

TOWNSHIP OF MORRIS
MORRIS COUNTY, NEW JERSEY

SKYLINE DRIVE SANITARY
SEWER PROJECT

CONTRACT NO. 68
 OTE: 2017-XX

TOWNSHIP COMMITTEE

BRUCE D. SISLER
 Mayor

COMMITTEE MEMBERS

LOUISE T. JOHNSON
 Deputy Mayor

DANIEL W. CAFFREY
 MATHEU D. NUNN
 PETER V. MANCUSO

TIMOTHY QUINN
 Township Administrator

CATHLEEN Y. AMELIO
 Township Clerk

JAMES R. SLATE, P.E.
 Township Engineer

MARK HOWARTH
 WPCU Superintendant

KAREN J. CARMAN
 Township Qualified Purchasing Agent

JOHN M. MILLS, III
 Township Attorney



LIST OF DRAWINGS

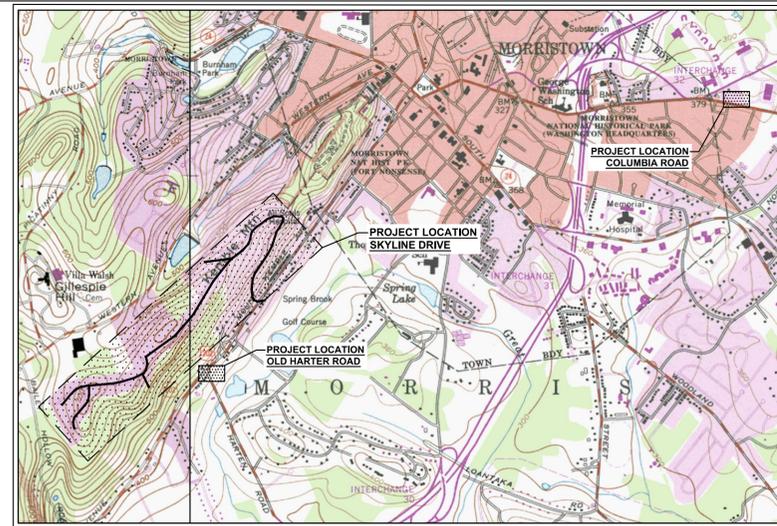
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April, 2017

TWA PERMIT SUBMISSION
(FINAL FOR SEWER DESIGN)

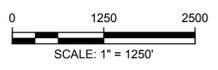
DAVID L. KLEMM
 Professional Engineer - NJ Lic. No. 38872

DATE _____



SOURCE: MENDHAM / MORRISTOWN, NEW JERSEY
U.S.G.S TOPOGRAPHIC QUADRANGLE

USGS MAP
SCALE: 1 INCH = 2,000 FEET



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1	4/21/2017	PZ	DRAFT FOR TOWNSHIP REVIEW	DLK	

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Client
**TOWNSHIP OF MORRIS
MORRIS COUNTY, NEW JERSEY**

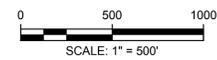
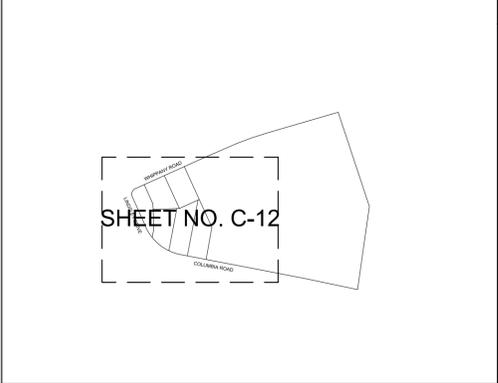
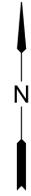
Title
**SKYLINE DRIVE
SANITARY SEWER PROJECT
LOCATION PLAN AND USGS MAP**

DAVID L. KLEMM
PROFESSIONAL ENGINEER LIC. NO. 38672

_____ Date _____

Project Number 355766	B/O	Total 23
Designed	Eng check	
Drawn	Coordination	
Dwg check	Approved	
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		Security

Drawing Number
G-1



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Title
SKYLINE DRIVE
SANITARY SEWER PROJECT
KEY MAP

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Drawing Number G-2			

GENERAL NOTES:

