Table 3 lists the requirements for protective clothing and other protective equipment based on Hazard/Risk Categories 0 through 4.

21.8.10.2 This clothing and equipment shall be used when working within the arc flash boundary, shall be used to determine the required personal protective equipment (PPE) for the task.

21.8.11 Hand and Arm Protection electrical protective equipment shall be maintained in a safe reliable condition.

21.8.12 Insulating equipment shall be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage.

21.8.13 Insulating gloves shall be given an air test, along with the inspection.

21.8.14 Electrical protective equipment shall be subjected to periodic electrical tests.

21.8.15 Test voltages and the maximum intervals between tests shall be in accordance with the following table.

**NFPA 70E, 130.7(C)(7)(c) *Rubber Insulating Equipment, Maximum Test Intervals***

Rubber Insulating Equipment	When to Test	Governing Standard for Test Voltage <sup>1</sup>
Blankets	Before first issue; every 12 months thereafter <sup>2</sup>	ASTM F 479
Covers	If insulating value is suspect	ASTM F 478
Gloves	Before first issue; every 6 months thereafter <sup>2</sup>	ASTM F 496
Line Hose	If insulating value is suspect	ASTM F 478
Sleeves	Before first issue; every 12 months thereafter <sup>2</sup>	ASTM F 496

<sup>1</sup>ASTM F 478, *Standard Specifications for In-Service Care of Insulating Line Hose and Covers*; ASTM F 479, *Standard Specification for In-Service Care of Insulating Blankets*; ASTM F 496, *Standard Specifications for In-Service Care of Insulating Gloves and Sleeves*.

<sup>2</sup>If the insulating equipment has been electrically tested but not issued for service, it is not permitted to be placed into service unless it has been electrically tested within the previous 12 months.

- 21.8.16 Employees will wear approved nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts.
- 21.8.17 Employees will wear approved protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.
- 21.8.18 When working near exposed energized conductors or circuit parts, each employee shall use insulated tools or handling equipment if the tools or handling equipment could make contact with such conductors or parts.
  - 21.8.18.1 If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material will be protected.
- 21.8.19 Fuse handling equipment, insulated for the circuit voltage, will be used to remove or install fuses when the fuse terminals are energized.
- 21.8.20 Ropes and hand-lines used near exposed energized parts shall be nonconductive.
- 21.8.21 Protective shields, protective barriers, or insulating materials will be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur.
- 21.8.22 When normally enclosed live parts are exposed for maintenance or repair, they will be guarded to protect unqualified persons from contact with the live parts.

**21.9 ALERTING TECHNIQUES**

- 21.9.1 Alerting techniques will be used to warn and protect unqualified employees from hazards that could cause injury due to electric shock, burns, or failure of electric

equipment parts inside the limited approach boundary or arc flash boundary whichever is further using examples as follows:

- 21.9.1.1 **Safety Signs and Tags:** Safety signs, safety symbols, or accident prevention tags will be used where necessary to warn employees about electrical hazards that could endanger them.
- 21.9.1.2 **Barricades:** Barricades will be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or circuit parts.
  - 21.9.1.2.1 Conductive barricades may not be used where they might cause an electrical contact hazard.
- 21.9.1.3 **Attendants:** If signs and barricades do not provide sufficient seaming and protection from electrical hazards, an attendant will be stationed to warn and protect employees.

## 21.10 **ENERGIZED ELECTRICAL WORK REQUIREMENTS**

**NOTE:** An Energized Electrical Work Permit is not required for testing, troubleshooting, and voltage measuring, provided a hazard analysis is conducted using point using the arc flash label posted on the panel or in lieu of detailed arc flash analysis (Form 20.16.2 Table 1 & Form 20.16.3 Table 2) shall be used as a guide, to determine the hazard level to which personnel will be exposed, boundary requirements, and the personal protective equipment required (Form 20.16.4 Table 3) in order to minimize the possibility of injury.

- 21.10.1 It is the general policy for Total Automations Concepts, Inc. to conduct no live (energized) electrical work with the exception of testing and troubleshooting provided safe work practice and proper personal protective equipment is used.
- 21.10.2 It is also the preferred policy of Total Automations Concepts, Inc. policy to de-energize live parts, whenever possible, before an employee works on or near them to protect workers from electrical hazards.
- 21.10.3 In those rare cases where it is found to be infeasible or either because of increased or additional hazards or because of infeasibility due to equipment design or operational limitations, or creates a greater hazard to de-energize an Energized Electrical Work Permit (Form 20.16.5) shall be used and approved by Total Automations Concepts, Inc. Senior Management when the exposed live parts are not de-energized.
- 21.10.4 The Job Planning Checklist (Form 20.16.6) and other safety-related work practices shall be used to protect employees who may be exposed to the electrical hazards involved.
- 21.10.5 The work practices used shall protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object or where employees are near enough to be exposed to any hazard they present.
- 21.10.6 Only qualified persons may work on electric circuit parts or equipment that has not been de-energized.
- 21.10.7 Qualified persons must be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

- 21.10.8 Qualified persons shall be listed on (Form 20.16.9) Qualified Person Designation List.
- 21.10.9 Hazard/Risk evaluation procedure (Form 20.16.2 Table 1 & Form 20.16.3 Table 2) shall be used to identify the hazards/risks before work is started on or near live parts operating at 50 volts or more or where an electrical hazard exists.
- 21.10.10 A job briefing (Form 20.16.7) shall be conducted with employees involved in the task and cover topics such as: work procedures, hazards associated with the job, any special precautions, energy source controls, and personnel protective equipment requirements.
- 21.10.11 Whenever work is to be performed near overhead lines, the lines shall be de-energized and grounded, or other protective measures will be provided before work is started.
- 21.10.11.1 When overhead lines are to be de-energized, arrangements to de-energize and ground them shall be made with the organization that operates or controls the electrical circuits involved.
- 21.10.11.2 When protective measures are provided such as guarding, isolating, or insulating, those precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.
- 21.10.11.3 Only qualified employees will be permitted to install insulating devices on overhead power transmission or distribution lines.
- 21.10.11.4 Whenever an unqualified employee is working in an elevated positions near overhead lines, the location will be such that the person and the longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than the following distances:
- 21.10.11.4.1 For voltages to ground 50kV or below - 10ft.(305cm);
- 21.10.11.4.2 For voltages to ground over 50kV - 10 ft. (305cm) plus 4 inches (10 cm) for every 10kV over 50kV.
- 21.10.11.5 Whenever an unqualified employee is working on the ground in the vicinity of overhead lines, the person may not bring any conductive object closer to unguarded, energized overhead lines than the distances given above.
- 21.10.11.6 For voltages normally encountered with overhead power lines, objects which do not have an insulating rating for the voltage involved are considered to be conductive.
- 21.10.11.7 Whenever a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than that shown in paragraph 20.10.11.4.2 above, unless:
- 21.10.11.7.1 The person is insulated from the energized part. Gloves, with sleeves as necessary, rated for the voltage involved, are considered to be insulation of the person from the energized part on which work is performed.
- 21.10.11.7.2 The energized part is insulated both from all other conductive objects at a different potential and from the person.

- 21.10.11.7.3 The person is insulated from all conductive objects at a potential different from that of the energized part.
- 21.10.11.8 Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines will be operated so that a minimum clearance of 10 ft. (305 cm) is maintained. If the voltage is higher than 50kV, the clearance will be increased 4 in. (10 cm) for every 10kV over that voltage. However, under any of the following conditions, the clearance may be reduced:
- 21.10.11.8.1 If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4 ft. (122 cm). If the voltage is higher than 50kV, the clearance will be increased 4 in. (10 cm) for every 10kV over that voltage.
- 21.10.11.8.2 If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.
- 21.10.11.8.3 If the equipment is an aerial lift insulated for the voltage involved, and if the work is performed by a qualified person, the clearance (between the un-insulated portion of the aerial lift and the power line) may be reduced to the distance given in said paragraph 20.10.11.4.2 above.
- 21.10.11.8.4 If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is intentionally grounded, employees working on the ground near the point of grounding will not stand at the grounding location whenever there is a possibility of overhead line contact.
- 21.10.11.8.5 Employees standing on the ground may not contact the vehicle or mechanical equipment or any of its attachments, unless:
- 21.10.11.8.5.1 The employee is using protective equipment rated for the voltage.
- 21.10.11.8.5.2 The equipment is located so that no un-insulated part its structure (that portion of the structure that provides a conductive path to employees on the ground) can come closer to the line than permitted in paragraph 20.10.11.4.2 above.
- 21.10.12 Additional precautions, such as the use of barricades or insulation, will be taken to protect employees from hazardous ground potentials, depending on earth resistance and fault currents that can develop within the first few inches or more outward from the grounding.
- 21.10.13 A hazard analysis (Form 20.16.2 Table 1 & Form 20.16.3 Table 2) shall be conducted to determine the risk level of the energized electrical task to be performed, personal protective equipment requirements, and the necessity of voltage rated tools.
- 21.10.14 Employees may not enter spaces containing exposed energized parts, unless illumination is provided that enables the employees to perform the work safely.
- 21.10.15 Where lack of illumination or an obstruction precludes observation of the work to be performed, employees may not perform tasks near exposed energized parts.
- 21.10.16 Employees shall not reach blindly into areas that may contain energized parts.

