

# SAFETY & QUALITY CONTROL PROGRAMS INTEGRATION FOR FEDERAL CONSTRUCTION PROJECTS

## MEGA VIERNES CIVIL 2023

MR. CARLOS A. RODRIGUEZ, PE  
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# *DÍA MUNDIAL DE SEGURIDAD Y SALUD EN EL TRABAJO*





# Profiles

Carlos A. Rodriguez, PE

## **PRESIDENT OF DIVISION 16, LLC**

- Bachelor of Science in Mechanical Engineering Tulane University 1994.
- Masters in Business Administration Tulane University 1997
- Over 28 years of Experience in Design, Pre-Construction and Estimating, Project Management and Executive Management of Construction Projects
- Current President of the Associated General Contractors Association – PR Chapter PE,
- CIAPR Member since 2001.



José N. Falcón, MBA

## **PRESIDENT OF SAFETY BUSINESS SOLUTIONS**

- Bachelors in Business Administration Universidad del Turabo 2012.
- Masters in Project Management Universidad del Turabo Over
- 10 years of Experience in Occupational Safety and Health in the Construction and General Industries.





# INTRODUCTION

- The presentation consists of discussing the general approach that contractors must follow to evaluate, outline, and develop the Safety & Health program that includes the specific project Accident Prevention Plan (**APP**) and the specific project Contractor Quality Control program.
- The process is an integrated approach that uses the List of Definable Features of Work (**DFOW's**) as the base list of tasks to develop and run the Accident Prevention Plan and the Contractor Quality Control Plan (**C-QC Plan**).





# PLANNING

During Estimating and Pre-Construction Phase:

- Identifying the requirements
- Allocating \$\$\$ Cost
- Developing the C-QC Plan and the APP



Key Safety & Health and  
Quality Control programs  
integration elements



## IMPLEMENTATION DURING THE CONSTRUCTION PHASE

# OCCUPATIONAL SAFETY & HEALTH



**Initial Orientation to outline responsibilities.**



**Orientation about the process to be followed during the course of the project.**



**PPE Requirements**



**Toolbox Meetings**



**Inspections and Reports**



# IMPLEMENTATION DURING THE CONSTRUCTION PHASE

## CONTRACTOR QUALITY CONTROL PLAN

AHA's must be submitted and approved  
before any task can begin.



AHA's are discussed with the Superintendent, and all  
subcontractors during the QC Preparatory Meetings



# PLANNING

## Understanding the project Safety and Health Requirements

- Safety and Health specific requirements are usually outlined in the project specifications in the General Requirement sections.
- Contractors shall read the requirements and from them develop an estimate Tab withing their General Requirements estimate to allocate \$\$\$ resources to cover the Safety and Health requirements Cost.



Key Safety & Health programs integration elements





# PLANNING

- Federal Agencies Projects Spec Section 01 35 26
  - *Example: USACE Spec Section 01 35 26 or EM-385-1*
- PR Agencies Projects (with federal funds)
  - *Example: PRASA Spec Section 007319*
  - *Health and Safety Requirements.*



Key Safety & Health programs integration elements





# Understanding the project Contractor Quality Control Requirements



Contractor Quality Control specific requirements are usually outlined in the project specifications in the General Requirement sections.



Every federal agency / project establishes similar but customized requirements based on project scope and facility operational characteristics.



Even if a project does not provide a Spec Section to cover Contractor Quality Control it is recommended as a best practice to develop an internal process within the budgetary parameters of each project.



Federal Agencies Projects Spec Section 01 45 04





# Understanding the project Contractor Quality Control Requirements



Contractors shall read the requirements and from them develop an estimate Tab within their General Requirements estimate to allocate \$\$\$ resources to cover the Contractor QC program requirements cost.



Other potential requirements:

Spec 01 45 35 – Special Inspections

Special Inspections are a requirement that requires a lot of qualified professionals, a specific Special Inspections Project Manual. It costs a lot of money.





# Understanding the project Contractor Quality Control Requirements



Developing the Accident Prevention Plan (APP) and the Contractor Quality Control Plan (C-QCP) must be done in a coordinated synchronized effort because they are related, and the execution of each plan affects each other.

Performing installations following the S&H parameters results in compliance with the QC Plan.





