ST. PAUL PHA FIRE SPRINKLER RETROFITS & HI-RISE PLUMBING AND HEATING SYSTEM MODERNIZATIONS

• TIM ANGARAN – MAINTENANCE DIRECTOR

- TIM BRAUN CONSTRUCTION PROGRAM MANAGER
- JORDAN LASOTA CONSTRUCTION PROGRAM MANAGER
- MIKE SILVAN ASSISTANT MAINTENANCE DIRECTOR
- BRENT FELLER CONSTRUCTION PROGRAM MANAGER





TODAY'S PRESENTATION

- BACKGROUND ON ST PAUL PHA HI-RISES
- TIMELINE AND THE WORK OF OF ST PAUL PHA FIRE SPRINKLER RETROFITS

- FIRE ALARM AND SPRINKLER TESTING AND MAINTENANCE
- HI-RISE PLUMBING AND HEATING SYSTEM MODERNIZATIONS
- PROJECT CHALLENGES, LESSONS LEARNED AND OUTCOMES

ST PAUL PHA MISSION

THE PHA HELPS FAMILIES AND INDIVIDUALS WITH LOW INCOMES ACHIEVE GREATER STABILITY AND SELF RELIANCE BY PROVIDING SAFE, AFFORDABLE, QUALITY HOUSING, AND LINKS TO COMMUNITY SERVICES.



ST PAUL PHA HOUSING PORTFOLIO

RENTAL ASSISTANCE DEMONSTRATION (RAD)

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- 3,855 APARTMENTS THROUGHOUT THE CITY OF ST PAUL
- 16 HI-RISES (2,553 APARTMENTS) 0,
 1, AND 2 BEDROOMS
- 4 FAMILY TOWNHOME
 COMMUNITIES (1,302 UNITS) 2 TO
 5 BEDROOM UNITS

LOW INCOME PUBLIC HOUSING

<u>(LIPH)</u>

- 418 HOMES THROUGHOUT THE CITY OF ST PAUL
- SINGLE FAMILY HOMES AND DUPLEXES
- RANGING FROM 2 BEDROOMS TO 6 BEDROOMS



ST PAUL PHA'S INVESTMENT IN LIFE SAFETY SYSTEMS **IMPROVEMENTS**

\$1,000,000

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FUNDING SOURCES FOR LIFE SAFETY SYSTEMS IMPROVEMENTS



- HUD FUNDING THROUGH CAPITAL FUND GRANT (LIPH)
 AND HOUSING ASSISTANCE PAYMENT (MULTIFAMILY)
- POTENTIAL OUTSIDE FUND SOURCES:
 - MINNESOTA HOUSING
 - FEDERAL HOME LOAN BANK OF DES MOINES
 - CITY/COUNTY FUNDING
 - CONGRESSIONALLY DIRECTED FEDERAL SPENDING









PRELIMINARY ENGINEERING AND PROJECT PLANNING

REQUIRES ENGAGEMENT WITH:

- AGENCY STAFF
- FIRE DEPARTMENT
- RESIDENTS



PRELIMINARY ENGINEERING AND PROJECT PLANNING



THINGS TO CONSIDER:

- THE SCOPE OF WORK
- STATE AND LOCAL FIRE AND BUILDING
 CODES
- HIRING AN ENGINEERING FIRM
- TYPES OF SOLICITATION AND PROPOSAL
 EVALUATION
- APPROXIMATE FEES VARY BY BUILDING

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• SITE REVIEW



IS A FIRE PUMP NEEDED?



