

### EARTHWORK QUANTITY ESTIMATE

|                          |           |
|--------------------------|-----------|
| CUT/EXPORT (REMEDIATION) | 20,000 CY |
| FILL/IMPORT              | 10,000 CY |

### LOT AREA

PROPOSED LOT 1: 302,137 S.F. (6.94 ACRES)

### FORESTRY NOTES

- PROTECT IN PLACE EXISTING STREET TREES IN PUBLIC RIGHT-OF-WAY ALONG MISSION INN AVE. (WASHINGTONIA FILIFERA).
- IF EXISTING STREET TREES ARE FOUND BY TREE INSPECTOR AT TIME OF SCHEDULED SITE INSPECTION (AFTER FINE GRADING AND HARDSCAPE INSTALLATION IS COMPLETE) TO BE MISSING, DEAD, DAMAGED, OR IN POOR CONDITION, THEY WILL BE REQUIRED TO BE REMOVED AND REPLACED WITH 24" BOX SIZE TREES TO TREE INSPECTOR'S SPECIFICATIONS. PLANTING, STAKING, IRRIGATION, AND ROOT BARRIERS TO LANDSCAPE & FORESTRY SPECIFICATIONS.
- PLANT IN PUBLIC RIGHT-OF-WAY, 24" BOX SIZE CELTIS SINENSIS ALONG MISSION INN AVE., LOPHSTEMON CONFERTUS (BRISBANE BOX) ALONG COMMERCE ST., AND MAGNOLIA GRANDIFLORA (ST. MARY) ALONG 5TH ST. AT TYPICAL SPACING 25' O.C.
- PRIOR TO ANY PLANTING, TREE INSPECTOR TO DETERMINE PRECISE LOCATIONS AT TIME OF SCHEDULED SITE INSPECTION AFTER FINE GRADING AND HARDSCAPE INSTALLATION IS COMPLETE. PLANTING, STAKING, IRRIGATION, AND ROOT BARRIERS TO LANDSCAPE & FORESTRY SPECIFICATIONS.

### LEGAL DESCRIPTION

LOTS 1, 2, 3, 4, 5, 6, 7, 22 THROUGH 37 IN BLOCK 6 OF WHITES ADDITION, IN THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 6, PAGE 48 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY.

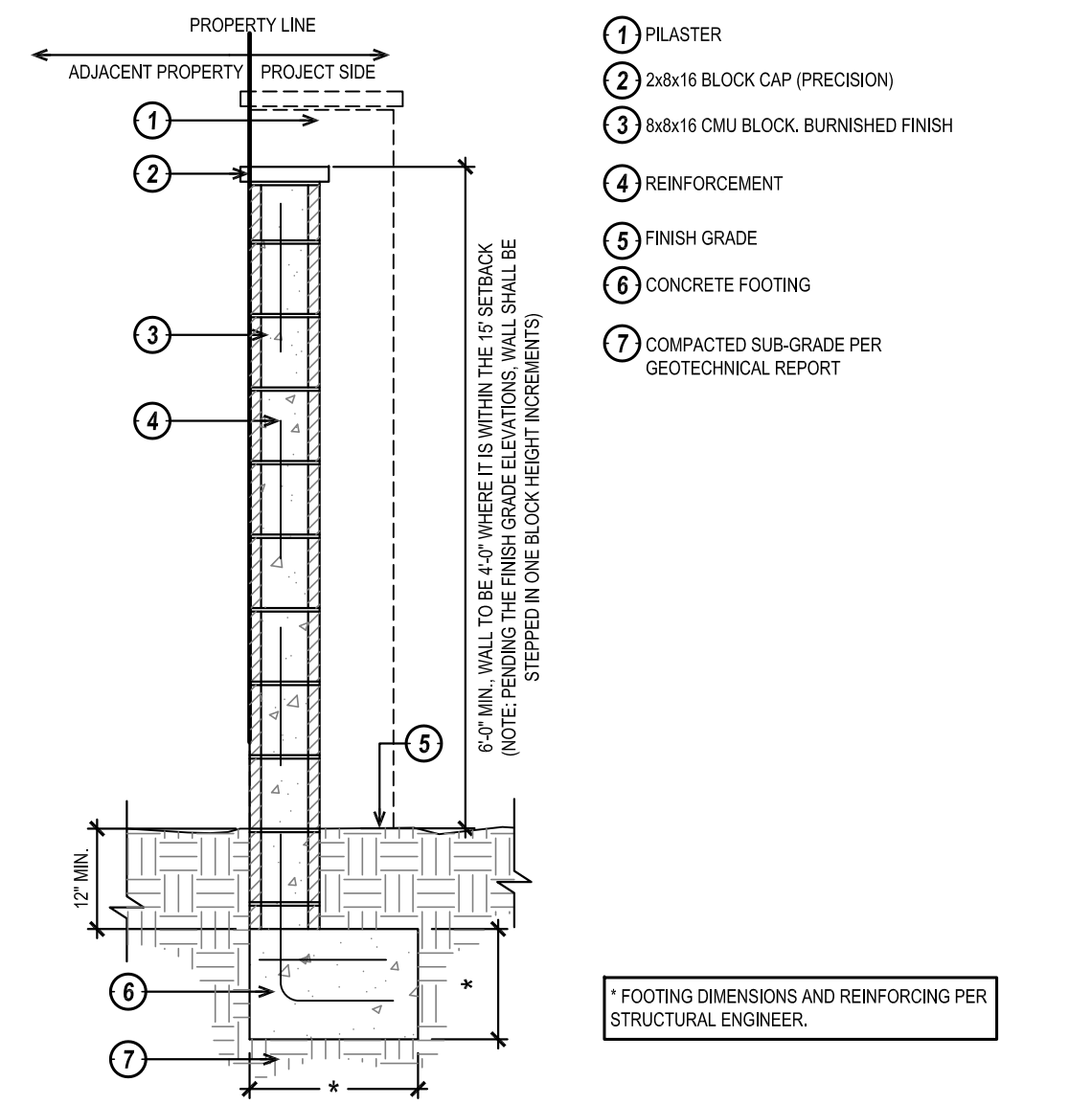
LOTS 1, 2, 3 THROUGH 7, INCLUSIVE, 22 THROUGH 37 INCLUSIVE, IN BLOCK 8 OF WHITES ADDITION, IN THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 6, PAGE 48 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA.

### EASEMENTS

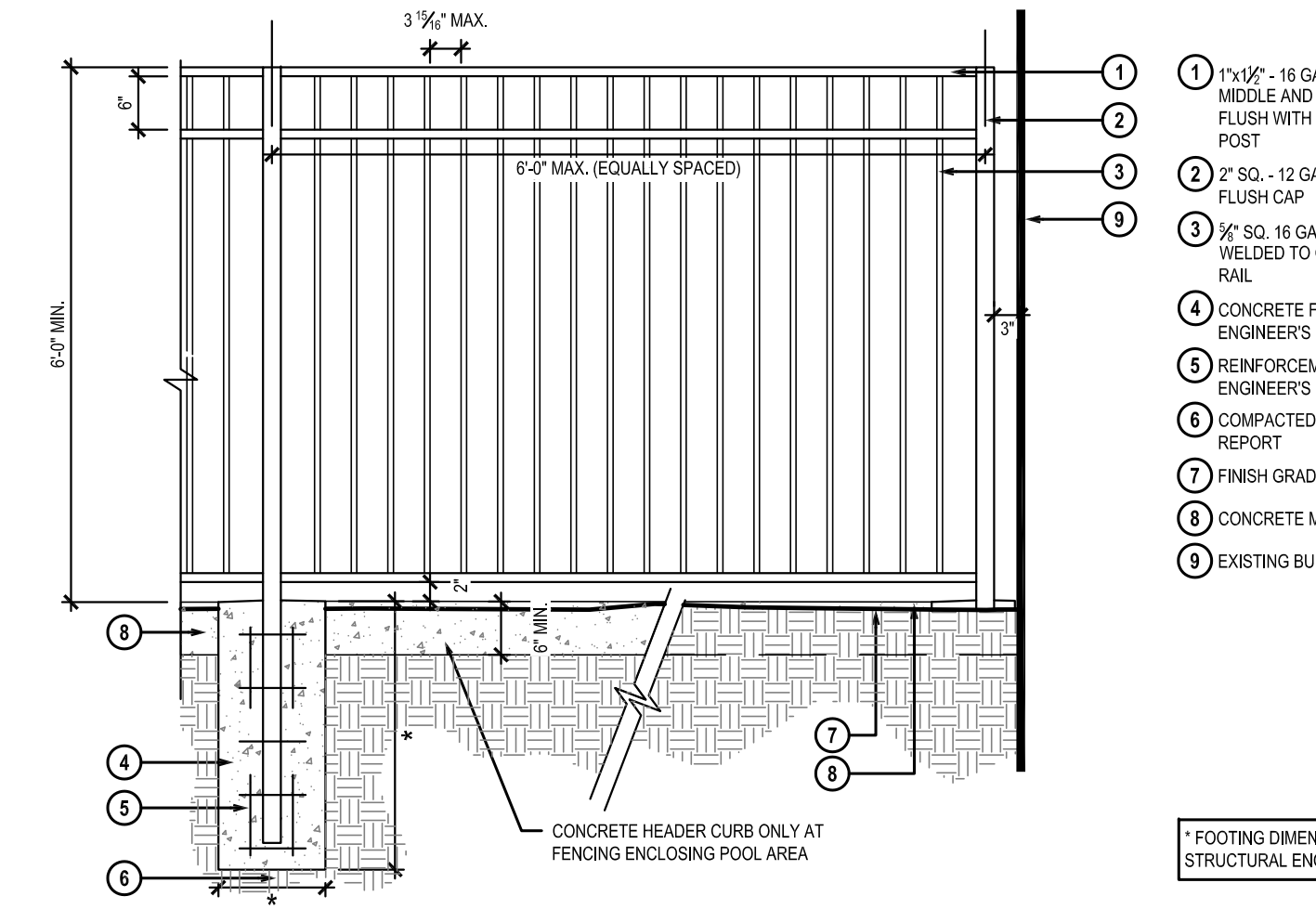
- EASEMENT(S) FOR INGRESS, EGRESS AND PARKING PURPOSE(S) AND RIGHTS INCIDENTAL THERETO, GRANTED TO SOUTHERN PACIFIC COMPANY RECORDED MARCH 13, 1928 IN BOOK 755, PAGE 184 OF DEEDS.  
*THE EXACT LOCATION AND EXTENT OF SAID EASEMENT IS NOT DISCLOSED OF RECORD. NO MENTIONED EASEMENTS WITHIN SAID DOCUMENT, DOES NOT AFFECT.*
- EASEMENT(S) FOR RIVERSIDE WATER COMPANY CONSTRUCTION AND MAINTENANCE OF ALL NECESSARY WATER DITCHES, PIPES, FLUMES AND APPARATUS FOR THE PURPOSES OF IRRIGATION AND DOMESTIC USE RECORDED IN BOOK 42, PAGES 294 AND 296, OF DEEDS, SAN BERNARDINO COUNTY RECORDS.  
*THE EXACT LOCATION IS UNDETERMINED FROM RECORD, DOCUMENT ILLEGIBLE.*
- EASEMENT(S) GRANTED TO SOUTHERN PACIFIC TRANSPORTATION COMPANY, A DELAWARE CORPORATION FOR RAILROAD PURPOSES AS RESERVED IN A DOCUMENT RECORDED DECEMBER 17, 1985 AS INSTRUMENT NO. 283346, OF OFFICIAL RECORDS.  
AFFECTS: OVER, ACROSS AND UPON THE NORTHWESTERLY 15.00 FEET OF SAID LOTS 4 AND 25. *AFFECTS TO BE OUTCLAIMED.*
- EASEMENT(S) GRANTED TO SOUTHERN PACIFIC TRANSPORTATION COMPANY, A DELAWARE CORPORATION FOR RAIL AND RAILROAD RELATED EQUIPMENT FACILITIES AND COMMUNICATIONS AND PIPELINES, LINES AND FACILITIES OF EVERY KIND AND NATURE INCLUDING BUT NOT LIMITED TO ALL EXISTING FACILITIES, TELEPHONE, TELEGRAPH, TELEVISION AND FIBER OPTIC LINES AND RELATED EQUIPMENT AND RIGHTS INCIDENTAL THERETO RECORDED AUGUST 31, 1990 AS INSTRUMENT NO. 326250, OF OFFICIAL RECORDS. *AFFECTS TO BE OUTCLAIMED.*
- EASEMENT(S) FOR TELECOMMUNICATIONS PURPOSE(S) AND RIGHTS INCIDENTAL THERETO, AS GRANTED TO QWEST COMMUNICATIONS COMPANY, LLC IN A DOCUMENT RECORDED DECEMBER 16, 2013 AS INSTRUMENT NO. 2013-0581753 OF OFFICIAL RECORDS. *AFFECTS PARCEL 2, NOT PLOTTABLE PER RECORD, TO BE OUTCLAIMED.*

### BENCHMARK

INDEX 6647 PAGE 42 DATED JANUARY 20, 2005  
 FOUND PK NAIL AND CITY SURVEYOR TAG IN WESTERLY END OF CATCH BASIN ON THE SOUTHERLY SIDE OF UNIVERSITY AVENUE, 95± EASTERLY OF CENTERLINE OF PARK AVENUE.  
 ELEVATION: 891.353 FEET



**1 - PERIMETER AND POOL CMU WALL**  
SCALE: NONE



**2 - PERIMETER AND POOL FENCE**  
SCALE: NONE

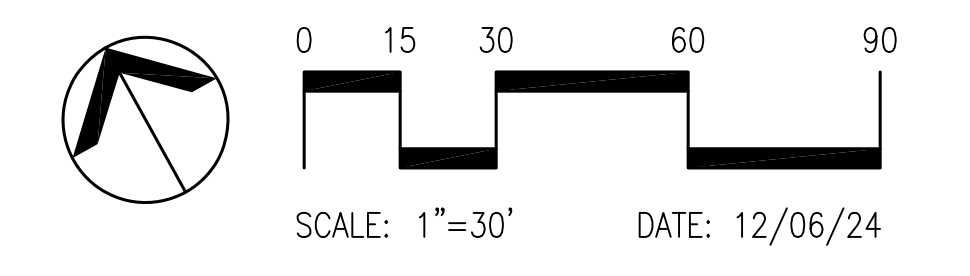
**\*NOTE**  
SEE SHEETS C-12 THRU C-14 FOR SITE SECTIONS.