- THE CONTRACTOR SHALL ESTABLISH PERMANENT BASE LINES IN THE FIELD AND PLACE MONUMENTS PRIOR TO START OF CONSTRUCTION FOR LAYOUT PURPOSES.
- THE CONTRACTOR SHALL ADEQUATELY PROTECT ALL EXISTING PIPELINES AND STRUCTURES DURING THE INSTALLATION OF NEW WORK.
- IN ALL AREAS WHERE THE WORK IS OUTSIDE OF PAVED ROADS, THE CONTRACTOR SHALL INSTALL AND MAINTAIN APPROPRIATE SOIL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE DETAILS ON THE DRAWINGS, REGARDLESS OF WHETHER OR NOT THE LOCATION OF SUCH MEASURES ARE SPECIFICALLY SHOWN ON THE PLANS. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, SILT FENCES ALONG THE PERIMETER OF DISTURBED AREAS AND AROUND MATERIAL STOCKPILES, AND STONE CONSTRUCTION ENTRANCE PADS AT POINTS OF MAJOR INGRESS AND EGRESS FROM PAVED ROADS TO UNPAVED AREAS.
- WHERE WORK IS IN PAVED ROADS, EROSION CONTROL MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO STORM DRAIN INLET PROTECTION, KEEPING ROADS CLEAN, AND CONTROLLING DUST.
- EXCAVATIONS OR TRENCHING WITHIN CLOSE PROXIMITY TO UNDERGROUND FACILITIES OR UTILITY POLES WILL REQUIRE PROTECTION TO PREVENT DAMAGE OR INTERRUPTION OF SERVICE TO UNDERGROUND FACILITIES. THE COST TO PROVIDE THIS PROTECTION WILL BE BORNE BY THE CONTRACTOR.
- CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STATE OF NEW JERSEY CONSTRUCTION SAFETY ACT, THE HIGH VOLTAGE PROXIMITY ACT AND ALL OTHER LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL EXCESS EXCAVATED MATERIAL IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE SYSTEM FOR DEWATERING THE CONSTRUCTION SITE AS REQUIRED TO PROPERLY CONSTRUCT ALL STRUCTURES IN THE DRY. THE CONTRACTOR SHALL INSTALL AND MAINTAIN SAFE, ADEQUATELY TEMPORARY RELIEF MEASURES AGAINST HYDROSTATIC UPLIFT DUE TO A HIGH WATER LEVEL, IF ENCOUNTERED, FOR THE DURATION OF THE WORK UNTIL THE NECESSARY CONSTRUCTION IS COMPLETED.
- UPON BACKFILLING, THE CONTRACTOR SHALL BROOM-SWEEP STREETS, USE APPROPRIATE METHODS TO CONTROL DUST AND HOSE DOWN THE PAVEMENT TO KEEP SURFACE CLEAN.
- THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH THE TOWNSHIP OF MORRIS POLICE DEPARTMENT WITH REGARDS TO ANY ROAD CLOSING AND/OR TRAFFIC DETOURS AND SHALL COMPLY WITH ALL REQUIREMENTS OF THE TOWNSHIP.
- UNLESS OTHERWISE SPECIFICALLY PERMITTED OR REQUIRED, NO WORK SHALL BE DONE BETWEEN THE HOURS OF 5:00 P.M AND 7:00 A.M., PREVAILING TIME. IF IT SHALL BECOME ABSOLUTELY NECESSARY TO PERFORM WORK AT NIGHT, THE ENGINEER SHALL BE INFORMED IN ADVANCE. GOOD LIGHTING AND ALL OTHER NECESSARY FACILITIES FOR PROPER EXECUTION AND INSPECTION OF THE WORK SHALL BE PROVIDED. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL STATE AND LOCAL LAWS GOVERNING HOURS DURING WHICH CONSTRUCTION EQUIPMENT MAY BE OPERATED.
- THE CONTRACTOR SHALL INFORM HIMSELF OF THE ROAD RIGHT-OF-WAY LIMITS AND CONTAIN HIS OPERATION WITHIN THE RIGHT-OF-WAY AND CONSTRUCTION LIMIT LINES.
- THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS AND TO THE PAVEMENT REPLACEMENT DETAILS ON THE DRAWINGS FOR PAVEMENT REPLACEMENT.
- THE CONTRACTOR SHALL PROTECT ALL STRUCTURES, ROADS, PIPELINES, TREES, SHRUBBERY, GRASS AREA, ETC., DURING THE PROGRESS OF HIS WORK AND SHALL REMOVE FROM THE SITE ALL CUTTINGS, DEBRIS AND UNUSED MATERIALS. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL RESTORE THE SITE AS NEATLY AS POSSIBLE TO ITS ORIGINAL CONDITION AND TO THE SATISFACTION OF THE OWNER AND ENGINEER.
- ALL PIPE LENGTHS SHOWN AND INDICATED ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE PIPING AS REQUIRED.
- THE LOCATION OF THE RIGHT-OF-WAY LINES, PROPERTY LINES, EXISTING PERMANENT EASEMENT LINES, AND PROPOSED TEMPORARY AND PERMANENT EASEMENT LINES SHOWN ON THE DRAWINGS ARE APPROXIMATE, AS REFERENCED FROM THE TOWNSHIP OF MORRIS TAX MAPS AND EASEMENT DRAWINGS PROVIDED BY THE TOWNSHIP OF MORRIS. ALL CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO WITHIN THE RIGHT-OF WAY, EXISTING PERMANENT EASEMENTS, AND PROPOSED TEMPORARY AND PERMANENT EASEMENTS, AS SHOWN ON THE DRAWINGS.
- ALL PROFILES INDICATE APPROXIMATE GROUND ELEVATIONS. ALL RIM AND GRATE ELEVATIONS SHOWN AND INDICATED ARE APPROXIMATE AND SHALL BE ADJUSTED AS NECESSARY TO MEET ACTUAL FIELD CONDITIONS
- ALL EXISTING CONTOUR LINES AND SPOT ELEVATIONS ARE APPROXIMATE. ALL PROPOSED CONTOURS SHALL BE GRADED TO BLEND EVENLY WITH EXISTING CONTOURS.
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO THE SITE IN A NEAT MANNER AT ALL TIMES. THE CONTRACTOR SHALL SUBMIT A PLAN OF THE TRAILER LOCATION AND STORAGE AREAS TO THE

NOTES:

- SILT FENCE SHALL BE INSTALLED ALONG BOTH SIDES OF PERMANENT AND/OR TEMPORARY EASEMENT (TYP.) AS SHOWN ON PLANS. REFER TO SOIL EROSION AND SEDIMENT CONTROL DETAILS ON SHEET SCD-1.
- PROPERTY LINES SHOWN ARE APPROXIMATE ONLY.
- CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITY SERVICES FOR INDIVIDUAL HOMES AND REPAIR AND RESTORE SUCH SERVICES IF DAMAGED BY CONTRACTOR'S OPERATIONS FOR THE PRICES BID. IT MAY BE NECESSARY TO TEMPORARILY DISCONNECT EXISTING UTILITY SERVICES INCLUDING, BUT NOT LIMITED TO, SANITARY LATERAL, WATER, AND GAS, TO ALLOW FOR CONSTRUCTION OF SANITARY SEWER. ALL UTILITY SERVICES MUST BE RESTORED AS SOON AS POSSIBLE. THE CONTRACTOR MUST COORDINATE INTERRUPTION OF UTILITY SERVICES, IF NECESSARY, WITH THE OWNER OF THE UTILITY AND THE PROPERTY OWNER. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS WORK.
- ALL TREES IN THE LINE OF AND ADJACENT TO NEW CONSTRUCTION SHALL BE PROTECTED UNLESS OTHERWISE NOTED.
- ALL ELEVATIONS ARE GIVEN IN FEET NAVD 88.
- ALL MANHOLES SHALL BE INSTALLED FLUSH WITH EXISTING GROUND, EXCEPT AS NOTED OTHERWISE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL UTILITY LINES FOR THE VARIOUS UNIT PRICES BID UNDER ITEM 1. NO ADDITIONAL PAYMENT WILL MADE FOR THIS WORK.
- CONTRACTOR SHALL PROVIDE TEMPORARY SHEETING/SHORING TO PROTECT EXISTING GAS, WATER, SANITARY SEWER AND OTHER UTILITIES IN ALL LOCATIONS WHERE THE TRENCH EXCAVATION IS WITHIN AN ANGLE OF REPOSE OF 1:1 TO THE EXISTING LINE. WHERE SPECIFICALLY SHOWN ON SEWER PROFILES, WHERE REQUIRED BY SITE CONDITIONS, OR WHERE DIRECTED BY THE OWNER OF THE UTILITY LINE OR BY THE ENGINEER. THE TOP OF THE TEMPORARY SHEETING/SHORING SHALL EXTEND ABOVE THE ELEVATION OF THE EXISTING GRADE. TEMPORARY SHEETING/SHORING SHALL BE "SLIDE RAIL SHEETING SYSTEM" FOR TRENCH SHORING MANUFACTURED BY THE ICON GROUP, OR EQUAL. PAYMENT FOR TEMPORARY SHEETING/SHORING SHALL BE INCLUDED UNDER ITEM 1. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.