O PRELIMINARY ENGINEERING AND PROJECT PLANNING O DESIGN DEVELOPMENT



• PRELIMINARY ENGINEERING AND PROJECT PLANNING DESIGN DEVELOPMENT

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PVC PIPING



STEEL PIPING

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• PRELIMINARY ENGINEERING AND PROJECT PLANNING • DESIGN DEVELOPMENT – PIPING CONCEALMENT

DRYWALL

DECOSHIELD

PAINT



• PRELIMINARY ENGINEERING AND PROJECT PLANNING • DESIGN DEVELOPMENT



PRELIMINARY ENGINEERING AND PROJECT PLANNING

REVIEW DRAWINGS



AND SPECIFICATIONS

FIRE SPRINKLER SYSTEM EXPANSION AT ROOSEVELT COMMUNITY CENTER CONTRACT NO. 22-005

DIVISION

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DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

SECTION 283101 - FIRE ALARM AND DETECTION SYSTEMS ADDRESSABLE

PRELIMINARY ENGINEERING AND PROJECT PLANNING PROTOTYPE



• PRELIMINARY ENGINEERING AND PROJECT PLANNING

PHASES OF CONSTRUCTION ENGINEERING

- CONSTRUCTION COST ESTIMATES
- DESIGN, DRAWINGS & SPECIFICATIONS
- CONSTRUCTION BIDDING AND AWARD
- CONSTRUCTION AND CONTRACT ADMINISTRATION
- PROJECT CLOSEOUT
- WARRANTY INSPECTION





PRELIMINARY ENGINEERING AND PROJECT PLANNING FIRE ALARM SYSTEM UPGRADE



PRELIMINARY ENGINEERING AND PROJECT PLANNING

FIRE ALARM SYSTEM UPGRADE

- SCOPE OF WORK
- STATE AND LOCAL FIRE AND BUILDING CODES
- ENGINEERING QUALIFICATIONS/EXPERIENCE
- TYPES OF SOLICITATION AND PROPOSAL
 EVALUATION
- APPROXIMATE FEES VARY BY BUILDING
- SITE REVIEW



PRELIMINARY ENGINEERING AND PROJECT PLANNING



FIRE ALARM SYSTEM UPGRADE

- DESIGN DEVELOPMENT
 - 1. PRODUCT/MATERIAL SELECTIONS
 - 2. DRAWING AND SPECIFICATION REVIEWS
 - 3. HEARING IMPAIRED OCCUPANTS
 - 4. LINE VOLTAGE & LINE VOLTAGE WORK
- CONSTRUCTION COST ESTIMATES
- CONSTRUCTION BIDDING AND AWARD
- CONSTRUCTION AND CONTRACT ADMINISTRATION

- PROJECT CLOSEOUT
- WARRANTY INSPECTION

COMPETITIVE BIDDING AND AWARD OF



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CONSIDERATIONS

- GENERAL CONTRACTOR OR INDIVIDUAL FIRE SPRINKLER AND FIRE ALARM CONTRACTS
- PROJECT ADVERTISING & COMPETITIVE BIDDING
- AWARD TO THE LOWEST <u>RESPONSIBLE</u> BIDDER
- QUALIFICATION/CERTIFICATIONS/LICENSES

- CONTRACTS AND PRODUCT
 - SUBMITTALS

- SCHEDULE OF VALUES
- MATERIAL ORDERING
- STAGING
- PROJECT SCHEDULE



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- TYPICAL PROJECT PHASING/MILESTONES
 - 1. COMMON AREAS
 - 2. APARTMENTS
 - 3. EMPLOYEE ONLY AREAS
- RESIDENT NOTICES

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- RESIDENT COORDINATION/FURNITURE MOVING
- UTILITY TIE-INS



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VERTICAL AND HORIZONTAL FLOOR-BY-FLOOR PROGRESSION

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CONSTRUCTION COORDINATION

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- CONSTRUCTION MEETINGS
- RESIDENT INVOLVEMENT AND
 COORDINATION
- HOURS OF OPERATION

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AGENCY STAFF INVOLVEMENT



PROJECT CLOSEOUT

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- FIRE DEPARTMENT INSPECTIONS
- PUNCH-LIST INSPECTIONS
- OPERATIONS AND MAINTENANCE
 MANUALS