### GENERAL NOTES

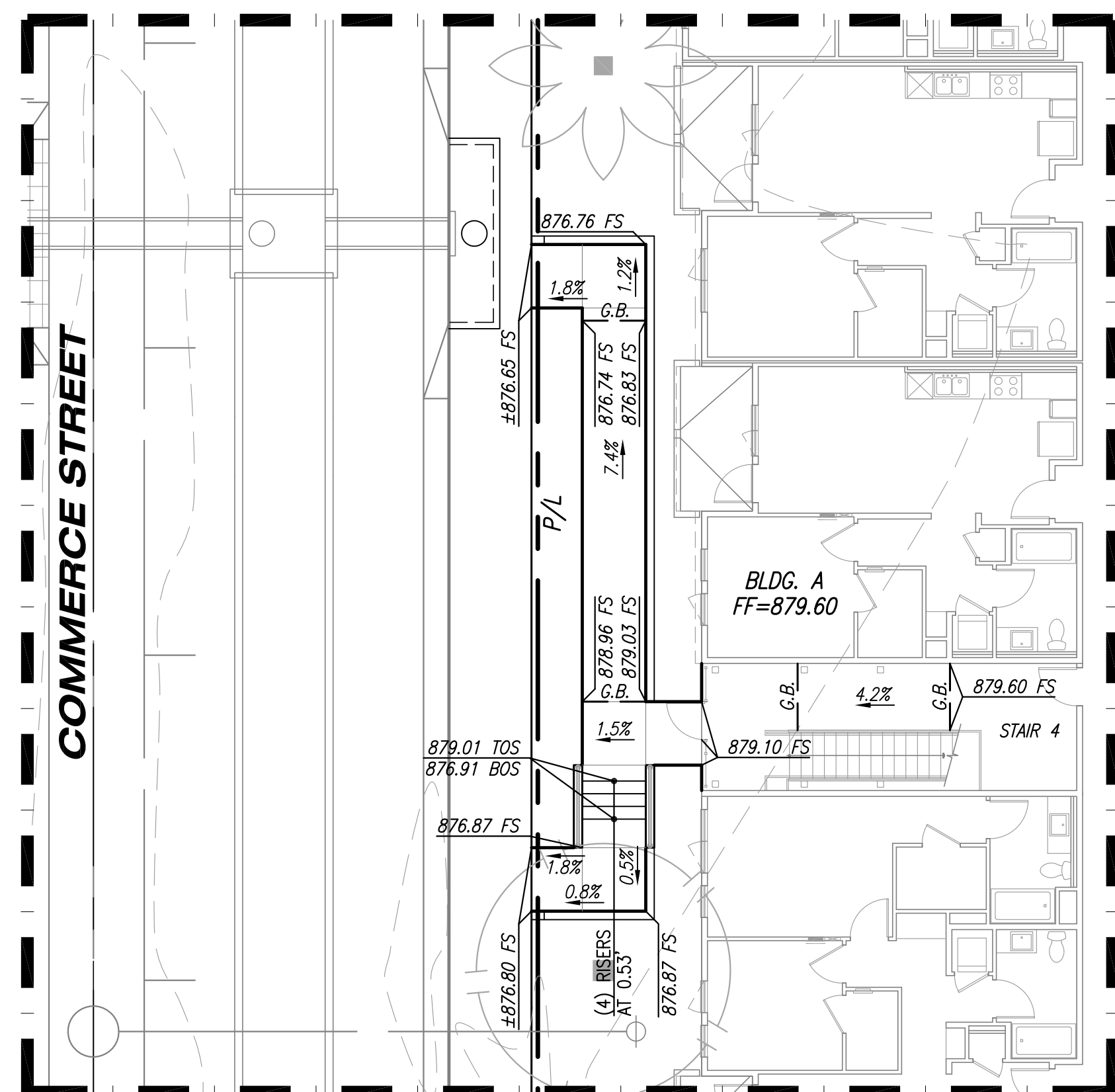
- THE STREET IMPROVEMENTS SHOWN HEREON ALONG COMMERCE ST. AND 5TH ST. ARE PER HDR'S PLANS, AS PART OF THE CITY'S THIRD STREET GRADE SEPARATION PROJECT. THE STREET IMPROVEMENT SCOPE OF WORK FOR THE IRON LOFTS DEVELOPMENT WILL INCLUDE TYING INTO HDR'S STREET IMPROVEMENTS AT KEY LOCATIONS AND CONTINUING ALONG THE IRON LOFTS' FRONTAGES ALONG THE NORTH SIDE OF MISSION INN AVE., THE EAST SIDE OF COMMERCE ST., AND THE SOUTH SIDE OF 5TH ST., AS SHOWN HEREON.
- THE ABANDONED RAIL LINE ALONG COMMERCE ST. SHALL ALSO BE REMOVED PER HDR'S PLANS.

**IRON LOFTS**  
**IRON LOFTS, LLC**

**C-1: PRELIMINARY GRADING PLAN**  
**RIVERSIDE, CALIFORNIA**

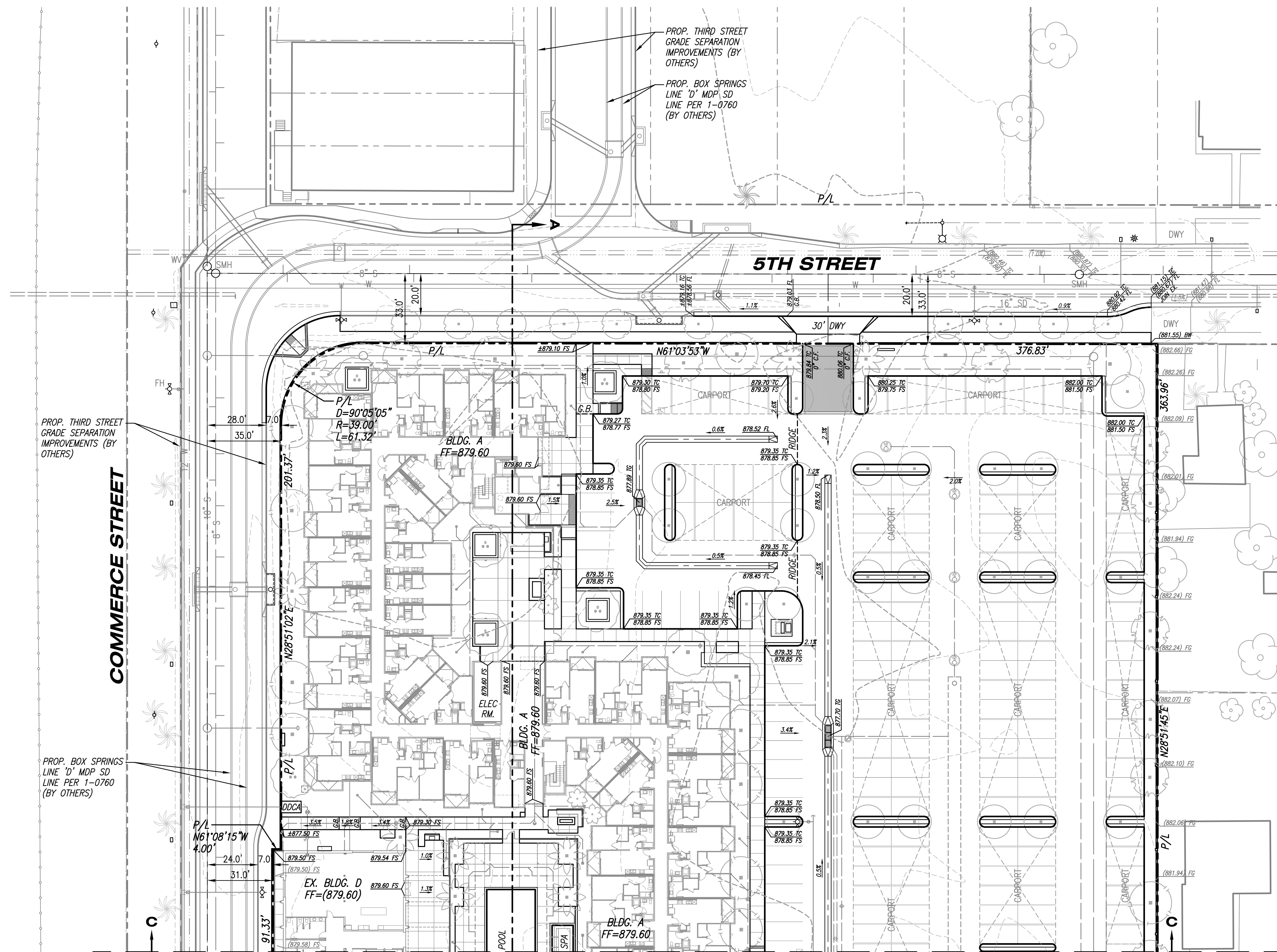


**KHR ASSOCIATES**  
CONSULTING ENGINEERS/SURVEYORS/PLANNERS  
17530 Von Karman Ave. - Suite 200  
Irvine, California 92614  
Tel (949) 756-6440



**3 - ENLARGED RAMP DETAIL**

SEE SHEET C-1  
SCALE: 1"=10'

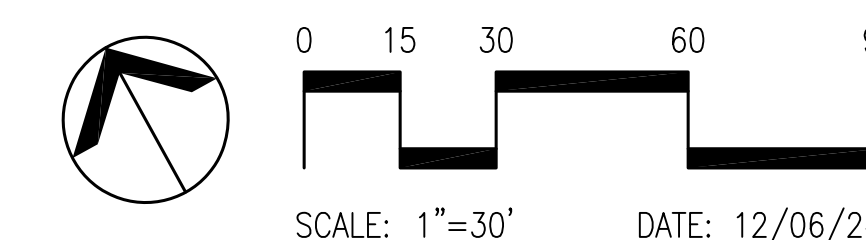


SEE SHEET C-1 FOR CONTINUATION

**GENERAL NOTES**

1. THE STREET IMPROVEMENTS SHOWN HEREON ALONG COMMERCE ST. AND 5TH ST. ARE PER HDR'S PLANS, AS PART OF THE CITY'S THIRD STREET GRADE SEPARATION PROJECT. THE STREET IMPROVEMENT SCOPE OF WORK FOR THE IRON LOFTS DEVELOPMENT WILL INCLUDE TYING INTO HDR'S STREET IMPROVEMENTS AT KEY LOCATIONS AND CONTINUING ALONG THE IRON LOFTS' FRONTAGES ALONG THE NORTH SIDE OF MISSION INN AVE., THE EAST SIDE OF COMMERCE ST., AND THE SOUTH SIDE OF 5TH ST., AS SHOWN HEREON.
2. THE ABANDONED RAIL LINE ALONG COMMERCE ST. SHALL ALSO BE REMOVED PER HDR'S PLANS.

**\*NOTE**  
SEE SHEETS C-12 THRU C-14 FOR SITE SECTIONS.

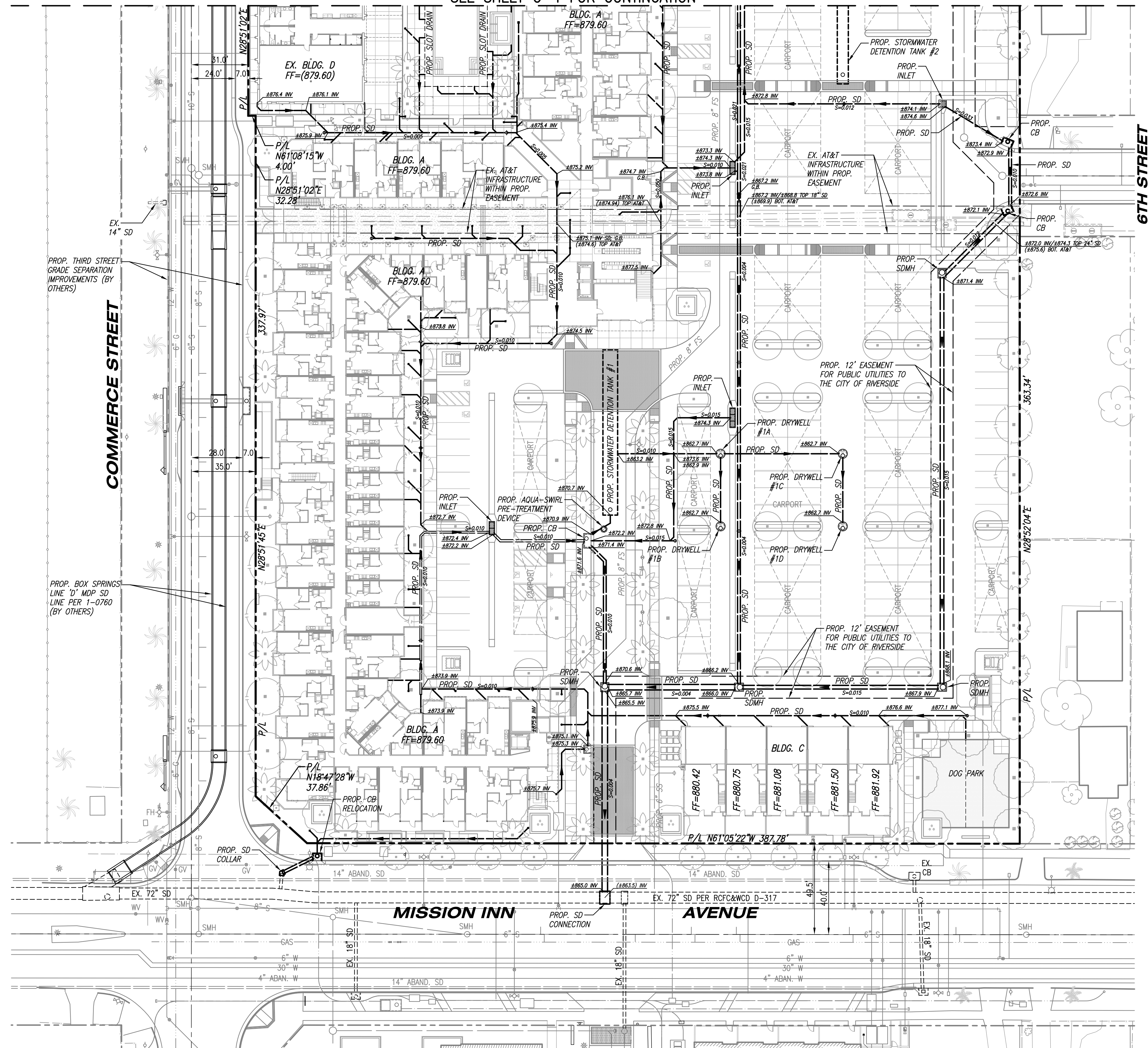


**IRON LOFTS**  
**IRON LOFTS, LLC**

**C-2: PRELIMINARY GRADING PLAN**  
**RIVERSIDE, CALIFORNIA**

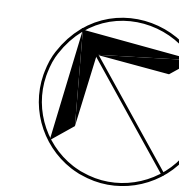
**KHR ASSOCIATES**  
CONSULTING ENGINEERS/SURVEYORS/PLANNERS  
17530 Von Karman Ave. - Suite 200  
Irvine, California 92614  
Tel (949) 756-8440

SEE SHEET C-4 FOR CONTINUATION



**NOTE**

THE PROPOSED STORM DRAIN CONNECTION TO THE EXISTING 72\"/>



SCALE: 1"=30' DATE: 12/06/24

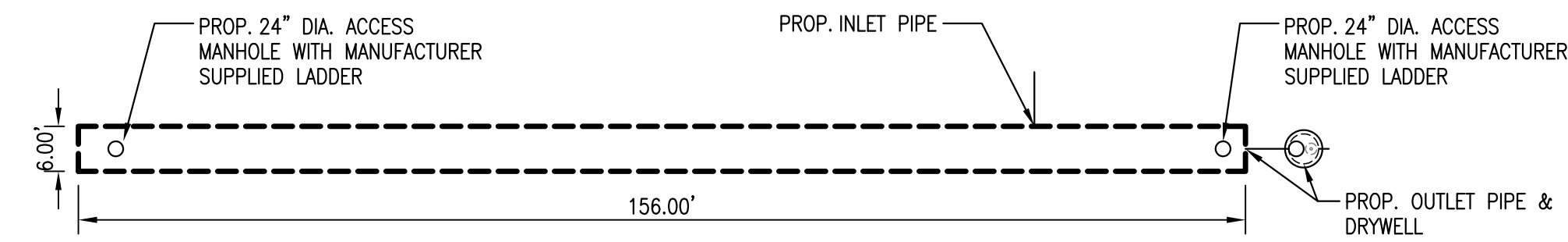
**IRON LOFTS**  
IRON LOFTS, LLC

**C-3: PRELIMINARY STORM DRAIN PLAN**  
RIVERSIDE, CALIFORNIA

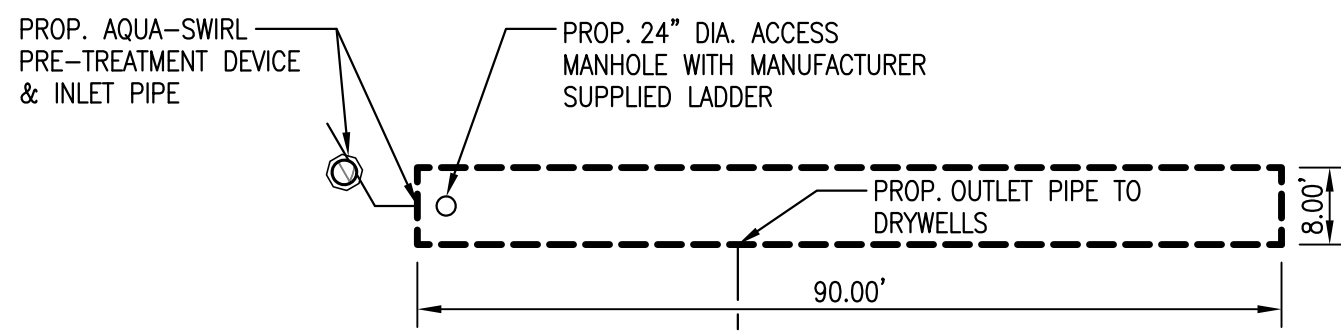
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17530 Von Karman Ave. - Suite 200  
Irvine, California 92614  
Tel (949) 756-6440