- ENGINEER FOR APPROVAL PRIOR TO LOCATING SAME.
- ALL EARTHWORK ACTIVITIES SHALL COMPLY WITH THE MORRIS COUNTY SOIL CONSERVATION DISTRICTS RULES AND REGULATIONS GOVERNING EROSION CONTROL.
 - ON SITE SPACE FOR TRAILER EQUIPMENT STORAGE, STOCKPILING AND OTHER TEMPORARY CONSTRUCTION ACTIVITIES IS LIMITED. ADDITIONAL SPACE REQUIRED FOR TEMPORARY CONSTRUCTION ACTIVITIES SHALL BE PROCURED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND SUCH AREAS SHALL BE RESTORED AND CLEANED UP TO THE SATISFACTION OF THE OWNER AND ENGINEER.
 - ALL UNDERGROUND PIPES TO BE LAID WITH 4'-0" MINIMUM COVER, UNLESS OTHERWISE NOTED.
 - THE LOCATIONS AND ELEVATIONS OF ALL EXISTING PIPES ARE ESTIMATED AND THE CONTRACTOR SHALL DIG THE NECESSARY TEST PITS TO ACCURATELY DETERMINE THE POSITION OF THE EXISTING PIPES WHERE CONNECTIONS ARE REQUIRED WITH NEW PIPES OR WHERE EXISTING PIPES MAY POSE AN INTER-FERENCE WITH NEW PIPES.
 - ALL SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF MORRIS TOWNSHIP.
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SAFE WORKING CONDITIONS. THESE CONDITIONS INCLUDE BUT ARE NOT LIMITED TO TRENCH SAFETY AND CONFINED SPACE ENTRY. THE CONTRACTOR SHALL COMPLY WITH THE O.S.H.A. REQUIREMENTS FOR SLOPING AND/OR SHORING OF TRENCHES AND EXCAVATIONS FOR ENTRY BY CONSTRUCTION. EXCAVATIONS SHALL BE SHEETED AND BRACED AS NECESSARY TO COMPLY WITH ALL APPLICABLE LABOR REGULATIONS AND TO PROTECT EXISTING UTILITIES. REFER TO SPECIFICATIONS FOR FURTHER DETAIL.
 - SANITARY SEWER LINES IN THE MORRIS TOWNSHIP'S SYSTEM CONTAIN A VARIETY OF DOMESTIC, COMMERCIAL AND INDUSTRIAL WASTEWATER. ALL MANHOLES AND EXCAVATIONS WITH OPENINGS TO THE PIPELINE ON ACTIVE SEWERS TO BE TREATED AS CONFINED SPACES. WHEN PERFORMING WORK WITHIN THE ROAD RIGHT-OF-WAY OR EASEMENT, THE CONTRACTOR SHALL COMPLY WITH O.S.H.A. CONFINED SPACE ENTRY REQUIREMENTS.
 - PLUGS SHALL BE INSTALLED IN THE DOWNSTREAM ENDS OF THE SEWER LINES UNDER THIS CONTRACT. PLUGS SHALL BE REMOVED ONLY ON THE ORDER OF THE TOWNSHIP OR THE ENGINEER.
 - ALL TRENCHES SHALL BE BACKFILLED WITHOUT DELAY TO KEEP OPEN TRENCHES TO A MINIMUM AND AS DIRECTED BY THE ENGINEER. ALL TRENCHES SHALL BE COMPACTED BY APPROVED METHODS. ALL TRENCHES SETTLEMENT SHALL BE PROMPTLY BROUGHT TO GRADE.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING A MARK OUT OF ALL UTILITIES PRIOR TO STARTING WORK OR ORDERING MATERIALS. THE CONTRACTOR SHALL ALSO CONTACT THE NEW JERSEY ONE CALL PROGRAM (1-800-272-1000) AT LEAST 72 HOURS PRIOR TO EXCAVATION.WHERE DOUBT EXISTS.
 - CONTROLS BASED UPON THE VERTICAL DATUM NAVD88 AND HORIZONTAL DATUM NAD83.
 - TOPOGRAPHY ELEVATION DATA OUTSIDE THE R.O.W. SUPPLIED BY OPEN SOURCE LIDAR DATA SETS.
 - ALL PROPOSED SANITARY SEWERS ARE TO BE INSTALLED AT LEAST 10 FEET HORIZONTALLY FROM POTABLE WATER LINES AND/OR AT LEAST 18 INCHES BELOW POTABLE WATER LINES AND IN SEPARATE TRENCHES, INCLUDING CROSSINGS.
 - CERTAIN UNFORESEEN CONDITIONS SHOULD BE EXPECTED TO OCCUR AND SUCH CONDITIONS WILL REQUIRE CLOSE INTERACTION BETWEEN THE OWNER, ENGINEER, AND CONTRACTOR IN ORDER TO RESOLVE PROBLEMS. EVERY EFFORT IS TO BE MADE TO RESOLVE SUCH PROBLEMS IN A TIMELY MANNER CONSISTENT WITH GOOD ENGINEERING AND CONSTRUCTION PRACTICE AND ECONOMIES OF BOTH TIME AND MONEY TO THE SATISFACTION OF ALL PARTIES CONCERNED.
 - IT IS THE INTENT OF THE CONTRACT DRAWINGS TO PROVIDE DETAILED GUIDANCE AS TO WHAT MUST BE CONSTRUCTED. HOWEVER, THE METHOD OF CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. PRIOR TO BIDDING, THE CONTRACTOR IS ADVISED TO REVIEW THE CONTRACT DRAWINGS SO TO ASSURE HIMSELF TO THE COMPLETENESS AND COORDINATION OF THE WORK TO BE BUILT.
 - THE CONTRACTOR IS FULLY RESPONSIBLE FOR SITE SAFETY AND SECURITY.
 - THE CORPORATIONS, COMPANIES, AGENCIES, OR MUNICIPALITIES OWNING OR CONTROLLING THE UTILITIES, AND THE NAME, TITLE, ADDRESS, AND TELEPHONE NUMBER OF THEIR LOCAL REPRESENTATIVE ARE AS LISTED BELOW:

ABBREVIATIONS:

(E)	EXISTING
(TBA)	TO BE ABANDONED
(TBA/R)	TO BE ABANDONED AND REMOVED
(TBM)	TO BE MODIFIED
(TBP)	TO BE PROTECTED
(TBR)	TO BE REMOVED
(TBRL)	TO BE RELOCATED
(TBRR)	TO BE REMOVED AND REPLACED
(TRIS)	TO REMAIN IN SERVICE
W.T.	WATER TIGHT
SAN.	SANITARY
PVC	POLYVINYL CHLORIDE
LF	LINEAR FOOT
INV.	INVERT
MH	MANHOLE
LPS	LOW PRESSURE SEWER