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TESTING AND MAINTENANCE





TESTING AND MAINTENANCE

REQUIRED ANNUAL INSPECTIONS

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FIRE SPRINKLER INSPECTIONS

- 1. FIRE PUMP INSPECTIONS
- 2. STANDPIPE INSPECTIONS
- 3. INSPECTIONS OF FLOWS AND TAMPERS
- 4. GOOD TIME TO INCLUDE AGENCY STAFF TRAINING







TESTING AND MAINTENANCE

REQUIRED ANNUAL INSPECTIONS

FIRE ALARM INSPECTIONS

1. APARTMENTS

- 2. COMMON AREAS
- 3. TESTING OF AUDIBLE ALARMS
- 4. GOOD TIME TO INCLUDE AGENCY STAFF TRAINING



TESTING AND MAINTENANCE



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MAINTENANCE SERVICE CONTRACTS FOR FIRE ALARMS AND SPRINKLERS



PROJECT CHALLENGES

- MATERIAL CHANGES AND DELAYS
- RESIDENT CONSIDERATIONS
- ASBESTOS/MOLD

- UNEXPECTED
 DISCOVERIES/OBSTRUCTIONS
- POST-TENSION CONSTRUCTION
- AESTHETIC CONSIDERATIONS
- NOISE/MESS



LESSONS LEARNED

- HIRE A COMPETENT ENGINEERING TEAM
- ENSURE CONTRACTORS ARE QUALIFIED AND CONSIDERATE
- KEEP AGENCY STAFF, RESIDENTS, AND THE FIRE DEPARTMENT
 INFORMED
- SHARE YOUR CONCERNS EARLY
- AESTHETIC CONCERNS

- SPRINKLER HEAD PLACEMENT OVER STOVES
- PAINTED PLASTIC SPRINKLER PIPING AND REPAIRS





LESSONS LEARNED

- FIRE WATCH
- PRODUCT RECALLS
- PROPER INSPECTIONS
- RESIDENT INCONVENIENCE/DAMAGE CLAIMS
- RESIDENT EDUCATION
- FIRE SPRINKLER AND FIRE ALARM COORDINATION
- FROZEN PIPING AND SPRINKLER HEADS



LESSONS LEARNED

REAC INSPECTIONS

- PAINT ON SPRINKLER HEADS
- MISSING TRIM RINGS

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- PIPING USED AS CLOTHES RACKS
- ANY ITEMS WITHIN 18 INCHES OF A SPRINKLER HEAD
- RESIDENT AND STAFF TRAINING IS VITAL TO AVOID THESE CONDITIONS



PROJECT OUTCOMES

• RESIDENT SAFETY

- A NEW PROPERTY AMENITY
- PUBLIC ADDRESS SYSTEM
- FIRE DEPARTMENT TRAINING
- POTENTIAL PROPERTY
 INSURANCE RATE REBATES



ST. PAUL PHA FIRE SPRINKLER RETROFITS

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QUESTIONS?





PLUMBING MODERNIZATION SITES

COMPLETED: 2022

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COMPLETED: 2018



HI-RISE PLUMBING EVALUATION AND ASSESSMENT

		Table 2-5 Building Plumbing Piping Materials										
Bldg No.	Building	Service	Material	Age	Locations							
M1-3	Mt. Airy	Sanitary	Galvanized	57	Throughout							
		Domestic	Galvanized	57	Throughout							
		Domestic	Copper	N/A	Various							
M1-5	Central	Sanitary	Galvanized	52	Throughout							
		Sanitary	Cast Iron	N/A	Various							
		Domestic	Galvanized	52	Throughout							
		Storm	Galvanized	52	Throughout							
M1-6	Valley	Sanitary	Galvanized	53	Throughout							
		Domestic	Copper – Type M	26	Throughout							
		Storm	Galvanized	53	Throughout							
M1-7	Neill	Sanitary	Galvanized	52	Throughout							
		Sanitary	Cast Iron	N/A	Various							
		Domestic	Copper-Type L	52	Throughout							
		Storm	Galvanized	52	Risers							
		Storm	Cast Iron	N/A	Mains							