R:\beam\beam-riverside-iron lofts\03\preliminary\BRL-03-04-STRM.dwg Dec 06, 2024 - 4:22pm





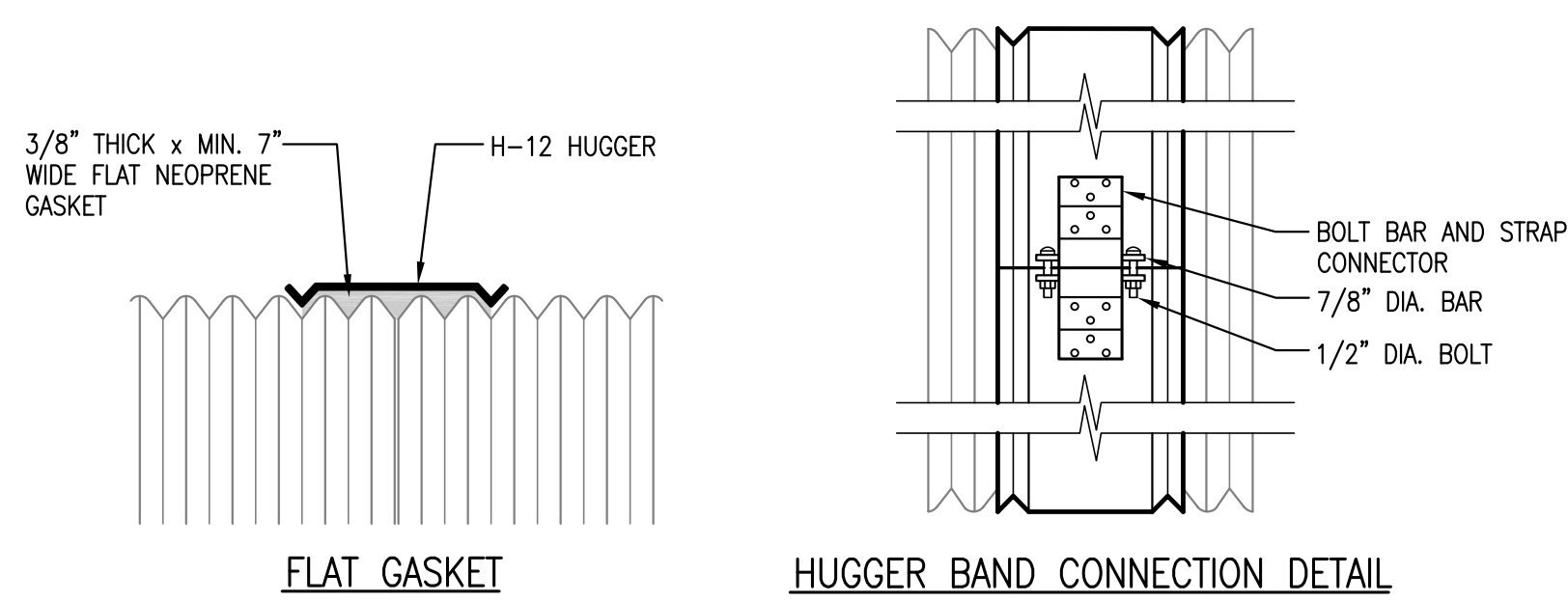
72" DIA. SOLID WALL CMP TANK (SYSTEM #2) TO HOLD A MINIMUM VOLUME OF 4,412 CF



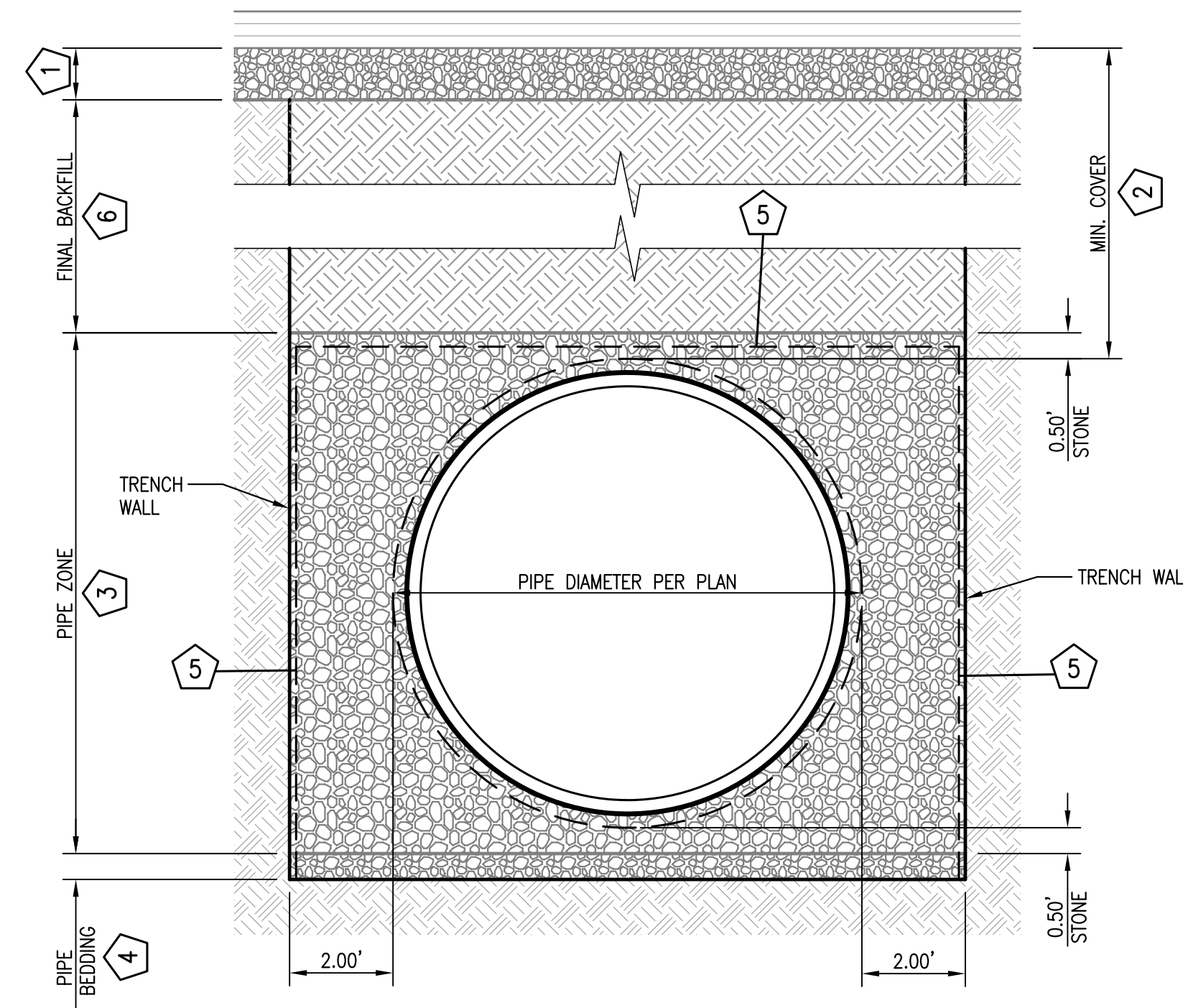
96" DIA. SOLID WALL CMP TANK (SYSTEM #1) TO HOLD A MINIMUM VOLUME OF 4,495 CF

**HUGGER BAND GENERAL NOTES**

- REFER TO CONTECH BAND SELECTION GUIDE FOR BAND WIDTH, GAGE, AND FASTENER TYPES.
- BANDS FOR PIPE-ARCH ARE THE SAME AS FOR EQUIVALENT DIAMETER ROUND PIPE.
- BANDS ARE NORMALLY FURNISHED AS FOLLOWS:  
12" THRU 48" 1-PIECE  
54" THRU 96" 2-PIECE  
102" THRU 144" 3-PIECES
- BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS.



**UNDERGROUND DETENTION PIPE DETAILS**  
SCALE: NONE



**TANK BACKFILL SECTION A-A**

**SPECIFICATION FOR CORRUGATED STEEL PIPE-ALUMINIZED TYPE 2 STEEL**

**SCOPE**

THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

**MATERIAL**

THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M274 OR ASTM A929.

**PIPE**

THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M36 OR ASTM A760. THE PIPE SIZES, GAGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

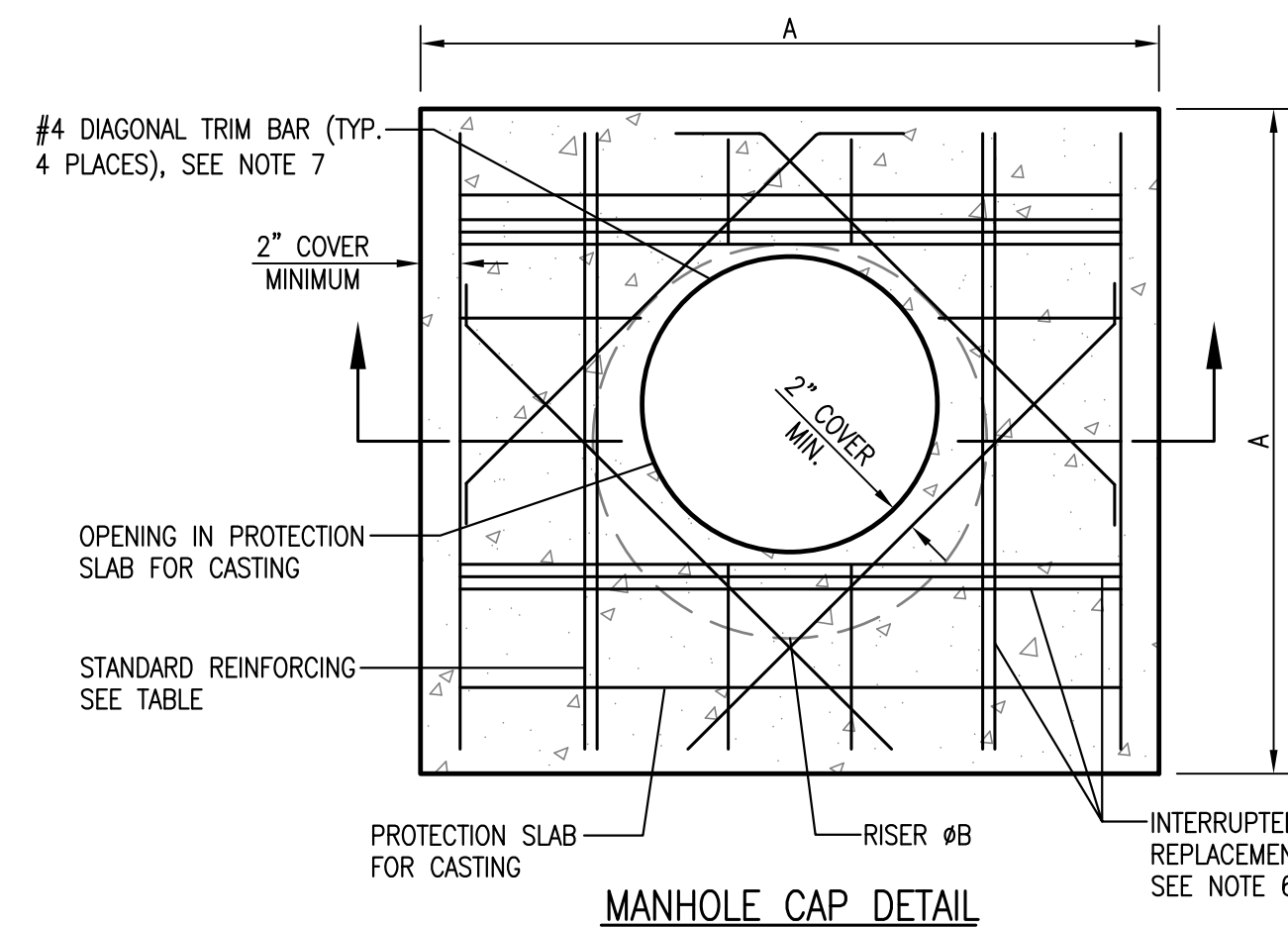
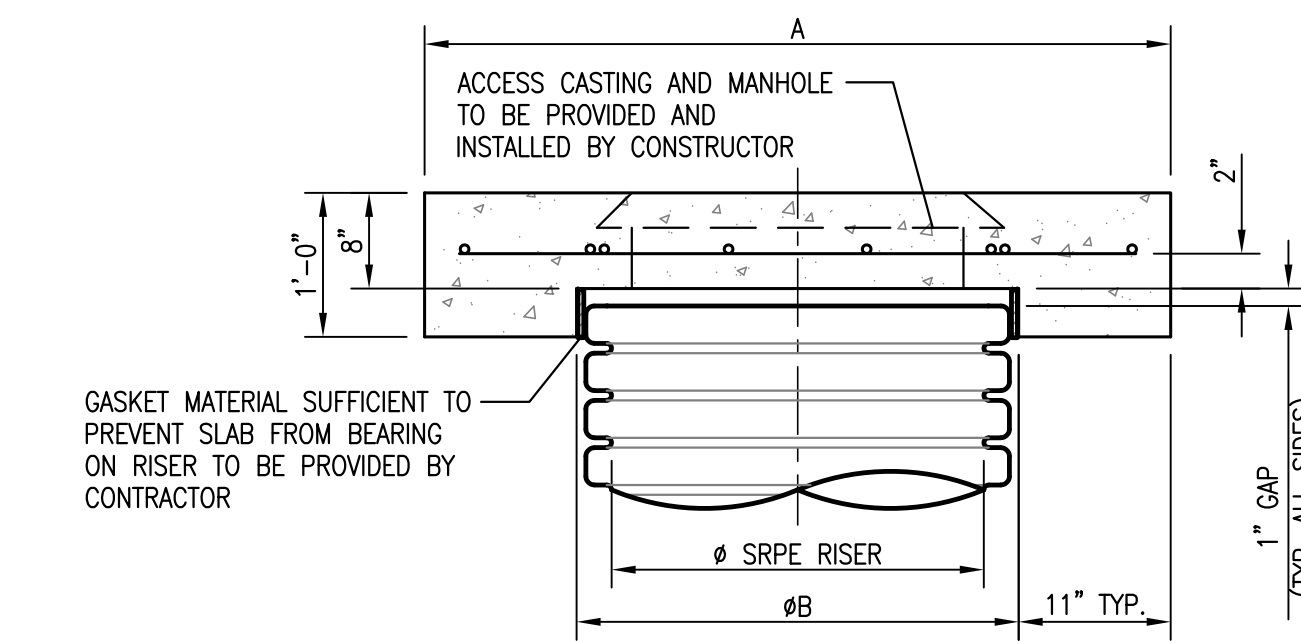
**HANDLING AND ASSEMBLY**

SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE NATIONAL CORRUGATED STEEL PIPE ASSOCIATION (NCSIPA)

**INSTALLATION**

SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.