# IMPLEMENTATION

## *Occ. Safety & Health*

The Construction Scope of Work determines what the Definable Features of Work (**DFOW**) can be.

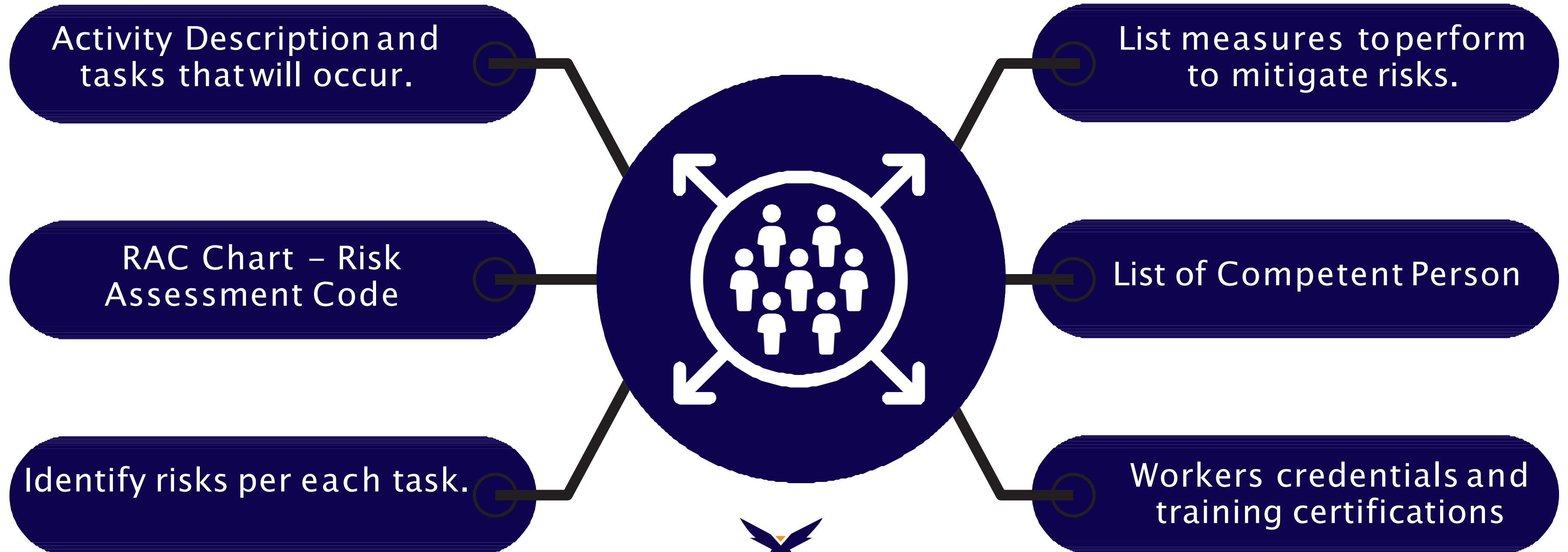
- List of installation tasks is extracted from the C-QC Plan (if the contract includes a C-QC Spec) or from the project Scope of Work (List can be generated by the contractor)





# Safety requirements Federal Projects (EM-385-1 or 29CFR1926)

AHA's – Activity Hazard Analysis (one per each DFoW minimum)





# AHA EXAMPLE



**SAFETY**  
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# PRASA Spec Section 007319

## Health and Safety Requirements



Safety requirements to comply with OSHA under Law 16.

From the Construction Scope of Work the Contractor shall generate the Installation Tasks List. For each Task a Job Hazard Analysis is developed



INFORMACIÓN GENERAL DEL PROYECTO		
NOMBRE DE PROYECTO:	LOCALIZACION:	PAGINA 1 DE 24
CONTRATISTA/SUBCONTRATISTA:	PREPARADO POR:	REVISADO POR:
FECHA PROGRAMADA DE COMIENZO:	SUPERVISOR:	INGENIERO DE PROYECTO:
DESCRIPCION BREVE DE LA TAREA:		
<b>COMENTARIOS GENERALES:</b> 1) Los trabajadores deberán firmar el JSA confirmando que revisaron y que cumplirán con el contenido. 2) Una copia del JSA se mantendrá disponible en el área de trabajo para su revisión. 3) Este JSA solo cubre las actividades aquí descritas. Cualquier otra actividad deberá modificar el JSA 4) Todo PPE y herramienta deberá estar en buenas condiciones e inspeccionada. 5) Todo Personal cumplirá con los controles establecidos por el CDC y el departamento de Salud de Puerto Rico contra el COVID-19		