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- COMPLETED IN 2016, AFTER RAVOUX
 PROJECT HAD BEGUN
- PROVIDED FULL BUILDING EXISTING
 CONDITIONS SUMMARY FOR EACH SITE

- PLUMBING 50-YR USEFUL LIFE
- REPORT RECOMMENDATIONS
 - SCOPE OF WORK
 - BUILDING PRIORITIZATION
 - COST ESTIMATES

HI-RISE PLUMBING EVALUATION AND ASSESSMENT

1.	M1-6: Valley Hi-Rise	\$4,151,000
2.	M1-18: Montreal Hi-Rise	\$4,375,000
3.	M1-5: Central Hi-Rise	\$2,429,000
4.	M1-15: Front Hi-Rise	\$3,489,000
5.	M1-3: Mt. Airy Hi-Rise	\$3,905,000
6.	M1-14: Wilson Hi-Rise	\$5,684,000
7.	M1-17: Wabasha Hi-Rise	\$1,735,000
8.	M1-24: Edgerton Hi-Rise	\$378,000
9.	M1-11: Cleveland Hi-Rise	\$3,028,000
10.	M1-27: Seal Hi-Rise	\$3,309,000
11.	M1-19: Exchange Hi-Rise	\$5,249,000
12.	M1-26: Hamline Hi-Rise	\$4,562,000
13.	M1-9: Dunedin Hi-Rise	\$300,000
14.	M1-7: Neill Hi-Rise	\$20,000
15.	M1-13: Iowa Hi-Rise	\$367,000

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2016 BUILDING REPAIR COST ESTIMATES AND PRIORITY LIST • COMMON ISSUES:

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- UNRELIABLE HOT WATER
- CLOGGED WASTE LINES
- LOW WATER PRESSURE
- LEAKS THROUGHOUT SYSTEM
- OLD, INEFFICIENT BOILERS
- OLD HOT WATER PUMPS AND TANKS

PLUMBING AND HEATING SYSTEM PROJECT PLANNING – BUDGETS & SCHEDULES

- HIGH-LEVEL PLANNING AND SCHEDULING
- BUDGETING AND FUNDING SOURCES
 - HOLD CFP/HAP MONEY FOR MULTIPLE YEARS
 - EXPLORE OUTSIDE FUNDING





PLUMBING AND HEATING SYSTEM PROJECT PLANNING – SCOPE OF WORK

RESIDENT OCCUPANCY

- FULLY OCCUPIED, PARTIALLY OCCUPIED OR EMPTY
- CONSIDER IMPACTS TO SCHEDULE AND REVENUE
- PLUMBING AND HVAC
 - TOTAL OR PARTIAL REPLACEMENT
 - MATERIALS AND PIPE CONNECTIONS
- BUILDING HEIGHT AND SIZE
- IN-APARTMENT WORK
 - PLUMBING CHASES AND ACCESS
 - MODERNIZATION OF LIVING SPACES



PLUMBING AND HEATING SYSTEM PROJECT PLANNING – SCHEDULE DEVELOPMENT

- DEPENDENT ON PREVIOUS DECISIONS
 - CONCURRENT STACK WORK
 - RESIDENT TRANSFERS
 - APARTMENT MODERNIZATION
- SUBCONTRACTORS TO THE GENERAL
 - PLUMBER/CARPENTER/ELECTRICIAN/FLOORS/PAINT
 - ADDITIONAL SPECIALTIES
- MILESTONES

- COMMON AREA AND PLUMBING MAINS
- PLUMBING STACK
- BOILER AND HEATING SYSTEM





PLUMBING AND HEATING SYSTEM PROJECT PLANNING - COORDINATION

- GENERAL CONTRACTOR RESPONSIBILITIES
 - GENERAL CONSTRUCTION PLANNING
 - DEMO AND ABATEMENT
 - WORK AROUND RESIDENT MOVES
- PHA RESPONSIBILITIES