**FOUNDATION/BEDDING PREPARATION**

PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE SOILS ENGINEER. ONCE THE FOUNDATION PREPARATION IS COMPLETE, THE 4-6 INCHES OF A WELL-GRADED GRANULAR MATERIAL SHALL BE PLACED AS THE BEDDING.

**BACKFILL**

THE BACKFILL MATERIAL SHALL BE FREE-DRAINING ANGULAR WASHED STONE 3/4"-2" PARTICLE SIZE. MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL - SLICING, RODDING, AIR-TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS. COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE PROJECT ENGINEER OR HIS REPRESENTATIVE IS SATISFIED WITH THE LEVEL OF COMPACTION. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT, AND MAINTAINING BALANCED LOADING ON ALL PIPES IN THE SYSTEM, DURING ALL SUCH OPERATIONS.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

**KEY**

- AGGREGATE ROAD BASE PER GRADING PLANS.
- 12" MIN. FOR DIAMETERS THROUGH 96"; 18" MIN. FOR DIAMETERS FROM 102" TO 144"; 24" MIN. FROM 150" TO 192"; AND 30" MIN. FROM 198" TO 234", MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
- FREE DRAINING ANGULAR WASHED STONE 3/4" TO 2" PARTICLE SIZE. DENSIFIED PER GEOTECHNICAL REPORT.
- WELL GRADED GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE 4" TO 6" IN DEPTH.
- CONTECH C-40 NON-WOVEN GEOTEXTILE REQUIRED, WRAPPING AROUND TOP AND SIDES OF TRENCH.
- FINAL BACK FILL MATERIAL PLACED IN 8" LIFTS AND COMPACTED TO 90% PER PROJECT SOILS REPORT, GRADING PLANS AND SPECIFICATIONS.

**GENERAL NOTES**

- REFER TO CONTECH BAND SELECTION GUIDE FOR BAND WIDTH, GAGE, AND FASTENER TYPES.
- BANDS FOR PIPE-ARCH ARE THE SAME AS FOR EQUIVALENT DIAMETER ROUND PIPE.
- BANDS ARE NORMALLY FURNISHED AS FOLLOWS:  
12" THRU 48" 1-PIECE  
54" THRU 96" 2-PIECES  
102" THRU 144" 3-PIECES
- BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS.
- REROLLED ANNUAL END CORRUGATIONS ARE NORMALLY 2-2/3" X 1/2".
- DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

**MANHOLE CAP NOTES**

- DESIGN IN ACCORDANCE WITH AASHTO, LATEST EDITION.
- DESIGN LOAD HS25.
- EARTH COVER = 1' MAX.
- CONCRETE STRENGTH = 3,500 PSI
- REINFORCING STEEL = ASTM A615, GRADE 60.
- PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
- TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
- PROTECTIVE SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
- DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

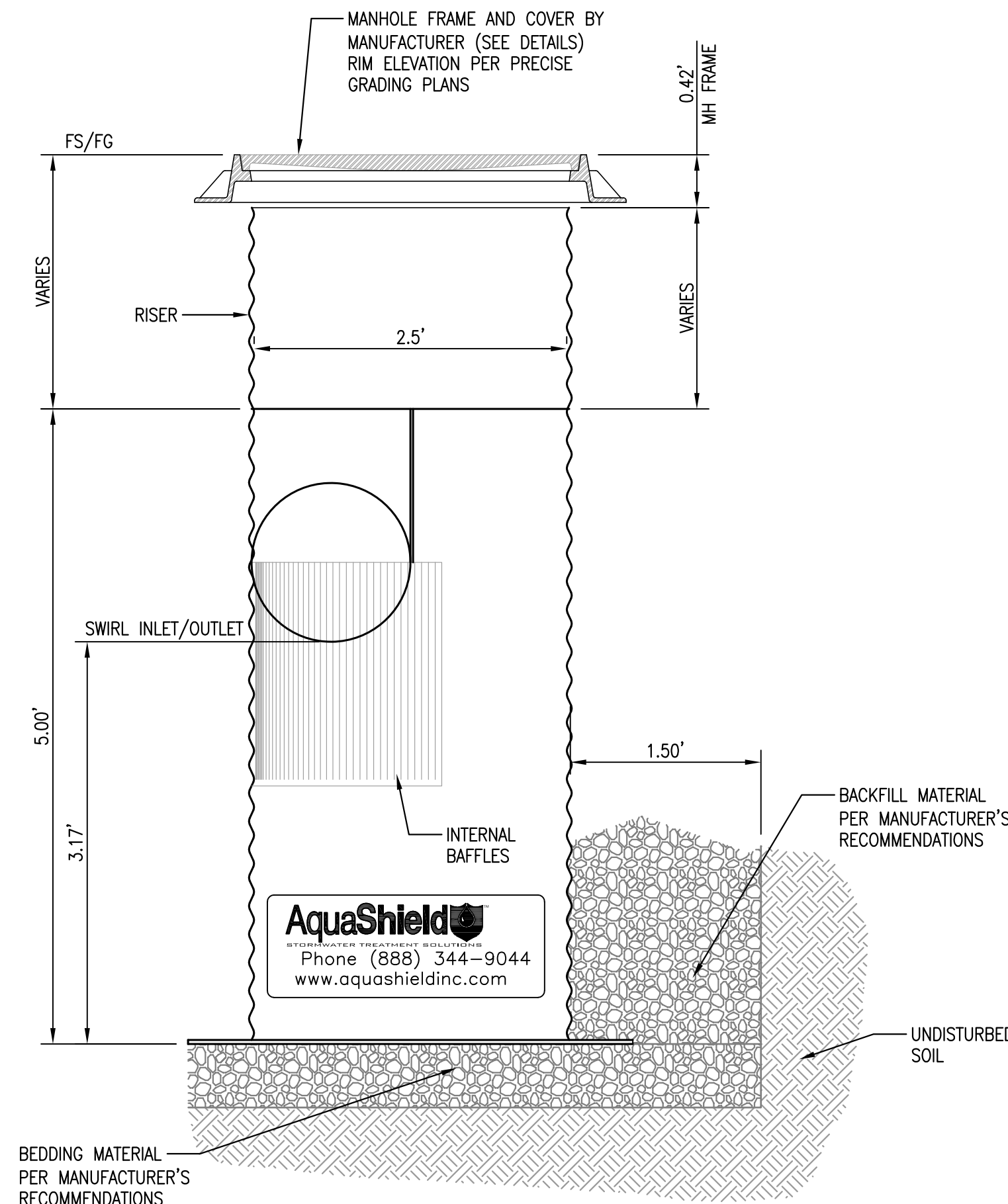
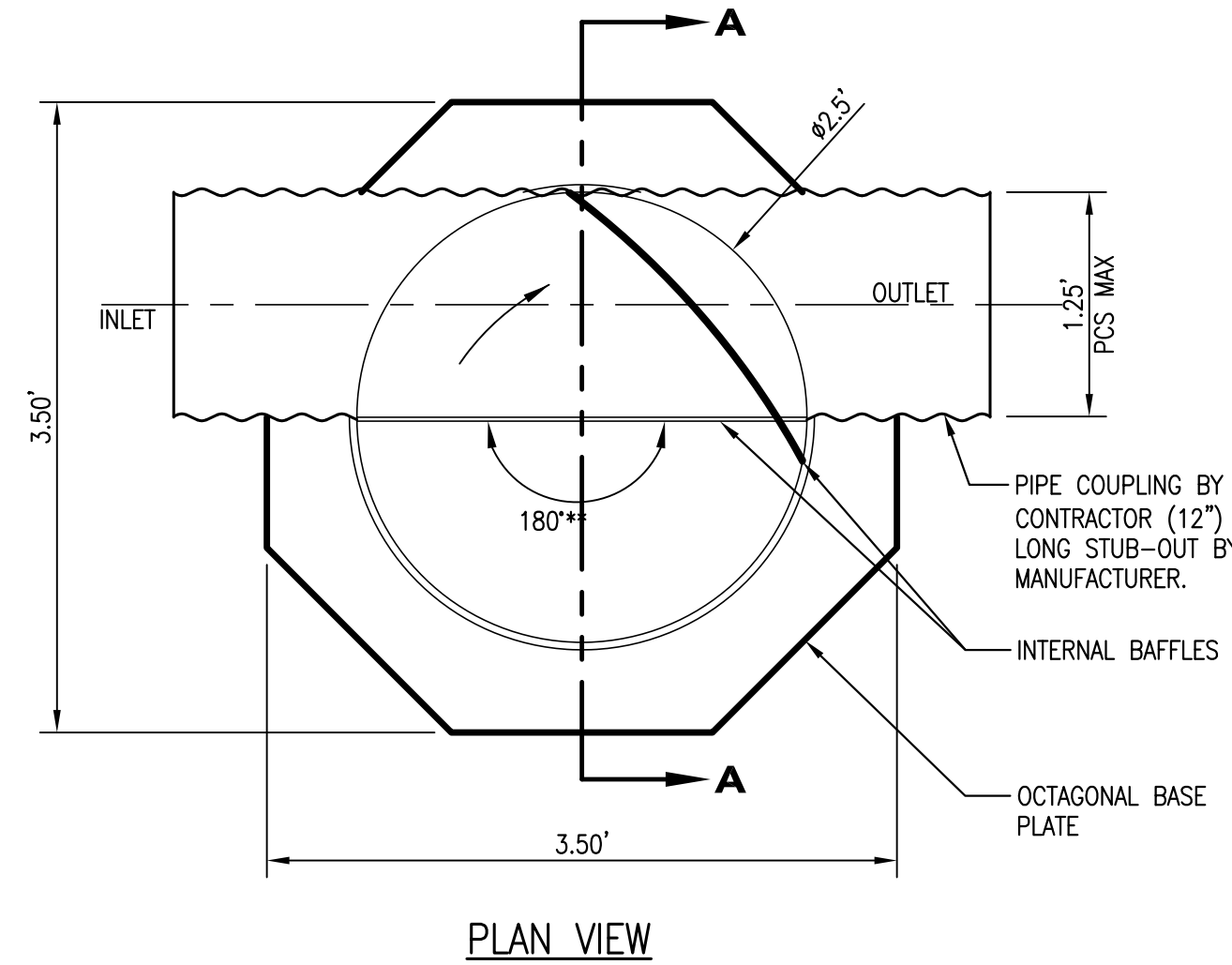
**REINFORCING TABLE**

| ØSRPE RISER | A                        | Ø B | REINFORCING   | **BEARING PRESSURE (PSF) |
|-------------|--------------------------|-----|---------------|--------------------------|
| 24"         | Ø 4'<br>4' X 4'          | 26" | #5 @ 12" OCEW | 2,410                    |
|             |                          |     | #5 @ 12" OCEW | 1,780                    |
| 30"         | Ø 4'-6"<br>4'-6" X 4'-6" | 32" | #5 @ 12" OCEW | 2,120                    |
|             |                          |     | #5 @ 12" OCEW | 1,530                    |
| 36"         | Ø 5'<br>5' X 5'          | 38" | #5 @ 10" OCEW | 1,890                    |
|             |                          |     | #5 @ 10" OCEW | 1,350                    |
| 42"         | Ø 5'-6"<br>5'-6" X 5'-6" | 44" | #5 @ 10" OCEW | 1,720                    |
|             |                          |     | #5 @ 9" OCEW  | 1,210                    |
| 48"         | Ø 6'<br>6' X 6'          | 50" | #5 @ 9" OCEW  | 1,600                    |
|             |                          |     | #5 @ 8" OCEW  | 1,110                    |

\*\* ASSUMED SOIL BEARING CAPACITY

**GENERAL NOTES**

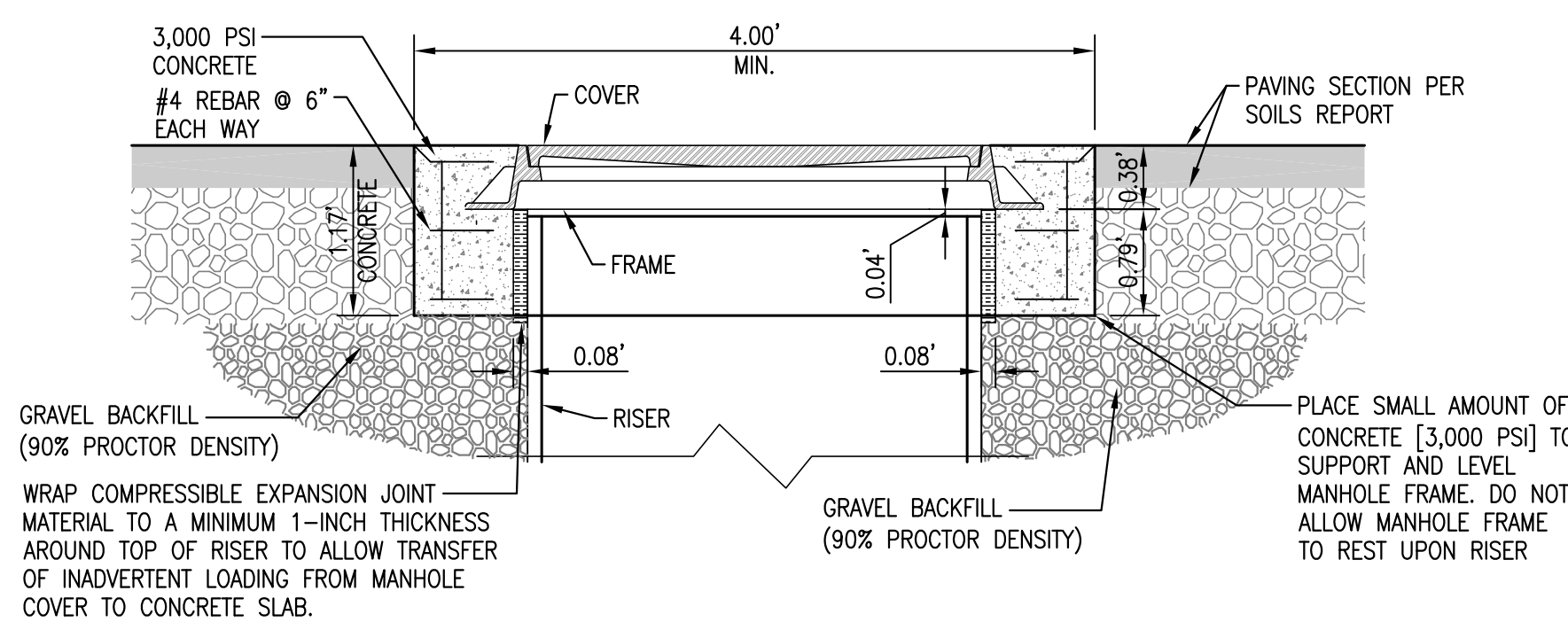
- BACKFILL SHALL EXTEND AT LEAST 18 INCHES OUTWARD FROM SWIRL CONCENTRATOR AND FOR THE FULL HEIGHT OF THE SWIRL CONCENTRATOR (INCLUDING RISER) EXTENDING LATERALLY TO UNDISTURBED SOILS. (SEE MANHOLE DETAIL BELOW)
- AS AN ALTERNATIVE, 42-INCH OD, HS-20/25 RATED PRECAST CONCRETE RINGS MAY BE SUBSTITUTED, 14-INCH THICKNESS MUST BE MAINTAINED.
- SEE MANUFACTURER'S SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- SEE SITE PLAN FOR ACTUAL SYSTEM ORIENTATION, WHICH MAY VARY FROM 90°, 180°, OR CUSTOM ANGLES TO MEET SITE CONDITIONS.