- 21.10.17 Whenever an employee works in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts, he/she must be provided with, and he/she will use, protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with those parts.
- 21.10.18 Doors, hinged panels, and the like that are present in any confined or enclosed space will be secured to prevent their swinging into an employee and causing the employee to contact exposed energized parts.
- 21.10.19 Conductive materials and equipment that are in contact with any part of an employee's body will be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts.
- 21.10.20 Whenever an employee must handle long dimensional conductive objects (such as ducts and pipes) in areas with exposed live parts, appropriate work practices (such as the use of insulation, guarding, two person and or material handling techniques) shall be instituted which will minimize the hazard.
- 21.10.21 Only wooden ladders or ladders with nonconductive side-rails if they are used where the employee or the ladder could contact exposed energized parts.
- 21.10.22 Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) may not be worn if they might contact exposed energized parts.
- 21.10.23 Where live parts present an electrical contact hazard, employees may not perform housekeeping duties at such close distances to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or arrears) are provided.
- 21.10.23.1 Electrically conductive cleaning materials (including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions) shall not be used in proximity to energized parts unless appropriate procedures are followed that will prevent electrical contact.
- 21.10.24 Only a qualified person following the requirements of the procedures set forth in this section of the policy may defeat an electrical safety interlock and then only temporarily while he or she is working on the equipment inside the restricted approach boundary (Form 20.16.2 Table 1).
- 21.10.24.1 The interlock system will be returned to its operable condition when such work is completed.

## **21.11 ENERGIZED ELECTRICAL WORK GENRAL PROCEDURAL STEPS**

- 21.11.1 In those rare cases where it is found to be infeasible or either because of increased or additional hazards or because of infeasibility due to equipment design or operational limitations creates a greater hazard to de-energize the circuit. The following procedural steps that must be completed before any energized electrical work is performed:
- 21.11.1.1 Justify that the task cannot be accomplished in a locked tagged and verified de-energized condition or differed until the scheduled outage.
- 21.11.1.2 Determine the Hazard Class, the nature and complexity of the controls dependent upon the combination of the Shock Hazard Analysis (Form 20.16.2 Table 1) and the Flash Hazard Analysis (Form 20.16.3 Table 2) to determine the hazard risk category and PPE requirements of the energized electrical task to be performed.



- 21.11.1.3 Determine whether you are “Qualified” in accordance with 20.5.12 above to perform the task identified in 20.11.1.2.
- 21.11.1.4 Use Job Planning Checklist (Form 20.16.6) Hazard/Risk Evaluation as completed above to determine the hazard risk category (Form 20.16.2 Table 1 & Form 20.16.3 Table 2) and personal protective equipment (Form 20.16.4 Table 3).
- 21.11.1.5 Obtain Energized Electrical Work Permit (Form 20.16.5) approval from Total Automations Concepts, Inc. Senior Management.
- 21.11.1.6 Perform job briefing (Form 20.16.7).
- 21.11.1.7 Implement hazard control requirements and perform the task in accordance the approved procedure.

## **21.12 ENERGIZED ELECTRICAL WORK APPROVAL**

- 21.12.1 The Total Automations Concepts, Inc. Senior Management must formally approve all energized electrical work with the exception of testing and troubleshooting. This approval process shall include:
  - 21.12.1.1 Shock Hazard Analysis (Form 20.16.2 Table 1)
  - 21.12.1.2 Flash Hazard Classification (Form 20.16.3 Table 2)
  - 21.12.1.3 Job Planning Checklist (Form 20.16.6)
  - 21.12.1.4 Energized Electrical Work Permit (Form 20.16.5) completed and approved prior to the work.
- 21.12.2 The Supervisor must provide a briefing (Form 20.16.7) before any energized electrical work is performed.

**NOTE:** Standard operating procedures for energized electrical work procedures should be reviewed at least annually.

## **21.13 SERVICE OR MAINTENANCE CONTRACTS (EQUIPMENT SUBCONTRACTORS)**

- 21.13.1 Whenever outside servicing personnel are to be engaged in activities cover in the scope and application of this policy Total Automations Concepts, Inc. and the outside contractor(s)/employer(s) shall inform each other of existing hazards, personnel protective equipment requirements, safe work practice procedures, emergency action and evacuation procedure as applicable to the work to be performed. This coordination effort shall include a documented meeting using the Job Briefing Form (Form 20.16.7).
- 21.13.2 Third-party service companies or individuals who may provide installation or maintenance of commercial equipment under purchase orders, service contracts, or blanket purchase orders for service.
- 21.13.3 The supervisor or person responsible for the equipment needing service must be aware of the hazards and the nature and extent of maintenance to be done on the equipment when engaging non-company workers.
- 21.13.4 Non-company workers must follow the safety requirements and procedures of their employers, OSHA regulations, and other consensus standards, which must provide a level of electrical safety consistent with this policy.
- 21.13.5 The person responsible for the equipment may impose additional safety requirements on the work to ensure that the work can be done safely and not present an unexpected hazard to the contracted worker, or to other employees.

21.13.6 This may include providing additional safeguards such as:

21.13.6.1 Protective barriers.

21.13.6.2 Posting a Total Automations Concepts, Inc. qualified person at the work site control access, for the protection of the Total Automations Concepts, Inc. employee or other safety measures as may be required to ensure safe working conditions for all the Total Automations Concepts, Inc. employees and contract workers.

## 21.14 TRAINING

21.14.1 Appropriate training will be provided for those employees who face a risk of electric shock in the form of classroom and/or on the job instruction.

21.14.2 Each employee is required to be trained will become familiar with the safe work practices required by this policy and those sections of the OSHA Electrical Standard and NFPA 70E Electrical Safe Work Practice that pertain to his/her respective job assignment(s).

21.14.3 Qualified persons (i.e. those persons permitted to work on or near exposed energized parts) will, at a minimum, be trained in the following:

21.14.3.1 The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.

21.14.3.2 The skills and techniques necessary to determine the nominal voltage of exposed parts.

21.14.3.3 An understanding and limitations of the detailed arc flash study labels posted on the electrical equipment.

21.14.3.4 If panels or electrical equipment are not labeled as mentioned, qualified employees shall use the clearance distances listed in paragraph 20.10.8.4, conduct a Shock Hazard Analysis (Form 20.16.2 Table 1), and Flash Hazard Classification (Form 20.16.3 Table 2) of this Policy and the corresponding voltages to which the qualified person will be exposed.

21.14.3.5 Release of victims from contact with exposed energized conductors or circuit parts.

21.14.3.6 Qualified persons shall be instructed in methods of first aid and emergency procedures such as cardiopulmonary resuscitation (CPR) and automatic external defibrillator (AED) and shall be verified up to date by SMAPLE COMPANY annually.

21.14.3.7 Proper use of the special precautionary techniques, personal protective equipment, including arc flash, insulating, and shielding materials.

21.14.3.8 The degree of training will be determined by the risk likely to be encountered by the employee. The training given to “qualified and non-qualified persons” will be documented on a training roster (Form 20.16.8).

21.14.4 Qualifying Personnel

21.14.4.1 Only those persons who are qualified in writing by management may install, fabricate, repair, test, calibrate, or modify electrical or electronics wiring, devices, systems, or equipment.

21.14.4.2 A qualified person is an individual formally recognized in writing (Form 20.16.9) by the Total Automations Concepts, Inc. Senior Management as:

- 21.14.4.2.1 Having completed the required classroom training.
  - 21.14.4.2.2 Having sufficient understanding of a device, system, piece of equipment, or facility to be able to recognize and positively control any hazards it may present.
  - 21.14.4.2.3 Having completed site, area, facility, equipment, and apparatus specific training.
  - 21.14.4.2.4 Who possesses the work experience and formal training necessary to execute the work according to recognized and accepted technical standards.
  - 21.14.4.2.5 Having qualifications documented by his or her supervisor.
- 21.14.5 Total Automations Concepts, Inc. shall determine through regular supervision or through inspections on an annual basis that each qualified employee is complying with electrical safe work practices as outlined in this policy.

**NOTE:** A person can be considered qualified with respect to certain equipment and methods but not qualified for others.