Tareas	Peligros	Procedimientos (Controles)
1. Requisitos generales de seguridad todos los pasos.	1.1 Estrés por calor (Heat Stress)	1.1.A Beba un mínimo de ½ gal. de agua cada hora (se proporcionarán vasos individuales para beber agua).  1.1.B Diariamente, se llevará agua para el equipo de trabajo.  1.1.C Verificar varias veces durante la jornada de trabajo la temperatura en el exterior.  1.1.D Suministro de agua potable suficiente para el personal de trabajo.  1.1.E Avisar a los empleados que estén trabajando expuestos al sol hidratarse continuamente con agua, aunque no tengan sed cada 15 minutos.  1.1.F Alertar a los empleados sobre las condiciones de riesgos causadas por el calor.

# JHA EXAMPLE

		1.1.G Compañeros de labores se velarán unos a otros para estar atentos a signos y enfermedades relacionadas al calor.  1.1.H El supervisor programara descansos frecuentes a un lugar asignado fresco y con sombra.
	1.2 Agua portátil	1.2.A Todos los recipientes para beber estarán identificados y debidamente etiquetados. De igual manera deberán estar sellados y con fecha del día en el que se va a utilizar.  1.2.B Habrá agua potable y vasos desechables fácilmente disponibles y los vasos desechables se desecharán en un recipiente de basura adecuado.
	1.3. Área de trabajo	1.3.A Mantenga un área de trabajo limpia y bien organizada para prevenir accidentes.  1.3.B Mantenga los pasillos libres de escombros, extensiones, materiales, herramientas o cualquier otro objeto que pueda entorpecer la vía de tránsito.  1.3.C Se identificará los riesgos con las rotulaciones necesarias.
Tareas	Peligros	Procedimientos (Controles)
2- Coordinación y discusión de tareas, control de riesgos y discusión de documentación con todos los empleados. Incluir análisis de riesgos, y rótulos adecuados.	2.1. Falta de familiaridad con los procedimientos de emergencia <ul style="list-style-type: none"> <li>Desconocimiento de los peligros específicos del sitio</li> <li>Desconocimiento de áreas restringidas</li> <li>Desconocimiento de otras operaciones o actividades peligrosas que se llevan a cabo en el sitio.</li> <li>Coordinación deficiente y/o objetivos mal entendidos.</li> </ul>	2.1.A. Se discutirá el JHA con los empleados involucrados con la tarea.  2.1.B Durante la discusión el supervisor les explicara a todos los empleados lo requerimientos de equipo protección personal básico como: <ul style="list-style-type: none"> <li>Guantes anti-cortaduras.</li> <li>Botas de seguridad con punta de acero (más arriba del tobillo).</li> <li>Capacete. ANSI Z-89 4- Gafas ANSI Z-87.</li> <li>Chaleco reflectivo ANSI Nivel 2.</li> <li>Sistema de protección contra caídas (Harness).</li> </ul> 2.1.C Escuche y asegúrese de obtener información y procedimientos de emergencia y demolición del sitio.  2.1.D Escuche y asegúrese de obtener información sobre todos y cada uno de los peligros del lugar de trabajo.  2.1.E Escuche y asegúrese de obtener información sobre



# IMPLEMENTATION

## Quality Control Requirements

- List of Definable Features of Work is generated by the Contractor utilizing the C-QC Plan
- All Specification Sections – Division 2 to Division 33 shall be covered by the list of DFOW's.



