



CITY OF PALM COAST

SECTION F DITCH REPLACEMENT

CITY OF PALM COAST, FLAGLER COUNTY, FLORIDA

City Officials

MAYOR
Milissa Holland

COUNCIL MEMBERS

District 1: Robert Cuff
District 2: Jack Howell
District 3: Nick Klufas
District 4: Eddie Branoquinho

CITY MANAGER

Matthew Morton

PUBLIC WORKS DIRECTOR

Gerald Forte

City of Palm Coast

160 Lake Avenue
Palm Coast, Florida 32164
Phone: 386.986.3748
Attn.: Mike Peel, P.E., C.F.M.

Engineer

CPH Engineers, Inc.

520 Palm Coast Pkwy
Palm Coast, FL 32137
Phone: 386.445.6569 Fax: 386.447.8991
Attn. Jason R. Kellogg, P.E.

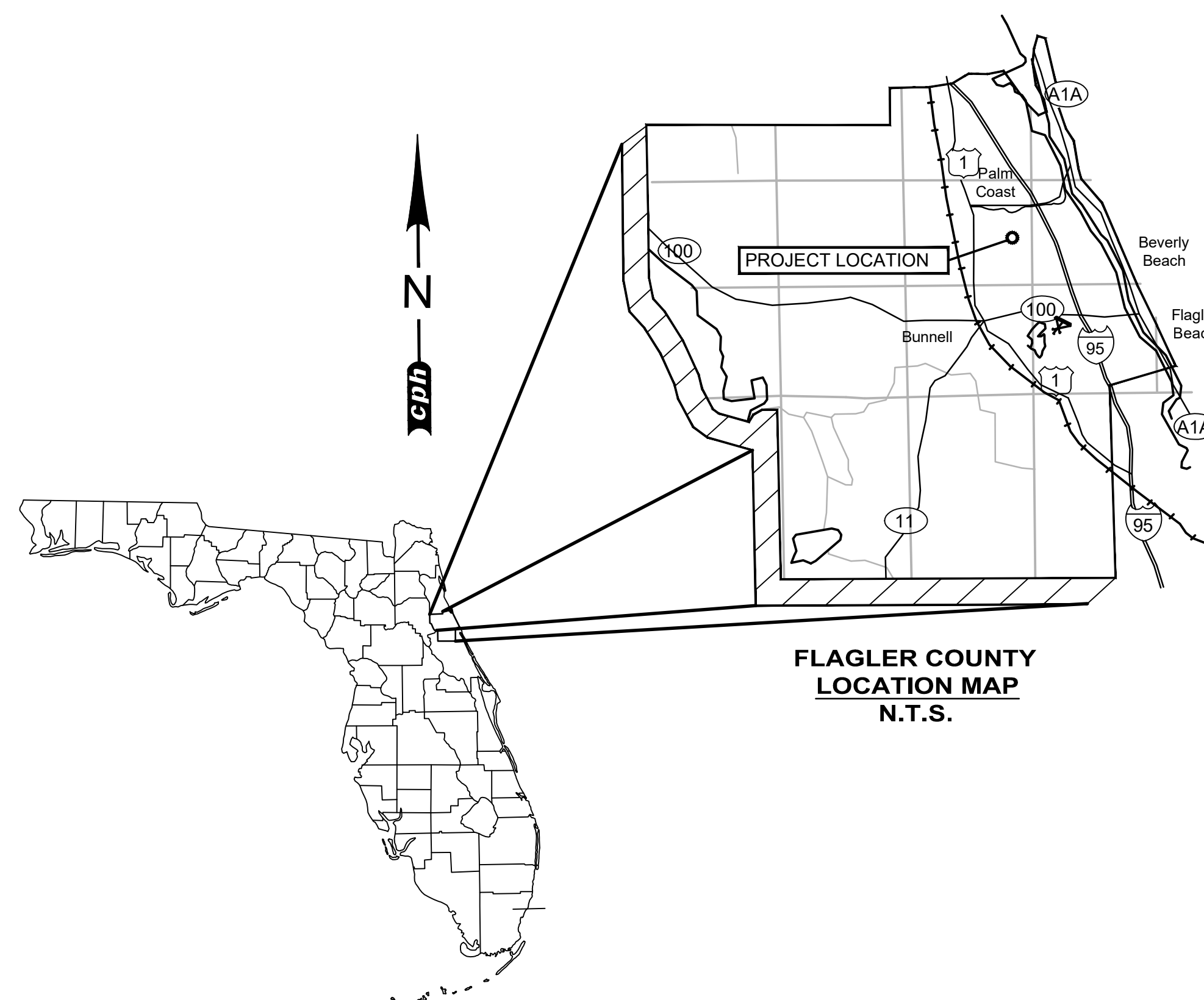
Survey

CPH Engineers, Inc.

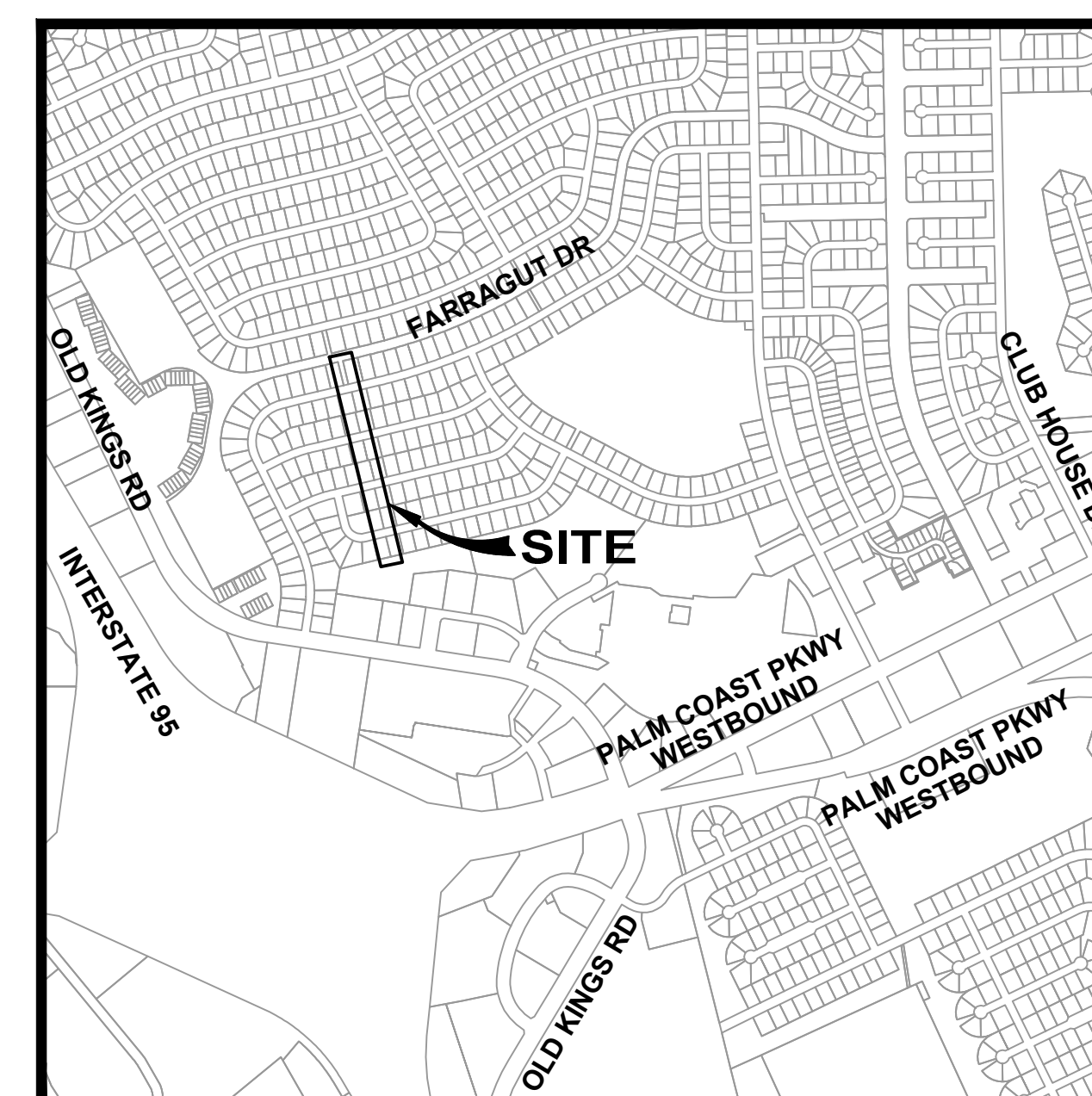
520 Palm Coast Pkwy
Palm Coast, FL 32137
Phone: 386.445.6569 Fax: 386.447.8991
Attn. Jeffery W. Patterson, P.S.M.

DRAWINGS

- 1 COVER SHEET
- 2 GENERAL NOTES
- 3 OVERALL PLAN AND TYPICAL SECTIONS
- 4-5 DEMOLITION AND SWPP PLAN
- 6-9 CROSS SECTIONS
- 10-12 IMPROVEMENTS PLAN AND PROFILE
- 13 DETAILS



FLAGLER COUNTY
LOCATION MAP
N.T.S.



VICINITY MAP
1" = 1000'



STATE MAP
N.T.S.

NOTICE

THIS SET OF PLANS IS NOT VALID FOR CONSTRUCTION PURPOSES WITHOUT BEING STAMPED *APPROVED FOR CONSTRUCTION BY CPH ENGINEERS, INC.* PLANS WITHOUT THIS STAMP ARE GIVEN FOR INFORMATIONAL PURPOSES ONLY.

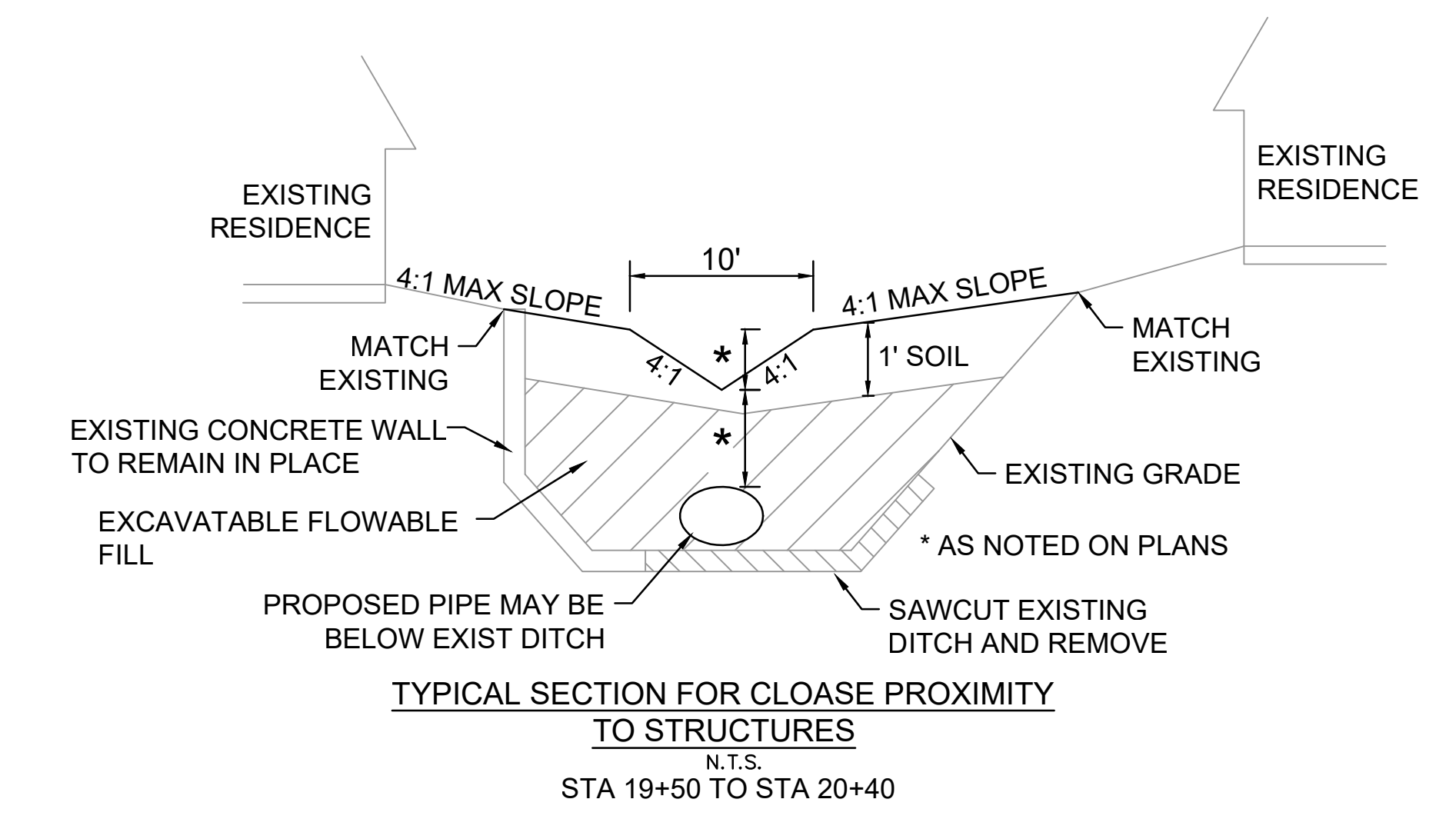
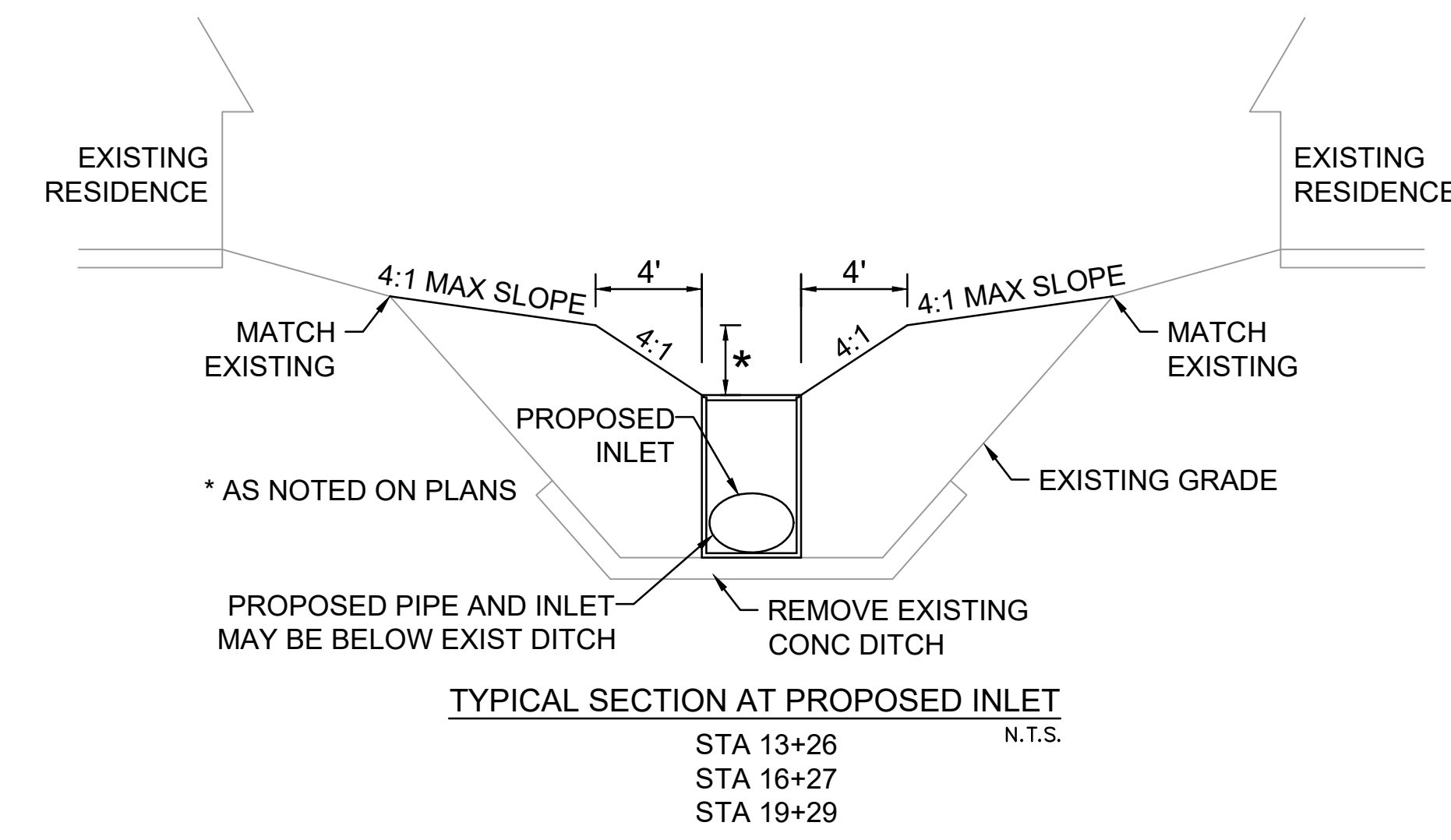
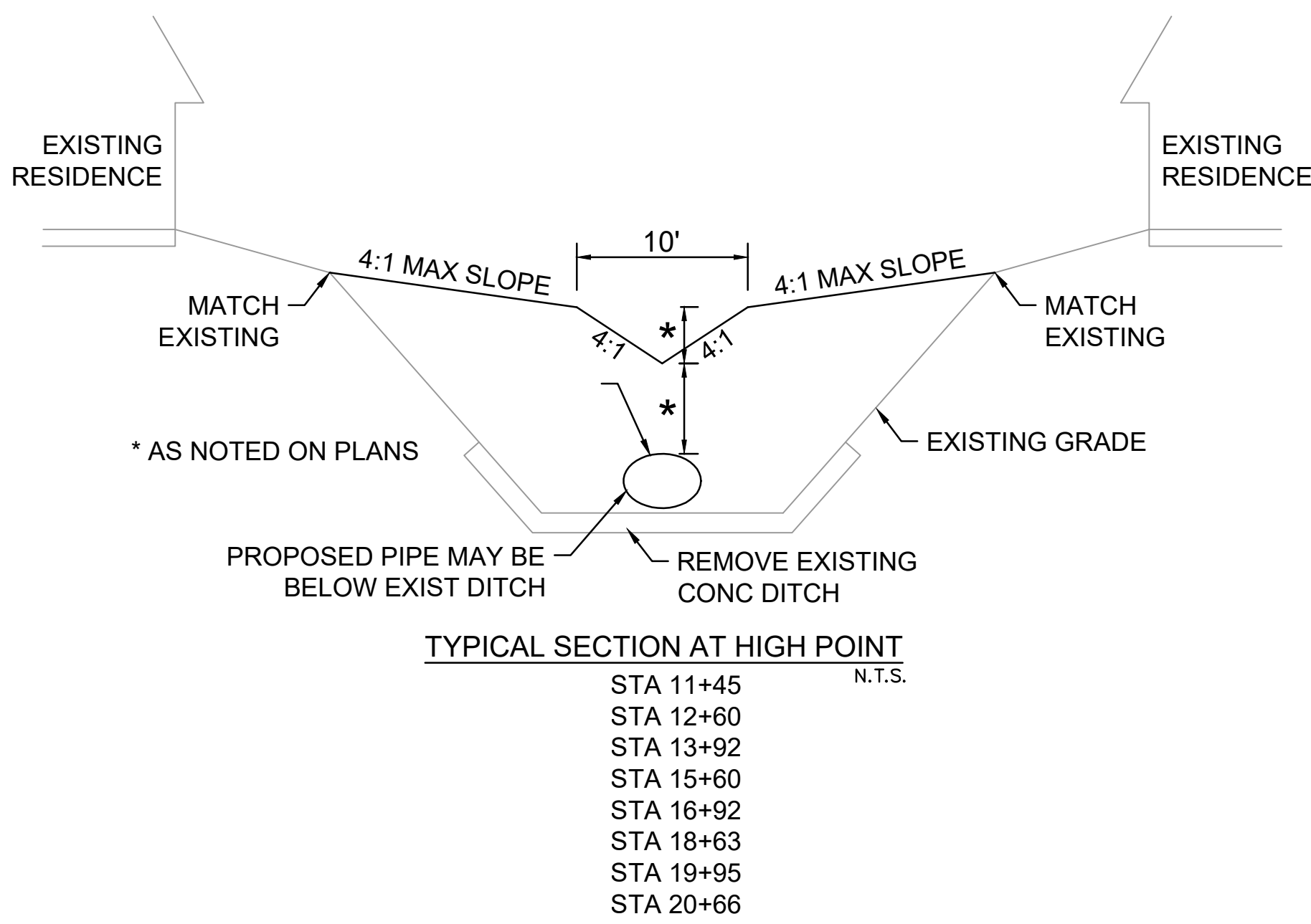
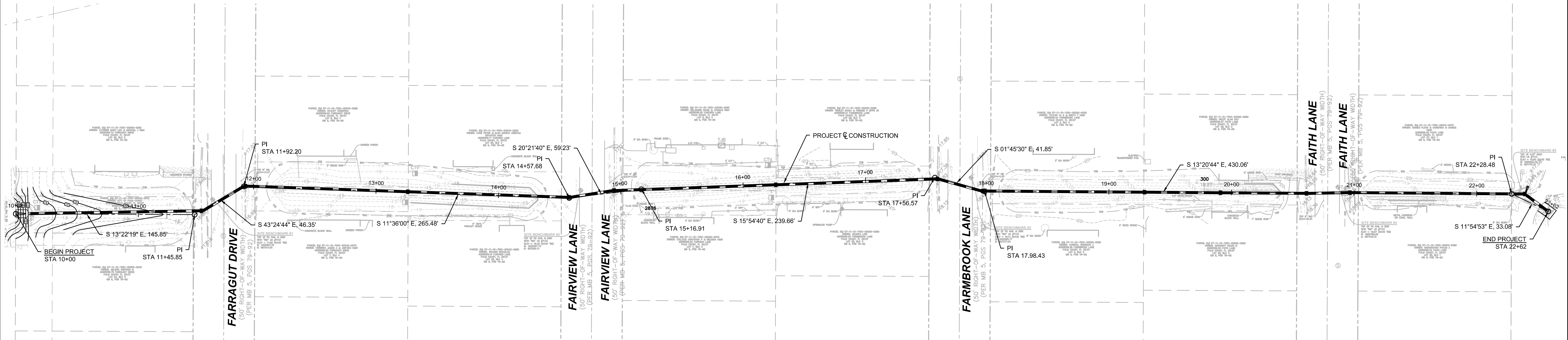
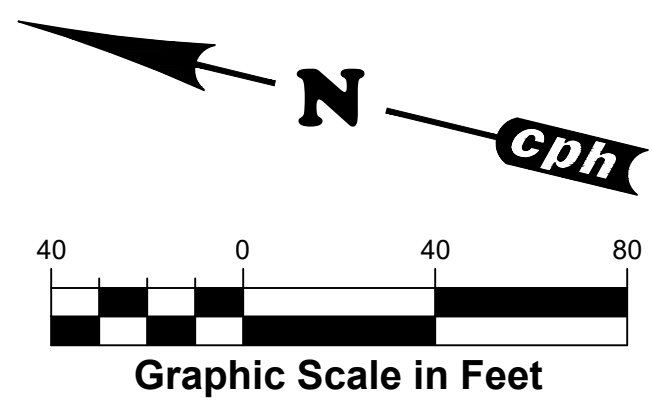
cph Engineers (C.O.A. No. 3215)
Architects (Lic. No. AA2600926)
Surveyors (L.B. No. 7143)
Landscape Arch. (Lic. No. LC0000298)
Planners
Environmental Scientists
Construction Management
Traffic / Transportation