21.14.6 General Guidelines for Qualification:

- 21.14.6.1 Qualification for electrical or electronics work is determined by the employee's supervisor, and is based on a combination of (including required periodic retraining), formal electrical trade, military, college or other training, work experience, and on-the-job training.
- 21.14.6.2 Formal training can be the completion of apprenticeship or comparable training.
- 21.14.6.3 Experience may be a combination of, or include formal technical related education courses and hand-on field or classroom lab work that may or may not result in licenses or certifications.
- 21.14.6.4 On-going electrical and electronics training must include an annual review of this policy and the company's lockout/tagout procedures.
- 21.14.6.5 Re-training shall be performed at intervals not to exceed 3 years.

**21.15 ELECTRICAL SAFETY CONSIDERATIONS**

21.15.1 General Considerations:

- 21.15.1.1 Personal Protective Equipment (PPE): Treat it well. Keep it clean and oil free as it is your last line of protection.
- 21.15.1.2 Joining a job in progress: When you are assigned to a job in progress with lockout/tagout devices applied, you have an obligation to yourself to understand exactly what has been locked out and verified.
- 21.15.1.3 Practice proper housekeeping and cleanliness: Poor housekeeping is a major factor in many accidents. A cluttered area is likely to be both unsafe and inefficient. Every employee is responsible for keeping a clean area, and every supervisor is responsible for ensuring that his or her areas of responsibility remain clean.
- 21.15.1.4 Maintenance for safety: Good maintenance is essential to safe operations. Establish maintenance procedures and schedules for servicing and maintaining equipment and facilities, including documentation of repairs, removals, replacements, and disposals.

- 21.15.1.5 **Document your work**: An up-to-date set of documentation adequate for operation, maintenance, testing, and safety should be available to anyone working on potentially hazardous equipment.
- 21.15.1.6 **Keep drawings and prints up to date**: Obsolete drawings should be marked as obsolete and if maintained, kept in a 'Dead File". Be certain that active file drawings have the latest corrections. All facilities drawings should be archived.
- 21.15.1.7 **Have designs reviewed**: All systems and modifications to systems performing a safety function or controlling a potentially hazardous operation must be reviewed and approved.
- 21.15.1.8 **Have designs and operation verified**: All systems performing safety functions or controlling a potentially hazardous operation must be validated by actual test procedures before being placed in service. The procedures and actual tests must be documented.
- 21.15.1.9 **Beware of wet areas**: While working with liquids (e.g., washing, mopping, and spraying), exercise extra care to avoid contact with electrical outlets or devices.
- 21.15.1.10 Electrical openings: cover them if liquids can penetrate them.
  - 21.15.1.10.1 If the openings cannot be covered, the power must be disconnected and locked out.
- 21.15.1.11 **Keep manuals, read them**: Read the manuals before assembling or operating the equipment. These manuals are part of your safety system.
- 21.15.1.12 **Proximity sensors**: Proximity detectors may NOT be used in the final verification step for LOTO.
- 21.15.1.13 **Keep proper spare fuses handy**: Check the manual for the proper fuse information. When replacing fuses, the replacement fuse must be an exact replacement. Using any other value or type fuse compromises the integrity and safety of the equipment.

**Warning:** All changes to the electrical system must be reported to the supervisor this includes replacing breakers and fuses other than what was installed, adjusting overloads etc.

- 21.15.1.14 **Beware of UPS Systems**: Aside from internal battery voltages, Uninterruptible Power Sources (UPS's) are designed to provide 120-volt AC power to a computer or other critical equipment when its plug is removed from the wall receptacle. You should expect to encounter 120-V AC when you open it.
- 21.15.1.15 **Clearance Around Electrical Equipment**: Maintain access and working clearance space around power and lighting circuit breaker panels, motor controllers, and other electrical equipment in accordance with OSHA or the latest edition of the National Electrical Code (NEC), whichever is most stringent. This clearance space ensures safe maintenance space required for personnel who inspect, adjust, maintain, or modify electrical equipment.
- 21.15.1.16 **Choose safe test equipment**: The test equipment you use should be considered personal protective equipment (PPE).

- 21.15.1.16.1 Each instrument must be listed and labeled by a nationally recognized testing laboratory (NRTL) rated for the voltage and shall be category rated for the area of work.
  - 21.15.1.16.2 When you use such a meter, its rating requires that you use approved test leads to ensure the Category Rating the manufacturer has earned.
  - 21.15.1.16.3 Inspect your meter and meter leads for damage before each use.
  - 21.15.1.16.4 If the test equipment is used for any kind of certification, it must be calibrated regularly, according to the manufacturers' maintenance instructions.
  - 21.15.1.17 Set meter range switches before powering-up: Decide in advance that you will not change ranges with a probe on a live test point. There are two reasons for this:
    - 21.15.1.17.1 First, remember, it is easy for a probe tip to slip off a live test point while you are looking at the range switch.
    - 21.15.1.17.2 Second, it may be possible to switch through a current measurement range effectively putting a dead short between the meter leads.
  - 21.15.2 Extension cords: Extension cords provide a convenient method of bringing AC power to a device that is not located near a power source. They are used as temporary power sources.
    - 21.15.2.1 Extension cords are probably involved in more electrical-code and safety violations than any other device. They are stepped on, stretched, cut, overloaded, and, in general, used improperly.
    - 21.15.2.2 Extension cords that are in use by personnel shall have ground-fault circuit-interrupter (GFCI) protection for personnel.
      - 21.15.2.2.1 The GFCI can consist of a special circuit breaker, a GFCI outlet, or an extension cord with a built-in GFCI.
- NOTE:** GFCI shall be tested monthly in accordance with manufactures proscribed procedure or underwriters laboratory procedures Appendix 1
- 21.15.2.3 Extension cords are for temporary use not to exceed 90 days: In general, roll-up the cord at the end of the day.
  - 21.15.2.4 Do not daisy-chain extension cords.
  - 21.15.2.5 Check the cord for damage each time you use it.
  - 21.15.2.6 Use only approved and properly maintained extension cords that have no exposed live parts, exposed ungrounded metal parts, damage, or splices.
  - 21.15.2.7 Use only heavy-duty or extra-heavy-duty rated cable.
  - 21.15.2.8 Ensure that the extension cord is of sufficient current-carrying capacity to power the device.
    - 21.15.2.8.1 Use of an undersized cord results in an overheated cord and insufficient voltage delivered to the device, thus causing device or cord failure and a fire hazard.
    - 21.15.2.8.2 Undersized cords also constitute a serious shock hazard, as it may not allow the breaker feeding it to trip.

21.15.2.8.3 Always use three-conductor (grounded) extension cords, even if the device has a two-conductor cord.

**21.15.2.9 Avoiding Misuse of Extension Cords:**

21.15.2.9.1 Observe the following restrictions to avoid misuse of extension cords:

21.15.2.9.1.1 Do not use extension cords in place of permanent facility wiring.

21.15.2.9.1.2 Avoid running extension cords through doors, ceilings, windows, or holes in the walls. If it is necessary to run a cord through a doorway for short term use, ensure the cord is:

21.15.2.9.1.2.1 Protected from damage.

21.15.2.9.1.2.2 Removed immediately when no longer in use.

21.15.2.9.1.2.3 Not a tripping hazard.

21.15.2.9.1.3 Do not cut off the ground pin of an extension cord or compromise the ground protection in any way.

21.15.2.9.1.4 Do not use frayed or damaged extension cords.

21.15.2.9.1.5 Never splice extension cords, even for a repair. Only qualified personnel may make repairs of extension cords.

**21.15.3 Power Strips/Power Taps**

21.15.3.1 A power strip (referred to by OSHA as a Relocatable Power Tap or RPT) is a variation of an extension cord, where the cord terminates in a row or grouping of receptacles.

21.15.3.2 RPT's are commonly used in offices to provide multiple receptacles to office equipment. In general, all rules pertaining to extension cords also apply to power strips.

21.15.3.3 Additional considerations are:

21.15.3.3.1 Power strips are not rated for heaters, refrigerators, toaster ovens or other high power devices.

21.15.3.3.2 Use only for office equipment such as computers, printers, etc.

21.15.3.3.3 Do not permanently mount power strips to any facility surface. Power strips are classified as temporary devices. It is acceptable to hang them from screws or hooks if they are manufactured with slots or keyholes.

**21.16 FORMS**

21.16.1 Appendix 1: GFCI Testing Procedures

21.16.2 Table 1: Shock Hazard Analysis

21.16.3 Table 2: Flash Hazard Classification

21.16.4 Table 3: PPE Cross Reference

21.16.5 Energized Electrical Work Permit

21.16.6 Job Planning Checklist

21.16.7 Job Briefing Sheet

21.16.8 Electrical Safety Training Roster Sheet

**FORM 20.16.1 - APPENDIX 1: GROUND FAULT CIRCUIT INTERRUPTERS (GFCI's)  
TESTING PROCEDURES (Underwriters Laboratories)**

GFCIs are designed to protect a person from electric shock when he or she simultaneously contacts a "live" (usually 120V) wire or part and a grounded object. The GFCI works by sensing a difference between the supply and return currents. When the difference exceeds 5mA—indicating that current is flowing to ground (through the person)—the device switches off.