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- RESIDENT ISSUES AND NOTIFICATIONS
- MOD VACANT APARTMENTS
 - PERMANENT RESIDENT MOVES VOLUNTARY (OUT OF BUILDING)
 - TEMPORARY RESIDENT MOVES RIGHT TO RETURN



PLUMBING AND HEATING SYSTEM PROJECT PLANNING – SPRINKLER COORDINATION

- IMPACTS BASED UPON THE PLUMBING SCOPE
- **RESPONSIBILITY**

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- INSIDE OR OUTSIDE OF PLUMBING CONTRACT
- SPRINKLER DRAINING AND SHUTOFF
 - FIRE WATCH





ST PAUL PHA PLUMBING PROGRESS

- THREE BUILDINGS COMPLETE
 - RAVOUX 2017

- VALLEY 2018
- MONTREAL 2019
- ONE BUILDING IN PROGRESS
 - FRONT 2022
- ONE BUILDING IN PLANNING MT AIRY
 - PLANNING/DESIGN/ENGINEERING 2023
 - CONSTRUCTION 2024
 - DEPENDENT UPON BUDGET





RAVOUX HI-RISE



- BUILT IN 1970 FOR \$3.22M
- 220 APARTMENTS
- <u>8 FLOORS 26 RISERS</u>
- <u>26 VACANT APARTMENTS NEEDED</u>
- INTERIOR CONSTRUCTION: SHEETROCK OVER STUD
- FULL BASEMENT
- SUPPORT SPACE: WILDER LIVING, FULL COMMERCIAL KITCHEN

RAVOUX HI-RISE

• SCOPE OF WORK

- FULL PLUMBING REPLACEMENT
- HOT WATER TANKS
- ASBESTOS ABATEMENT
- RESIDENT MOVING
 - PHONE/CABLE/INTERNET
 - CLEANING
- TOTAL COST: \$4.3M
- DURATION: 11 MONTHS (4/2016 2/2017)



















VALLEY HI-RISE



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- BUILT IN 1963 FOR \$2.18M
- 159 APARTMENTS (22 ADA)
- <u>11 FLOORS 24 RISERS</u>
- <u>22 VACANT APARTMENTS NEEDED</u>
- INTERIOR CONSTRUCTION: SHEETROCK OVER CLAY TILE
- NO BASEMENT
- SUPPORT SPACE: PHA & ASI OFFICES, COMMERCIAL KITCHEN

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VALLEY HI-RISE

• SCOPE OF WORK

- FULL PLUMBING REPLACEMENT
- HOT WATER STORAGE TANKS
- ASBESTOS ABATEMENT
- RESIDENT MOVING
 - PHONE/CABLE/INTERNET
 - CLEANING
- TOTAL COST: \$3.8M
- DURATION: 12 MONTHS (10/2017 10/2018)









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- BUILT IN 1970 FOR \$2.76M
- 185 APARTMENTS (10 ADA)
- <u>18 FLOORS 15 RISERS</u>
- <u>38 VACANT APARTMENTS NEEDED
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- INTERIOR CONSTRUCTION: SHEETROCK OVER CMU BLOCK

- NO BASEMENT
- SUPPORT SPACE: FULL COMMERCIAL KITCHEN

MONTREAL HI-RISE

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• SCOPE OF WORK

- FULL PLUMBING REPLACEMENT
- ASBESTOS ABATEMENT
- VAT FLOORING REPLACEMENT
- RESIDENT MOVING
 - PHONE/CABLE/INTERNET
 - CLEANING
- TOTAL COST: \$5.0M
- DURATION: 12 MONTHS (9/2018 9/2019)