520 Palm Coast Pkwy SW - Palm Coast, FL 32137
Phone 386-445-6569 Fax 386-447-8991

1

JOB# P61244
DATE: MAY 2019

JASON R. KELLOGG, P.E.
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NOTE: ALL DISTURBED AREAS ARE TO BE SODDED TO MATCH EXISTING SOD TYPE

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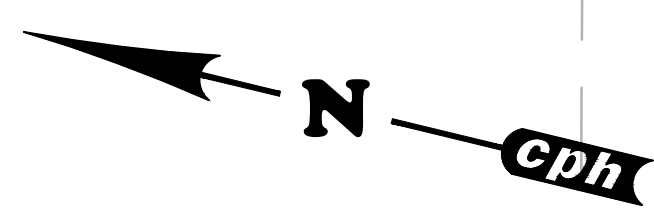
SECTION F DITCH REPLACEMENT
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 Licenses:
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 REG-# 56952

OVERALL PLAN AND TYPICAL SECTIONS

Sheet No.
3



RIBBON LAKE DRAINAGE AREA
(60' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

FAIRVIEW LANE
(50' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

FARRAGUT DRIVE
(50' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

FAIRVIEW LANE
(50' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

FAITH LANE
(50' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

MATCHLINE STA 14+76.49

MATCHLINE STA 20+78.48

FAIRVIEW LANE
(50' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

FARBROOK LANE
(50' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)

No.	Date	Revision	By	No.	Date	Revision	By
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2				3			
3				4			
4				5			



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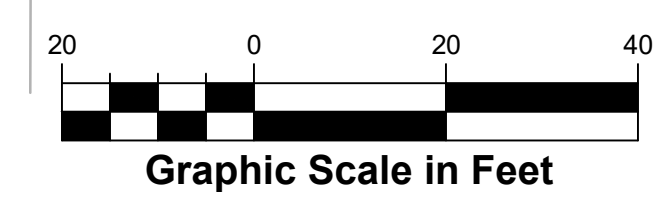
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REG-# 56952