Although the GFCI is an effective safety device, it is not a guarantee against shock in every situation. The GFCI does not protect against a line-to-neutral or a line-to-line shock. Also, if GFCI-protected equipment contains transformers, a ground fault (shock) on the secondary side of the transformer may not trip the GFCI.

GFCIs are normally installed as either circuit breakers or receptacles. In either case, the GFCI may be wired to protect multiple receptacles. Individual GFCI plug-in adapters are also available.

Like all products, GFCIs can be damaged by lightning or electrical surges and may fail to provide adequate protection and GFCIs must be tested at least monthly, using the following procedures as prescribed by Underwriters Laboratories:

- Push the "Reset" button located on the GFCI receptacle, first to assure normal GFCI operation.
- Plug a nightlight (with an "ON/OFF" switch) or other product (such as a lamp) into the GFCI receptacle and turn the product "ON."
- Push the "Test" button located on the GFCI receptacle. The nightlight or other product should go "OFF."
- Push the "Reset" button, again. The light or other product should go "ON" again.

**NOTE:** If the light or other product remains "ON" when the "Test" button is pushed, the GFCI is not working properly or has been incorrectly installed (mis-wired). If your GFCI is not working properly, only a qualified person can assess the situation, rewire the GFCI if necessary or replace the device.

**CAUTION:** Testing of a GFCI will disconnect all receptacles protected by the GFCI. Before testing, determine which receptacles are protected. Verify that the interruption of power will not adversely affect other activities.

**FORM 20.16.2 - TABLE 1: SHOCK HAZARD ANALYSIS (Page 1)**

NFPA 70E, *Standard for Electrical Safety in the Workplace*, 2012 Edition, Table 130.4(C)(a) Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Alternating-Current Systems (All dimensions are distance from energized electrical conductor or circuit part to employee.)

Nominal System Voltage Range, Phase to Phase <sup>1</sup>	Limited Approach Boundary <sup>2</sup>		Restricted Approach Boundary <sup>2</sup> ; Includes Inadvertent Movement Adder	Prohibited Approach Boundary <sup>2</sup>
	Exposed Movable Conductor <sup>3</sup>	Exposed Fixed Circuit Part		
< 50V	Not Specified	Not Specified	Not Specified	Not Specified
50V – 300V	10 ft 0 in (3.0 m)	3 ft 6 in (1.0 m)	Avoid Contact	Avoid Contact
301V – 750V	10 ft 0 in (3.0 m)	3 ft 6 in (1.0 m)	1 ft 0 in (.3 m)	0 ft 1 in (25.0 mm)
751V - 15kV	10 ft 0 in (3.0 m)	5 ft 0 in (1.5 m)	2 ft 2 in (.7 m)	0 ft 7 in (.2 m)
15.1kV - 36kV	10 ft 0 in (3.0 m)	6 ft 0 in (1.8 m)	2 ft 7 in (.8 m)	0 ft 10 in (.3 m)
36.1kV – 46kV	10 ft 0 in (3.0 m)	8 ft 0 in (2.5 m)	2 ft 9 in (.8 m)	1 ft 5 in (.4 m)
46.1kV – 72.5kV	10 ft 0 in (3.0 m)	8 ft 0 in (2.5 m)	3 ft 3 in (1.0 m)	2 ft 2 in (.7 m)
72.6kV – 121kV	10 ft 8 in (3.3 m)	8 ft 0 in (2.5 m)	3 ft 4 in (1.0 m)	2 ft 9 in (.8 m)
138kv – 145kV	11 ft 0 in (3.4 m)	10 ft 0 in (3.0 m)	3 ft 10 in (1.2 m)	3 ft 4 in (1.0 m)
161kV – 169kV	11 ft 8 in (3.6 m)	11 ft 8 in (3.6 m)	4 ft 3 in (1.3 m)	3 ft 9 in (1.1 m)
230kV – 242kV	13 ft 0 in (4.0 m)	13 ft 0 in (4.0 m)	5 ft 8 in (1.7 m)	5 ft 2 in (1.6 m)
345kV – 362kV	15 ft 4 in (4.7 m)	15 ft 4 in (4.7 m)	9 ft 2 in (2.8 m)	8 ft 8 in (2.6 m)
500kV – 550kV	19 ft 0 in (5.8 m)	19 ft 0 in (5.8 m)	11 ft 10 in (3.6 m)	11 ft 4 in (3.5 m)
765kV – 800kv	23 ft 9 in (7.2 m)	23 ft 9 in (7.2 m)	15 ft 11 in (4.9 m)	15 ft 5 in (4.7 m)

**NOTE:** For arc flash boundary, see 130.5(A) of NFPA 70E, 2012 Edition.

<sup>1</sup> For single-phase systems, select the range that is equal to the system's maximum phase-to-ground voltage multiplied by 1.732.

<sup>2</sup> See definition in Article 100 and text in 130.4(D)(2) and Annex C for elaboration (NFPA 70E, 2012 Edition)

<sup>3</sup> This term describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.



**FORM 20.16.2 - TABLE 1: SHOCK HAZARD ANALYSIS (Page 2)**

NFPA 70E, *Standard for Electrical Safety in the Workplace*, 2012 Edition, **Table 130.4(C)(b)** Approach Boundaries<sup>1</sup> to Energized Electrical Conductors or Circuit Parts for Shock Protection for Direct-Current Systems

Nominal Potential Difference	Limited Approach Boundary		Restricted Approach Boundary; Includes Inadvertent Movement Adder	Prohibited Approach Boundary
	Exposed Movable Conductor <sup>2</sup>	Exposed Fixed Circuit Part		
< 50V	Not Specified	Not Specified	Not Specified	Not Specified
50V- 300V	10 ft 0 in (3.0 m)	3 ft 6 in (1.0 m)	Avoid Contact	Avoid Contact
301V –1kV	10 ft 0 in (3.0 m)	3 ft 6 in (1.0 m)	1 ft 0 in (.3 m)	0 ft 1 in (25.0 mm)
1.1kV - 5V	10 ft 0 in (3.0 m)	5 ft 0 in (1.5 m)	1 ft 5 in (.5 m)	0 ft 4 in (.1 m)
5kV - 15kV	10 ft 0 in (3.0 m)	5 ft 0 in (1.5 m)	2 ft 2 in (.7 m)	0 ft 7 in (.2 m)
15.1kV – 45kV	10 ft 0 in (3.0 m)	8 ft 0 in (2.5 m)	2 ft 9 in (.8 m)	1 ft 5 in (.4 m)
45.1kV – 75kV	10 ft 0 in (3.0 m)	8 ft 0 in (2.5 m)	3 ft 2 in (1.0 m)	2 ft 1 in (.7 m)
75.1kV – 150kV	10 ft 8 in (3.3 m)	10 ft 0 in (3.0 m)	4 ft 0 in (1.2 m)	3 ft 2 in (1.0 m)
150.1kV – 250kV	11 ft 8 in (3.6 m)	11 ft 8 in (3.6 m)	5 ft 3 in (1.6 m)	5 ft 0 in (1.5 m)
250.1kV – 500kV	20 ft 0 in (6.0 m)	20 ft 0 in (6.0 m)	11 ft 6 in (3.5 m)	10 ft 10 in (3.3 m)
500.1kV – 800kv	26 ft 0 in (8.0 m)	26 ft 0 in (8.0 m)	16 ft 5 in (5.0 m)	16 ft 5 in (5.0 m)

<sup>1</sup> All dimensions are distance from exposed energized electrical conductors or circuit parts to worker.

<sup>2</sup> This term describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.