SECTION A-A

**NOTE**

IF TRAFFIC LOADING (HS-25) IS REQUIRED OR ANTICIPATED, A 4-FOOT [1.22 M] DIAMETER, 14-INCH [356 MM] THICK REINFORCED CONCRETE PAD MUST BE PLACED OVER THE STORMWATER TREATMENT SYSTEM RISER TO SUPPORT AND LEVEL THE MANHOLE FRAME, AS SHOWN. THE TOP OF RISER PIPE MUST BE WRAPPED WITH COMPRESSIBLE EXPANSION JOINT MATERIAL TO A MINIMUM 1-INCH [25 MM] THICKNESS TO ALLOW TRANSFER OF WHEEL LOADS FROM MANHOLE COVER TO CONCRETE SLAB. MANHOLE COVER SHALL BEAR ON CONCRETE SLAB AND NOT ON RISER PIPE. THE CONCRETE SLAB SHALL HAVE A MINIMUM STRENGTH OF 3,000 PSI [20 MPA] AND BE REINFORCED WITH #4 [13 MM] REINFORCING STEEL AS SHOWN. MINIMUM COVER OVER REINFORCING STEEL SHALL BE 1-INCH [25 MM]. TOP OF MANHOLE COVER AND CONCRETE SLAB SHALL BE LEVEL WITH FINISH GRADE.



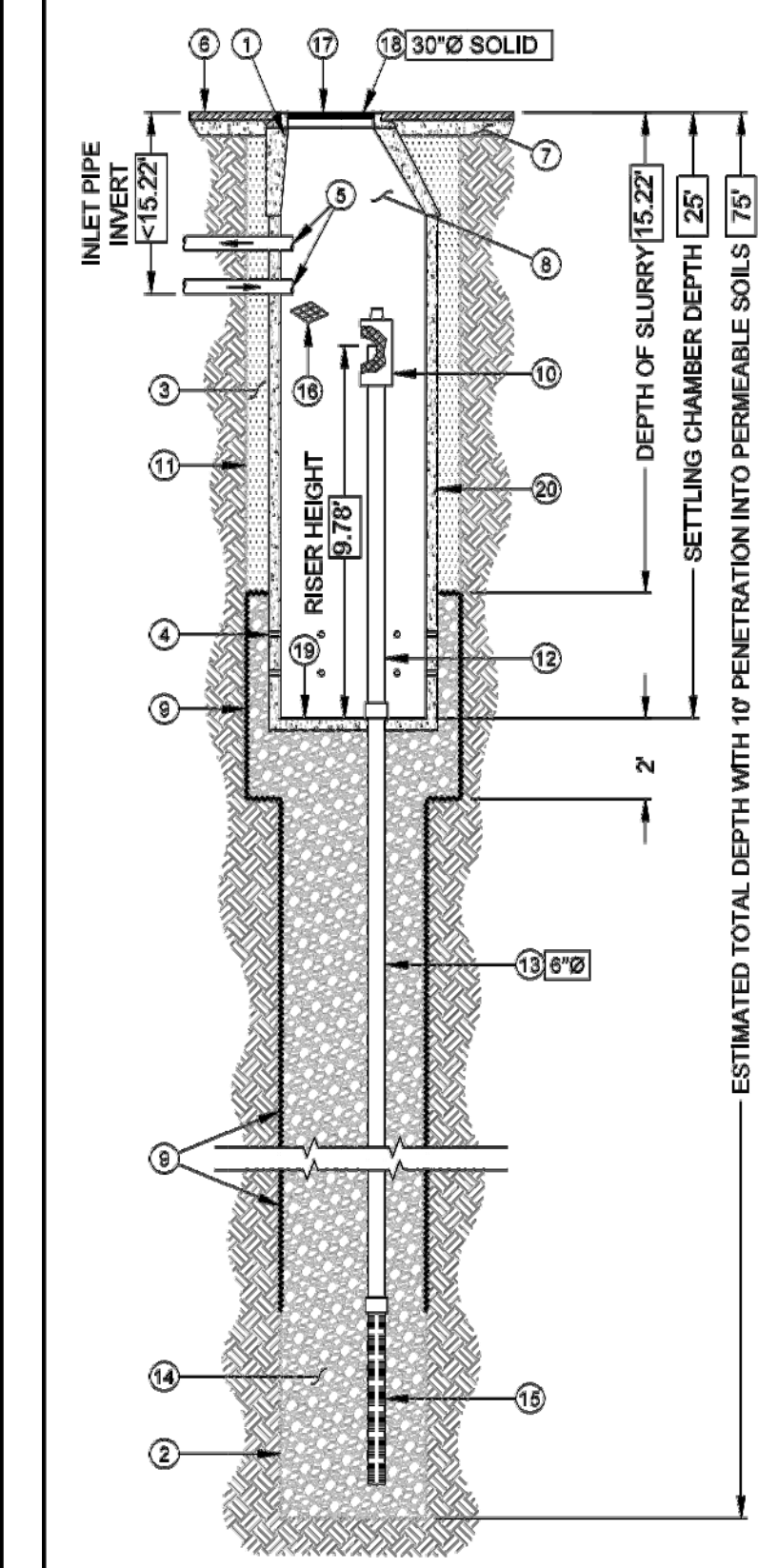
MANHOLE FRAME AND COVER DETAIL FOR TRAFFIC AREAS ONLY

**AQUA-SWIRL MODEL AS-2 BY PCS**

SCALE: NONE

**IRON LOFTS**  
**IRON LOFTS, LLC**

**The MaxWell® IV**  
DRAINAGE SYSTEM DETAILS AND SPECIFICATIONS  
**Iron Lofts - DMA 2**  
Riverside, CA

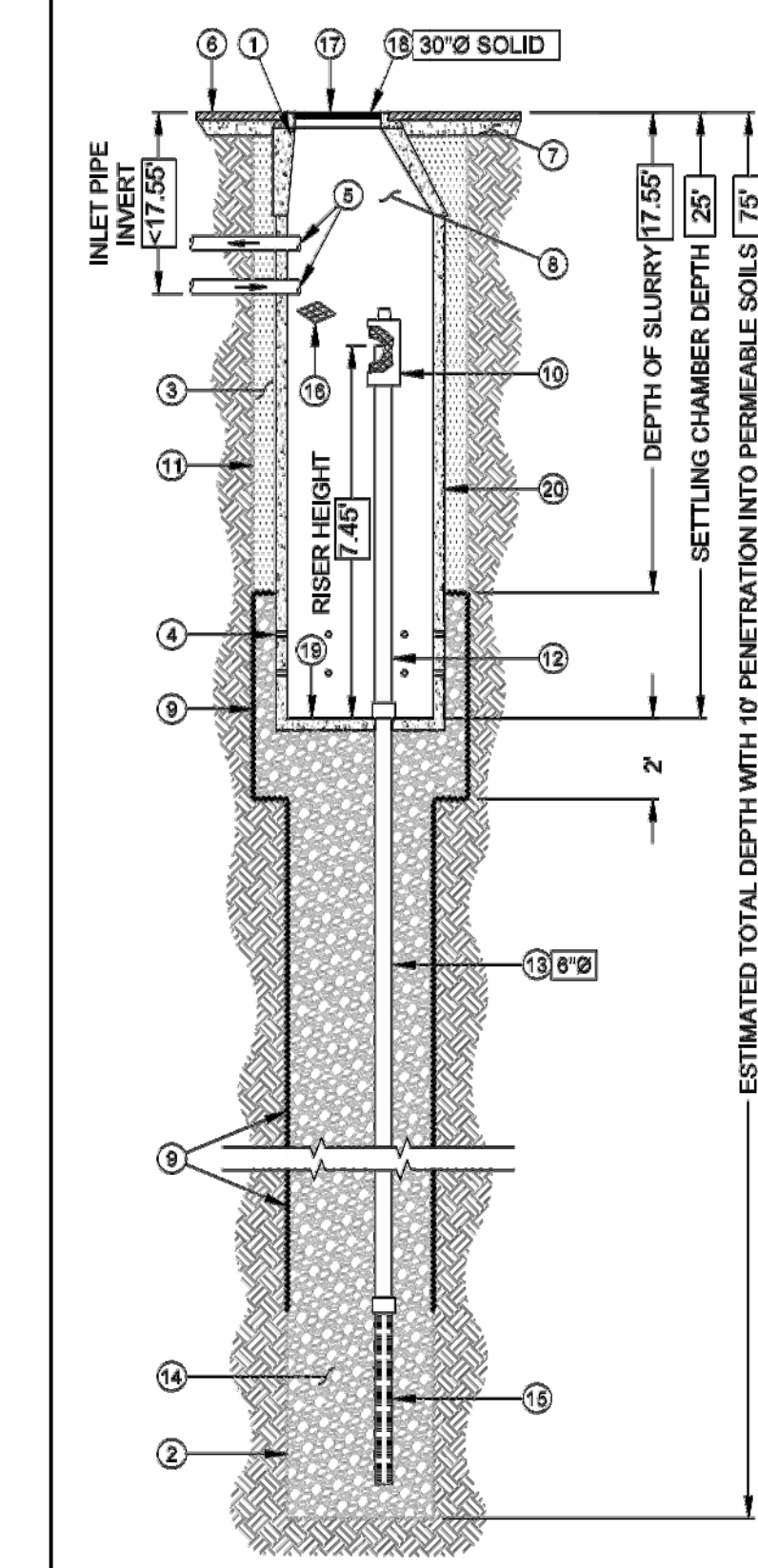


- ITEM NUMBERS**
- MANHOLE CONE - MODIFIED FLAT BOTTOM.
  - MIN 4" Ø DRILLED SHAFT.
  - STABILIZED BACKFILL - TWO-SACK SLURRY MIX.
  - 6 PERFORATIONS MINIMUM PER FOOT, 2 ROWS MINIMUM.
  - INLET PIPE/OUTLET PIPE (BY OTHERS). SEE SEPARATE PLAN FOR INVERT ELEVATIONS.
  - GRADED BASIN OR PAVING (BY OTHERS).
  - COMPACTED BASE MATERIAL, IF REQUIRED (BY OTHERS).
  - FREEBOARD DEPTH VARIES WITH INLET PIPE ELEVATION. INCREASE SETTLING CHAMBER DEPTH AS NEEDED TO MAINTAIN ALL INLET PIPE ELEVATIONS ABOVE RISER PIPE.
  - NON-WOVEN GEOTEXTILE SLEEVE - MIRAFI 140 NL, MIN. 6 FT Ø, HELD APPROX. 10 FEET OFF THE BOTTOM OF EXCAVATION.
  - PUREFLO® DEBRIS SHIELD - ROLLED 16 GA. STEEL X 24" LENGTH WITH VENTED ANTI-SIPHON AND INTERNAL 0.285" MAX. 5/16" FLATTENED EXPANDED STEEL SCREEN X 12" LENGTH. FUSION BONDED EPOXY COATED.
  - MIN. 6" Ø DRILLED SHAFT.
  - RISER PIPE - SCH. 40 PVC MATED TO DRAINAGE PIPE AT BASE SEAL.
  - DRAINAGE PIPE - ADS HIGHWAY GRADE OR SCH. 40 PVC WITH TRI-A COUPLER. SUSPEND PIPE DURING BACKFILL OPERATIONS. DIAMETER AS NOTED.
  - ROCK - WASHED, SIZED BETWEEN 3/8" AND 1-1/2".
  - FLOFAST® DRAINAGE SCREEN - SCH. 40 PVC 0.120" SLOTTED WELL SCREEN WITH MIN. 32 SLOTS PER ROW/FT. OVERALL LENGTH VARIES, UP TO 120" WITH TRI-B COUPLER.
  - ABSORBENT - HYDROPHOBIC PETROCHEMICAL SPONGE. MIN. 128 OZ. CAPACITY. TYPICAL, 2 PER CHAMBER.
  - FABRIC SEAL - U.V. RESISTANT GEOTEXTILE - TO BE REMOVED BY CUSTOMER AT PROJECT COMPLETION. GRATED ONLY.
  - BOLTED RING & GRATE/COVER - DIAMETER & TYPE AS SHOWN. CLEAN CAST IRON WITH WORKING "STORM WATER ONLY" IN RAISED LETTERS. BOLTED IN 2 LOCATIONS AND SECURE TO COME WITH MORTAR. RIM ELEVATION ±0.02' OF FLANS.
  - BASE SEAL - CONCRETE SLURRY.
  - PRE-CAST LINER - 4000 PSI CONCRETE 48" ID. X 54" OD. CENTER IN HOLE AND ALIGN SECTIONS TO MAXIMIZE BEARING SURFACE.

|                    |                         |               |
|--------------------|-------------------------|---------------|
| DATE: IV-4-SS-CA   | REVISION BY: NJT        | SCALE: N.T.S. |
| DRAWN ON: 07-20-23 | REVISION DATE: 10-18-23 |               |

Manufactured and Installed by  
**TorrentResources**  
An evolution of McQuade Drilling  
www.torrentresources.com

**The MaxWell® IV**  
DRAINAGE SYSTEM DETAILS AND SPECIFICATIONS  
**Iron Lofts - DMA 1**  
Riverside, CA



- ITEM NUMBERS**
- MANHOLE CONE - MODIFIED FLAT BOTTOM.
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  - STABILIZED BACKFILL - TWO-SACK SLURRY MIX.
  - 6 PERFORATIONS MINIMUM PER FOOT, 2 ROWS MINIMUM.
  - INLET PIPE/OUTLET PIPE (BY OTHERS). SEE SEPARATE PLAN FOR INVERT ELEVATIONS.
  - GRADED BASIN OR PAVING (BY OTHERS).
  - COMPACTED BASE MATERIAL, IF REQUIRED (BY OTHERS).
  - FREEBOARD DEPTH VARIES WITH INLET PIPE ELEVATION. INCREASE SETTLING CHAMBER DEPTH AS NEEDED TO MAINTAIN ALL INLET PIPE ELEVATIONS ABOVE RISER PIPE.
  - NON-WOVEN GEOTEXTILE SLEEVE - MIRAFI 140 NL, MIN. 6 FT Ø, HELD APPROX. 10 FEET OFF THE BOTTOM OF EXCAVATION.
  - PUREFLO® DEBRIS SHIELD - ROLLED 16 GA. STEEL X 24" LENGTH WITH VENTED ANTI-SIPHON AND INTERNAL 0.285" MAX. 5/16" FLATTENED EXPANDED STEEL SCREEN X 12" LENGTH. FUSION BONDED EPOXY COATED.
  - MIN. 6" Ø DRILLED SHAFT.
  - RISER PIPE - SCH. 40 PVC MATED TO DRAINAGE PIPE AT BASE SEAL.
  - DRAINAGE PIPE - ADS HIGHWAY GRADE OR SCH. 40 PVC WITH TRI-A COUPLER. SUSPEND PIPE DURING BACKFILL OPERATIONS. DIAMETER AS NOTED.
  - ROCK - WASHED, SIZED BETWEEN 3/8" AND 1-1/2".
  - FLOFAST® DRAINAGE SCREEN - SCH. 40 PVC 0.120" SLOTTED WELL SCREEN WITH MIN. 32 SLOTS PER ROW/FT. OVERALL LENGTH VARIES, UP TO 120" WITH TRI-B COUPLER.
  - ABSORBENT - HYDROPHOBIC PETROCHEMICAL SPONGE. MIN. 128 OZ. CAPACITY. TYPICAL, 2 PER CHAMBER.
  - FABRIC SEAL - U.V. RESISTANT GEOTEXTILE - TO BE REMOVED BY CUSTOMER AT PROJECT COMPLETION. GRATED ONLY.
  - BOLTED RING & GRATE/COVER - DIAMETER & TYPE AS SHOWN. CLEAN CAST IRON WITH WORKING "STORM WATER ONLY" IN RAISED LETTERS. BOLTED IN 2 LOCATIONS AND SECURE TO COME WITH MORTAR. RIM ELEVATION ±0.02' OF FLANS.
  - BASE SEAL - CONCRETE SLURRY.
  - PRE-CAST LINER - 4000 PSI CONCRETE 48" ID. X 54" OD. CENTER IN HOLE AND ALIGN SECTIONS TO MAXIMIZE BEARING SURFACE.