DEMOLITION AND SWPP PLAN

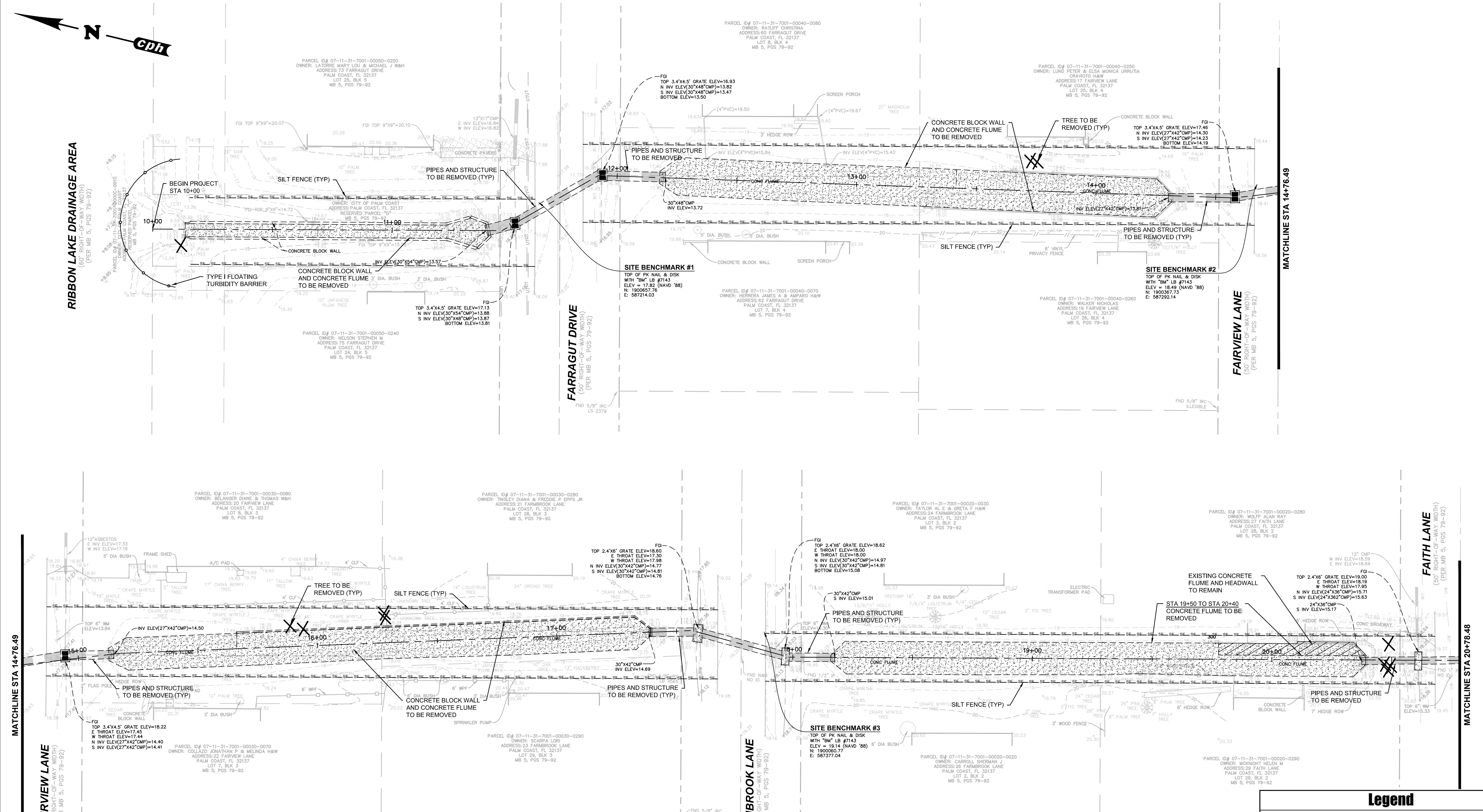
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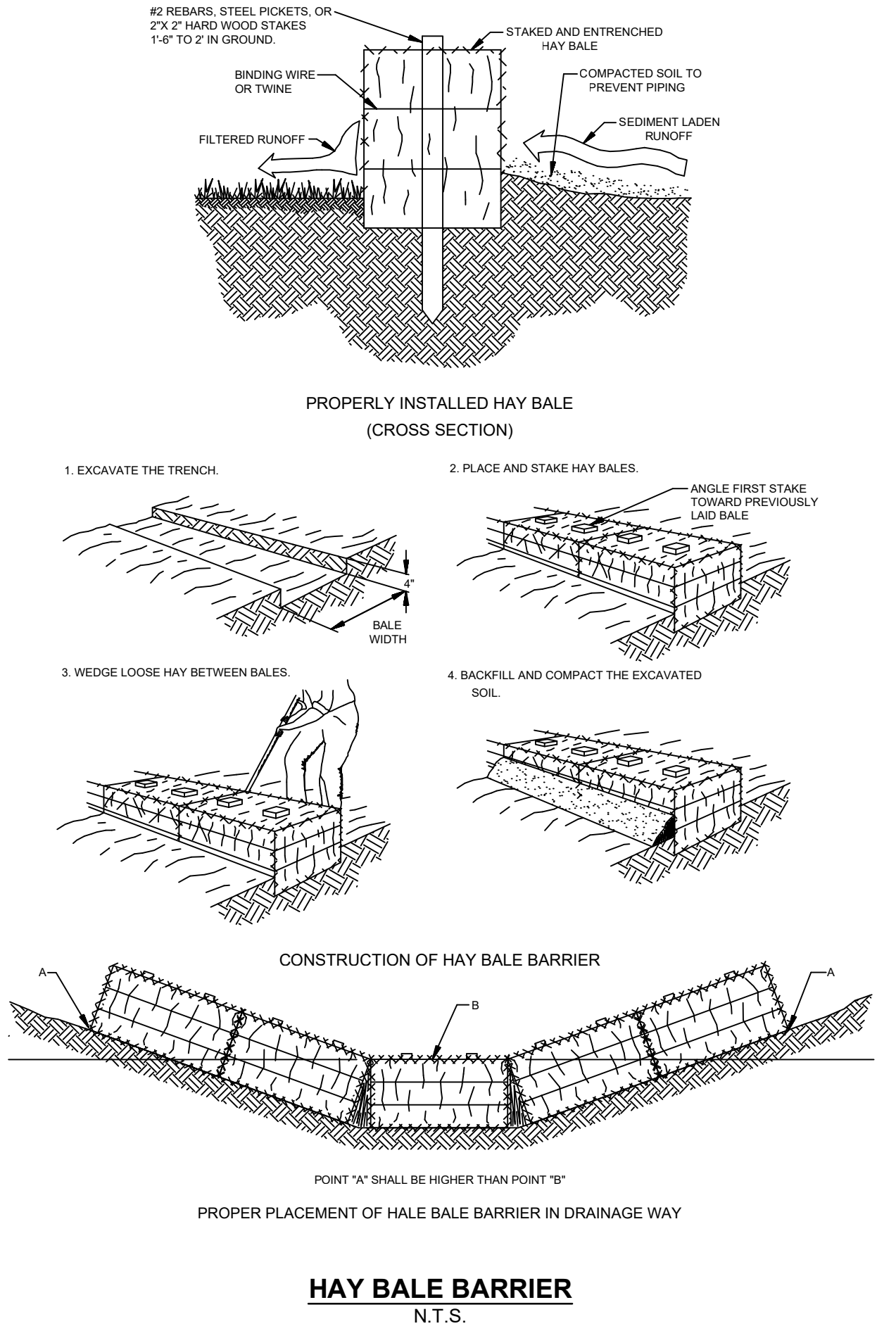
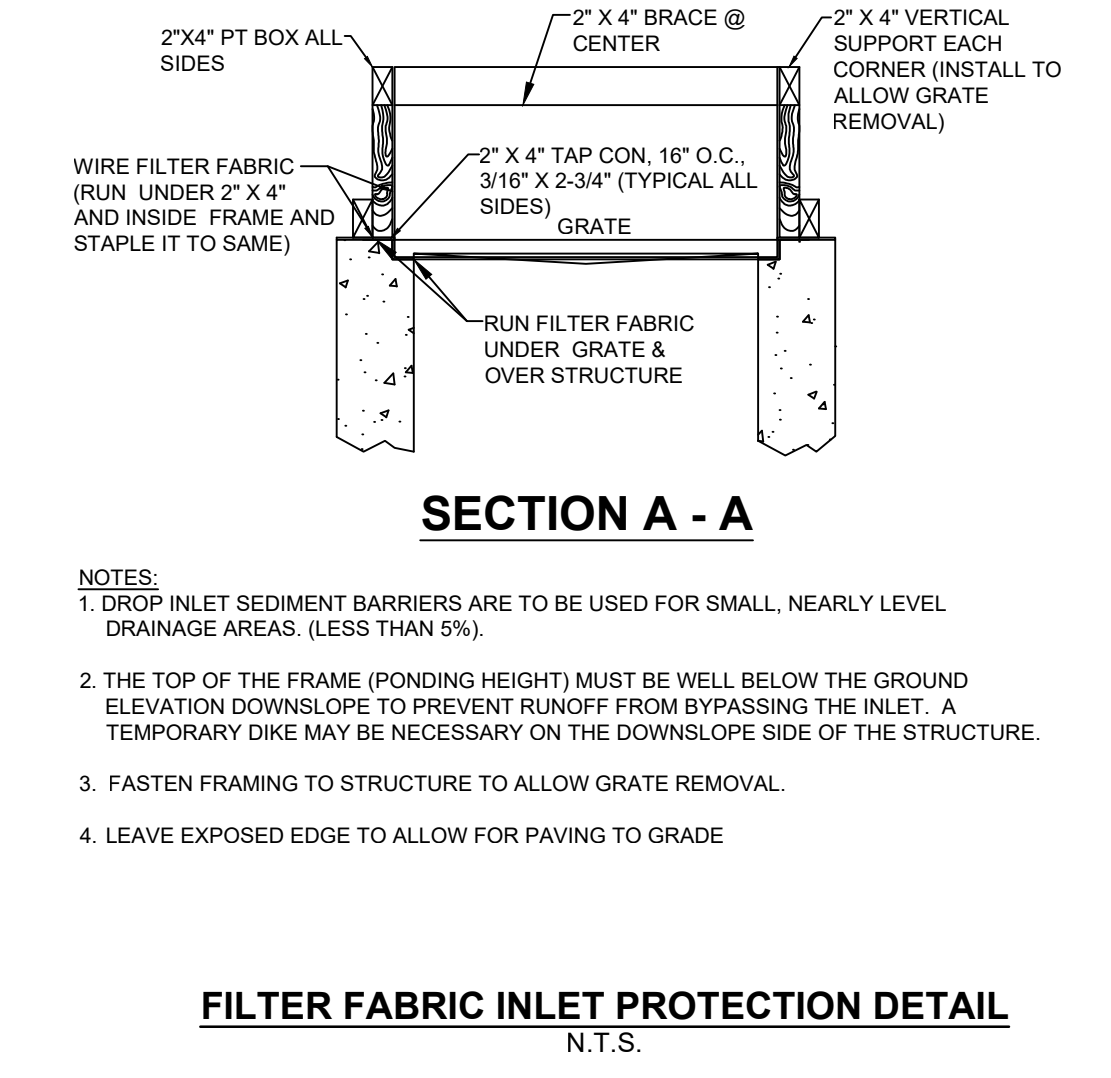
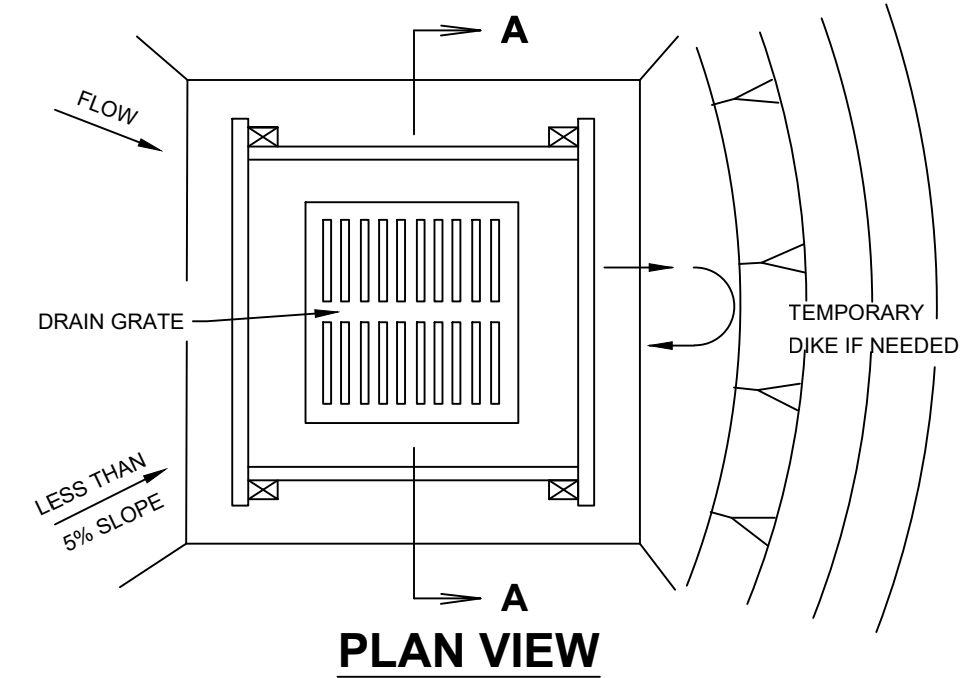
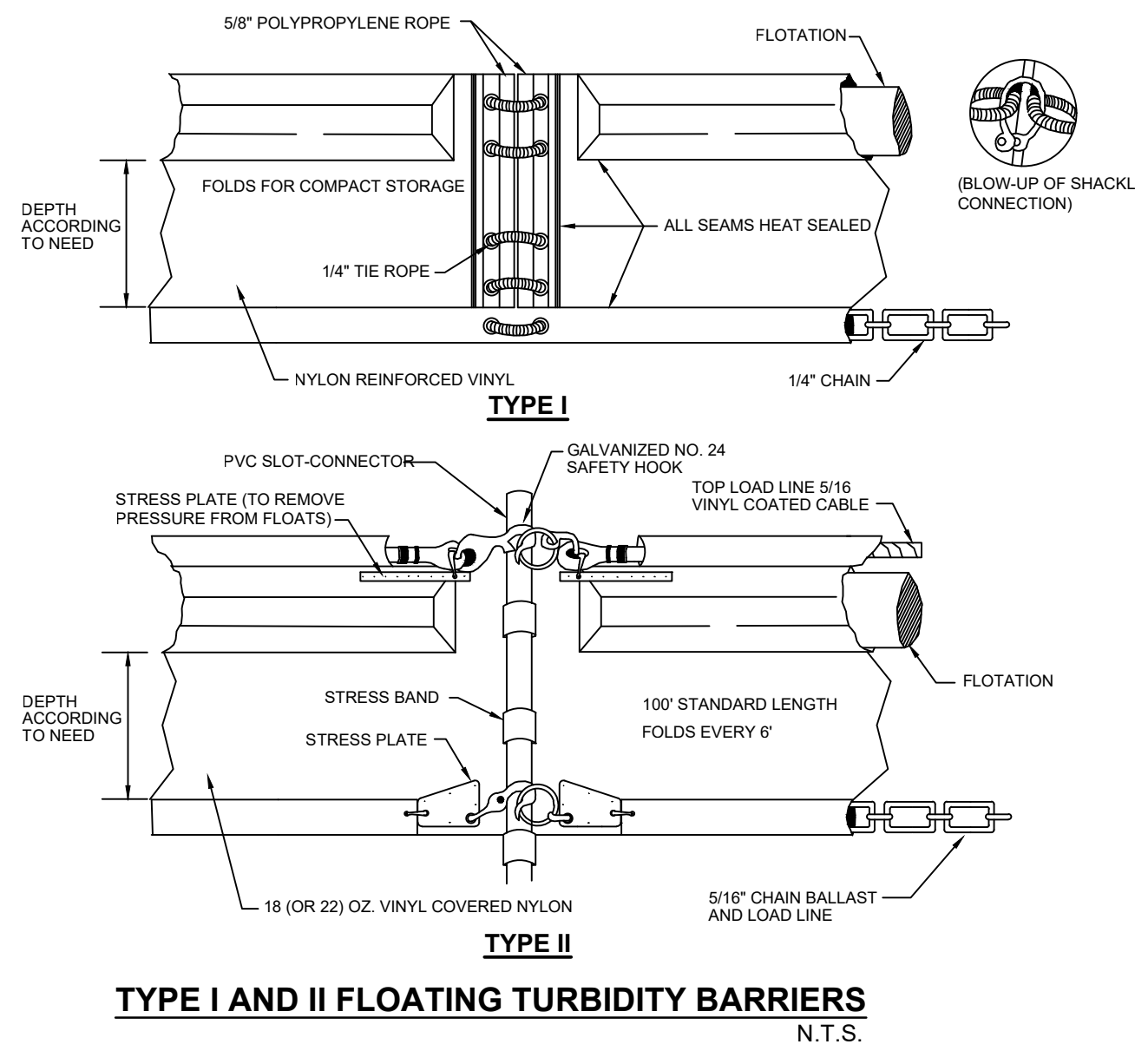
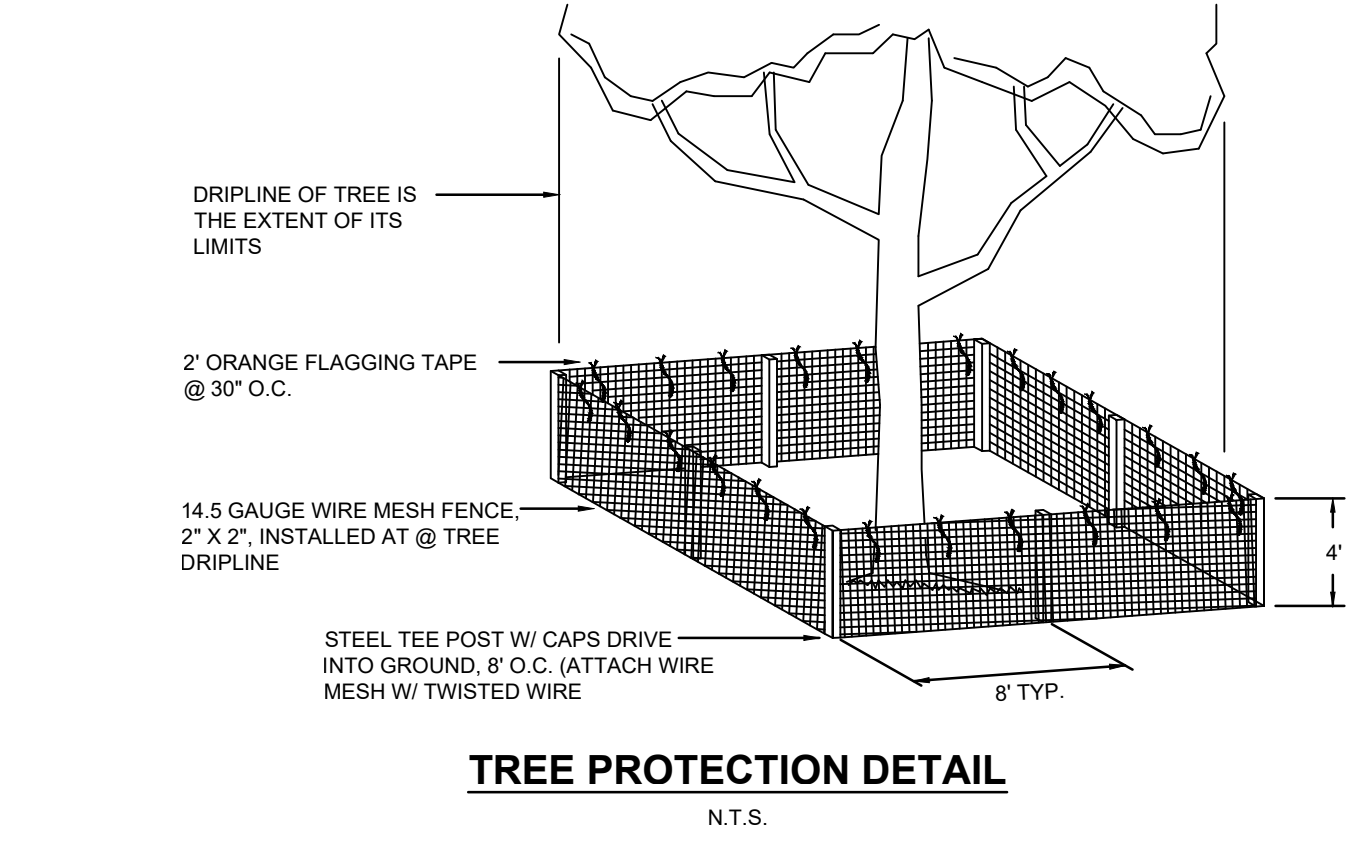
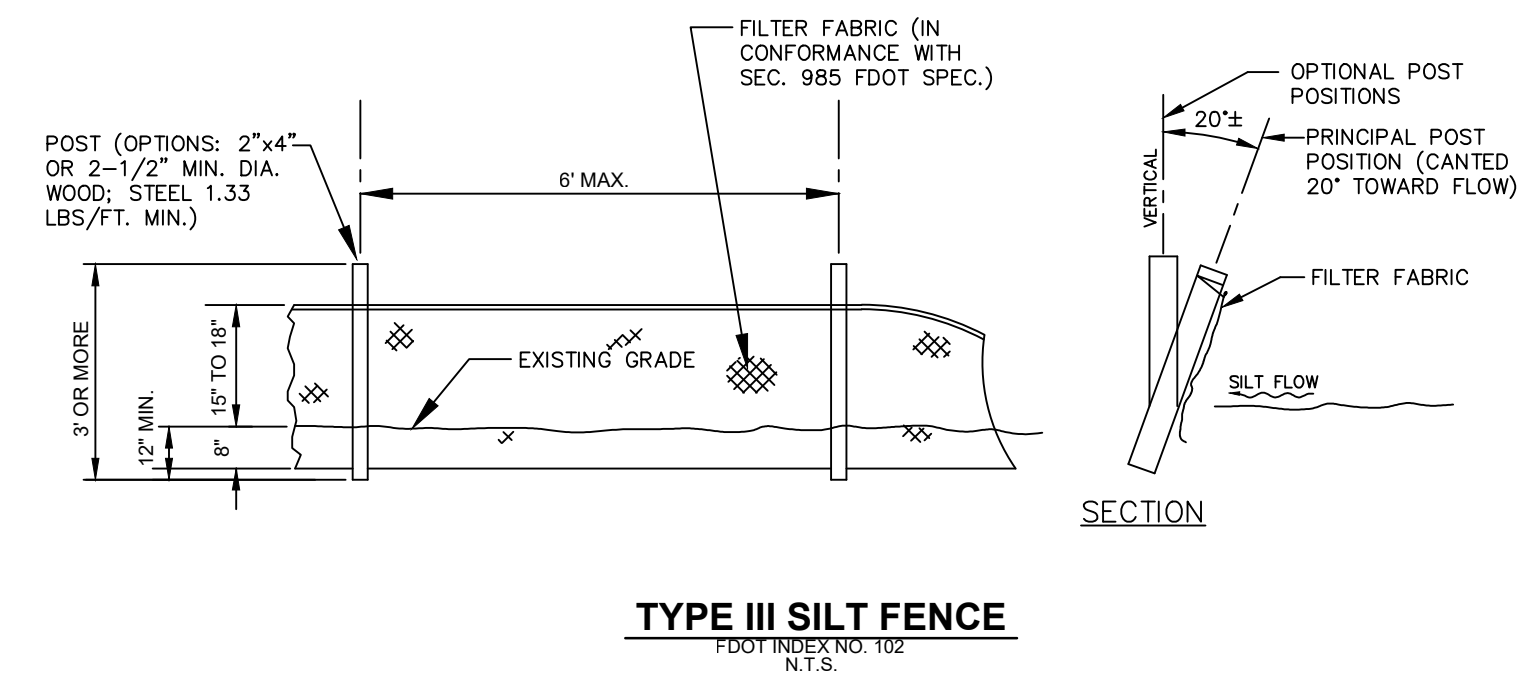
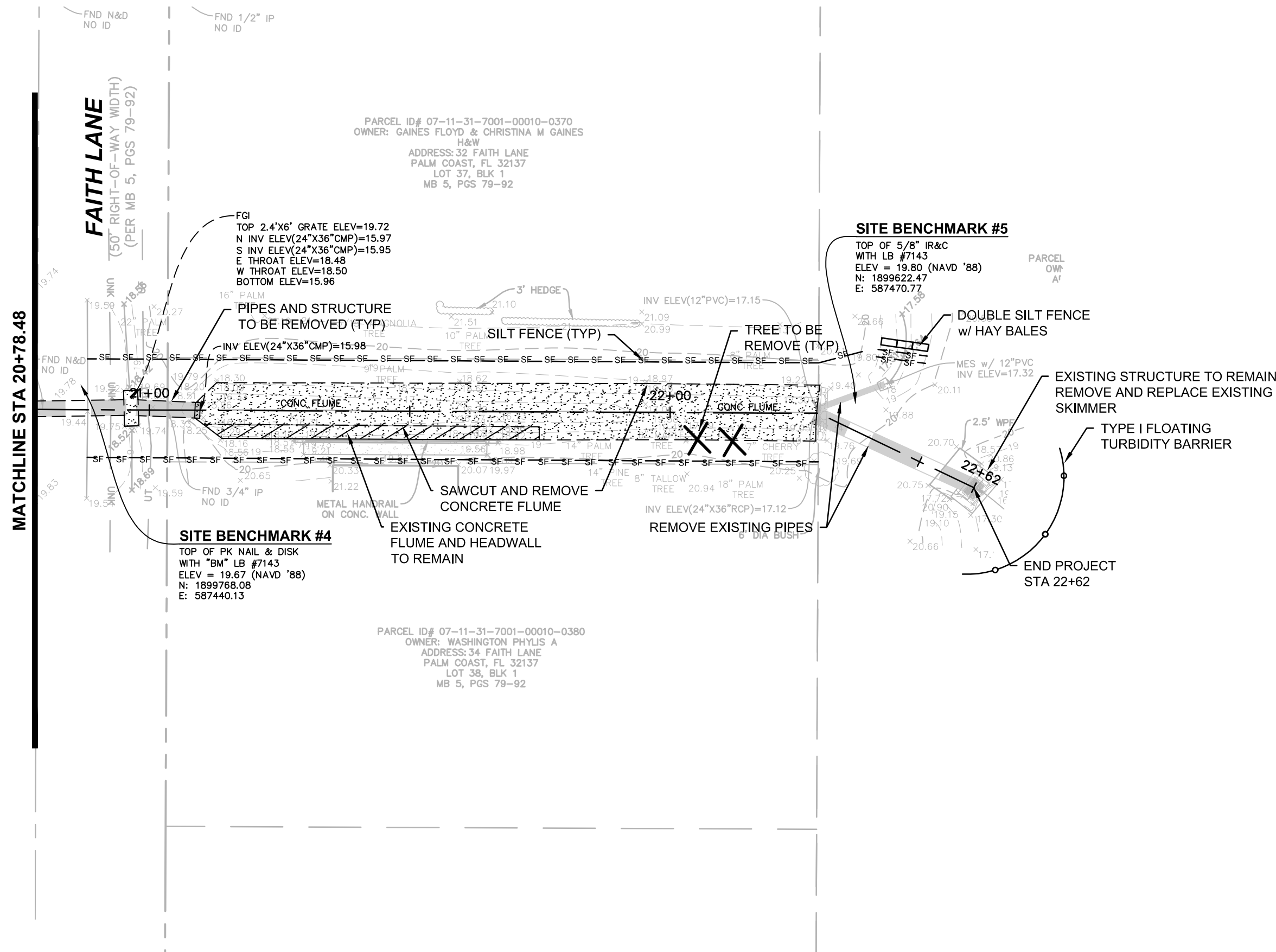
Legend

- SITE BENCHMARK
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER SYSTEM
- EXISTING CONTOUR LINE
- TREE TO BE REMOVED
- PROPOSED SILT FENCE
- PROPOSED FLOATING TURBIDITY BARRIER



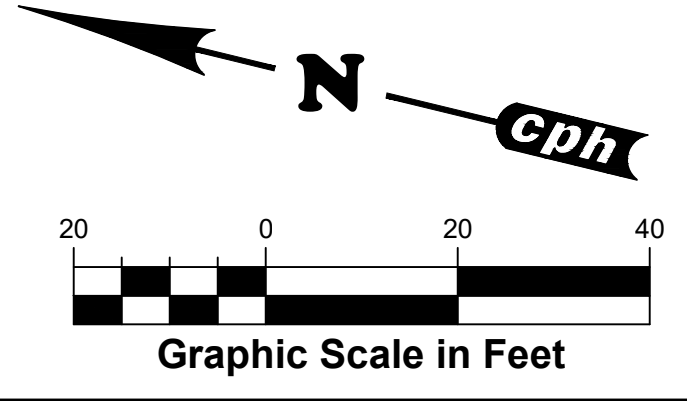
SEE NOTES AND DETAILS SHEET 6





GENERAL NOTES:

- SILT FENCE SHALL BE PLACED AND INSPECTED BY THE CITY PRIOR TO ANY CONSTRUCTION.
- CONTRACTOR TO COORDINATE WITH THE CITY ON ALL MOBILIZATION AND EQUIPMENT STORAGE LOCATIONS PRIOR TO ANY CONSTRUCTION.
- CONTRACTOR TO PROVIDE THE CITY WITH PROJECT TRAFFIC CONTROL PLAN AND SCHEDULE OF ALL PHASES OF CONSTRUCTION PRIOR TO ANY CONSTRUCTION ACTIVITY.
- TRAIL AND SIDEWALK CLOSURES MUST BE COORDINATED WITH THE CITY AND SCHEDULED. APPROPRIATE SIGNAGE AND TEMPORARY ACCESS/USE MUST BE PROVIDED BY THE CONTRACTOR AND APPROVED BY THE CITY PRIOR TO ANY CONSTRUCTION ACTIVITY.
- ALL UTILITY CONSTRUCTION AT PROPOSED STORM PIPING IS TO BE COORDINATED WITH THE CITY OF PALM COAST.
- ALL DISTURBED AREAS ARE TO BE SODDED w/ BAHIA SOD.