**FORM 20.16.3 – TABLE 2: FLASH HAZARD CLASSIFICATION (Page 1)**  
 NFPA 70E Table 130.7(C)(15)(a) Hazard/Risk Category Classifications and Use of Rubber Insulating  
 Gloves and Insulated and Insulating Hand Tools-Alternating Current Equipment Table 130.7(C)(9)

Tasks Performed on Energized Equipment	Hazard/Risk Category	Rubber Insulating Gloves	Insulated & Insulating Hand Tools
<b>Panelboards or other equipment rated 240 V and below</b> Parameters: <b>Maximum</b> 25 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; Minimum 18 in. working distance <b>Potential</b> arc flash boundary with exposed energized conductors or circuit parts using above parameters: 19 in.			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	0	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
CB or fused switch operation with covers off	0	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	1	Y	Y
Remove/install CBs or fused switches	1	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	1	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	N	N
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard	1	Y	Y
<b>Panelboards or other equipment rated &gt; 240 V and up to 600 V</b> - Parameters: <b>Maximum</b> of 25 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance <b>Potential</b> arc flash boundary with exposed energized conductors or circuit parts using above parameters: 30 in.			
Perform infrared the thermography and other non-contact inspections outside the restricted approach boundary	1	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
CB or fused switch operation with covers off	1	Y	N
Work on energized electrical conductors and circuit parts, including voltage testing	2	Y	Y
Remove/install CBs or fused switches	2	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	1	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	N	N
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard	2	Y	Y
<b>600 V class motor control centers (MCCs)</b> - Parameters: <b>Maximum</b> of 65 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance - <b>Potential</b> arc flash boundary with exposed energized conductors or circuit parts using above parameters: 53 in.			
Pe1fmm infrared thermography and other non-contact inspections outside the restricted approach boundary	1	N	N
CB or fused switch or starter operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch or starter operation with enclosure doors open	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized electrical conductors and circuit parts > 120 V, exposed	2	Y	Y

Tasks Performed on Energized Equipment	Hazard/Risk Category	Rubber Insulating Gloves	Insulated & Insulating Hand Tools
Application of temporary protective grounding equipment, after voltage test	2	Y	N
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the motor control center	2	Y	Y
<b>600 V class motor control centers (MCCs)</b> - Parameters: <b>Maximum</b> of 42 kA short circuit current available; maximum of 0.33 sec (20 cycle) fault clearing time; minimum 18 in. working distance - <b>Potential</b> arc flash boundary with exposed energized conductors or circuit parts using above parameters: 165 in.			
Insertion or removal of individual starter "buckets" from MCC	4	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	1	N	N
<b>600 V class switchgear (with power circuit breakers or fused switches) and 600 V class switchboards</b> - Parameters: <b>Maximum</b> of 35 kA short circuit current available; maximum of up to 0.5 sec (30 cycle) fault clearing time; minimum 18 in. working distance - <b>Potential</b> arc flash boundary with exposed energized conductors or circuit parts using above parameters: 233 in.			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	2	N	N
CB or fused switch operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch operation with enclosure doors open	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized electrical conductors and circuit parts	2	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	N	N
Application of temporary protective grounding equipment after voltage test	2	N	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	2	N	N
<b>Other 600 V class (277 V through 600 V, nominal) equipment</b> - Parameters: <b>Maximum</b> of 65 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance (except as indicated) - <b>Potential</b> arc flash boundary with exposed energized conductors or circuit parts using above parameters: 53 in.			
<b>Lighting or small power transformers (600 V, maximum)</b>			
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	2	N	N
Opening hinged covers (to expose bare, energized electrical conductors)	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing and circuit parts)	1	Y	N
Application of temporary protective grounding equipment, after voltage test	1	Y	Y
Revenue meters (kW-hour, at primary voltage and current)-insertion or removal	2	Y	N
Cable trough or tray cover removal or installation	1	N	N
Miscellaneous equipment cover removal or installation	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2	Y	Y
Application of temporary protective grounding equipment, after voltage test	2	Y	N
Insertion or removal of plug-in devices into or from busways	2	Y	N

Tasks Performed on Energized Equipment	Hazard/Risk Category	Rubber Insulating Gloves	Insulated & Insulating Hand Tools
<b>NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 Kv - Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance - Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters: 422 in.</b>			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	3	N	N
Contactor operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
Contactor operation with enclosure doors open	2	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	4	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120V or below, exposed	0	Y	Y
Work on control circuits with energized electrical conductors and circuit parts >120V, exposed	3	Y	Y
Insertion or removal (racking) of starters from cubicles, doors open or closed	4	N	N
Application of temporary protective grounding equipment, after voltage test	3	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	N	N
Insertion or removal (racking) of starters from cubicles of arc-resistant construction, tested in accordance with IEEE C37.20.7, doors closed only	0	N	N
<b>Metal clad switchgear, 1 kV through 38 Kv - Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance - Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters: 422 in.</b>			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	3	N	N
CB operation with enclosure doors closed	2	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB operation with enclosure doors open	4	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	4	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	2	Y	Y
Work on control circuits with energized electrical conductors and circuit parts > 120 V, exposed	4	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	N	N
Application of temporary protective grounding equipment, after voltage test	4	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	N	N
Opening voltage transformer or control power transformer compartments	4	N	N
<b>Arc-resistant switchgear Type 1 or 2 (for clearing times of &lt; 0.5 sec with a perspective fault current not to exceed the arc-resistant rating of the equipment) - Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance - Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters: 422 in.</b>			

Tasks Performed on Energized Equipment	Hazard/Risk Category	Rubber Insulating Gloves	Insulated & Insulating Hand Tools
CB operation with enclosure door closed	0	N	N
Insertion or removal (racking) of CBs from cubicles, doors closed	0	N	N
Insertion or removal of CBs from cubicles with door open	4	N	N
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	2	Y	Y
Insertion or removal (racking) of ground and test device with door closed	0	N	N
Insertion or removal (racking) of voltage transformers on or off the bus door closed	0	N	N
<b>Other equipment 1 kV through 38 kV - Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance - Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters: 422 in.</b>			
<b>Metal-enclosed interrupter switchgear, fused or unfused</b>			
Switch operation of arc-resistant-type construction, tested in accordance with IEEE C37.20.7, doors closed only	0	N	N
Switch operation, doors closed	2	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	4	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	N	N
Outdoor disconnect switch operation (hookstick operated)	3	Y	N
Outdoor disconnect switch operation (gang-operated, from grade)	2	Y	N
Insulated cable examination, in manhole or other confined space	4	Y	N
Insulated cable examination, in open area	2	Y	N

Y =Yes (required). N: No (not required).

**NOTES:**

- (1) Rubber insulating gloves are gloves rated for the maximum line-to-line voltage upon which work will be done.
- (2) Insulated and insulating hand tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done, and are manufactured and tested in accordance with ASTM F 1505, *Standard Specification for Insulated and Insulating Hand Tools*.
- (3) The use of "N" does not indicate that rubber insulating gloves and insulated and insulating hand tools are not required in all cases. Rubber insulating gloves and insulated and insulating hand tools may be required by 130.4, 130.8 (C) (7), and 130.8(0).
- (4) For equipment protected by upstream current limiting fuses with arcing fault current in their current limiting range (1/2 cycle fault clearing time or less), the hazard/risk category required may be reduced by one number.
- (5) For power systems up to 600 V the arc flash boundary was determined by using the following information: When 0.03 second trip time was used, that indicated MCC or panelboard equipment protected by a molded-case circuit breaker. Working distance used was 18 in. (455 mm). Arc gap used was 32 mm for switchgear and 25 mm for MCC and protective device type 0 for all. When 0.33 or 0.5 second trip time was used, that indicated a LVPCB (drawout circuit breaker) in switchgear. Working distance was 24 in. (610 mm). Arc gap used was 32 mm and protective device type 0 for all. All numbers were rounded up or down depending on closest multiple of 5.
- (6) For power systems from 1 kV to 38 kV the arc flash boundary was determined by using the following information: No maximum values were given in the 2009 edition of NFPA 70E for short-circuit current or operating time. Two sets of equations were performed: 35 kA AIC and 0.2 second operating time and 26 kA AIC and 0.2 second operating time. 0.2 seconds was used by adding the typical maximum total clearing time of the circuit breaker to an estimated value for relay operation. This coincides with the IEEE 1584 values of 0.18 second operating time and 0.08 tripping time rounded off. A short-circuit current of 35 kA was used as a maximum (HRC-4 @ ~ 40 cal/cm<sup>2</sup>) and 26 kA was used to compare the effects of lowering the short circuit current (HRC-4 @ ~ 30 cal/cm<sup>2</sup>). Working distance used was 36 in. (909 mm), arc gap was 6 in. (455 mm), and protective device type 0 for all.