|                    |                         |               |
|--------------------|-------------------------|---------------|
| DATE: IV-4-SS-CA   | REVISION BY: NJT        | SCALE: N.T.S. |
| DRAWN ON: 07-20-23 | REVISION DATE: 10-18-23 |               |

Manufactured and Installed by  
**TorrentResources**  
An evolution of McQuade Drilling  
www.torrentresources.com

**DRYWELL & DETENTION DESIGN CALCULATIONS**

Drywell #2 (Combination of DW2A, DW2B, DW2C, DW2D)

|   |                            |                           |
|---|----------------------------|---------------------------|
| Mitigation Volume, $V_{dwp}$ :          | 5.881 C.F.                 | From BMP Design Worksheet |
| Infiltration Rate, $K_{inf,measured}$ : | 1.60 in/hr                 | Test Well W-10            |
| Factor of Safety, FS:                   | 3                          |                           |
| Number of Drywells, $DW_{quantity}$ :   | 4 each                     |                           |
| DW Chamber s:                           | 4 feet                     |                           |
| DW Chamber Area, $DWC_{Area}$ :         | 12.57 square feet per foot |                           |
| DW Chamber Volume, $DWC_{Volume}$ :     | 12.57 cubic feet per foot  |                           |
| DW Chamber depth (from invert down):    | 9.78 linear feet           |                           |
| DW Rock Shaft s:                        | 4 feet                     |                           |
| DW Rock Shaft Area, $DWR_{Area}$ :      | 12.57 square feet per foot |                           |
| DW Rock Shaft Volume, $DWR_{Volume}$ :  | 12.57 cubic feet per foot  |                           |
| DW Rock depth:                          | 50.00 linear feet          |                           |
| DW Infiltration depth:                  | 59.78 linear feet          |                           |
| DW Bottom Area, $DWB_{Area}$ :          | 12.57 square feet per foot |                           |
| T (Maximum Drawdown Time):              | 48 hr                      |                           |
| CMP Diameter (detention):               | 6 feet                     |                           |
| CMP Volume:                             | 28.2 cubic feet per foot   |                           |
| CMP Length:                             | 156 linear feet            |                           |

Determine Design Infiltration Rate:  $K_{inf,design}$

$$K_{inf,design} = K_{inf,measured} + FS$$

$$K_{inf,design} = 0.53 \text{ in/hr} + 0.000012 \text{ ft/sec}$$

Determine Minimum Infiltration Surface Area,  $A_{min}$

$$A_{min} = (V_{dwp} \times 12 \text{ in/ft}) \div (T \times K_{inf,design})$$

$$A_{min} = 2,757 \text{ S.F.}$$

Determine Infiltration Surface Area,  $A_{actual}$

$$A_{actual} = (DW_{infiltration,depth} \times DWR_{Area} + DWB_{Area}) \times DW_{quantity}$$

$$A_{actual} = 3,066 \text{ S.F.}$$

Determine Volume of Drywell,  $V_{drywell}$

$$V_{drywell} = (DWC_{Volume} \times DW_{chamber,depth}) + (DWR_{Volume} \times DW_{rock,depth} \times 0.40) \times DW_{quantity}$$

$$V_{drywell} = 1,497 \text{ C.F.}$$

Determine Volume Remaining to Detain in CMP,  $V_{detain}$

$$V_{detain} = V_{dwp} - V_{drywell}$$

$$V_{detain} = 4,384 \text{ C.F.}$$

Determine CMP Detention Volume,  $V_{CMP,detain}$

$$V_{CMP,detain} = CMP_{Volume} \times CMP_{Length}$$

$$V_{CMP,detain} = 4,412 \text{ C.F.}$$

Determine DW & CMP Volume,  $V_{design}$

$$V_{design} = V_{CMP,detain} + V_{drywell}$$

$$V_{design} = 5,909 \text{ C.F.}$$

Determine Drawdown Time,  $T_{actual}$

$$T_{actual} = (V_{design} \times 12 \text{ in/ft}) \div (A_{actual} \times K_{inf,design})$$

$$T_{actual} = 43.81 \text{ hr}$$

**DRYWELL & DETENTION DESIGN CALCULATIONS**

Drywell #1 (Combination of DW1A, DW1B, DW1C, DW1D)

|   |                            |                           |
|---|----------------------------|---------------------------|
| Mitigation Volume, $V_{dwp}$ :          | 5.825 C.F.                 | From BMP Design Worksheet |
| Infiltration Rate, $K_{inf,measured}$ : | 1.60 in/hr                 | Test Well W-8             |
| Factor of Safety, FS:                   | 3                          |                           |
| Number of Drywells, $DW_{quantity}$ :   | 4 each                     |                           |
| DW Chamber s:                           | 4 feet                     |                           |
| DW Chamber Area, $DWC_{Area}$ :         | 12.57 square feet per foot |                           |
| DW Chamber Volume, $DWC_{Volume}$ :     | 12.57 cubic feet per foot  |                           |
| DW Chamber depth (from invert down):    | 7.45 linear feet           |                           |
| DW Rock Shaft s:                        | 4 feet                     |                           |
| DW Rock Shaft Area, $DWR_{Area}$ :      | 12.57 square feet per foot |                           |
| DW Rock Shaft Volume, $DWR_{Volume}$ :  | 12.57 cubic feet per foot  |                           |
| DW Rock depth:                          | 50.00 linear feet          |                           |
| DW Infiltration depth:                  | 57.45 linear feet          |                           |
| DW Bottom Area, $DWB_{Area}$ :          | 12.57 square feet per foot |                           |
| T (Maximum Drawdown Time):              | 48 hr                      |                           |
| CMP Diameter (detention):               | 8 feet                     |                           |
| CMP Volume:                             | 50.2 cubic feet per foot   |                           |
| CMP Length:                             | 90 linear feet             |                           |

Determine Design Infiltration Rate:  $K_{inf,design}$

$$K_{inf,design} = K_{inf,measured} + FS$$

$$K_{inf,design} = 0.53 \text{ in/hr} + 0.000012 \text{ ft/sec}$$

Determine Minimum Infiltration Surface Area,  $A_{min}$

$$A_{min} = (V_{dwp} \times 12 \text{ in/ft}) \div (T \times K_{inf,design})$$

$$A_{min} = 2,730 \text{ S.F.}$$

Determine Infiltration Surface Area,  $A_{actual}$

$$A_{actual} = (DW_{infiltration,depth} \times DWR_{Area} + DWB_{Area}) \times DW_{quantity}$$

$$A_{actual} = 2,839 \text{ S.F.}$$

Determine Volume of Drywell,  $V_{drywell}$

$$V_{drywell} = (DWC_{Volume} \times DW_{chamber,depth}) + (DWR_{Volume} \times DW_{rock,depth} \times 0.40) \times DW_{quantity}$$

$$V_{drywell} = 1,380 \text{ C.F.}$$

Determine Volume Remaining to Detain in CMP,  $V_{detain}$

$$V_{detain} = V_{dwp} - V_{drywell}$$

$$V_{detain} = 4,445 \text{ C.F.}$$

Determine CMP Detention Volume,  $V_{CMP,detain}$

$$V_{CMP,detain} = CMP_{Volume} \times CMP_{Length}$$

$$V_{CMP,detain} = 4,495 \text{ C.F.}$$

Determine DW & CMP Volume,  $V_{design}$

$$V_{design} = V_{CMP,detain} + V_{drywell}$$

$$V_{design} = 5,875 \text{ C.F.}$$

Determine Drawdown Time,  $T_{actual}$

$$T_{actual} = (V_{design} \times 12 \text{ in/ft}) \div (A_{actual} \times K_{inf,design})$$

$$T_{actual} = 44.98 \text{ hr}$$

**MAXWELL IV DRAINAGE SYSTEM (TORRENT RESOURCES)**

SCALE: NONE

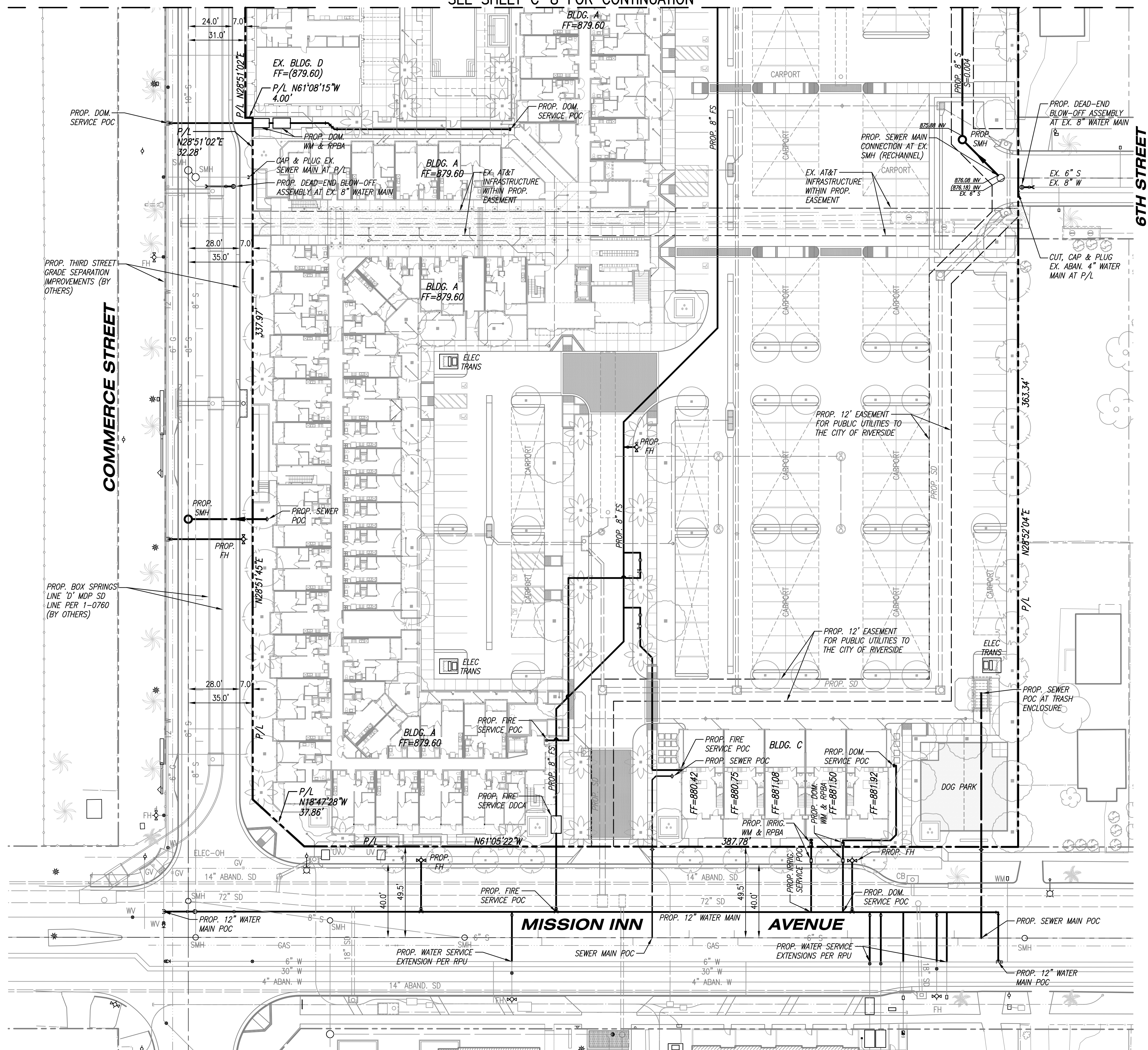
DATE: 12/06/24

**C-6: PRELIMINARY LID BMP DETAILS**  
**RIVERSIDE, CALIFORNIA**

**KHR ASSOCIATES**  
CONSULTING ENGINEERS/SURVEYORS/PLANNERS  
17530 Von Karman Ave. - Suite 200  
Irvine, California 92614  
Tel (949) 756-6440

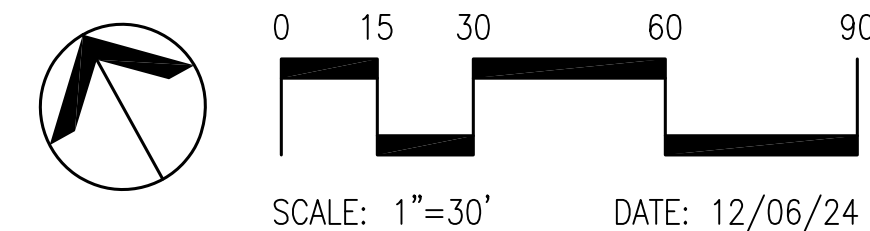
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SEE SHEET C-8 FOR CONTINUATION