Legend	
	SITE BENCHMARK
	EXISTING SPOT ELEVATION
	EXISTING STORM SEWER SYSTEM
	EXISTING CONTOUR LINE
	TREE TO BE REMOVED
	PROPOSED SILT FENCE
	PROPOSED FLOATING TURBIDITY BARRIER

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Approved by:	JRK		
Job No.	P61244	©	2019

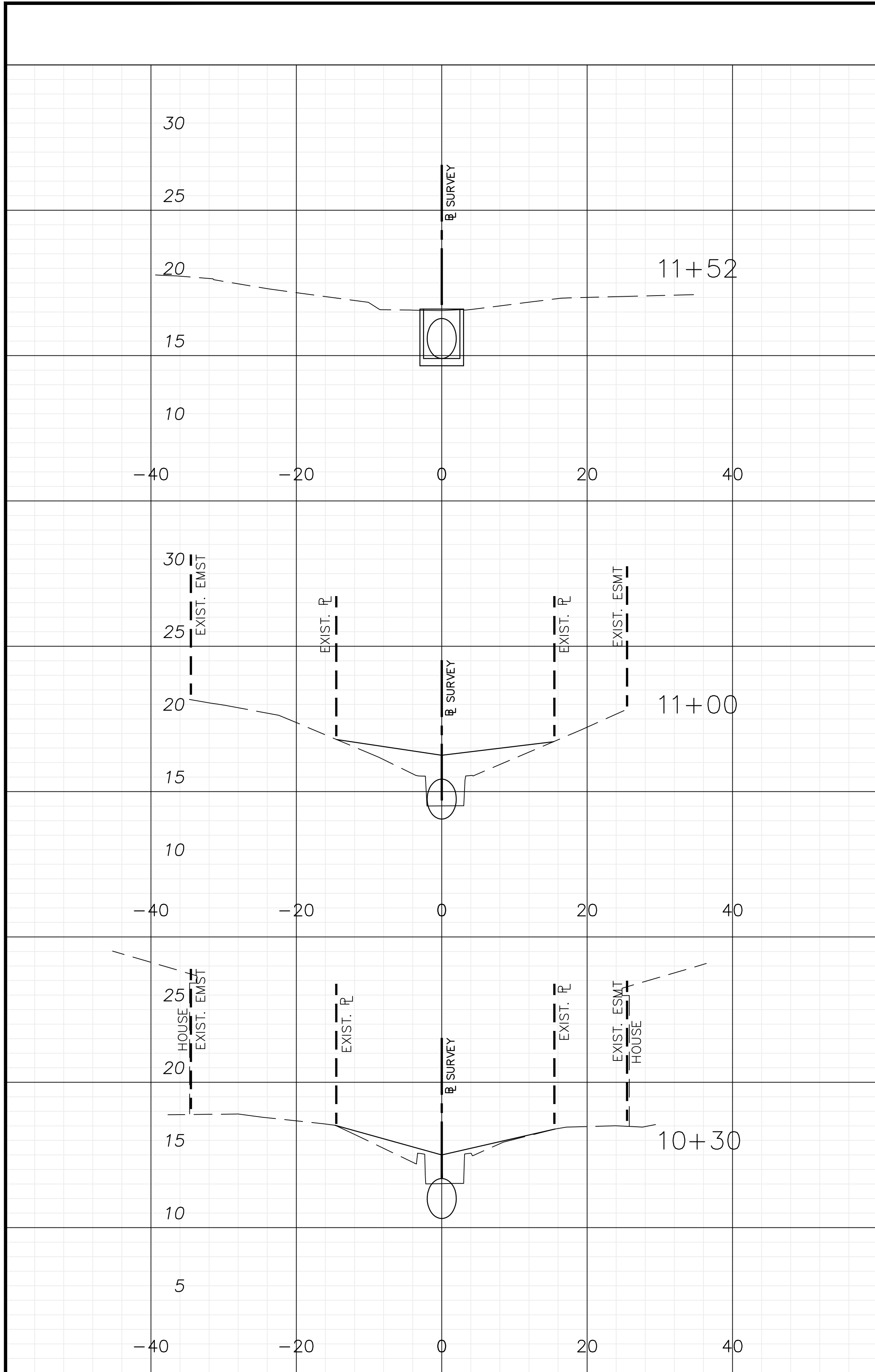
SECTION F DITCH REPLACEMENT
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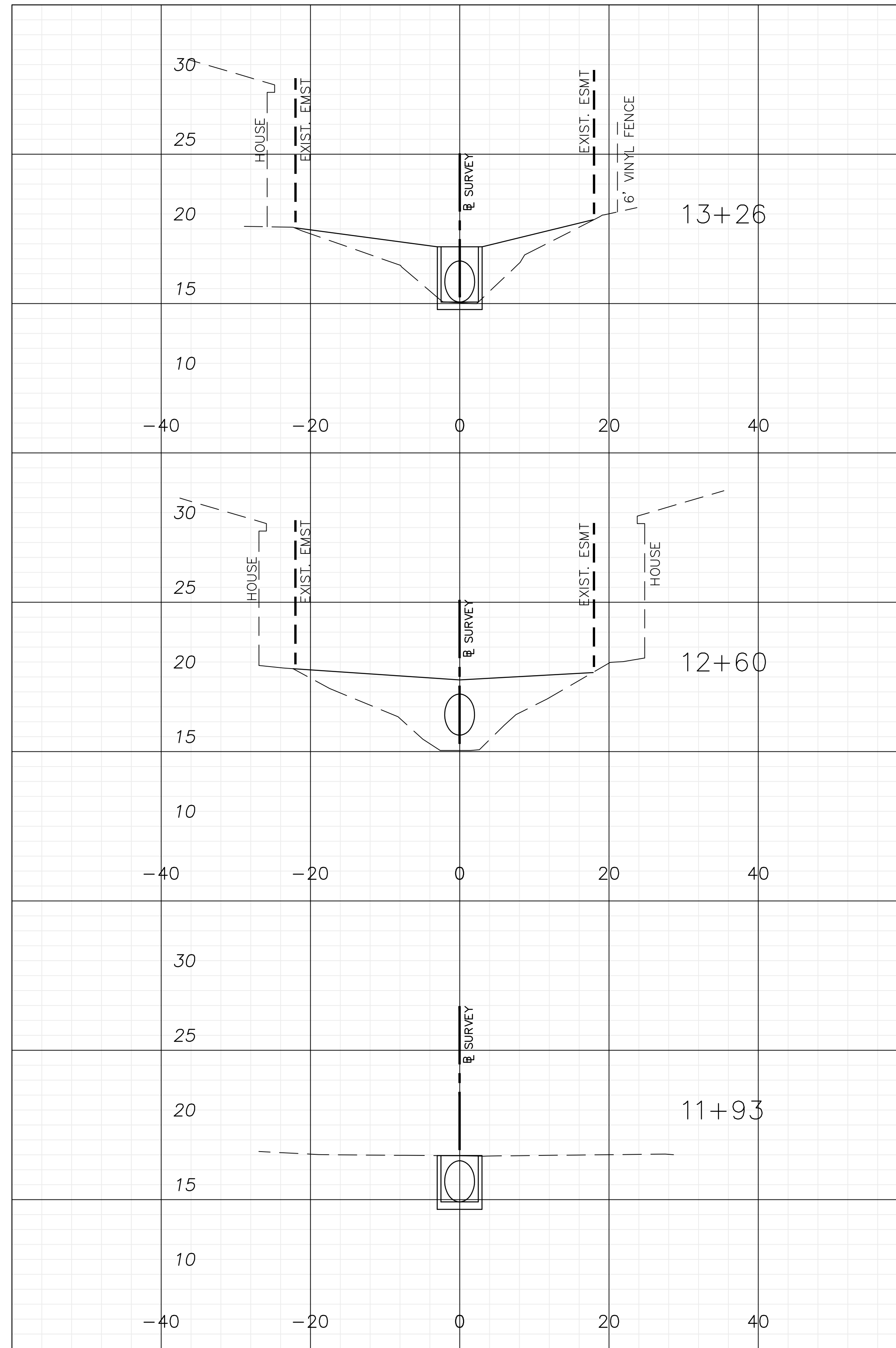
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REG-# 56952

DEMOLITION AND SWPP PLAN

Sheet No.
5



SCALE : 1" = 10' HORIZONTAL 1" = 5' VERTICAL



SCALE : 1" = 10' HORIZONTAL 1" = 5' VERTICAL

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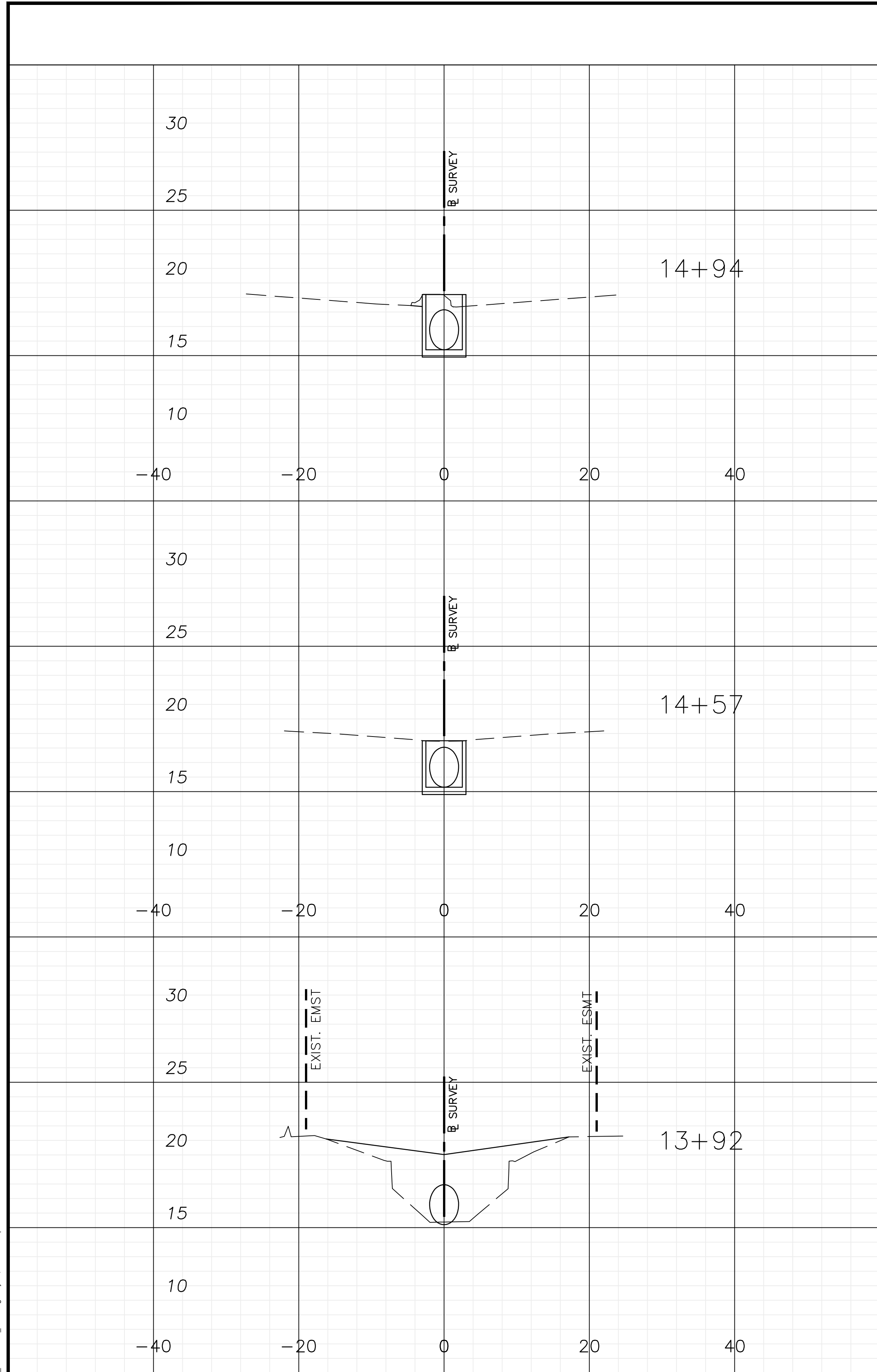
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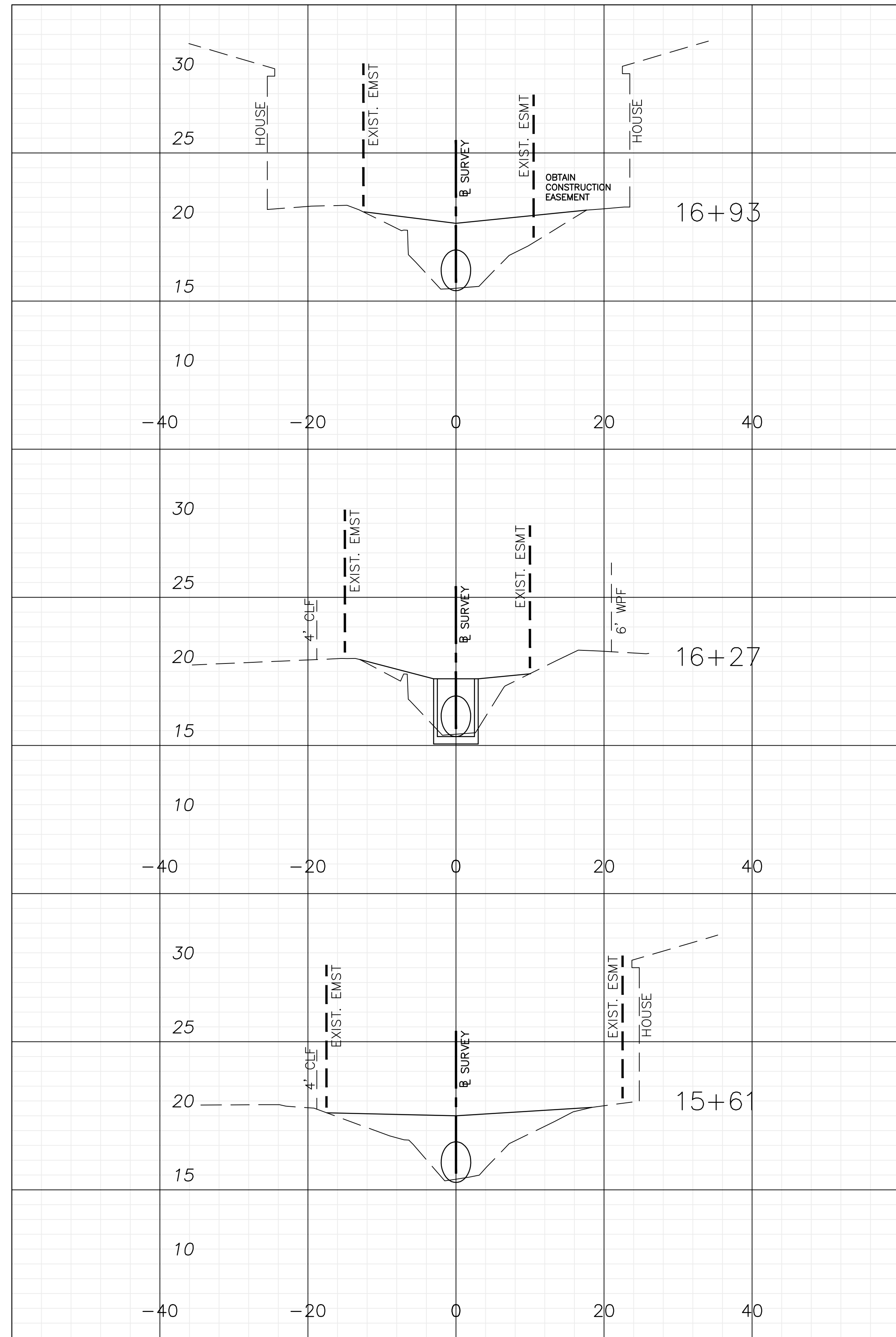
CROSS SECTIONS

Sheet No.