**FORM 20.16.3 – TABLE 2: FLASH HAZARD CLASSIFICATION (Page 2)**  
**NFPA 70E Table 130.7(C)(15)(b) Hazard/Risk Category Classifications and Use of Rubber Insulating Gloves and Insulated and Insulating Hand Tools-Direct Current Equipment**

Tasks Performed on Energized Equipment	Hazard/Risk Category (Note 1)	Rubber Insulating Gloves (Note 2)	Insulated & Insulating Hand Tools
<b>Storage batteries, direct-current switchboards and other direct-current supply sources &gt;50 V &lt;250 V</b> - Parameters: Voltage: 250 V Maximum arc duration and working distance: 2 sec @ 18 in.			
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 1$ kA and $< 4$ kA Potential arc flash boundary using above parameters at 4 kA: 36 in.	1	Y	Y
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 4$ kA and $< 7$ kA Potential arc flash boundary using above parameters at 7 kA: 48 in.	2	Y	Y
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 7$ kA and $< 15$ kA Potential arc flash boundary using above parameters at 15 kA: 72 in.	3	Y	Y
<b>Storage batteries, direct-current switchboards and other direct-current supply sources <math>\geq 250</math> V <math>\leq 600</math> V</b> - Parameters: Voltage: 600 V Maximum arc duration and working distance: 2 sec @ 18 in.			
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 1$ kA and $< 1.5$ kA Potential arc flash boundary using above parameters at 1.5 kA: 36 in.	1	Y	Y
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 1.5$ kA and $< 3$ kA Potential arc flash boundary using above parameters at 3 kA: 48 in.	2	Y	Y
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 3$ kA and $< 7$ kA Potential arc flash boundary using above parameters at 7 kA: 72 in.	3	Y	Y
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 7$ kA and $< 10$ kA Potential arc flash boundary using above parameters at 10 kA: 96 in.	4	Y	Y

Y: Yes (required).

**NOTES:**

- (1) If acid exposure is possible, the clothing is required to be protected from acid and arc rated to the hazard according to ASTM F 1891 or equivalent and evaluated by ASTM F 1296 for acid protection.
- (2) In clean rooms or other electrical installations, that do not permit leather protectors for arc flash exposure, ASTM F 496 is required to be followed for use of rubber insulating gloves without leather protectors, and the rubber gloves chosen are required to be arc rated to the potential exposure level of the hazard/risk category.

**FORM 20.16.4 TABLE 3: PPE CROSS REFERENCE**  
**NFPA 70E Table 130.7(C)(16) Protective Clothing and Personal Protective Equipment (PPE)**

Hazard/Risk Category	Protective Clothing and Personal Protective Equipment (PPE)
0	<p><b>Protective Clothing, Nonmelting or Untreated Natural Fiber</b> (i.e., untreated cotton, wool, rayon, or silk, or blends of these materials) with a Fabric Weight of at Least 4.5 oz/yd<sup>2</sup>                      Shirt (long sleeve)                      Pants (long)</p> <p><b>Protective Equipment</b>                      Safety glasses or safety goggles (SR); Hearing protection (ear canal inserts); Heavy duty leather gloves (AN) (See Note 1.)</p>
1	<p><b>Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm<sup>2</sup></b> (See Note 3.)                      Arc-rated long-sleeve shirt and pants or arc-rated coverall                      Arc-rated face shield (see Note 2) or arc flash suit hood                      Arc-rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p><b>Protective Equipment</b>                      Hard hat; Safety glasses or safety goggles (SR); Hearing protection (ear canal inserts); Heavy duty leather gloves (See Note 1.); Leather work shoes (AN)</p>
2	<p><b>Arc-Rated Clothing, Minimum Arc Rating of 8 cal/cm<sup>2</sup></b> (See Note 3.)                      Arc-rated long-sleeve shirt and pants or arc-rated coverall                      Arc-rated flash suit hood or arc-rated face shield (See Note 2) and arc-rated balaclava                      Arc-rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p><b>Protective Equipment</b>                      Hard hat; Safety glasses or safety goggles (SR); Hearing protection (ear canal inserts); Heavy duty leather gloves (See Note 1.); Leather work shoes</p>
3	<p><b>Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal/cm<sup>2</sup></b> (See Note 3.)                      Arc-rated long-sleeve shirt (AR)                      Arc-rated pants (AR)                      Arc-rated coverall (AR)                      Arc-rated arc flash suit jacket (AR)                      Arc-rated arc flash suit pants (AR)                      Arc-rated arc flash suit hood                      Arc-rated gloves (See Note 1.)                      Arc-rated jacket, parka, rain wear, or hard hat liner (AN)</p> <p><b>Protective Equipment</b>                      Hard hat; Safety glasses or safety goggles (SR); Hearing protection (ear canal inserts); Leather work shoes</p>
4	<p><b>Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm<sup>2</sup></b> (See Note 3.)                      Arc-rated long-sleeve shirt (AR)                      Arc-rated pants (AR)                      Arc-rated coverall (AR)                      Arc-rated arc flash suit jacket (AR)                      Arc-rated arc flash suit pants (AR)                      Arc-rated arc flash suit hood                      Arc-rated gloves (See Note 1.)                      Arc-rated jacket, parka, rain wear, or hard hat liner (AN)</p> <p><b>Protective Equipment</b>                      Hard hat; Safety glasses or safety goggles (SR); Hearing protection (ear canal inserts); Leather work shoes</p>

AN: as needed (optional). AR: as required. SR: selection required.

Notes:

- (1) If rubber insulating gloves with leather protectors are required by Table 130.7(C)(9), additional leather or arc-rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.
- (2) Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck, or, alternatively, an arc-rated arc flash suit hood is required to be worn.
- (3) Arc rating is defined in Article 100 and can be either the arc thermal performance value (ATPV) or energy of break open threshold (E<sub>BT</sub>). ATPV is defined in ASTM F 1959, *Standard Test Method for Determining the Arc Thermal Performance Value of Materials for Clothing*, as the incident energy on a material, or a multilayer system of materials, that results in a 50 percent probability that sufficient heat transfer through the tested specimen is predicted to cause the onset of a second-degree skin burn injury based on the Stoll curve, in cal/cm<sup>2</sup> • E<sub>BT</sub> is defined in ASTM F 1959 as the incident energy on a material or material system that results in a 50 percent probability of breakopen. Arc rating is reported as either ATPV or E<sub>BT</sub>, whichever is the lower value.

## FORM 20.16.5 ENERGIZED ELECTRICAL WORK PERMIT

Facility:	From: (Date)	(Time)	am / pm
Process/Area:	To: (Date)	(Time)	am / pm
Description of Circuit/Equipment:			
Description of Work to be Done:			
Justification of why the circuit/equipment cannot be de-energized or work deferred until next scheduled outage:			
Detailed job description procedure to be used in performing the above detailed work:			
Description of Safe Work Practices to be employed:			
Results of Shock Analysis/Approach Boundaries: See RC184 <i>Electrical Safety</i> Appendix D - NFPA 70E, 2012 Edition, Table 130.4(C)(a) <i>Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Alternating-Current Systems</i> Voltage Level Phase to Phase: _____ Limited approach boundary: _____ ft _____ in Restricted approach boundary: _____ ft _____ in <input type="checkbox"/> Work will be conducted within this boundary. Prohibited approach boundary: _____ ft _____ in <input type="checkbox"/> Work will be conducted within this boundary.			
Results of Flash Hazard Analysis: See RC184 <i>Electrical Safety</i> Appendix F - NFPA 70E, 2012 Edition, Table 130.7(C)(15)(a) or Appendix G - NFPA 70E, 2012 Edition, Table 130.7(C)(15)(b) <i>Hazard/Risk Category Classifications and Use of Rubber Insulating Gloves and Insulated and Insulating Hand Tools</i> Hazard/risk category: <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 Rubber Insulating Gloves Required: <input type="checkbox"/> YES <input type="checkbox"/> NO Insulated and Insulating Hand Tools Required: <input type="checkbox"/> YES <input type="checkbox"/> NO			
Personal Protective Equipment Required to Safely Perform Work: See RC184 <i>Electrical Safety</i> Appendix H - NFPA 70E, 2012 Edition, Table 130.7(C)(16) <i>Protective Clothing and Personal Protective Equipment (PPE)</i>			
Means employed to restrict the access of unqualified persons from the work area: <input type="checkbox"/> Signs/tags <input type="checkbox"/> Barricades <input type="checkbox"/> Attendants			
Evidence of the completion of a job briefing, including discussion of any job-related hazards: <input type="checkbox"/> Yes, see attached <input type="checkbox"/> No			
Do you agree the above work can be done safely: <input type="checkbox"/> YES <input type="checkbox"/> NO			
Qualified Person's Signature (required)	Print Name	Date	
<b>Approval Requirements:</b> (Verbal authorization shall be documented on the permit by the qualified person requesting approval) <input type="checkbox"/> Signal circuits that are less than 5 amperes, 110 volts - Requires I&C Supervisor <u>or</u> Electrical Engineer/Programmer Approval. <input type="checkbox"/> Energized electrical conductors and circuit parts that are less than or equal to 600 volts - Requires Electrical Engineer/Programmer <u>and</u> Facility Manager/Supervisor Approval. <input type="checkbox"/> Electrical conductors and circuit parts that is greater than 600 volts AC or DC - Requires Electrical Engineer/Programmer <u>and</u> Facility Manager/Supervisor, <u>and</u> the Vice President of Operations Approval.			
Instrumentation & Controls Supervisor's Signature	Print Name	Date	
Electrical Engineer/Programmer's Signature	Print Name	Date	
Facility Manager/Supervisor or Equivalent's Signature	Print Name	Date	
Vice President of Operations' Signature	Print Name	Date	