LEGEND:

	EXIST. HOUSE ALREADY CONNECTED TO SEWER		EXIST. WATERMAINS/ 'W' TEXT
	EXIST. HOUSE TO BE SERVICED BY GRAVITY SANITARY SEWER		EXIST. GAS PIPE/ 'G' TEXT
	EXIST. HOUSE TO BE SERVICED BY GRINDER PUMP		EXIST. WATER VALVE
	EXIST. HOUSE NO.		EXIST. GAS VALVE
	EXIST. LOT NO.		EXIST. CLEAN OUT
	EXIST. BLOCK NO.		EXIST. SANITARY LINE
	EXIST. UTILITY POLE		EXIST. STORM LINE
	EXIST. SIGN		EXIST. CATCH BASIN WITH SEDIMENT CONTROL DEVICE
	EXIST. SANITARY MANHOLE		PROPOSED SANITARY MANHOLE
	EXIST. DRAIN MANHOLE		PROPOSED SANITARY GRAVITY SEWER
	EXIST. CATCH BASIN		PROPOSED SANITARY PRESSURE SEWER
	EXIST. FIRE HYDRANT		LIMIT OF DISTURBANCE AND SILT FENCE
	EXIST. CONTOUR		TEMPORARY CONSTRUCTION EASEMENT
	EXIST. ELEVATION SPOT		PERMANENT CONSTRUCTION EASEMENT
	EXIST. TREE		
	EXIST. TREE LINE		
	EXIST. GUARD RAIL		
	EXIST. FENCE LINE		
	EXIST. CONC. CURB		
	EXIST. EDGE OF PAVEMENT		
	EXIST. SIDEWALK		
	EXIST. DRIVEWAY		
	EXIST. PROPERTY LINE		
	EXIST. EASEMENT LINE		
	SOIL BORING		

Cablevision of Morris	Southeast Morris County Municipal Utility Authority
6 Eastmans Road	19 Saddle Road
Parsippany, N.J. 07054	Cedar Knolls, N.J. 07927
Hollis Orderson, (973)781-0988 x 246	Laura Cummings, Executive Director/ Chief Engineer, (973)326-6866
Jersey Central Power & Light Company	Verizon Communications Corporation
300 Madison Avenue, P.O. Box 3687	210 Malapardis Road
Morristown, NJ 07962-3687	Cedar Knolls, N.J. 07927
Dennis Pavagadhi, (973)401-8213	Glenn A. Howell, (973)631-7551
Public Service Electric & Gas	Township of Morris, Sewer Department~ Water Pollution Control Unit
48 Middle Avenue	Lake Valley Road, P.O. Box 7603
Summit, N.J. 07901	Convent Station, N.J., 07961-7603
Keith Wilson, (908)522-7412	Mark Howarth, Superintendent, (973)326-7363
Texas Eastern/ Algonquin Gas Trans. Co./ Duke Energy	Morris County Department of Public Works Division of Engineering
501 Coolidge Avenue	P.O. Box 900
South Plainfield, N.J. 07080	Morristown, N.J. 07963-0900
Land Development, (908)757-1212	Christopher Vitz, PE, (973)285-6750