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SCALE : 1" = 10' HORIZONTAL 1" = 5' VERTICAL



SCALE : 1" = 10' HORIZONTAL 1" = 5' VERTICAL

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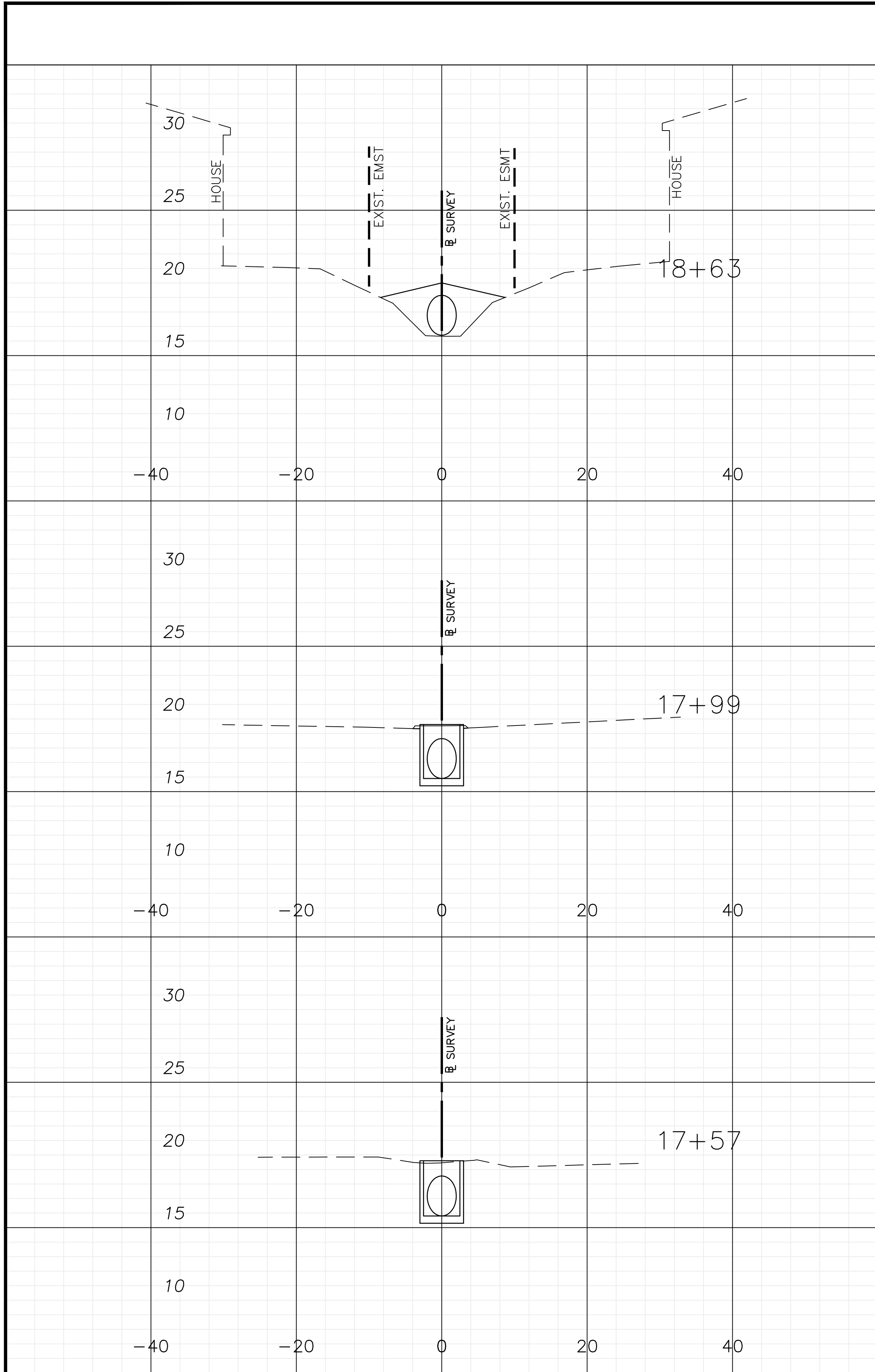
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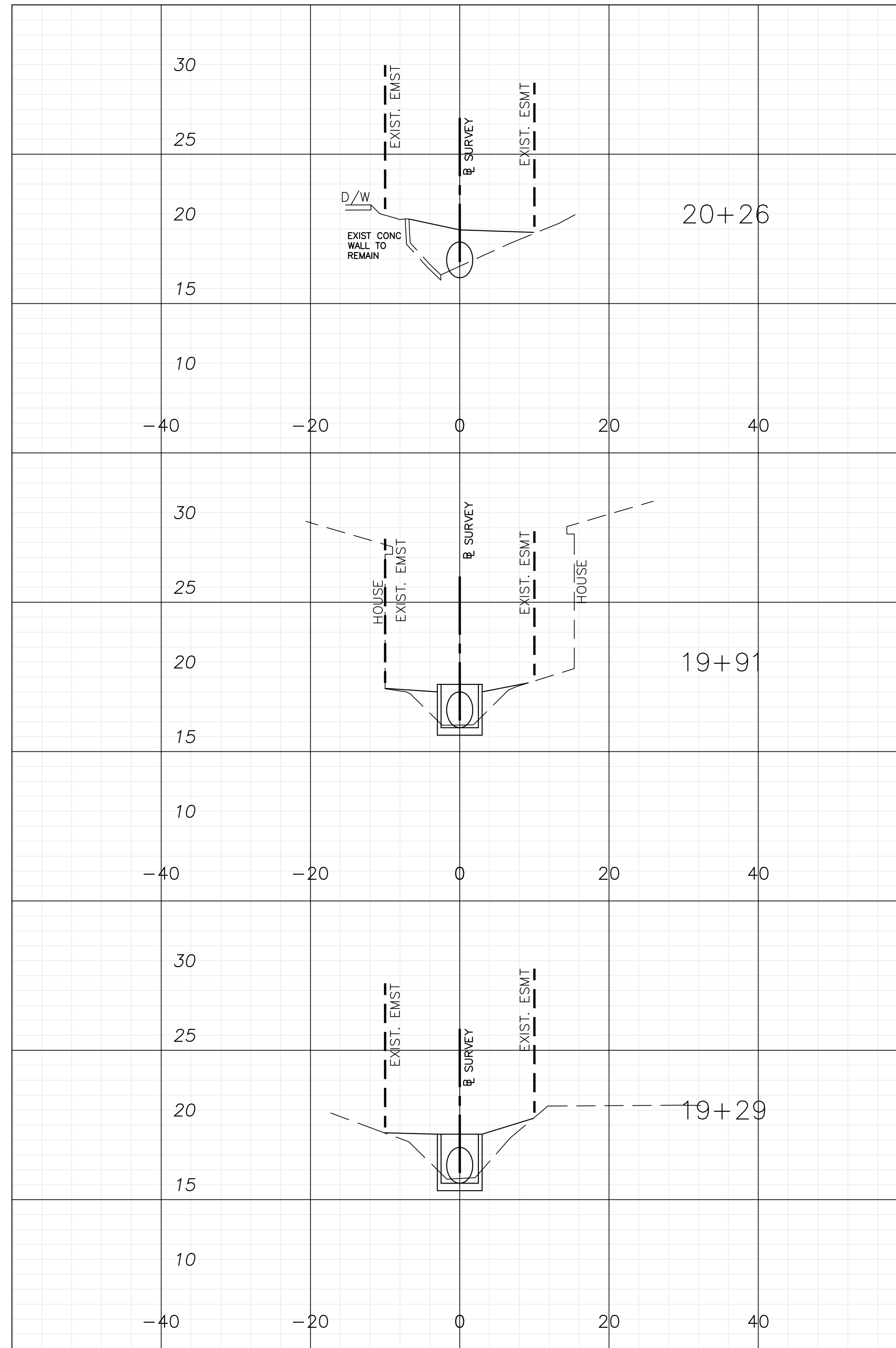
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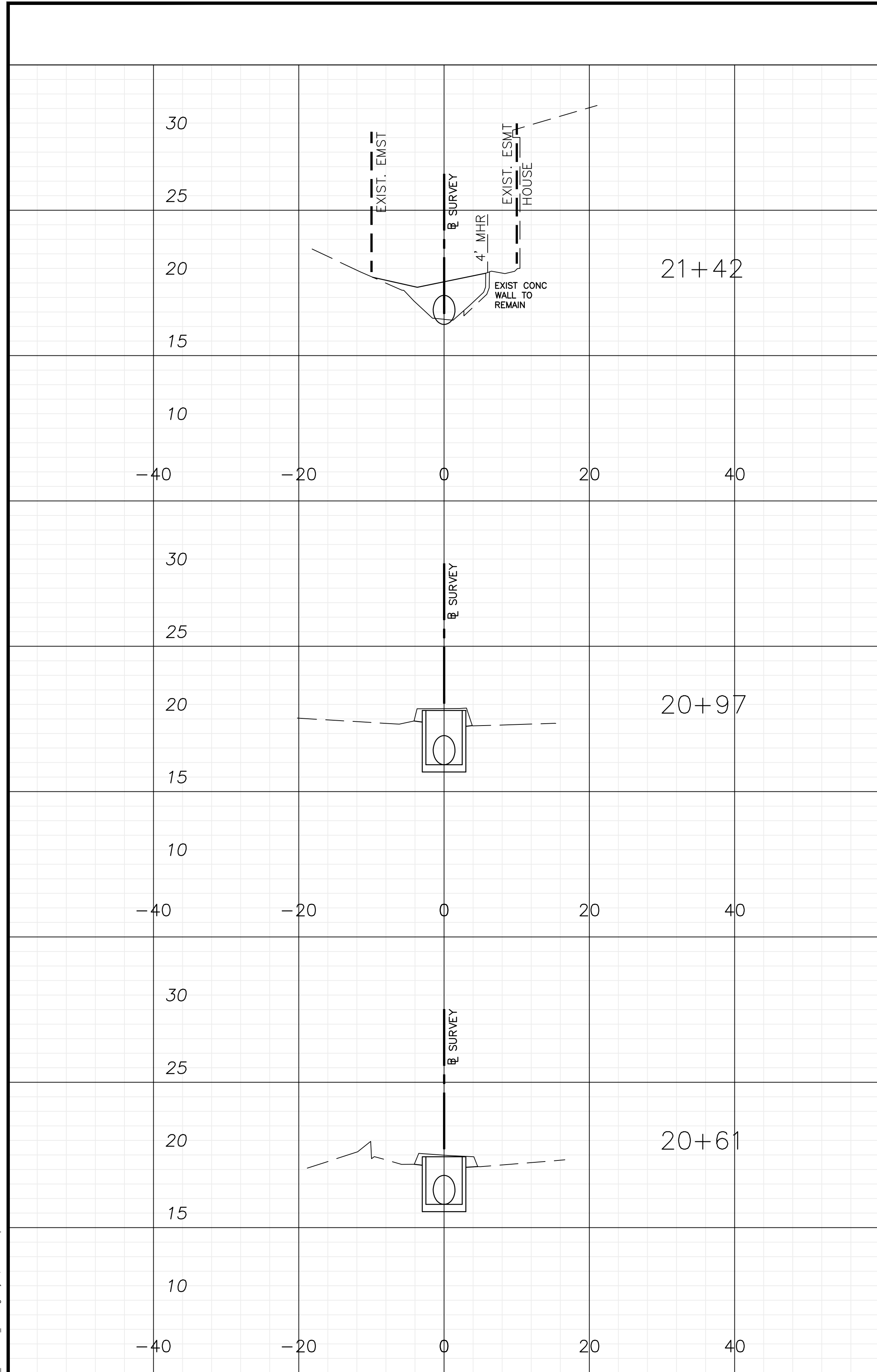
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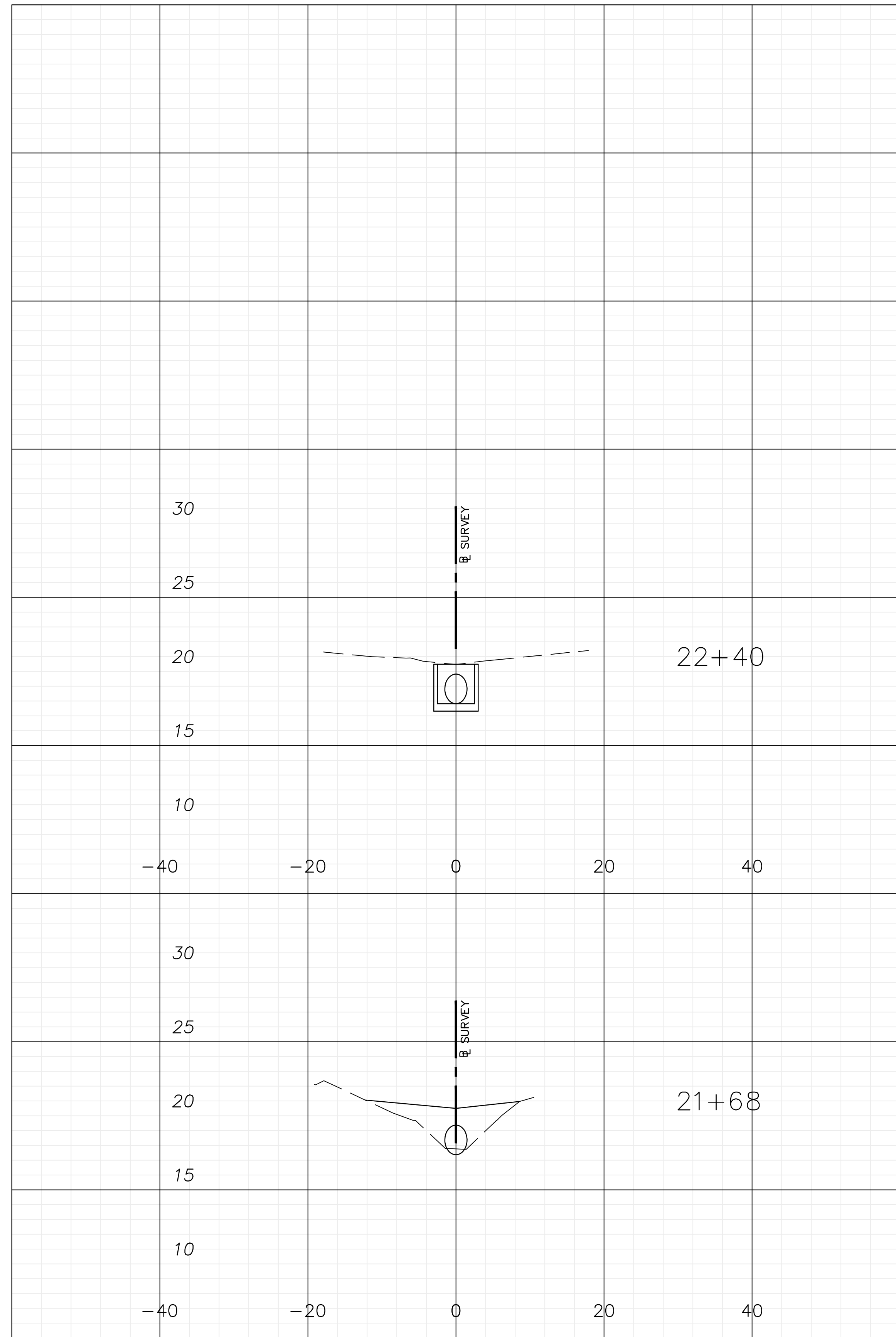
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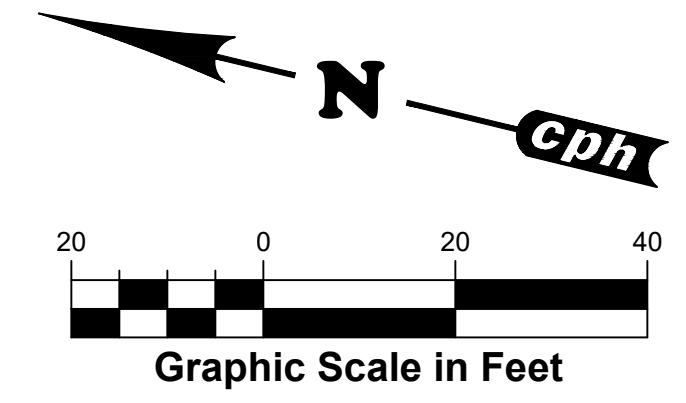
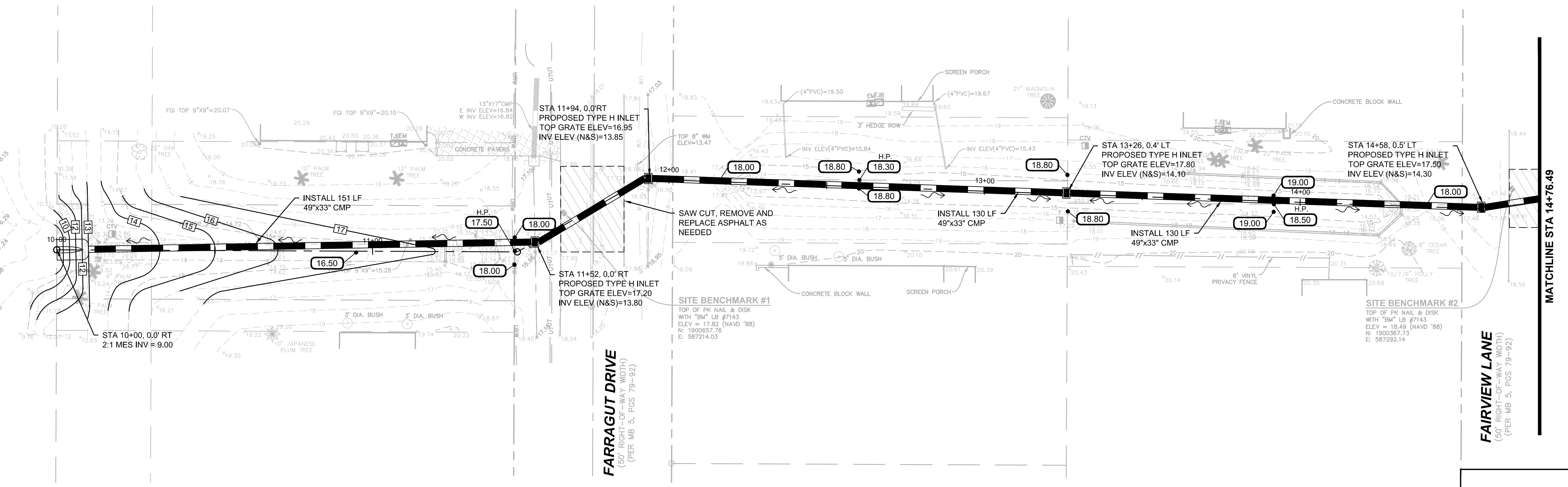
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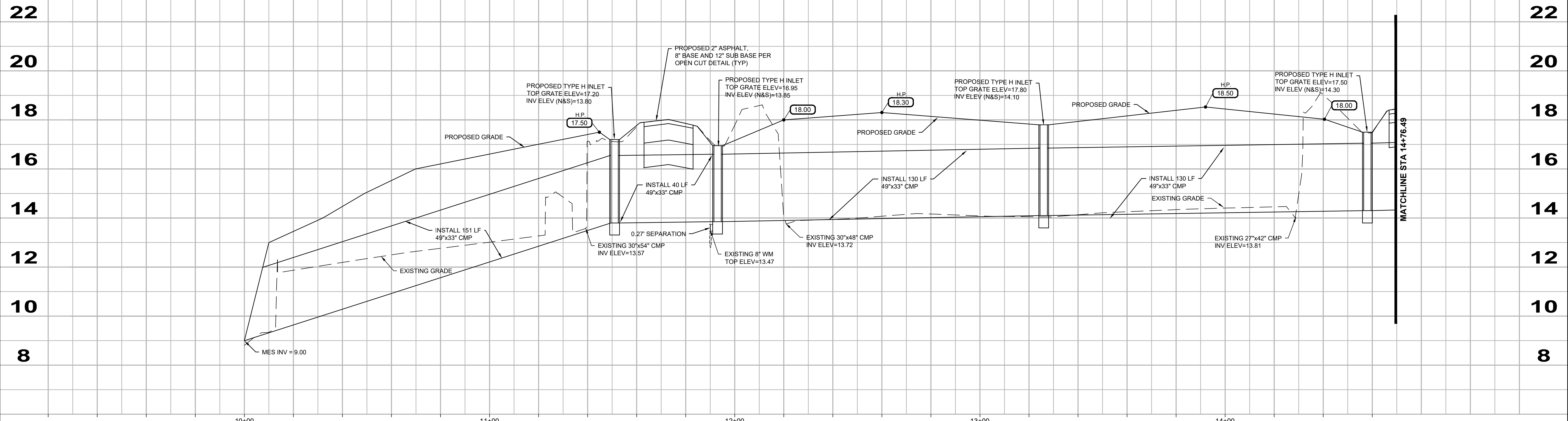
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9