**FORM 20.16.6 JOB PLANNING CHECKLIST**

<p align="center"><b>Identify</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The hazards</li> <li><input type="checkbox"/> The voltage levels involved</li> <li><input type="checkbox"/> Skills required</li> <li><input type="checkbox"/> Any "foreign" (secondary source) voltage source</li> <li><input type="checkbox"/> Any forms of stored energy and, after discharge, can it regain energy</li> <li><input type="checkbox"/> Any unusual work conditions (explosive gas, flammable chemicals, water present, etc.)</li> <li><input type="checkbox"/> How many people are needed to do the job</li> <li><input type="checkbox"/> The shock protection boundaries</li> <li><input type="checkbox"/> The available incident energy</li> <li><input type="checkbox"/> Potential for arc flash (Conduct a flash-hazard analysis.)</li> <li><input type="checkbox"/> The flash protection boundaries</li> </ul>	<p align="center"><b>Know</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What the job is</li> <li><input type="checkbox"/> Who else needs to know—communicate!</li> <li><input type="checkbox"/> Who is in charge</li> </ul> <hr/> <p align="center"><b>Think</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> About the unexpected event...What if?</li> <li><input type="checkbox"/> Lock—Tag—Test—Try</li> <li><input type="checkbox"/> Test for voltage—FIRST</li> <li><input type="checkbox"/> Use the right tools, equipment, &amp; PPE</li> <li><input type="checkbox"/> Install and remove grounds</li> <li><input type="checkbox"/> Install barriers and barricades</li> <li><input type="checkbox"/> What else...?</li> </ul>
<p align="center"><b>Ask</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Can the equipment be De-energized?</li> <li><input type="checkbox"/> Are backfeeds of the circuits to be worked on possible?</li> <li><input type="checkbox"/> Is there a "Two Person" or "Safety Watch" requirement?</li> </ul>	<p align="center"><b>Prepare for an emergency</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is the standby person CPR trained?</li> <li><input type="checkbox"/> Is the required emergency equipment available? Where is it?</li> <li><input type="checkbox"/> Where is the nearest telephone?</li> <li><input type="checkbox"/> Where is the fire alarm?</li> <li><input type="checkbox"/> Is confined space rescue available?</li> <li><input type="checkbox"/> What is the exact work location?</li> <li><input type="checkbox"/> How is the equipment shut off in an emergency?</li> <li><input type="checkbox"/> Are emergency telephone numbers known?</li> <li><input type="checkbox"/> Where is the fire extinguisher?</li> <li><input type="checkbox"/> Are radio communications available?</li> </ul>
<p align="center"><b>Check</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Job plans</li> <li><input type="checkbox"/> Single-line diagrams and vendor prints</li> <li><input type="checkbox"/> Status board</li> <li><input type="checkbox"/> That information on plant/vendor resources is up to date</li> <li><input type="checkbox"/> Safety procedures</li> <li><input type="checkbox"/> Vendor information</li> <li><input type="checkbox"/> That individuals are familiar with the facility</li> </ul>	
<p>Sign: _____ Date: _____</p>	<p>Sign: _____ Date: _____</p>
<p>Sign: _____ Date: _____</p>	<p>Sign: _____ Date: _____</p>

## FORM 20.16.7 JOB BRIEFING SHEET

Date Start:		Extended Duration <input type="checkbox"/>		One-time Use Only <input type="checkbox"/>	
Division:		Building:	Room/Area:		
Job Supervisor/Qualified Worker:			Job Supervisor/ Contractor:		
Description of work to be done:					
Description of Circuit/Equipment:					
Justification for why equipment cannot be de-energized:					
<b>Results of Shock Hazard Analysis (NFPA-70E 2004 130.2)</b>					
Maximum Voltage:		Glove Voltage Rating:		(Inspect gloves before use, check certification date)	
Limited Approach Boundary: (ft.)		Restricted Approach Boundary: (ft.)		Prohibited Approach Boundary: (ft.)	
<b>Results of Arc Flash Hazard Analysis (NFPA-70E 2004 130.3)</b>					
Risk Category:			Flash Protection Boundary: (ft.)		
<input type="checkbox"/> All Natural Fiber Outerwear					
<input type="checkbox"/> Fire Retardant Clothing		Cal/cm <sup>2</sup>		ATPV Rating:	
<input type="checkbox"/> Required Additional PPE:					
<b>Safety Checklist (Verify that proper controls are in place):</b>					
<input type="checkbox"/> Workers must be trained, qualified, and have full knowledge of equipment.					
<input type="checkbox"/> Safe work practices to be followed Practices Documented.					
<input type="checkbox"/> Safety watch is required. This person must be trained, qualified, be able to cut off all power sources, and have immediate access to a telephone or radio to call 911 in case of emergency.					
<input type="checkbox"/> Insulated tools and equipment required.					
<input type="checkbox"/> Remove all jewelry and metal apparel.					
<input type="checkbox"/> Use barricades and warning signs.					
<input type="checkbox"/> Documented job briefing including discussion of any job-specific hazards (e.g., NFPA-70E 2004 Annex I).					
<input type="checkbox"/> See attachment for added information, special requirements, procedures, or written work plans.					
<b>APPROVALS</b>					
Hazard analysis performed by:				Date:	
Maintenance Supervisor:				Date:	
Safety Coordinator:				Date:	
Contractor/Vendor :				Date:	
President/General Manager:				Date:	
<b>AUTHORIZED WORKERS that understand and agree to the above:</b>					
Printed or typed name(s):	Signature(s) & Date(s):		Printed or typed name(s):	Signature(s) & Date(s):	

**FORM 20.16.8 ELECTRICAL SAFETY TRAINING ROSTER SHEET**

Date of Training: \_\_\_/\_\_\_/\_\_\_

Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_

The following employees have received "QUALIFIED / NON-QUALIFIED" person training on electrical safe work procedures:

Employee Name (Please Print)	Employee Signature
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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_____	_____

## DRUG AND ALCOHOL POLICY

### PREFACE:

The problems that drug and alcohol abuse have inflicted upon our society are numerous. Fifty four percent (54%) of all highway fatalities are alcohol related. More than 100,000 Americans die each year from alcohol consumption. Thousands of American workers are either seriously injured or killed each year on the job due to alcohol and substance abuse. The competitive edge that the United States once held over other countries because of the high productivity of its workforce has disappeared, causing the loss of thousands of jobs. There's no denying the fact that alcohol and substance abuse on the job has caused a decline in the overall well being of American business and the American family.

It is widely recognized that alcohol/substance abuse is a treatable illness. Persons afflicted by alcohol/substance abuse illness are legally considered disabled and are protected from discrimination under the Americans with Disabilities Act. Nothing in this policy is intended to be in conflict with the Americans with Disabilities Act. Neither is it the intent of Amber Mechanical Contractors, Inc. to discriminate against any person with a disability that is qualified and capable of performing the job duty for which he/she is applying or was hired for, even if reasonable accommodation is necessary. However, because the safety and well being of our employees is of utmost importance, reasonable accommodation does not mean that alcohol and/or drug use will ever be tolerated on the job.

### POLICY STATEMENT

The Directors of Amber Mechanical Contractors Inc. recognize the problems created by drug and alcohol abuse and the need to develop prevention and treatment programs. Amber Mechanical Contractors Inc. has a commitment to protect people and property, and to provide a safe working environment. The purpose of this policy is to establish and maintain a drug free, alcohol free, safe, healthy work environment for all of its employees.

### DEFINITIONS

**Company Premises** - The term "Company Premises" as used in this policy includes all property, facilities, land, buildings, structures, automobiles, trucks and other vehicles owned, leased or used by the company. This includes private automobiles used by employees while on company business, Construction Job sites, Service Call and Service Contract sites, and any and all work sites or locations for which Amber Mechanical Contractors Inc. has responsibility.

**Prohibited Items & Substances** - Prohibited substances include all illegal drugs (including controlled substances); look alike drugs; designer drugs and those prescribed medications which have not been reported to a supervisor, or medications which have not been prescribed for current use by an authorized medical practitioner; alcoholic beverages; and drug paraphernalia in the possession of, or being used by an employee on the job.

**Employee** - Individuals, who perform work for Amber Mechanical Contractors Inc. including, but not limited to, management, supervision, engineering, craft workers and clerical personnel.

**Accident** - Any event resulting in injury to a person or property to which an employee contributed as a direct or indirect cause.

**Incident** - An event which has all the attributes of an accident, except that no harm was caused to person or property.