Key Quality Control programs integration elements





# Example 1- DFOW's List Simple Project

INTERIOR REPAIRS				
WORK TASK #	TYPE OF WORK	CONTRACTOR (Crew)	SPECIFICATION SECTION	COMMENTS
IR-01	TEMPORARY CONTROLS / PHASING	D-16	PER S.O.W.	
IR-02	REMOVAL OF EXISTING TILE (BATHROOMS ONLY)	D-16	Section 02 41 00	
IR-03	FIT - MODIFY DOOR FRAME OPENINGS	D-16	Section 07 92 00	
IR-04	NEW TILE FLOORING	A. ECHEV	Section 09 30 10	
IR-05	NEW VINYL FLOORING	A. ECHEV	Section 09 65 00	
IR-06	PAINT DOORS (SANDING SEALER ONLY)	D-16	Section 09 90 00	
IR-07	INSTALL DOORS AND DOOR FRAMES	D-16	Section 08 14 00	
IR-08	INSTALL DOORS HARDWARE & OTHER MISC HARDWARE INSTALLATION	D-16	Section 08 71 00	

NOTE: WORK OUTLINED IN SPECS ONLY APPLIES AS IT RELATES TO NEGOTIATED SCOPE OF WORK



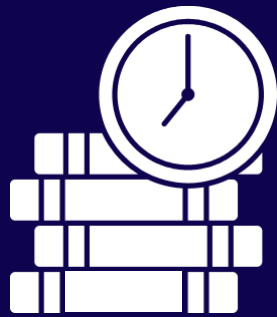
# Example 2 – DFOW's List Elaborated Project

LIST OF DFOW's for QC Plan			APPENDIX F
#		DFOW	DFOW Task
1		Permits	Permits Procurement
2		Admin Procurement	
			Work Restrictions
			Measurement of Payment
			Administrative Procedures
			Project Schedule
			Submittals Procedures
3		Design & Engineering	
			Prelim Geotechnical Report
			Pre-Design
			Design Assessments
			Design
4		Sustainability	Sustainability
5		Safety & Health	Safety & Health
6		Quality Control	RMS System
			Quality Control
			Special Inspections
7		Proj Stage & Phasing	
			Weather Data
			Proj Facilities
			Project Phasing
			Waste Management
			Traffic Control
8		Environmtl Measures	Environmtl Measures
9		Close-Out Procedurs	Close-Out Submittals
			Ops & Maintenance
			Warranties
10		Commissioning	Commissioning
11		Vibration Monitoring	Vibration Monitoring
12		Demolition	Demolition
ABOVE FROM SoW SPECS (Except Special Inspections)			
CONSTRUCTION ITEMS BELOW			
#		DFOW	DFOW Task
13	31 00 00	Earthwork	
			Earthwork

FDA San Juan Campus Reconstruction W912EP20C0026					
LIST OF DFOW's for QC Plan			APPENDIX F	UPDATED AFTER FINAL DESIGN	29-Jul-22
#		DFOW	DFOW Task	Resources	Spec Section
21		Concrete Work	Concrete Forms and Re-Bar;	D16-DDD JV	
			Concrete Accessories		03 30 00
			Concrete Reinforcing		03 30 00
			Concrete Cast in Place	D16-DDD JV	
			Concrete-Cast in Place		03 30 00
			Concrete Finishing		03 30 00
			Concrete Curing		03 30 00
			Joint Sealants		07 92 00
22		Building Work			
		Pre-Cast Bldg Struct			
			Pre-Cast Structural Concrete	Maruach Pre-Cast	03 45 33
			Pre-Cast Structure Anchors	Maruach Pre-Cast	03 45 33
			Pre-Cast Structure Welding	Maruach Pre-Cast	03 45 33
			Pre-Cast Bldg Structure Grouting	Maruach Pre-Cast	03 45 33
23		Masonry Work	Masonry Work	D16-DDD JV	04 20 00
			Masonry Plastering / Cement Stucco		09 14 23
24		Metals Work			
			Metals - Roof Equip Louvered Screen	PRG	05 50 13
			Metals - Ladders	D16-DDD JV	05 51 33
			Metals - Railings	D16-DDD JV	05 52 00
			Metals - Misc Metals	D16-DDD JV	05 50 13
25		Wood, Plastics, Composites			
			Wood Blocking		06 41 16.00 10
			Break Rm, Bath & Other Cabinets		06 41 16.00 10
26		Rldg Envelope Seal		D16-DDD JV	
			Pressure Testing for Air Tightness		07 05 23
			Building Air Barrier System		07 27 10.00 10
27		Cisterns and Roof Waterproofing			
			Cisterns-Fluid Applied Waterproofing	D16-DDD JV	07 14 00
			Thermoplastic Polyolefin Roofing		07 54 19
			Flashing and Sheet Metal		07 60 00
28		Fire Stop & Sealants		D16-DDD JV	
			Firestopping		07 84 00
			Joint Sealants-Building Work		07 92 00
29		Doors, Frames, Hardware		D16-DDD JV	
			Steel Doors and Frames		08 11 13
			Aluminum Doors and Frames		08 11 16
			Wood Doors		08 14 00
			Doors Hardware		08 71 00
30		Glazing	Glazing	PRG	08 81 00
31		Aluminum Windows			
			Alum Framed Entrances & Storefronts	PRG	08 41 13
			Aluminum Windows	PRG	08 51 13
32		Gypsum Board Systems			
			Gypsum Board System;		
			Gypsum Framing	D16-DDD JV	09 22 00
			Gypsum Plastering	D16-DDD JV	09 34 23