RIBBON LAKE DRAINAGE AREA
(60' RIGHT-OF-WAY WIDTH)
(PER MB 5, PGS 79-92)



Legend	
	SITE BENCHMARK
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	PROPOSED STORM SYSTEM
	PROPOSED FLOW LINES
	EXISTING CONTOUR LINE
	PROPOSED CONTOUR LINE



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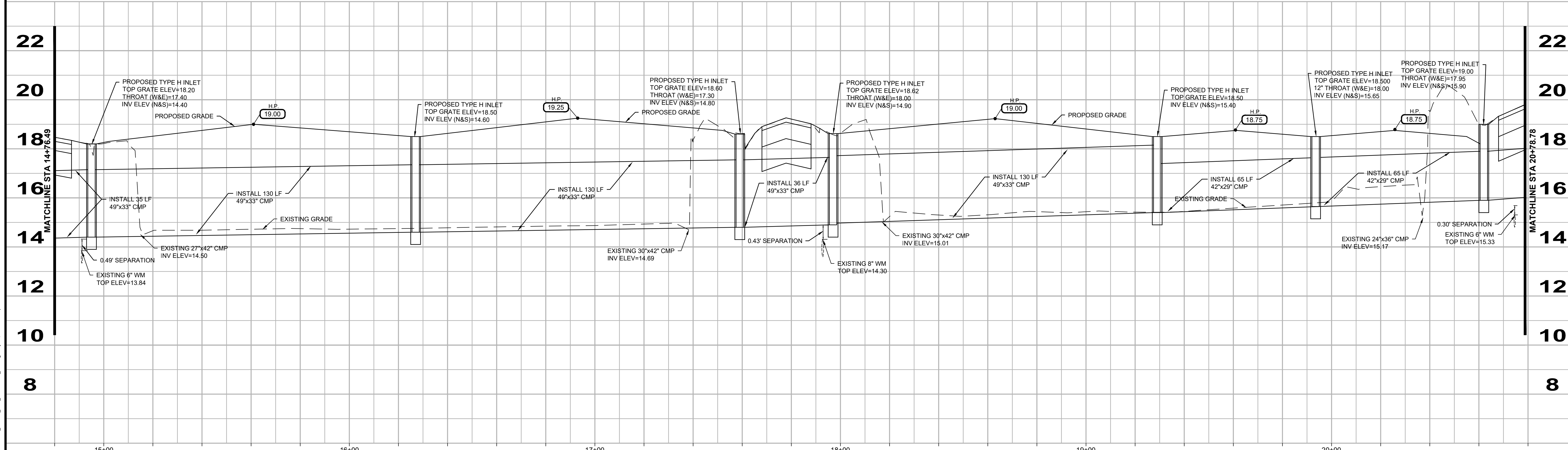
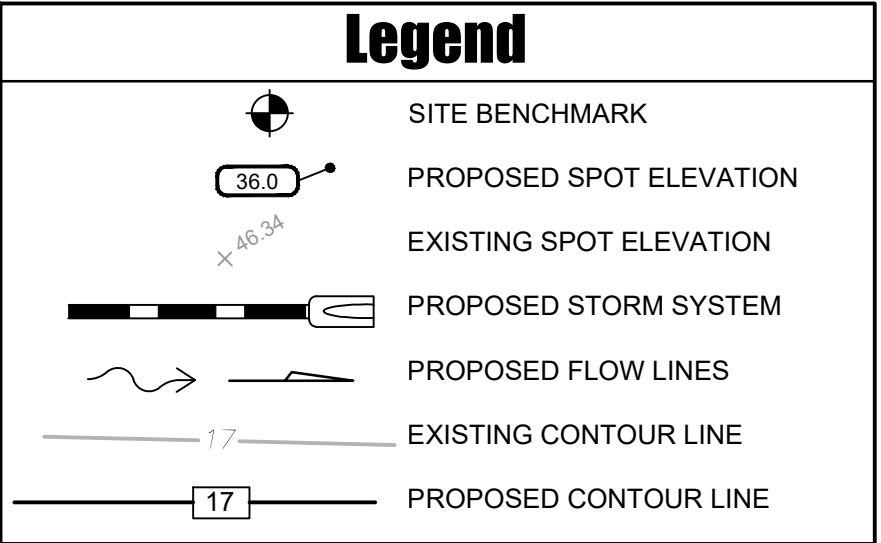
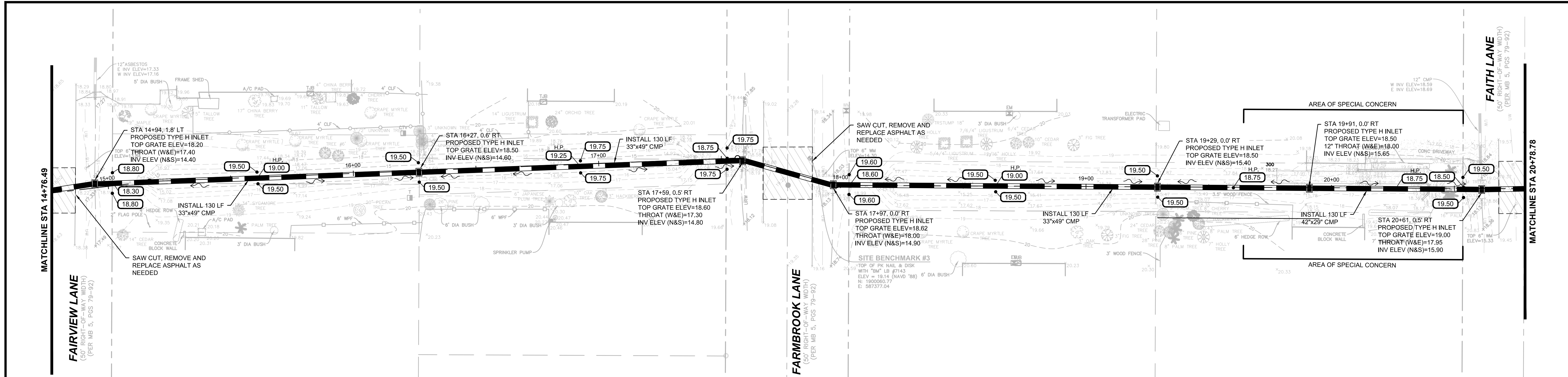
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IMPROVEMENTS PLAN AND PROFILE

Sheet No.
10



No.	Date	Revision	By	No.	Date	Revision	By

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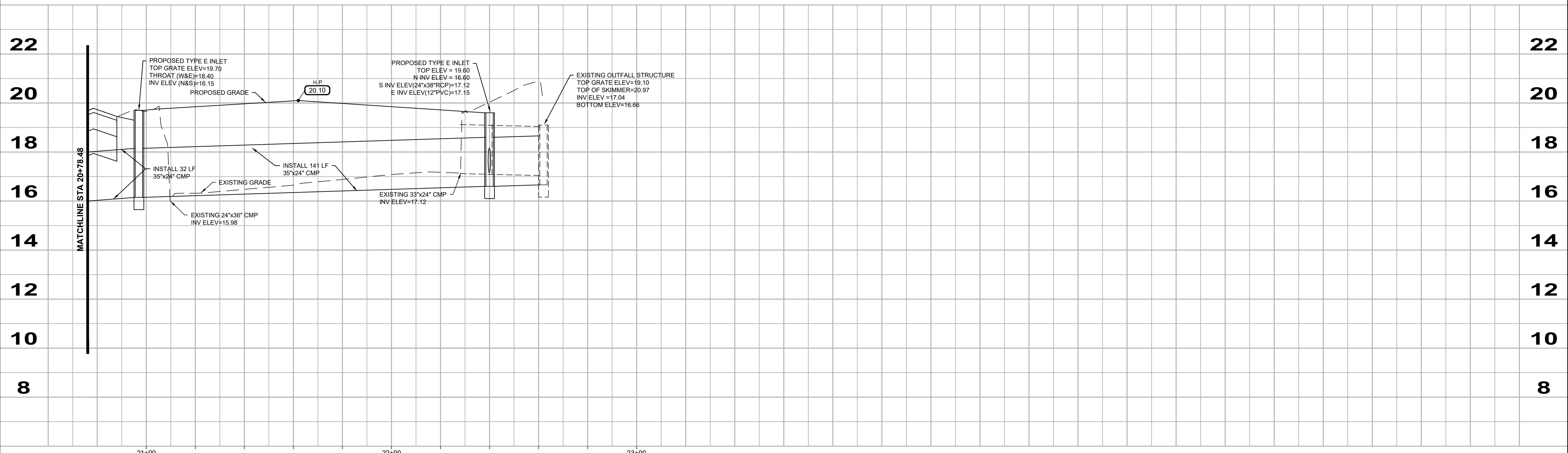
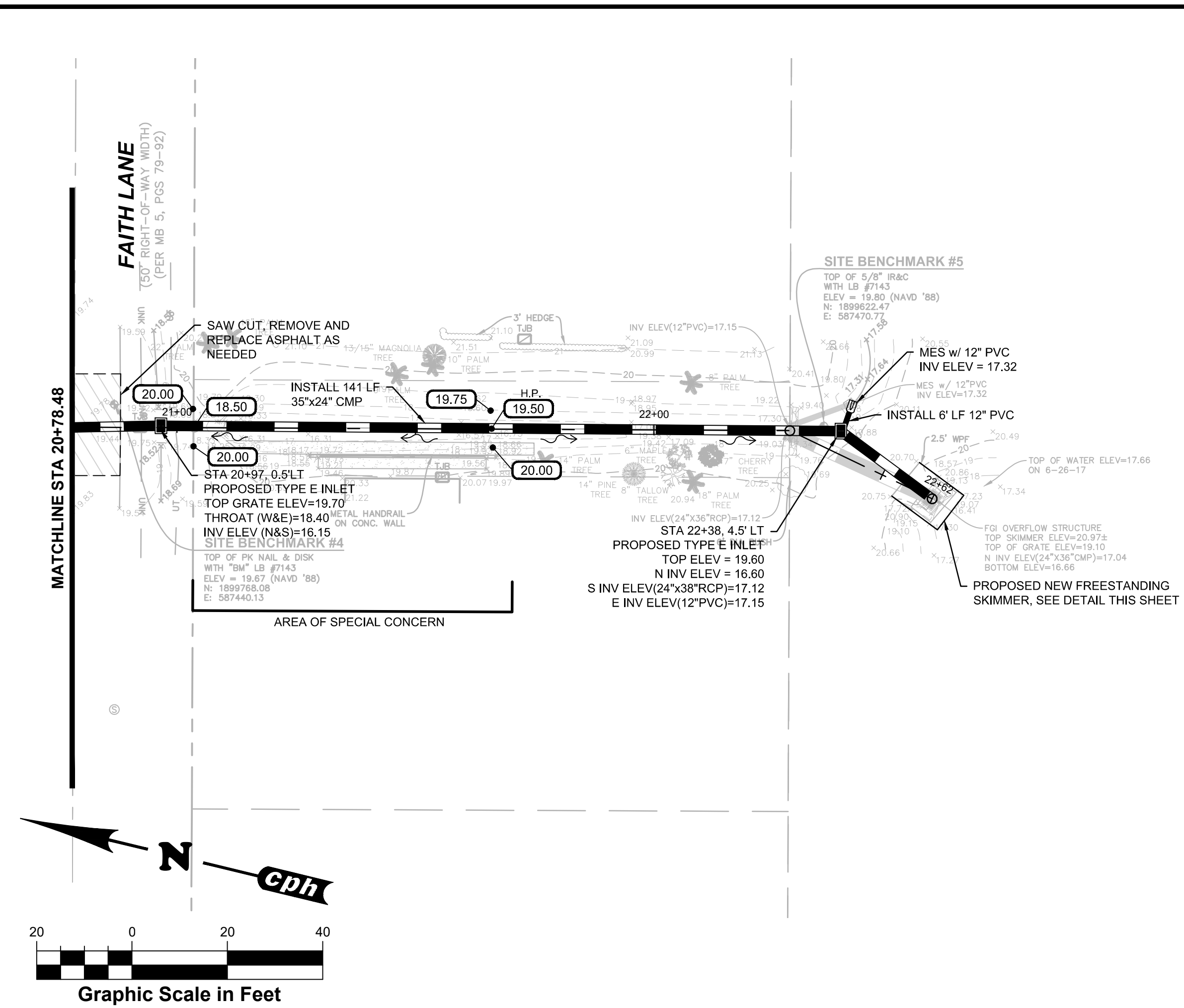
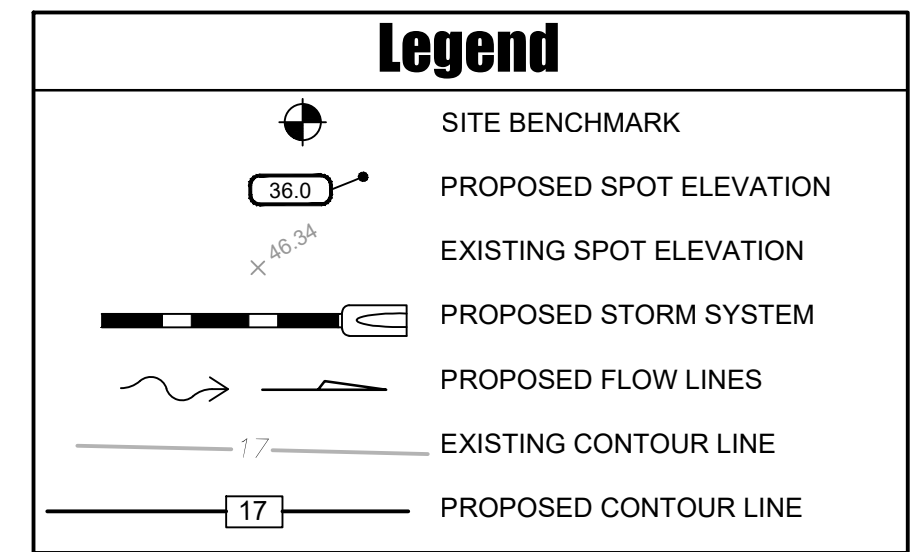
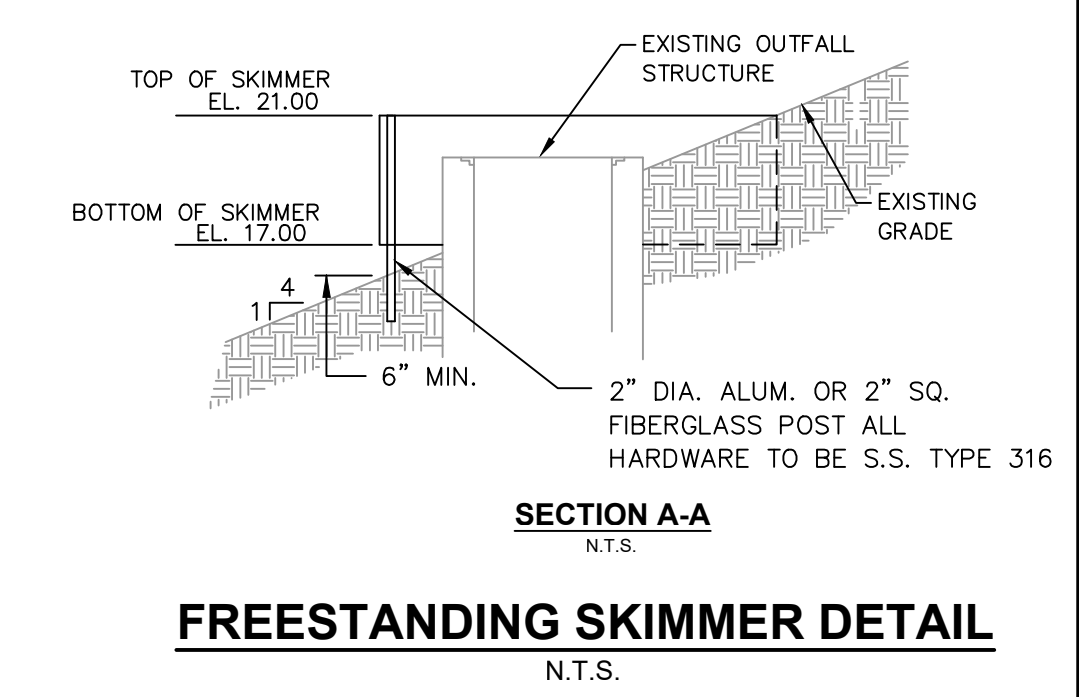
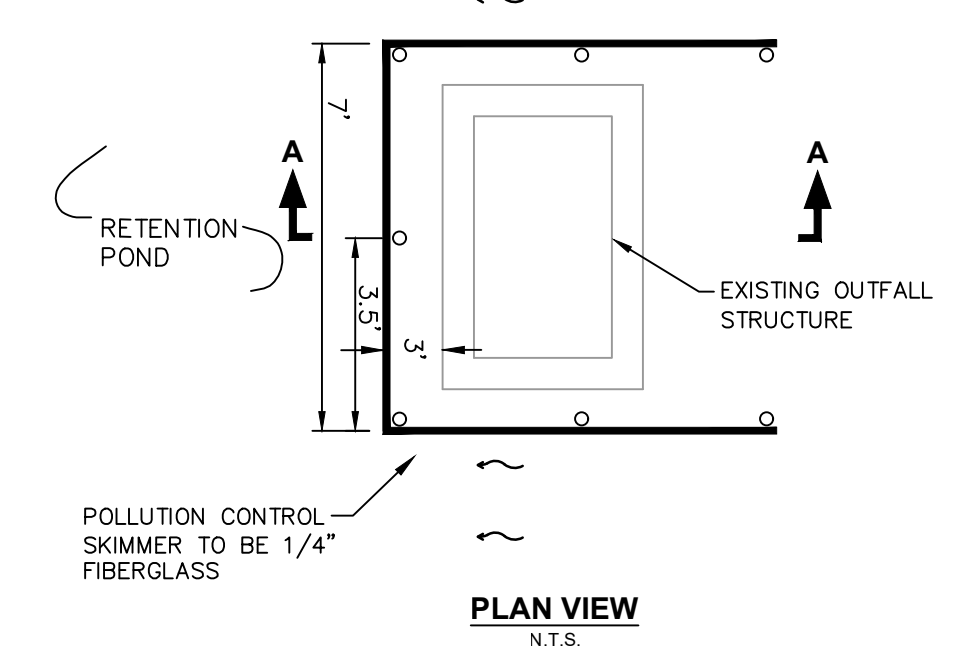
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**IMPROVEMENTS PLAN
AND PROFILE**