**Reasonable Cause** - Reasonable cause shall be defined as excessive tardiness, excessive absenteeism, or erratic behavior such as noticeable imbalance, incoherence, and disorientation.

## CONFIDENTIALITY

- a. Amber Mechanical Contractors Inc. has only the best interests of its employees in mind and, therefore encourages any employee with a substance abuse problem to come forward and voluntarily accept our assistance in dealing with the illness. An Employee Assistance Program (EAP) will provide guidance and direction for you during your recovery period. If you volunteer for help, the company will make every reasonable effort to return you to work upon your recovery. The company will also act to assure that your illness is handled in a confidential manner.
- b. All actions taken under this policy will be confidential and disclosed only to those with a "need to know".
- c. When a test is required, the specimen will be identified by code number, not by name, to insure the confidentiality of the donor. Each specimen container will be properly labeled and made tamper proof. The donor must witness this procedure.
- d. Unless an initial positive result is confirmed positive, it shall be deemed negative and reported by the laboratory as such.
- e. The handling and transportation of each specimen will be properly documented through the strict chain of custody procedures.

### **Part-time**

An employee who has satisfactorily completed the probationary period but whose normal workweek is less than thirty (30) hours per week is considered a part-time employee. Such employees receive no company benefits.

### **Temporary**

An employee who is hired for a specific purpose or a predetermined period of time (not to exceed six (6) months) is considered a temporary employee. Such employees do not receive company benefits.

### ***Equal Employment and Affirmative Action Policy***

The company will observe all state laws regarding equal opportunity and affirmative action in employment.

### ***Employee Bonding***

The company reserves the right to require bonding of all employees who occupy positions that require the handling of company funds or other valuables. The company will bear the cost of such bonding.

Employees who apply for positions requiring bonding must be eligible for standard coverage by an independent bonding company.

### ***Polygraph Examinations***

The company reserves the right to require all new employees to take a polygraph (lie detector test).

Employees may also be required to take the test when deemed appropriate by top management. Under these circumstances, management will provide a written request detailing the reasons for the polygraph.

### ***Drug Testing***

The company reserves the right to require all new and existing employees to take a drug test per our drug/alcohol policy. See Appendix "J".

While the company does not seek to interfere in the personal lives of employees, managers and supervisors will extend concern, confidentiality, and all available help to any employee who requests assistance with a personal problem. The door is always open.

### ***Sexual Harassment***

The company maintains a strict policy prohibiting unlawful harassment of employees, including implied or expressed forms of sexual harassment. Such harassment comprises any verbal, written, visual, or physical acts that are offensive, unwelcome, or capable of reasonable interpretation as objectionable, including acts or statements regarding pregnancy or marital status. In short, any conduct that interferes with an individual's work performance or creates an intimidating, hostile, or offensive working environment is strictly forbidden.

Any employees who believe they have been harassed by a co-worker, supervisor, or agent of the company should promptly report the facts of the incident and the names of the individuals involved to their supervisor or to the (Personnel Manager). The (Personnel Manager) will investigate all claims of sexual harassment and initiate appropriate corrective action.

If it is determined that sexual harassment has occurred, disciplinary action against the offending employee will follow. The severity and frequency of the offense, or other conditions surrounding the incident, will determine the severity of the discipline up to and including dismissal.

See Appendix "E" Sexual Harassment Policy for further information.

### ***Employee Concerns***

Wherever possible, an employee's concern should be handled directly by the immediate supervisor. Employees who feel that they have a legitimate complaint that cannot be resolved through informal discussions with the supervisor may seek recourse through the following:

#### **Step 1)**

The employee will discuss the matter with the immediate supervisor in an attempt to agree on a satisfactory settlement.

#### **Step 2)**

If a satisfactory settlement is not reached in Step 1 within three (3) working days after the initial discussion, the employee may put the grievance in writing for submission to the supervisor's manager within seven (7) days after receiving the supervisor's response in Step 1.

## DRUG AND ALCOHOL POLICY

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**Company Premises** - The term "Company Premises" as used in this policy includes all property, facilities, land, buildings, structures, automobiles, trucks and other vehicles owned, leased or used by the company. This includes private automobiles used by employees while on company business, Construction Job sites, Service Call and Service Contract sites, and any and all work sites or locations for which Amber Mechanical Contractors Inc. has responsibility.



**Prohibited Items & Substances** - Prohibited substances include all illegal drugs (including controlled substances); look alike drugs; designer drugs and those prescribed medications which have not been reported to a supervisor, or medications which have not been prescribed for current use by an authorized medical practitioner; alcoholic beverages; and drug paraphernalia in the possession of, or being used by an employee on the job.

**Employee** - Individuals, who perform work for Amber Mechanical Contractors Inc. including, but not limited to, management, supervision, engineering, craft workers and clerical personnel.

**Accident** - Any event resulting in injury to a person or property to which an employee contributed as a direct or indirect cause.

**Incident** - An event which has all the attributes of an accident, except that no harm was caused to person or property.

**Reasonable Cause** - Reasonable cause shall be defined as excessive tardiness, excessive absenteeism, or erratic behavior such as noticeable imbalance, incoherence, and disorientation.

## CONFIDENTIALITY

- a. Amber Mechanical Contractors Inc. has only the best interests of its employees in mind and, therefore encourages any employee with a substance abuse problem to come forward and voluntarily accept our assistance in dealing with the illness. An Employee Assistance Program (EAP) will provide guidance and direction for you during your recovery period. If you volunteer for help, the company will make every reasonable effort to return you to work upon your recovery. The company will also act to assure that your illness is handled in a confidential manner.
- b. All actions taken under this policy will be confidential and disclosed only to those with a "need to know".
- c. When a test is required, the specimen will be identified by code number, not by name, to insure the confidentiality of the donor. Each specimen container will be properly labeled and made tamper proof. The donor must witness this procedure.
- d. Unless an initial positive result is confirmed positive, it shall be deemed negative and reported by the laboratory as such.
- e. The handling and transportation of each specimen will be properly documented through the strict chain of custody procedures.

### **Part-time**

An employee who has satisfactorily completed the probationary period but whose normal workweek is less than thirty (30) hours per week is considered a part-time employee. Such employees receive no company benefits.

### **Temporary**

An employee who is hired for a specific purpose or a predetermined period of time (not to exceed six (6) months) is considered a temporary employee. Such employees do not receive company benefits.

### ***Equal Employment and Affirmative Action Policy***

The company will observe all state laws regarding equal opportunity and affirmative action in employment.

### ***Employee Bonding***

The company reserves the right to require bonding of all employees who occupy positions that require the handling of company funds or other valuables. The company will bear the cost of such bonding.

Employees who apply for positions requiring bonding must be eligible for standard coverage by an independent bonding company.

### ***Polygraph Examinations***

The company reserves the right to require all new employees to take a polygraph (lie detector test).

Employees may also be required to take the test when deemed appropriate by top management. Under these circumstances, management will provide a written request detailing the reasons for the polygraph.

### ***Drug Testing***

The company reserves the right to require all new and existing employees to take a drug test per our drug/alcohol policy. See Appendix "J".

While the company does not seek to interfere in the personal lives of employees, managers and supervisors will extend concern, confidentiality, and all available help to any employee who requests assistance with a personal problem. The door is always open.

### ***Sexual Harassment***

The company maintains a strict policy prohibiting unlawful harassment of employees, including implied or expressed forms of sexual harassment. Such harassment comprises any verbal, written, visual, or physical acts that are offensive, unwelcome, or capable of reasonable interpretation as objectionable, including acts or statements regarding pregnancy or marital status. In short, any conduct that interferes with an individual's work performance or creates an intimidating, hostile, or offensive working environment is strictly forbidden.

Any employees who believe they have been harassed by a co-worker, supervisor, or agent of the company should promptly report the facts of the incident and the names of the individuals involved to their supervisor or to the (Personnel Manager). The (Personnel Manager) will investigate all claims of sexual harassment and initiate appropriate corrective action.

If it is determined that sexual harassment has occurred, disciplinary action against the offending employee will follow. The severity and frequency of the offense, or other conditions surrounding the incident, will determine the severity of the discipline up to and including dismissal.

See Appendix "E" Sexual Harassment Policy for further information.

### ***Employee Concerns***

Wherever possible, an employee's concern should be handled directly by the immediate supervisor. Employees who feel that they have a legitimate complaint that cannot be resolved through informal discussions with the supervisor may seek recourse through the following:

#### **Step 1)**

The employee will discuss the matter with the immediate supervisor in an attempt to agree on a satisfactory settlement.

#### **Step 2)**

If a satisfactory settlement is not reached in Step 1 within three (3) working days after the initial discussion, the employee may put the grievance in writing for submission to the supervisor's manager within seven (7) days after receiving the supervisor's response in Step 1.