FRONT HI-RISE



- BUILT IN 1969 FOR \$2.42M
- 151 APARTMENTS
- <u>20 FLOORS 6 RISERS</u>
- <u>42 VACANT APARTMENTS NEEDED</u>
- INTERIOR CONSTRUCTION: STRUCTURAL SHEETROCK PANEL

- NO BASEMENT
- SUPPORT SPACE: NONE

FRONT HI-RISE

• SCOPE OF WORK

- FULL PLUMBING REPLACEMENT
- BOILER & HOT WATER TANK REPLACEMENT
- HEATING EXPANSION JOINT REPLACEMENT
- ASBESTOS ABATEMENT
- VAT FLOORING REPLACEMENT
- RESIDENT MOVING
 - PHONE/CABLE/INTERNET
 - CLEANING
- TOTAL COST: \$5.6M
- DURATION: 18 MONTHS (12/2020 5/2022)















PLUMBING PROJECT WORK FLOW

• REQUEST FOR PROPOSALS FOR ARCHITECTURAL/ENGINEERING CONTRACT

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- ARCHITECT LEAD MODERNIZATION
- ALLOW TIME FOR PLAN REVIEW AND SCHEDULE DEVELOPMENT
- CONSTRUCTION ADMINISTRATION ACCOUNT FOR PROJECT UNKNOWNS
- FULL BUILDING CONDITION SURVEY
 - KITCHEN

- BATHROOM
- INTERIOR FINISHES
- PROTOTYPE(S)
 - OPEN WALLS / PLUMBING CHASES
 - HAZARDOUS MATERIAL TESTING
 - PRE-PROPOSAL AND PRE-BID WALK-THROUGHS

PLUMBING PROJECT WORK FLOW

- CROSS-DEPARTMENTAL COORDINATION
 - RESIDENT SERVICES
 - MAINTENANCE
 - LEGAL

- FINANCE
- PROJECT BIDDING AND CONTRACTOR SELECTION
 - QUALIFIED GENERAL CONTRACTOR
 WITH PLUMBING PROJECT EXPERIENCE
- RESIDENT COORDINATION
 - RESIDENT MEETING & INFORMATIONAL EVENTS
 - RESIDENT NOTIFICATIONS



PLUMBING PROJECT WORK FLOW

CONSTRUCTION

- STAGING AREAS AND CONTRACTOR OFFICES
- COMMON AREAS AND PLUMBING MAINS
- APARTMENT AND STACK WORK
- BETWEEN PHASE PLANNING
- PROJECT CLOSEOUT



PLUMBING PROJECT CHALLENGES

• CONTINGENCY

- NEVER KNOW WHAT YOU WILL FIND WHEN YOU OPEN UP A WALL
- ADDITIONAL WORK ITEMS
- RESIDENT ISSUES
- MISCELLANEOUS ITEMS
- SCHEDULE
 - STACK WORK DELAYS
 - RESIDENT ISSUES



PLUMBING PROJECT LESSONS LEARNED

• PROJECT SCHEDULE

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- FIGURE OUT IN PRELIMINARY STAGES
- OWNER DRIVEN
- DOCUMENTATION
 - CONSTRUCTION NOTES/MEETING MINUTES
 - PHOTOS
- HIRE A GOOD A/E TEAM
 - ARCHITECT LEAD
 - STRONG DESIGN TEAM MECHANICAL ENGINEER
- HIRE A GOOD CONTRACTOR
 - RELEVANT PLUMBING EXPERIENCE
 - SUPERINTENDENT COMPATIBILITY





CHECK THE WORK AT THE END OF EACH WORK DAY!



PLUMBING PROJECT OUTCOMES

- PLUMBING WORK ORDER CALLS DECREASE
- LESS STAFF TIME DEALING WITH PLUMBING ISSUES
- UPDATED ENERGY MANAGEMENT CONTROLS
- UPDATED APARTMENT FINISHES

- COST REDUCTIONS FOR OPERATIONS
- SAFER & BETTER QUALITY MATERIALS IN WALLS





QUESTIONS?



THANK YOU!

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