Sheet No.
11

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JASON R. KELLOGG, P.E.
REG.# 56952

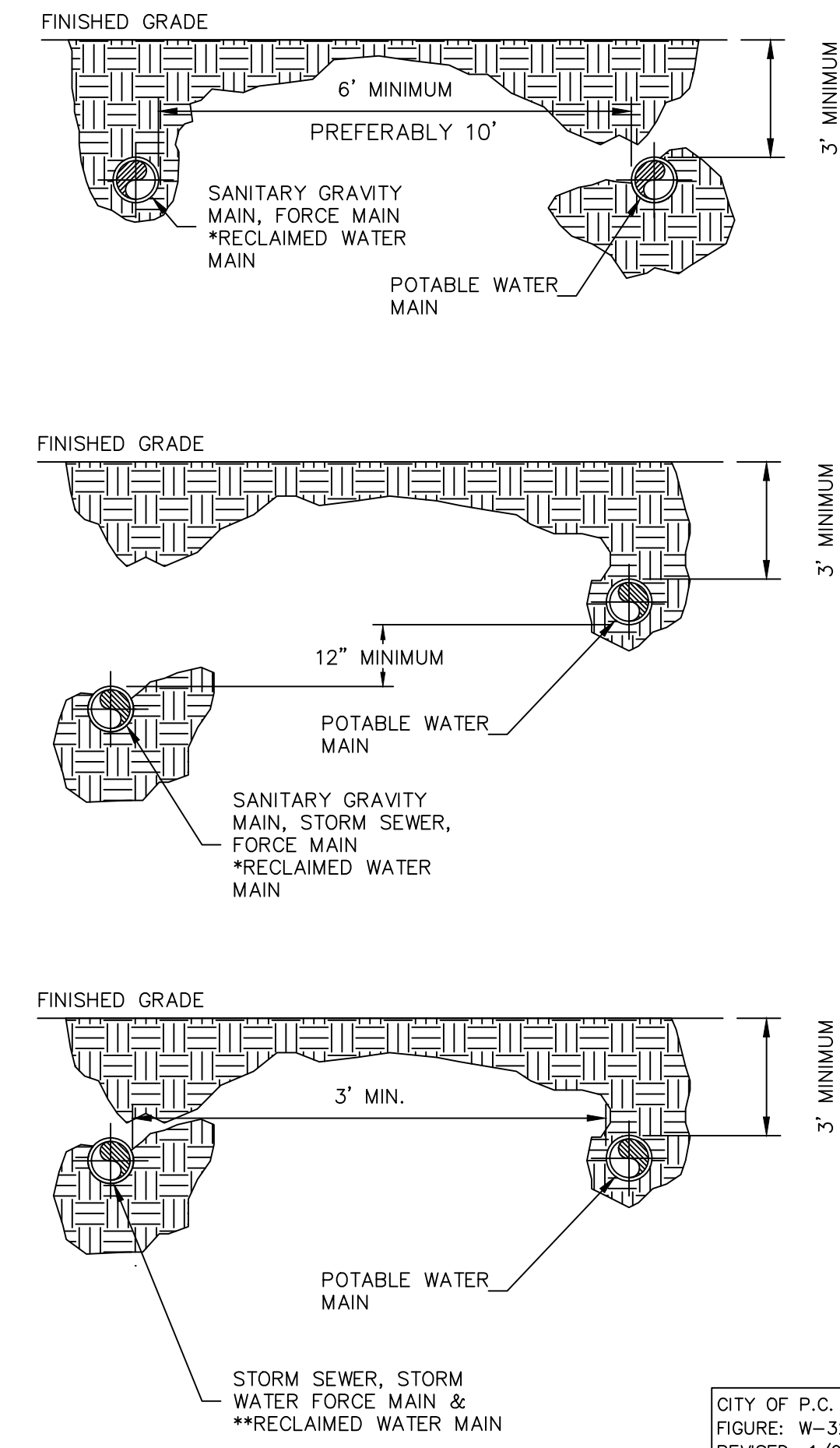
IMPROVEMENTS PLAN AND PROFILE

Sheet No.
12

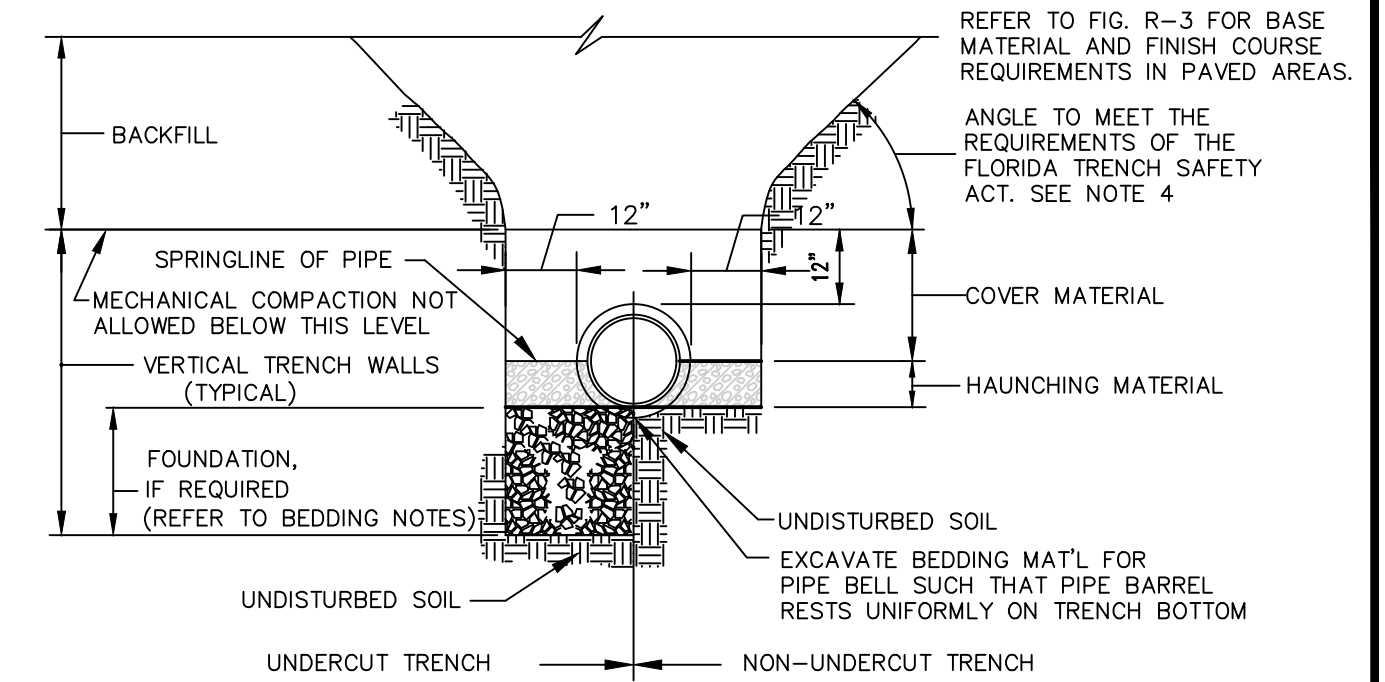
SANITARY GRAVITY, FORCE MAIN, REUSE MAIN, STORM SEWER, & POTABLE WATER MAIN SEPARATION NOTES & SOLUTIONS

- HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.**
 - A NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE INSTALLED TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
 - B. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE INSTALLED TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER.
 - C. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE INSTALLED TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY-TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS INSTALLED AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
 - D. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE INSTALLED TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E-6.002, F.A.C.
- VERTICAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, AND RECLAIMED WATER PIPELINES.**
 - A. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER SHALL BE INSTALLED SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES, ABOVE OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO INSTALL THE WATER MAIN ABOVE THE OTHER PIPELINE.
 - B. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE INSTALLED SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO INSTALL THE WATER MAIN ABOVE THE OTHER PIPELINE.
 - C. AT THE UTILITY CROSSINGS DESCRIBED IN PARAGRAPHS A AND B ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
- NEW OR RELOCATED FIRE HYDRANTS SHALL BE LOCATED SUCH THAT THE UNDERGROUND DRAIN (WEEP HOLE) IS AT LEAST:**
 - A. THREE FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORM WATER FORCE MAIN, RECLAIMED WATER MAIN OR VACUUM TYPE SANITARY SEWER.
 - B. SIX FEET AWAY FROM ANY EXISTING OR PROPOSED GRAVITY SANITARY SEWER AND WASTEWATER FORCE MAIN
 - C. TEN FEET FROM ANY ON SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM SUCH AS SEPTIC TANKS, DRAINFIELDS, AND GREASE TRAPS. ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS DO NOT INCLUDE PACKAGE SEWAGE TREATMENT FACILITIES AND PUBLIC WASTEWATER TREATMENT FACILITIES.
- NO WATER MAIN SHALL PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A SANITARY SEWER MANHOLE.**
- WATER MAINS SHALL NOT BE CONSTRUCTED OR ALTERED TO PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A STORM SEWER MANHOLE OR INLET STRUCTURE.**

*RECLAIMED WATER MAIN NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
 **RECLAIMED WATER MAIN REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

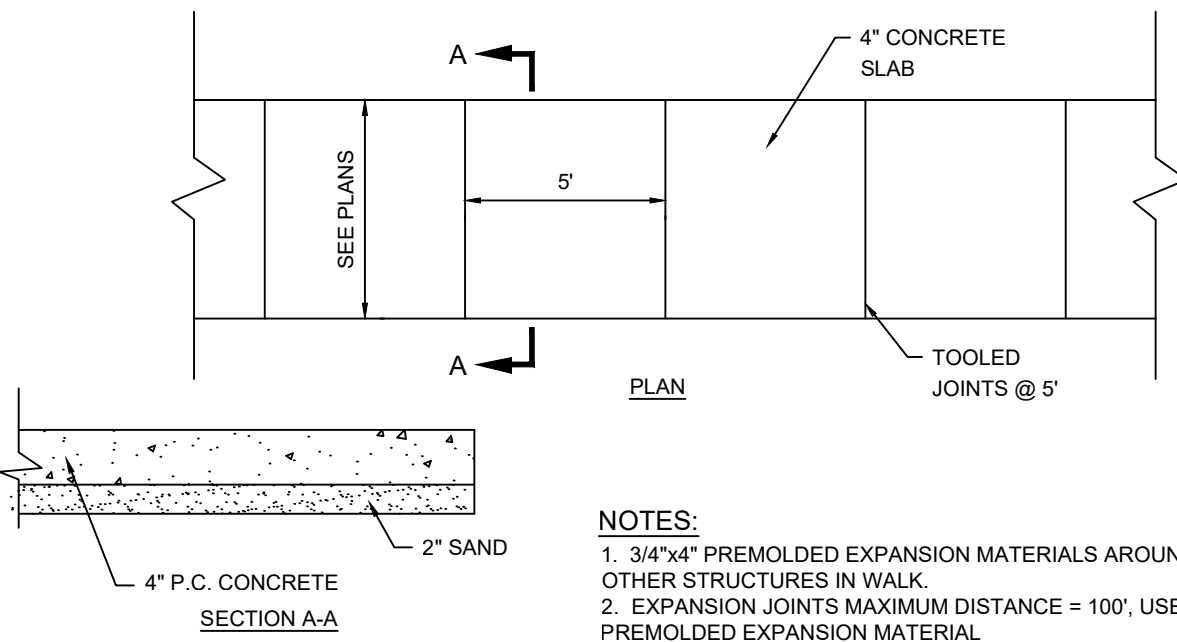


UTILITY SEPARATION DETAIL
N.T.S.