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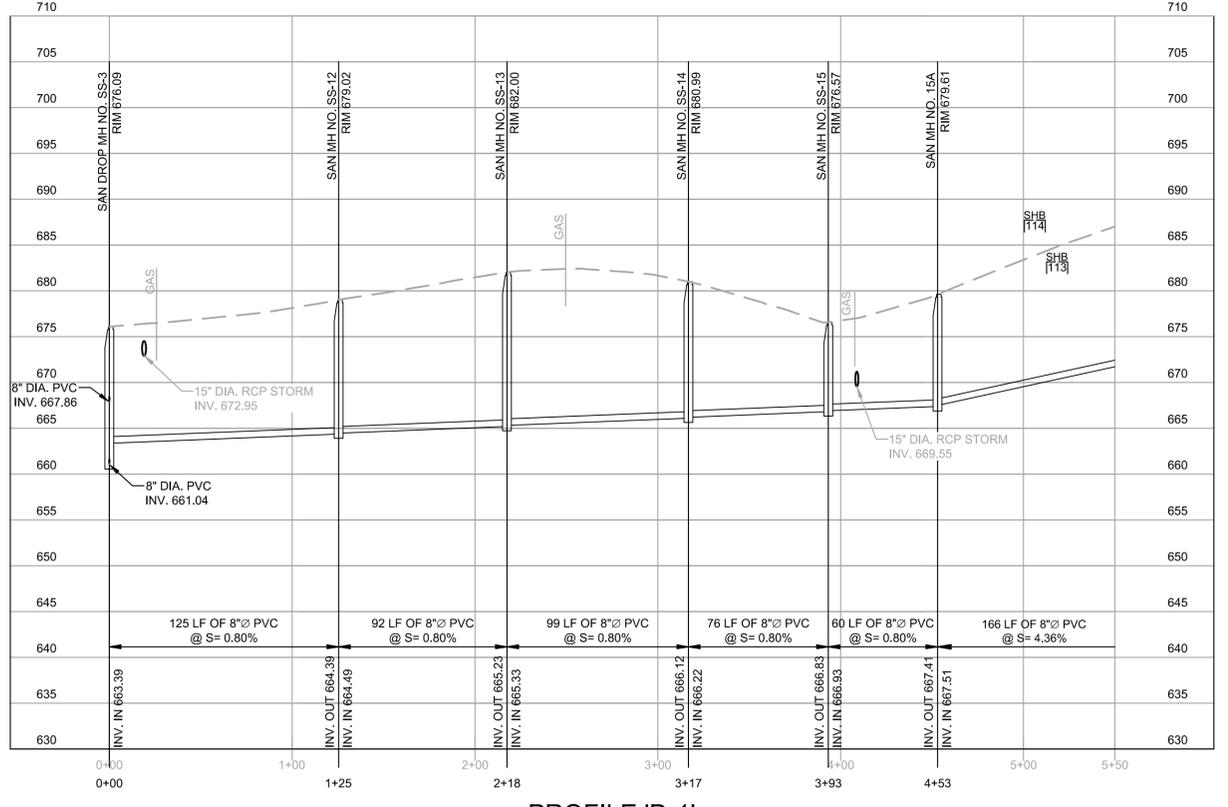
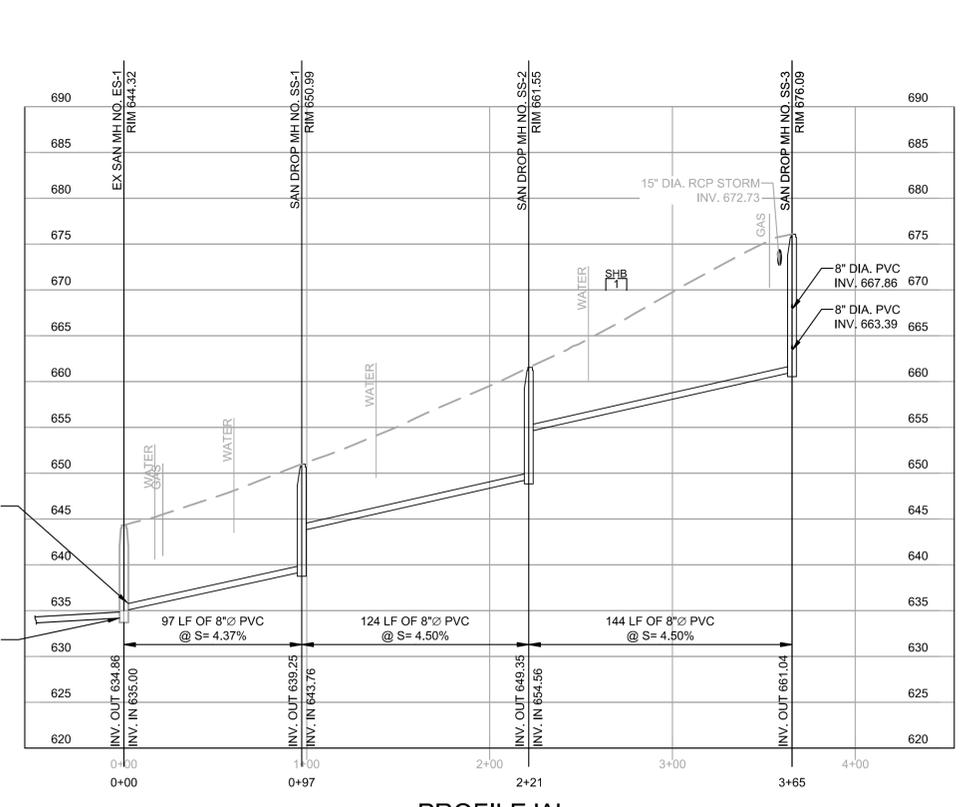
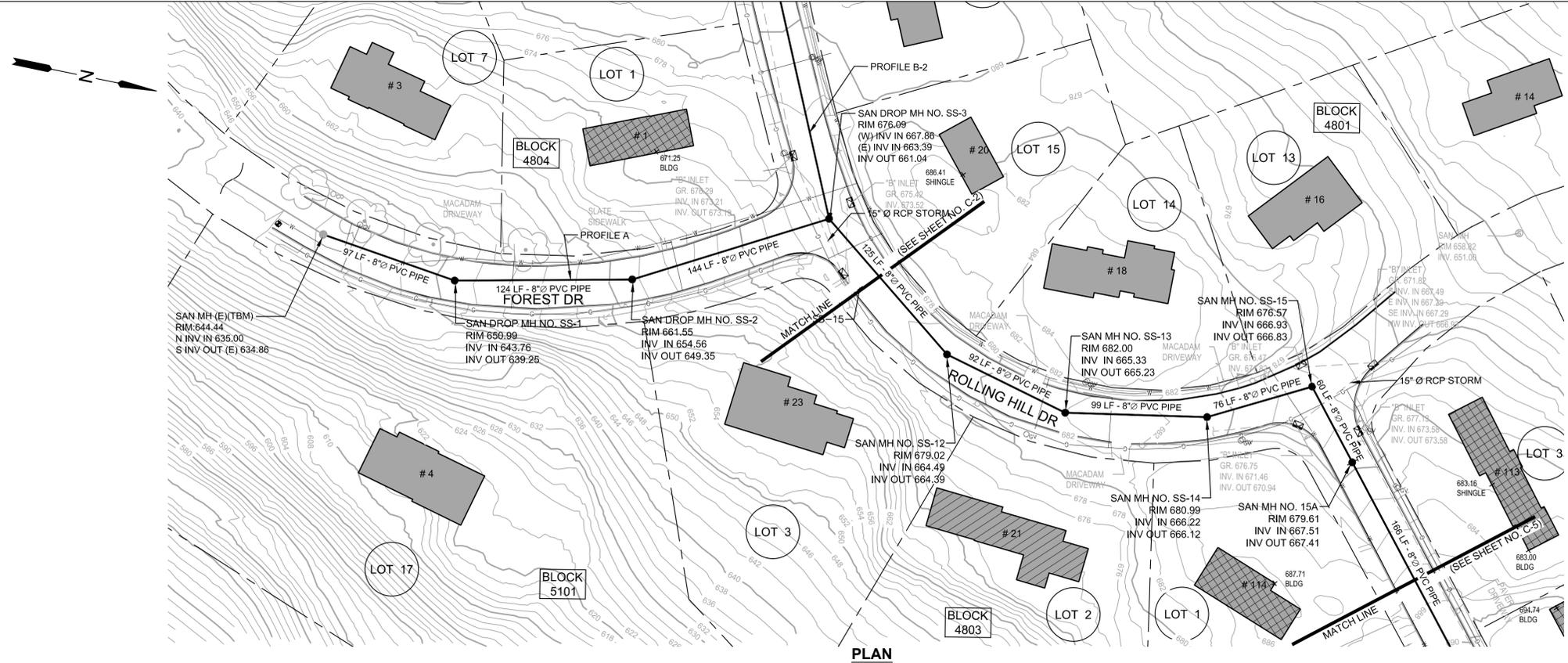
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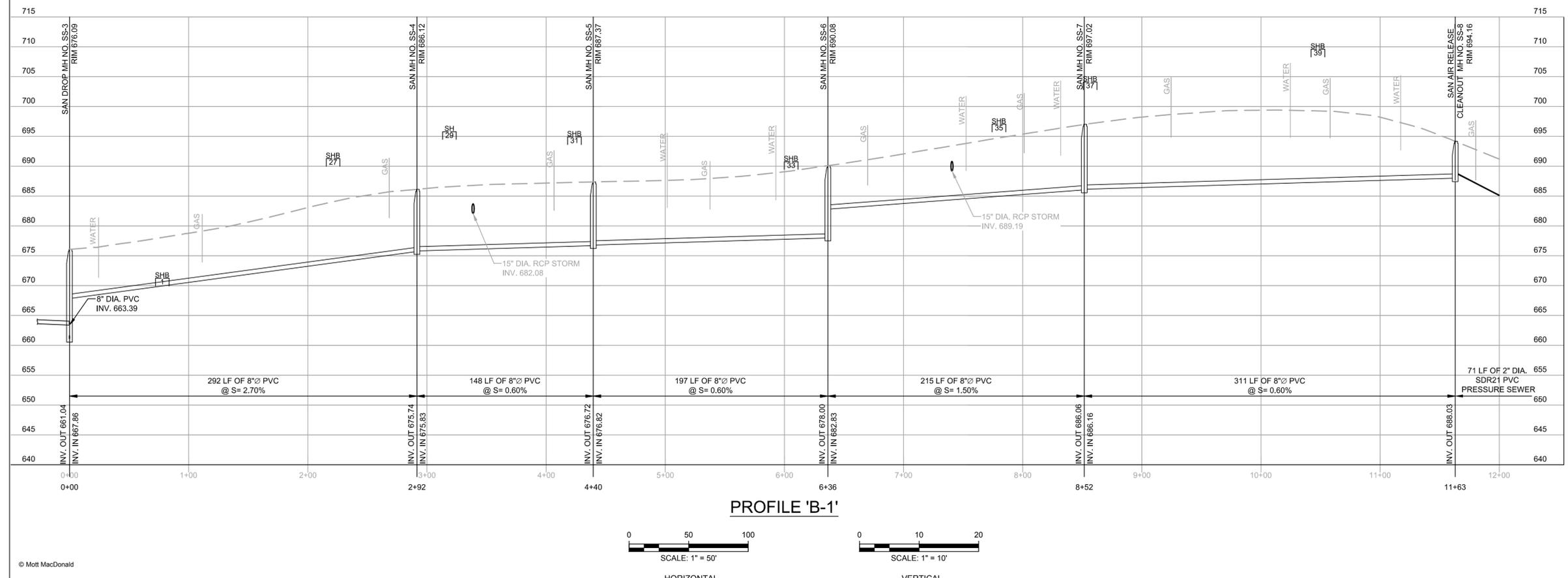