**NOTES**

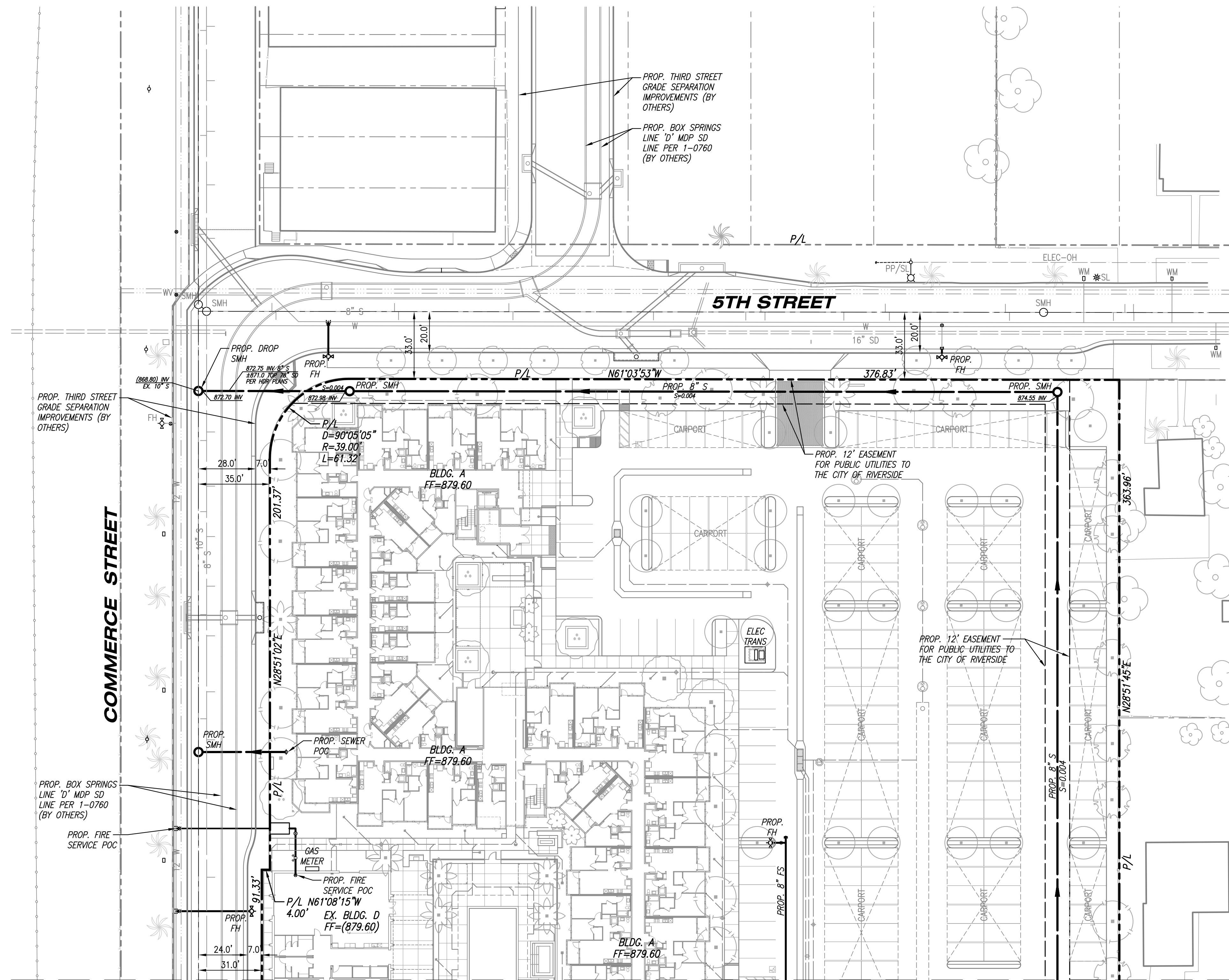
- VACATION OF 6TH ST. WILL REQUIRE THE ABANDONMENT OF THE EXISTING 8" WATER MAIN IN THE EXISTING STREET RIGHT OF WAY. ADDITIONAL ANALYSES WILL BE NEEDED TO DETERMINE IF THE ABANDONMENT OF THAT SECTION OF MAIN WILL TRIGGER ANY ADDITIONAL OFF-SITE UPGRADES OR THE NEED TO LOOP THE MAIN THROUGH AN EASEMENT WITHIN THE PROJECT.
- THE 6" WATER MAIN IN MISSION INN AVE. REQUIRES UPGRADE TO 12" FROM COMMERCE ST. ACROSS THE PROJECT FRONTAGE AT A MINIMUM, AND POSSIBLY UP TO PARK AVE. DEPENDING ON REQUIRED FIRE FLOW VOLUME AND IMPACTS FROM POTENTIAL ABANDONMENT OF THE 6TH ST. WATER MAIN.



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**C-7: PRELIMINARY WET UTILITY PLAN**  
RIVERSIDE, CALIFORNIA

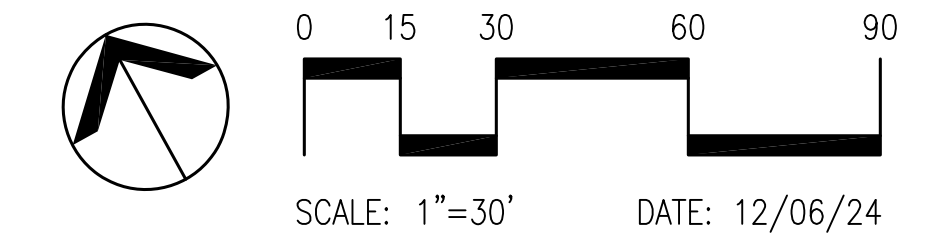
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CONSULTING ENGINEERS/SURVEYORS/PLANNERS  
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Irvine, California 92614  
Tel (949) 756-6440



SEE SHEET C-7 FOR CONTINUATION

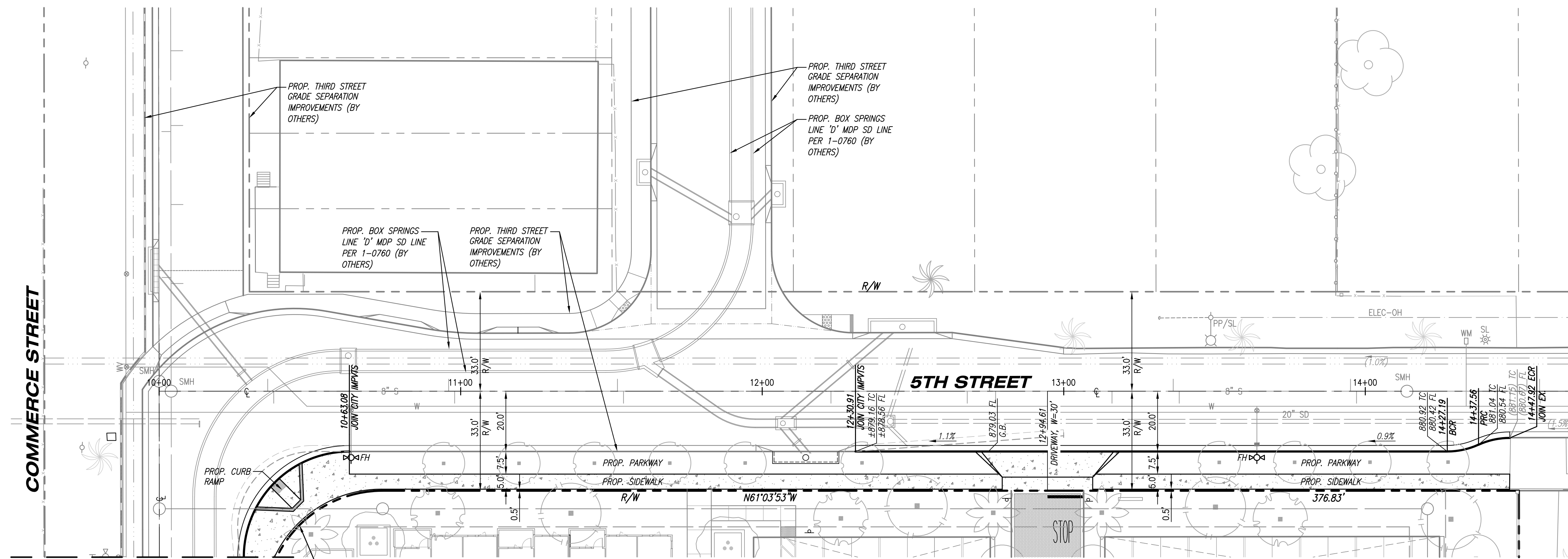
**IRON LOFTS**  
**IRON LOFTS, LLC**

**C-8: PRELIMINARY WET UTILITY PLAN**  
**RIVERSIDE, CALIFORNIA**



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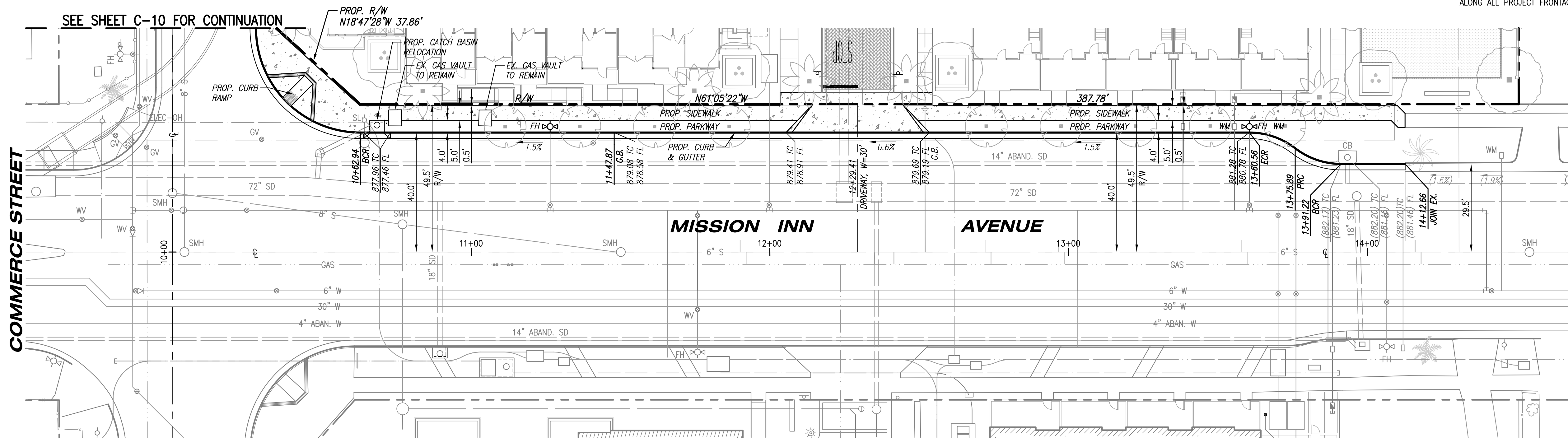


SEE SHEET C-10 FOR CONTINUATION

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L=61.32'

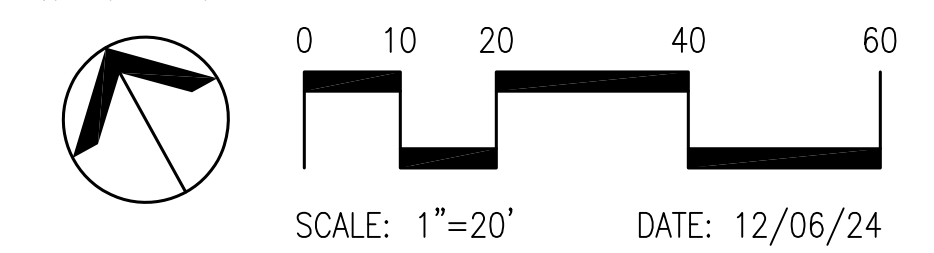
**GENERAL NOTES**

1. THE STREET IMPROVEMENTS SHOWN HEREON ALONG COMMERCE ST. AND 5TH ST. ARE PER HDR'S PLANS, AS PART OF THE CITY'S THIRD STREET GRADE SEPARATION PROJECT. THE STREET IMPROVEMENT SCOPE OF WORK FOR THE IRON LOFTS DEVELOPMENT WILL INCLUDE TYING INTO HDR'S STREET IMPROVEMENTS AT KEY LOCATIONS AND CONTINUING ALONG THE IRON LOFTS' FRONTAGES ALONG THE NORTH SIDE OF MISSION INN AVE., THE EAST SIDE OF COMMERCE ST., AND THE SOUTH SIDE OF 5TH ST., AS SHOWN HEREON.
2. THE ABANDONED RAIL LINE ALONG COMMERCE ST. SHALL ALSO BE REMOVED PER HDR'S PLANS.
3. REHABILITATION OF EXISTING PAVEMENT TO A MINIMUM OF STREET CENTERLINE ALONG ALL PROJECT FRONTAGES TO PUBLIC WORKS SPECIFICATIONS.



SEE SHEET C-10 FOR CONTINUATION

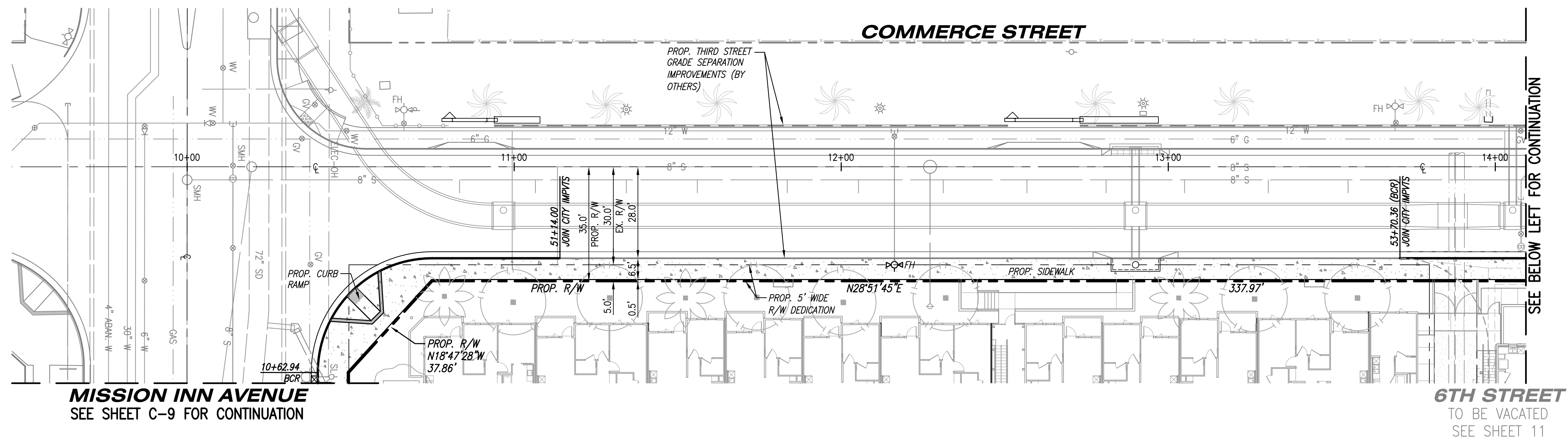
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**IRON LOFTS**  
IRON LOFTS, LLC

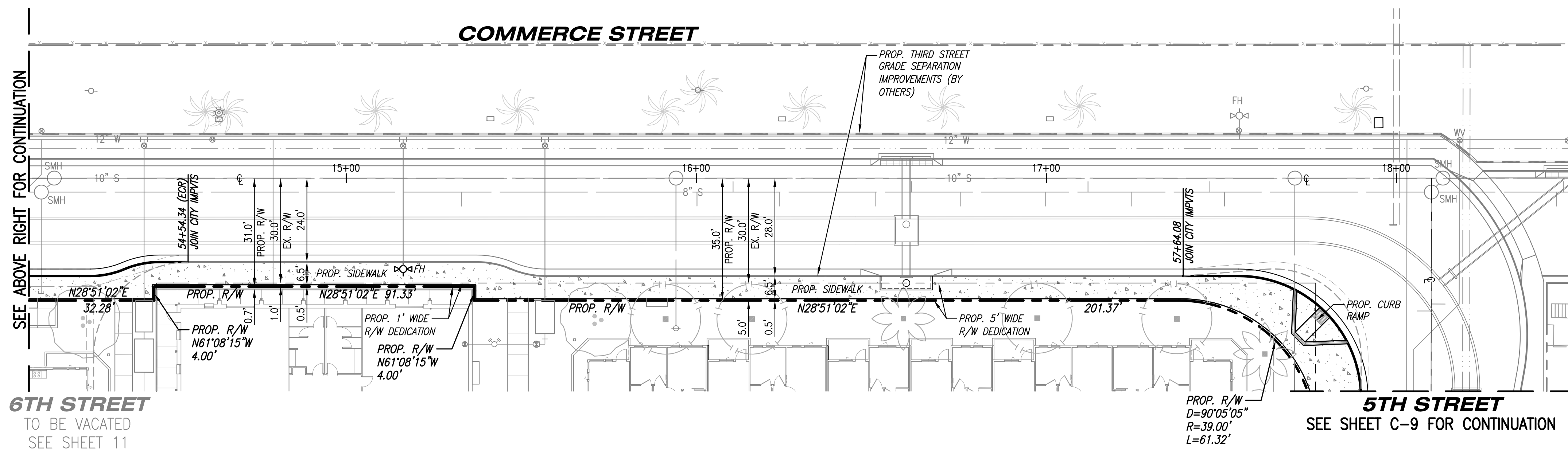
**C-9: PRELIMINARY STREET PLAN**  
RIVERSIDE, CALIFORNIA

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CONSULTING ENGINEERS/SURVEYORS/PLANNERS  
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**MISSION INN AVENUE**  
SEE SHEET C-9 FOR CONTINUATION

**6TH STREET**  
TO BE VACATED  
SEE SHEET 11



**6TH STREET**  
TO BE VACATED  
SEE SHEET 11

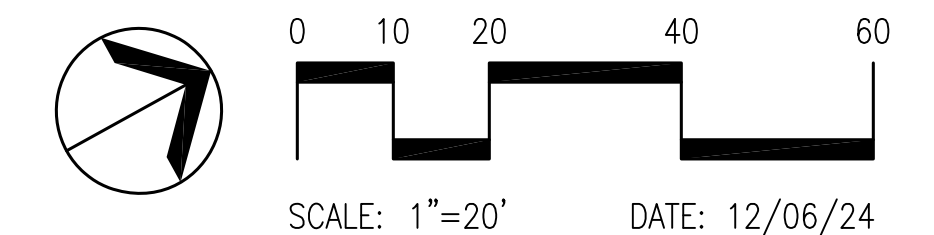
**5TH STREET**  
SEE SHEET C-9 FOR CONTINUATION

**GENERAL NOTES**

1. THE STREET IMPROVEMENTS SHOWN HEREON ALONG COMMERCE ST. AND 5TH ST. ARE PER HDR'S PLANS, AS PART OF THE CITY'S THIRD STREET GRADE SEPARATION PROJECT. THE STREET IMPROVEMENT SCOPE OF WORK FOR THE IRON LOFTS DEVELOPMENT WILL INCLUDE TYING INTO HDR'S STREET IMPROVEMENTS AT KEY LOCATIONS AND CONTINUING ALONG THE IRON LOFTS' FRONTAGES ALONG THE NORTH SIDE OF MISSION INN AVE., THE EAST SIDE OF COMMERCE ST., AND THE SOUTH SIDE OF 5TH ST., AS SHOWN HEREON.
2. THE ABANDONED RAIL LINE ALONG COMMERCE ST. SHALL ALSO BE REMOVED PER HDR'S PLANS.
3. REHABILITATION OF EXISTING PAVEMENT TO A MINIMUM OF STREET CENTERLINE ALONG ALL PROJECT FRONTAGES TO PUBLIC WORKS SPECIFICATIONS.