# Three Phases on Control (process followed for each DFoW)

## *Phase 1- Preparatory Meetings*



AHAs must be submitted and approved before any task can begin.



AHA's are discussed with the Superintendent, and all subcontractors during the QC Preparatory Meetings



All material Submittals must be approved before the Preparatory meeting.

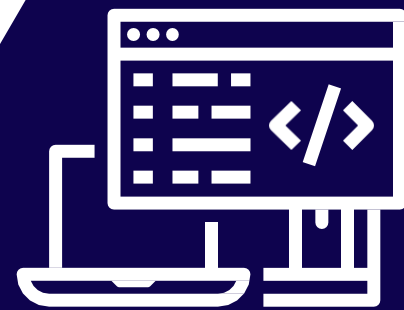


Any specific Work Plan that requires submission must be approved before the Preparatory meeting.



# Three Phases on Control (process followed for each DFoW)

## *Phase 1- Preparatory Meetings*



**Testing Requirements  
are discussed during  
the Preparatory  
Meetings.**



**Special Inspection  
Requirements are  
discussed during  
the Preparatory  
Meetings.**



**Installation can't  
begin until the  
Preparatory  
Meeting is held.**



**Materials are  
inspected on site  
before the  
Preparatory  
Meeting or before  
the installation  
task begins.**

# *Three Phases on Control (process followed for each DFOW)*

## *Phase 2 - Initial Meetings*

- Usually held during the 1st or 2nd day of Installation
- C-QC Manager verifies that all items related to Safety and Health and Quality Control are taking place.



Key Quality Control programs integration elements





# *Three Phases on Control (process followed for each DFOW)*

## *Phase 3- Follow Up Procedures*

- Testing Reports
- Daily Reports
- QC/QA Deficiency Logs



Key Quality Control programs integration elements

# Phase 3 – Follow-Up Procedures / Monitoring Process



Inspections



Audits



Close-Out  
Documents



# Example 1- Simple Project

## Example 2 Elaborated Project

### QUALITY CONTROL PLAN

DEPARTMENT OF THE ARMY  
MISSION AND INSTALLATION CONTRACTING COMMAND  
REPAIRS AT LAS COLINAS FAMILY HOUSING

CONTRACT: W912C319C0004  
FORT BUCHANAN, PUERTO RICO

November 18, 2019



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### QUALITY CONTROL PLAN

FDA SAN JUAN CAMPUS RECONSTRUCTION  
CONTRACT: W912EP20C0026  
SAN JUAN, PUERTO RICO



**GEO** | geotechnical engineering  
construction materials testing

# QUOTE

Do your work with  
pride, put safety  
in every stride.

SafetyCulture

## Slogans on National Safety Day

- National Safety Day has developed and sustained a voluntary movement of Safety, Health and Environment (SHE) on a national level.
- Workers are the strength of the company; it is because of their hard work that the work runs smoothly. Practice safety to keep this strength alive.
- Safety starts with doing the right thing, even when no one is watching. Please do it for yourself and your surroundings.





THANK YOU  
FOR YOUR ATTENTION



Your Contractor of Choice  
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relation of  
point of view  
**Safety** ['se  
possible d  
from risk