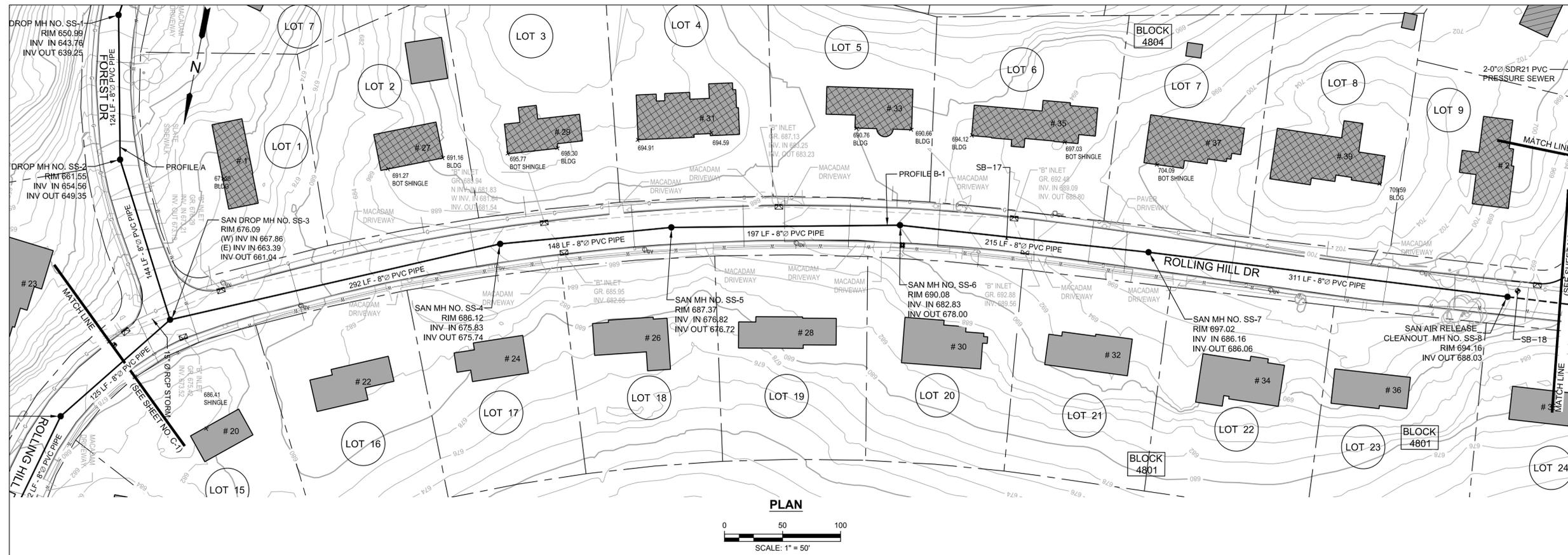
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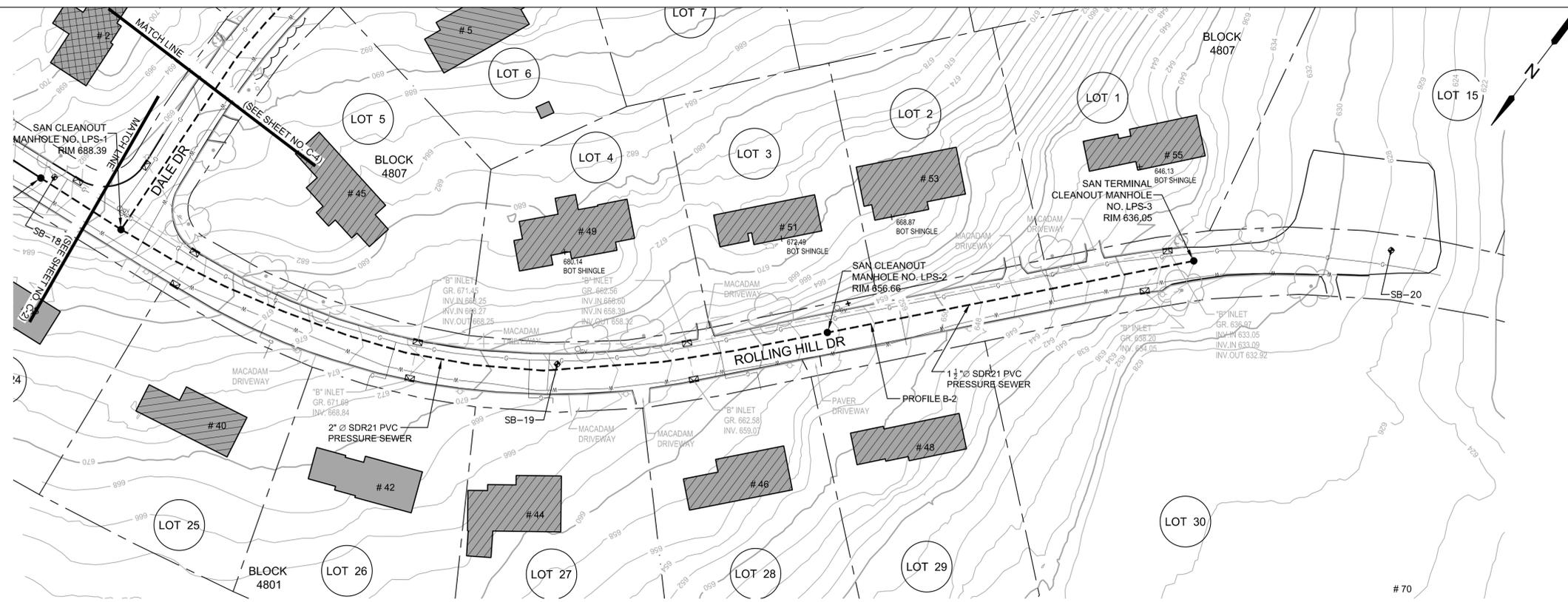
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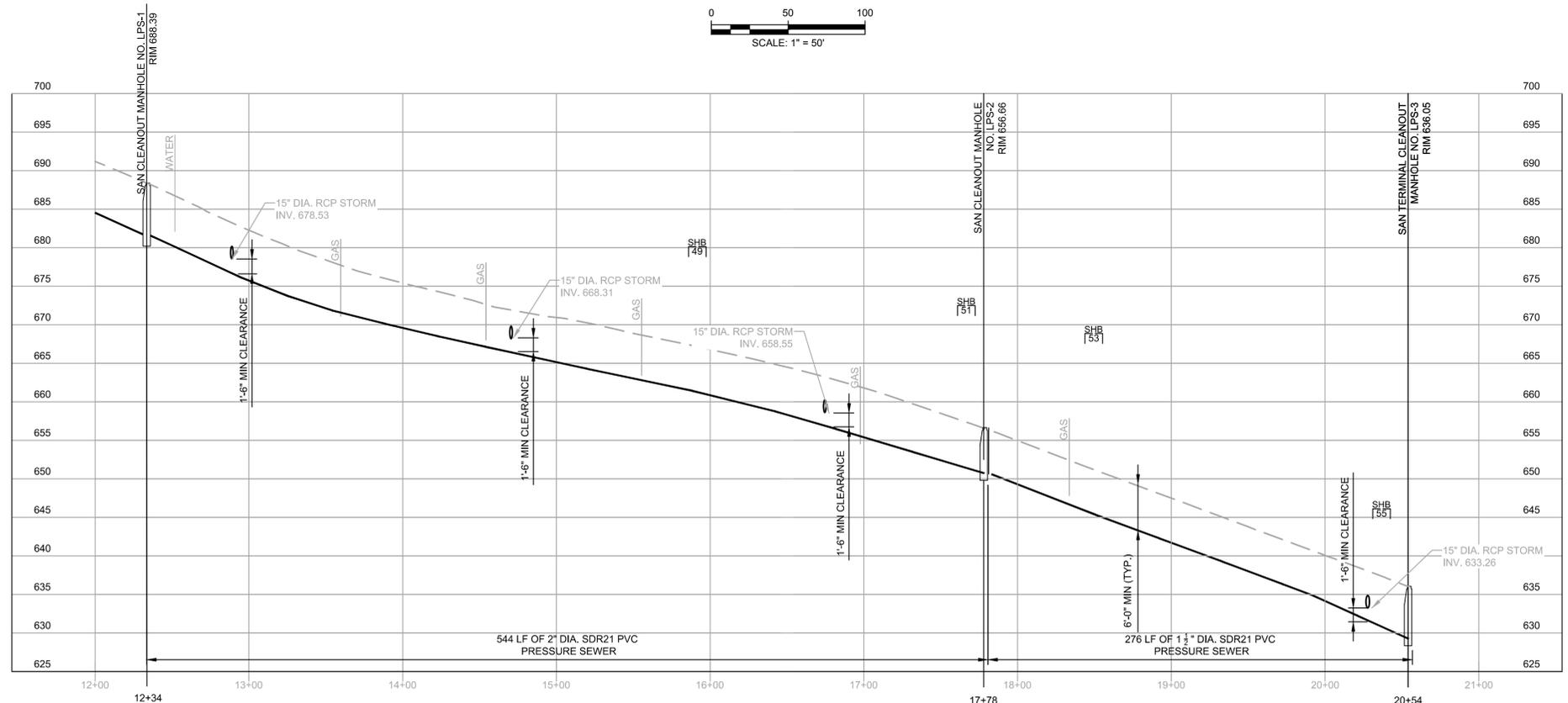
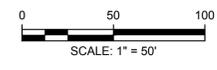
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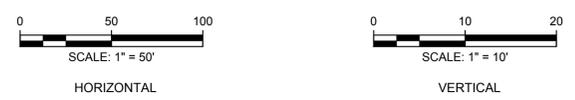
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Client
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MORRIS COUNTY, NEW JERSEY