**IRON LOFTS**  
**IRON LOFTS, LLC**

**C-10: PRELIMINARY STREET PLAN**  
**RIVERSIDE, CALIFORNIA**

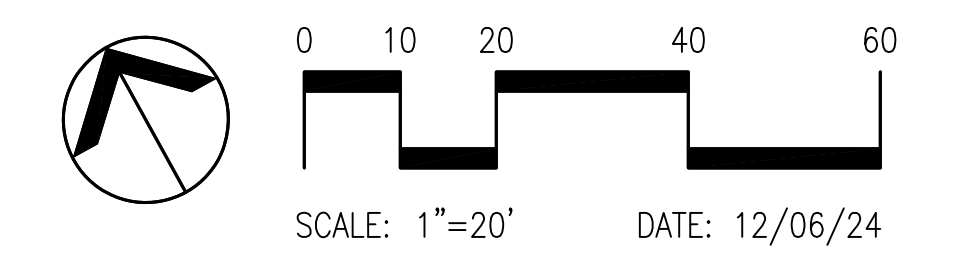
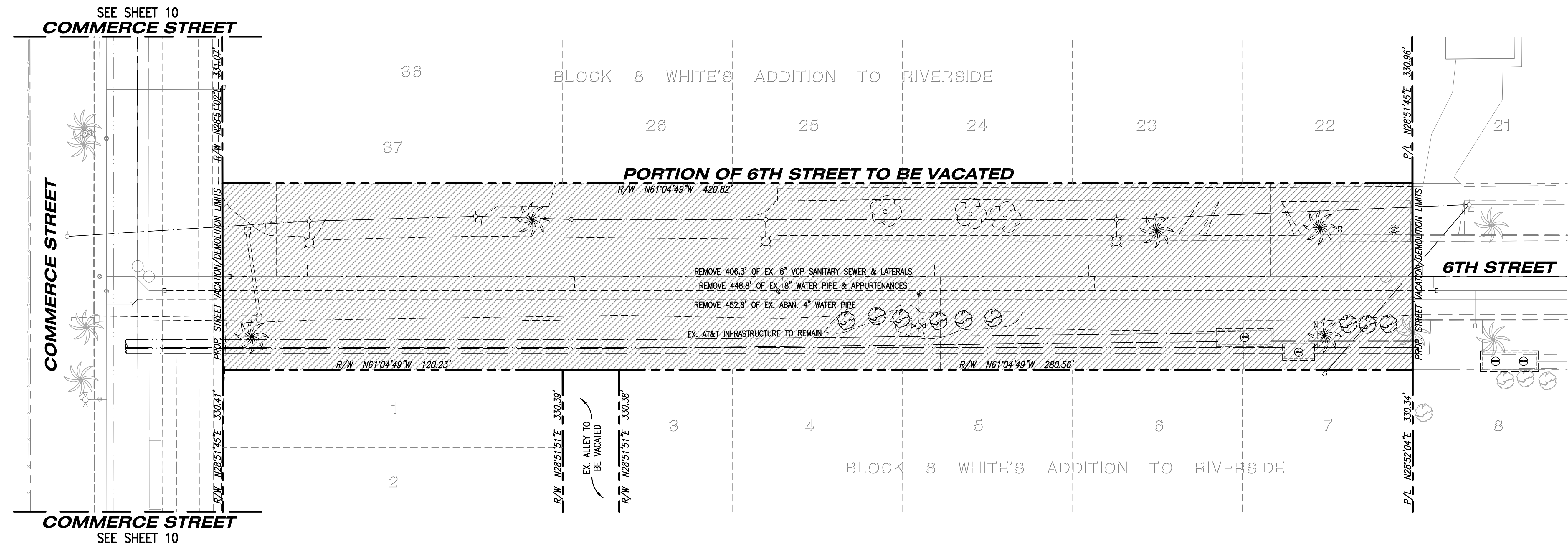


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**NOTES**

1. ALL EXISTING IMPROVEMENTS (I.E., HARDSCAPE, LANDSCAPE, UTILITIES, ETC.) WITHIN THAT PORTION OF 6TH STREET TO BE VACATED SHALL BE DEMOLISHED AND REMOVED.
2. ALL EXISTING OVERHEAD POWER LINES ALONG THAT PORTION OF 6TH STREET TO BE VACATED SHALL BE UNDERGROUNDED.

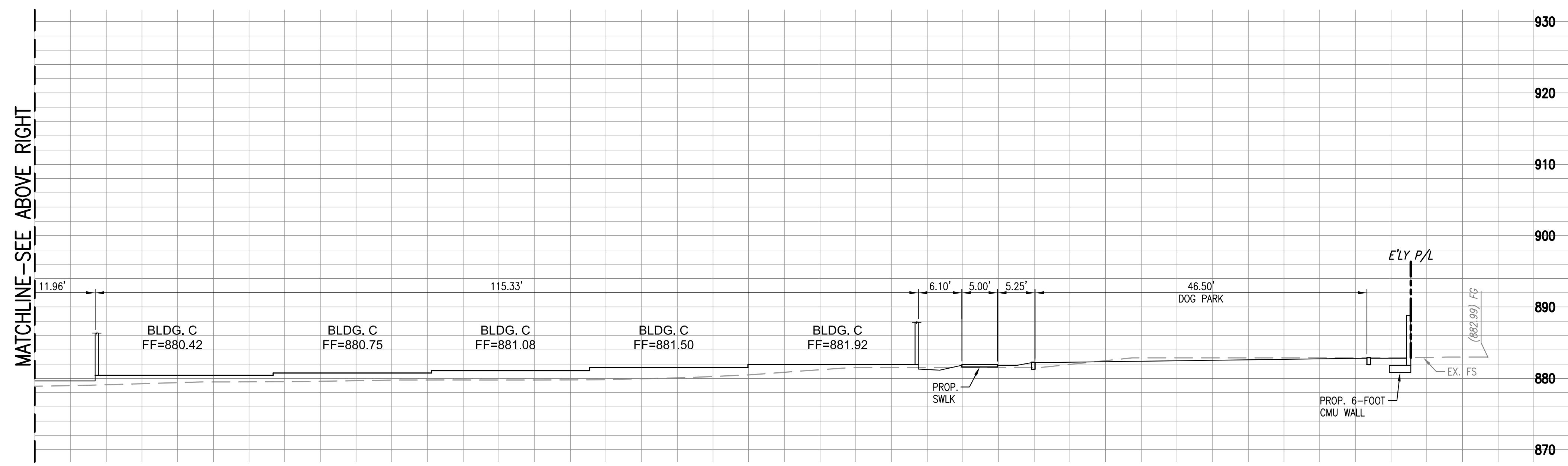
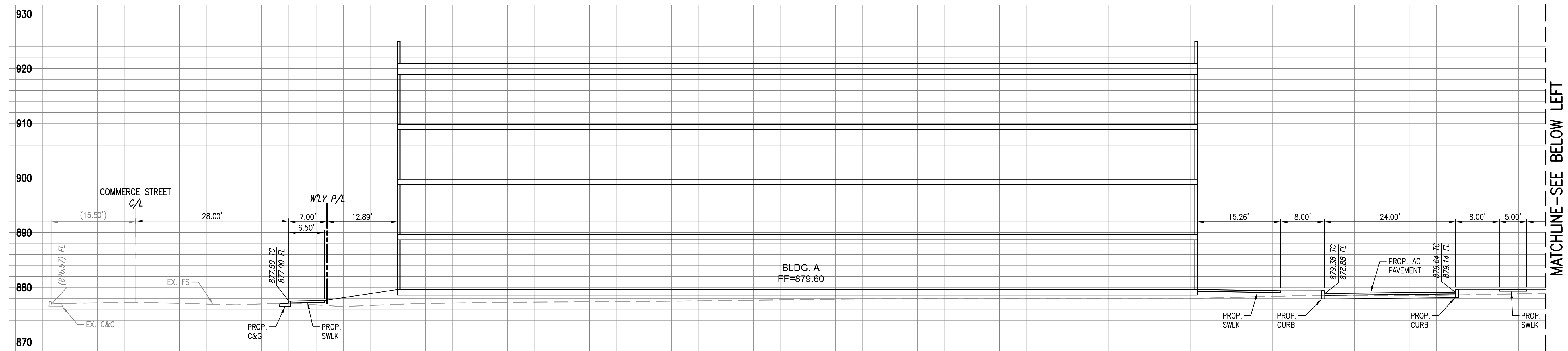


**IRON LOFTS**  
IRON LOFTS, LLC

**C-11: PRELIMINARY 6TH STREET VACATION & DEMOLITION PLAN**  
RIVERSIDE, CALIFORNIA

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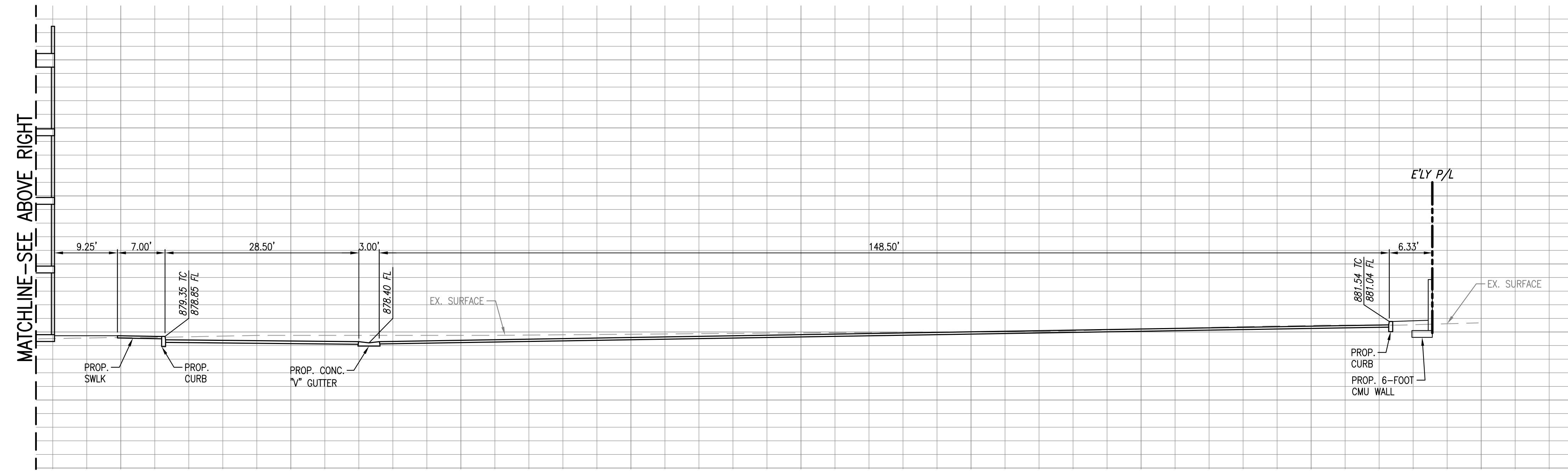
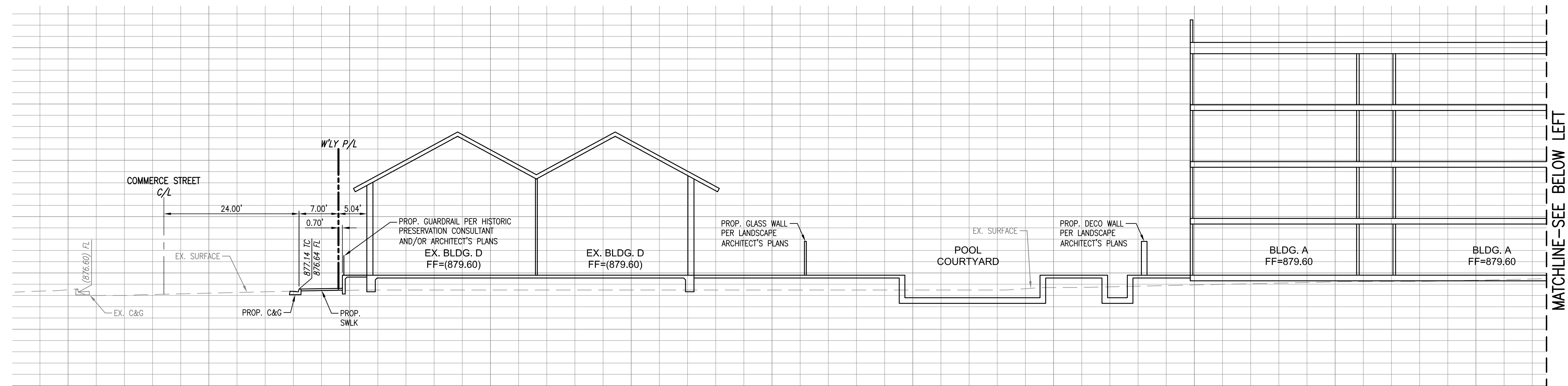
**SECTION "B-B"**  
 HORIZONTAL: 1"=10'  
 VERTICAL: 1"=10'

**IRON LOFTS**  
 IRON LOFTS, LLC

**C-13: PRELIMINARY SITE SECTIONS**  
 RIVERSIDE, CALIFORNIA

**KHR ASSOCIATES**  
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 Irvine, California 92614  
 Tel (949) 756-6440

DATE: 12/06/24



**SECTION "C-C"**  
 HORIZONTAL: 1"=10'  
 VERTICAL: 1"=10'

**IRON LOFTS**  
**IRON LOFTS, LLC**

**C-14: PRELIMINARY SITE SECTIONS**  
**RIVERSIDE, CALIFORNIA**

**KHR ASSOCIATES**  
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 Irvine, California 92614  
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DATE: 12/06/24