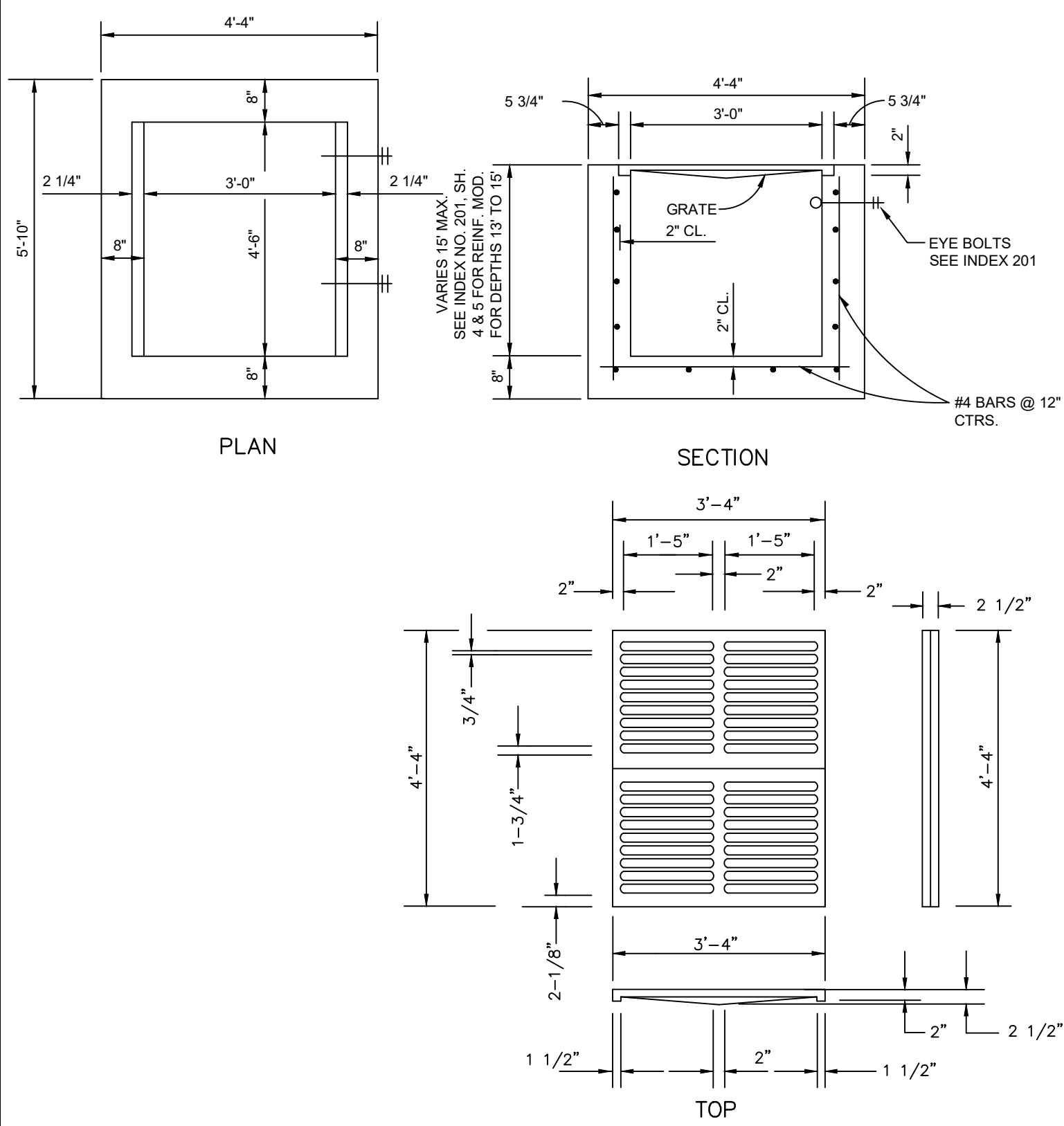
- 1. BEDDING NOTES:**
- NORMALLY APPROVED CLEAN BACKFILL MATERIAL WILL BE USED AS A 4-INCH TYPICAL BEDDING UNDER THE PIPE. HOWEVER, WHERE UNSTABLE OR UNSUITABLE MATERIAL EXISTS FOR BEDDING, AS DETERMINED BY THE UTILITY INSPECTOR AND / OR DESIGN ENGINEER, A SUFFICIENT DEPTH OF THE UNSTABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH NOT LESS THAN 6-INCHES NOR MORE THAN 24-INCHES OF ONE OF THE FOLLOWING MATERIALS:
 - APPROVED CLEAN BACKFILL (FROM ADJACENT AREA)
 - FDOT SIZE 6 AGGREGATE (3/8-INCH TO 3/4-INCH)
 - CRUSHED SHELL AS REQUIRED TO IMPLEMENT A STABLE BEDDING FOR THE PIPE.
 - BEDDING COMPACTION OF 95 PERCENT IS REQUIRED WHERE CLEAN BACKFILL MATERIAL IS USED. WHEN USING CRUSHED SHELL OR GRAVEL AS BACKFILL, HAND TAMPING IS REQUIRED.
 - IF SOLID HARDPAN IS ENCOUNTERED AT THE TRENCH BOTTOM, AND NO UNDERCUT (EXCLUDING TEETH DEPTH) HAS BEEN MADE IN THE HARDPAN, NO COMPACTION IS REQUIRED ON THE MATERIAL USED TO BRING THE EXCAVATION TO THE TRENCH BOTTOM.
 - ALL ASPECTS OF THIS BEDDING WORK WILL BE DETERMINED BY THE UTILITY INSPECTOR.
- 2. PERCENT COMPACTION:**
- COMPACTION REQUIREMENTS LISTED BELOW ARE IN PERCENTAGES OF MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR AASHTO T-180 (ASTM D-1557) UNLESS OTHERWISE SPECIFICALLY APPROVED.
- 95 PERCENT FOR PIPE BEDDING, EXCEPT FOR THE VARIOUS EXCEPTIONS LISTED IN THE BEDDING NOTES IN WHICH NO FORMAL COMPACTION TEST IS REQUIRED.
 - BAR TAMP HAUNCHING MATERIAL.
 - 95 PERCENT FOR COVER MATERIAL (6-INCH LIFTS)
 - 95 PERCENT FOR BACKFILL IN NON-ROADWAY AREAS. (12-INCH LIFTS)
 - 98 PERCENT FOR BACKFILL IN ROADWAY AREAS. (12-INCH LIFTS)
- 3. TESTING FREQUENCY:**
- LOCATION OF TESTING STATIONS WILL BE RANDOMLY SELECTED AND WITHIN THE FOLLOWING MINIMUM FREQUENCIES: BACKFILL: ONE (1) TEST PER 300 LINEAR FEET OR PORTION THEREOF. TYPICAL ELEVATIONS OF TEST POINTS WILL BE EVERY TWO (2) FEET, STARTING ONE FOOT ABOVE TOP OF PIPE. THE PERCENT (%) OF MAXIMUM DENSITY LISTED ABOVE ARE MINIMUMS AND MAY BE INCREASED AT THE DISCRETION OF THE UTILITY INSPECTOR AND / OR DESIGN ENGINEER.
- 4. IF ANGLE CANNOT BE MET DUE TO TIGHT WORKING CONDITIONS, TRENCH SHALL BE SHEETED OR A TRENCH BOX UTILIZED.**

PIPE BEDDING & TRENCHING DETAIL
N.T.S.

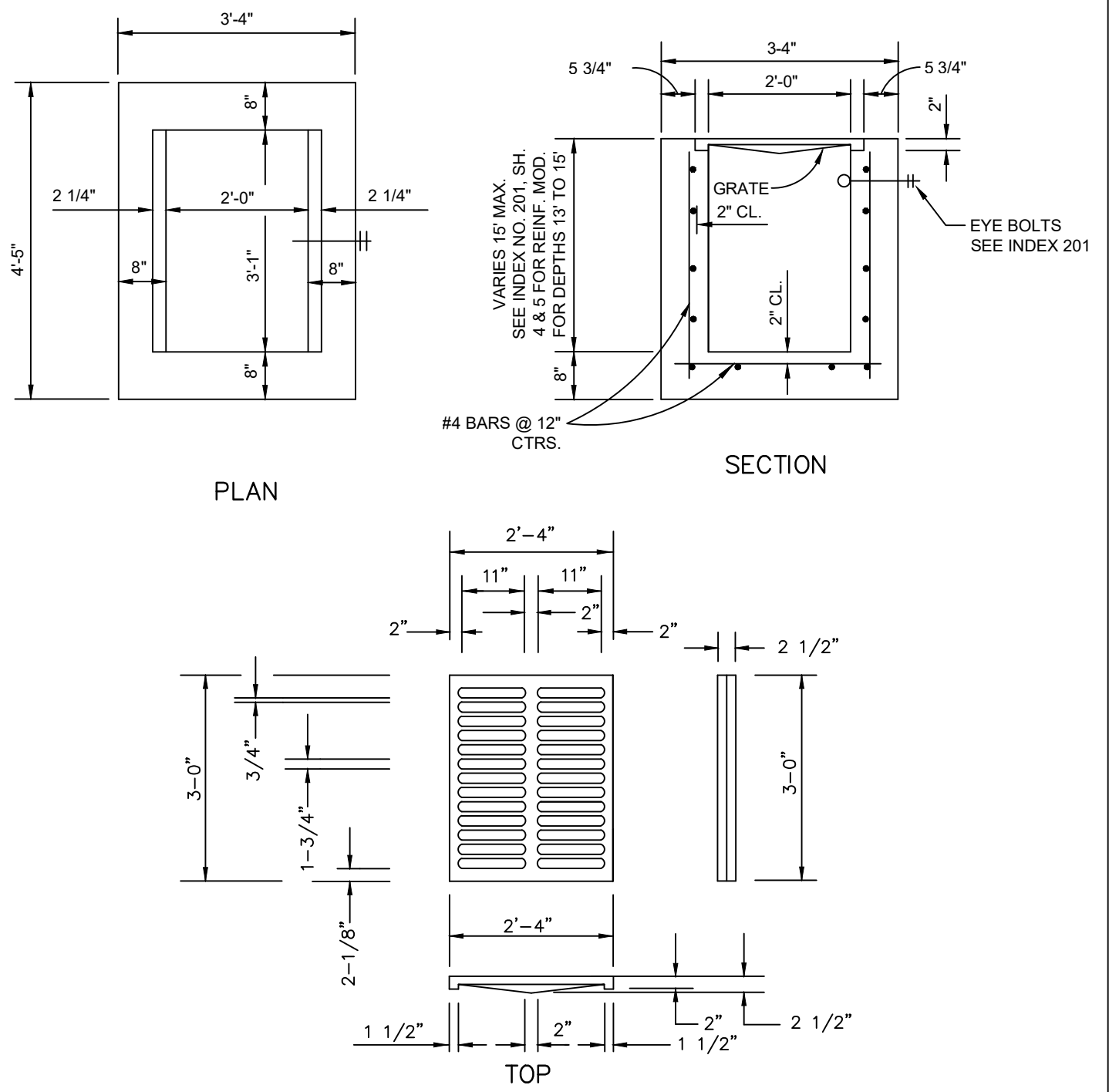


- NOTES:**
- 3/4"x4" PREMOLDED EXPANSION MATERIALS AROUND P.P. OR OTHER STRUCTURES IN WALK
 - EXPANSION JOINTS MAXIMUM DISTANCE = 100', USED 3/4"x4" PREMOLDED EXPANSION MATERIAL
 - CONTRACTION JOINTS MAXIMUM DISTANCE = 21', SAW CUT 2" DEEP AND FILL WITH HOT POURED SEALER.
 - SAW CUT JOINTS WITHIN 24 HOURS.
 - MINIMUM 3,000 P.S.I. CONCRETE REQUIRED.

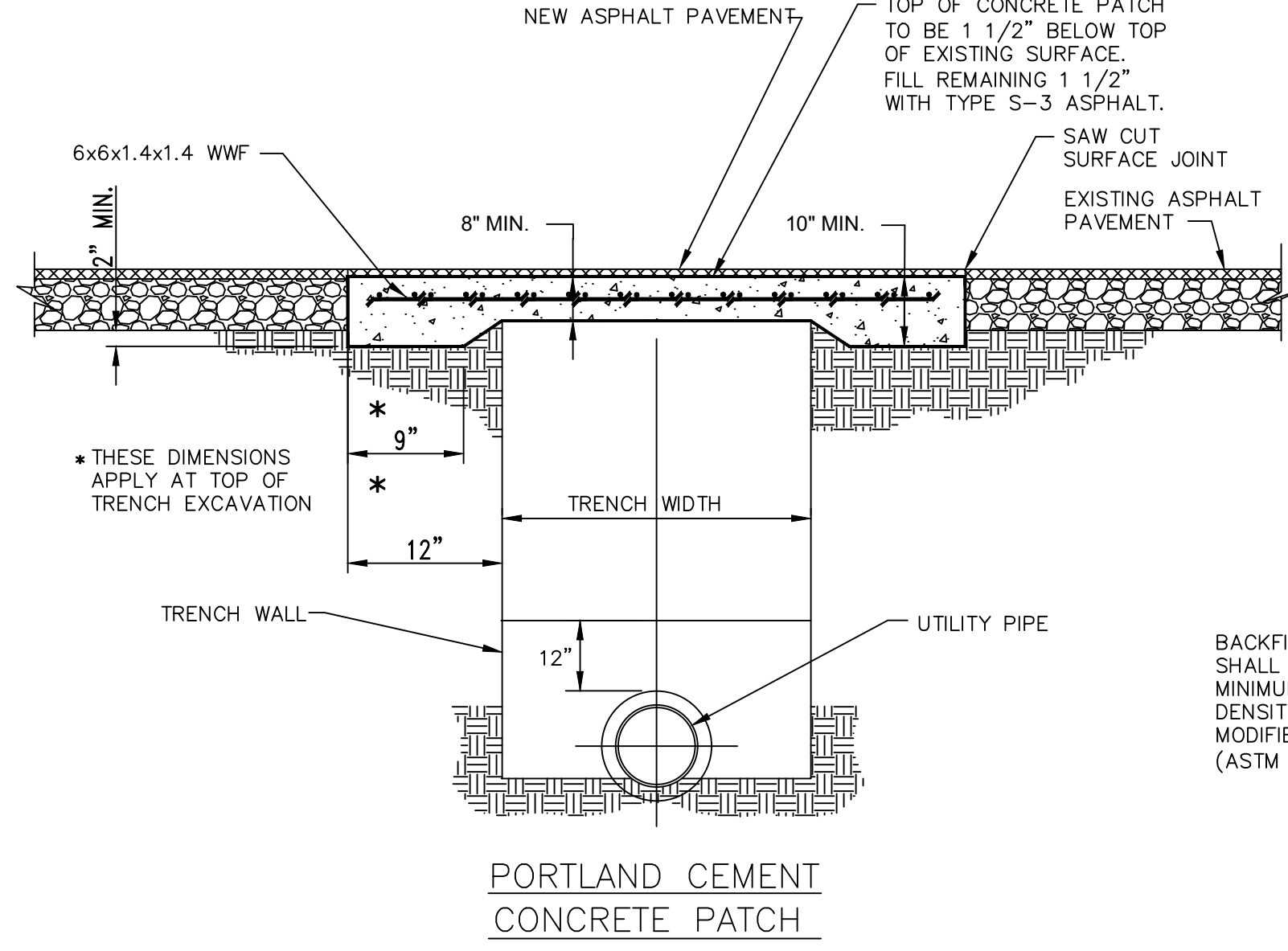
CONCRETE SIDEWALK DETAIL
N.T.S.



TYPE E INLET DETAIL
N.T.S.

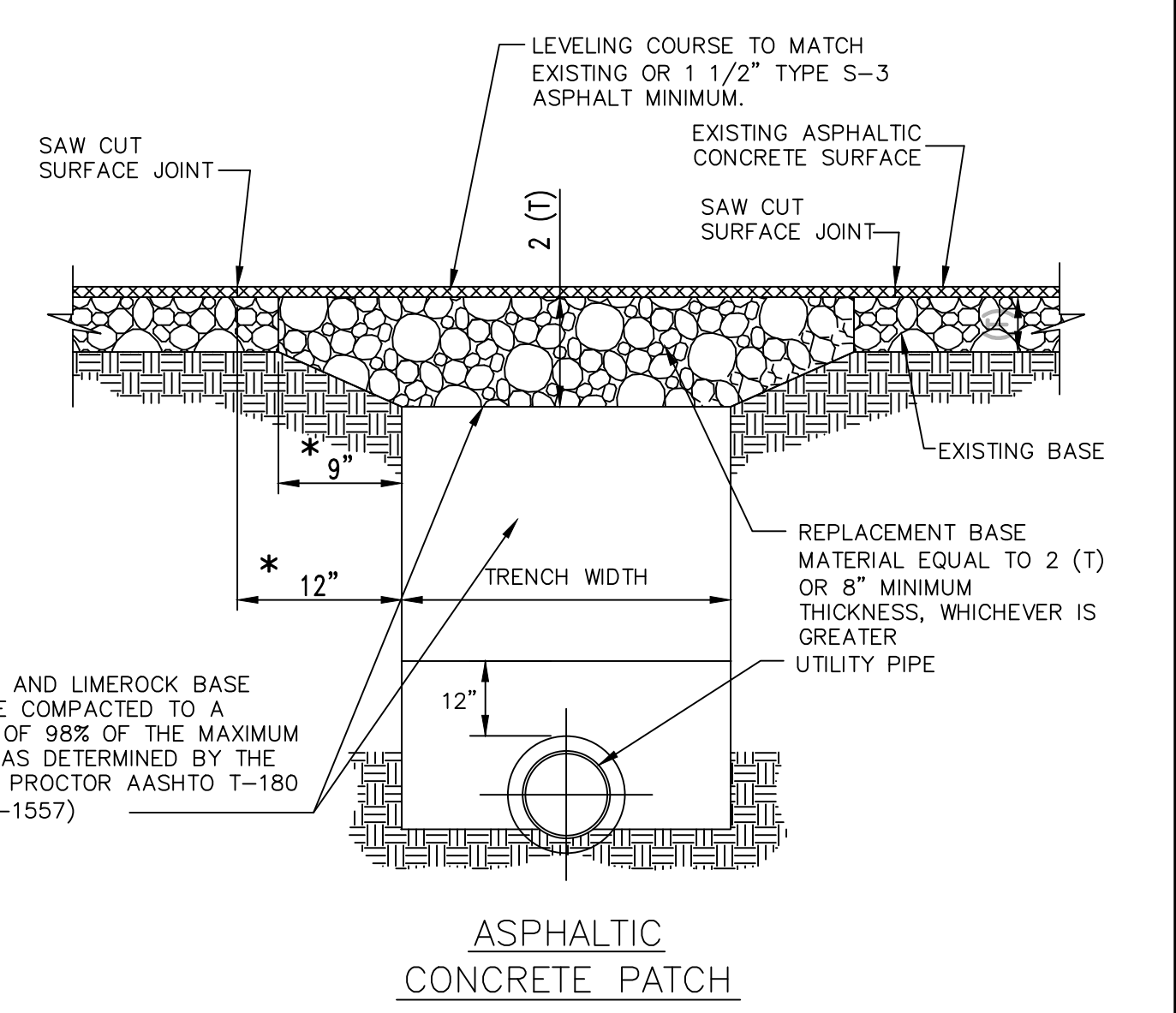


TYPE H INLET DETAIL
N.T.S.



- NOTES:**
- ALL PUBLIC ROADS AND PAVED DRIVE CROSSINGS SHALL BE BACKFILLED WITH COMMON FILL MATERIAL AND TOPPED WITH AT LEAST 8" IN THICKNESS OF LIMEROCK BASE COURSE MATERIAL DURING CONSTRUCTION OF UTILITY TRENCH.
 - IN AREAS WHERE ABOVE DETAILS DEVIATE FROM COUNTY AND/OR CITY STANDARDS, THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS AND LABOR TO CONFORM TO SAID STANDARDS.
 - ALL EXCAVATIONS SHALL COMPLY WITH THE TRENCH SAFETY ACT (F.S. 553.60 THRU 553.64, LAWS OF FLORIDA). LATEST EDITION.

SECTION F DITCH REPLACEMENT
City of Palm Coast, Florida



STANDARD ROADWAY OPEN-CUT DETAIL
N.T.S.

No.	Date	Revision	By	No.	Date	Revision	By

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DETAILS

City of P.C. FIGURE: R-3 REVISED: 3/09

Sheet No. **13**