Title
SKYLINE DRIVE
SANITARY SEWER PROJECT
 PLANS, PROFILES AND SOIL EROSION AND
 SEDIMENT CONTROL PLANS

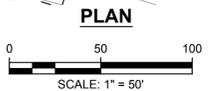
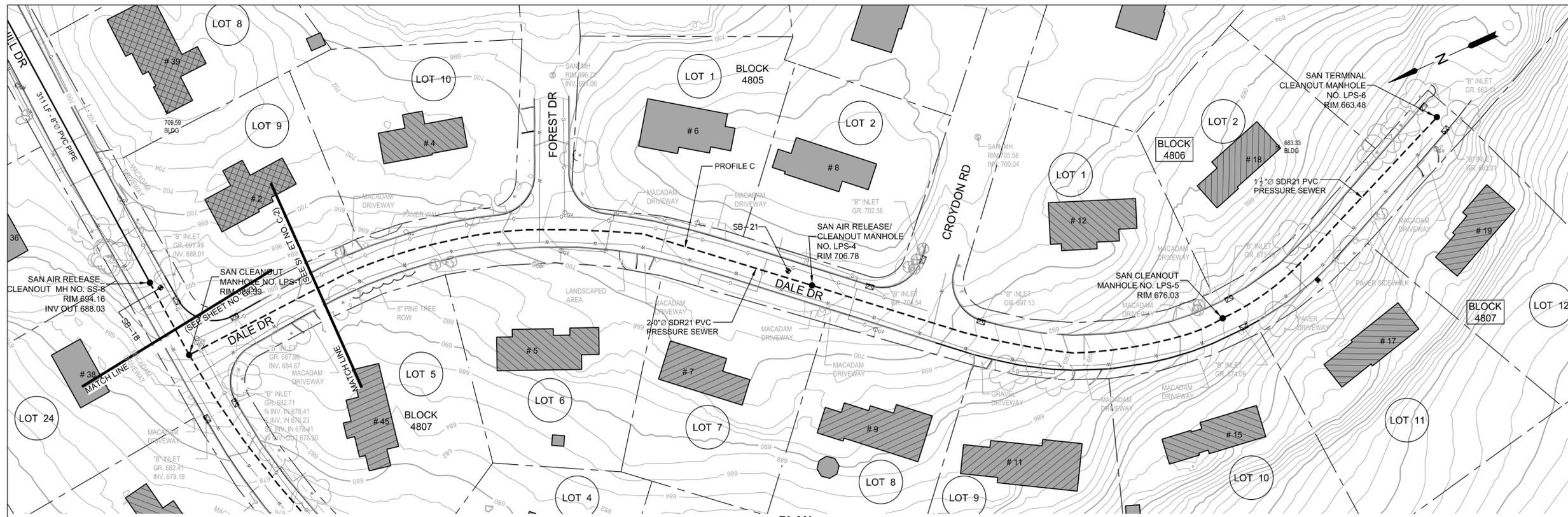
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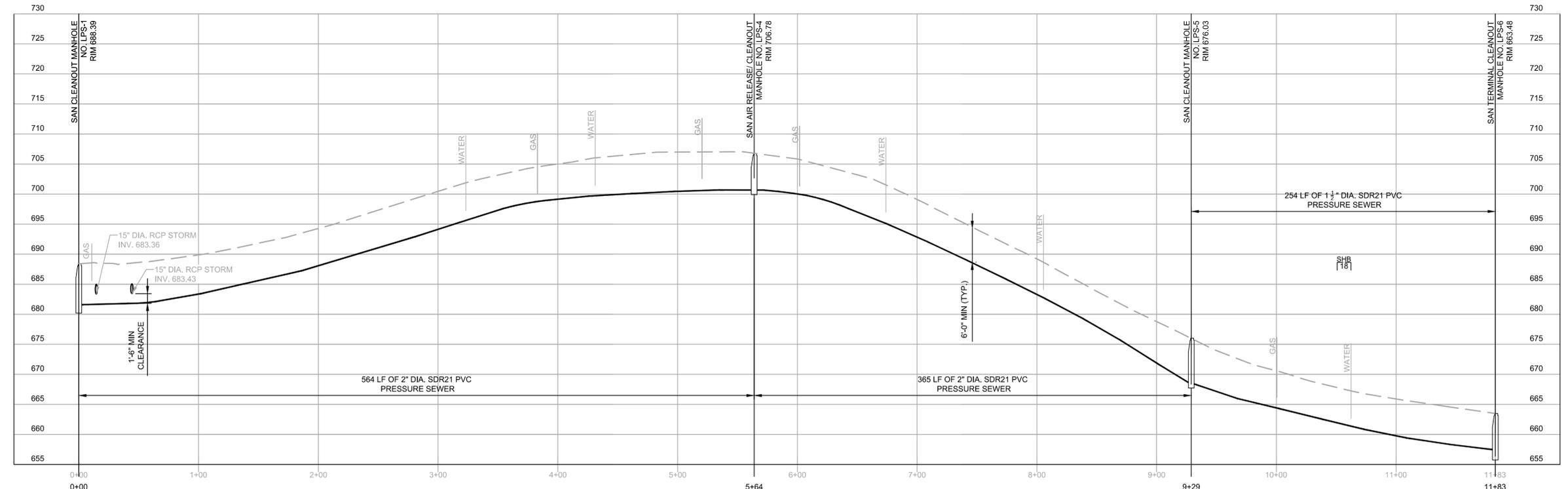
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PLAN



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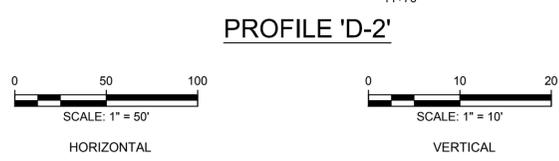
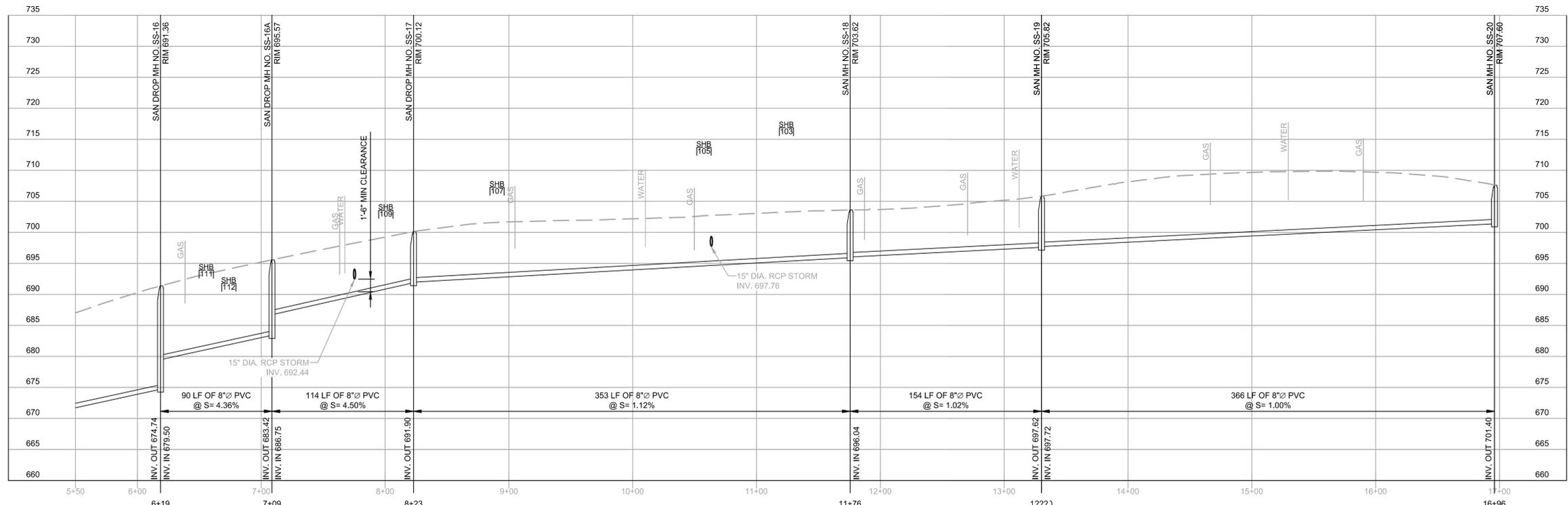
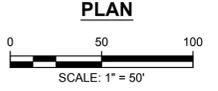
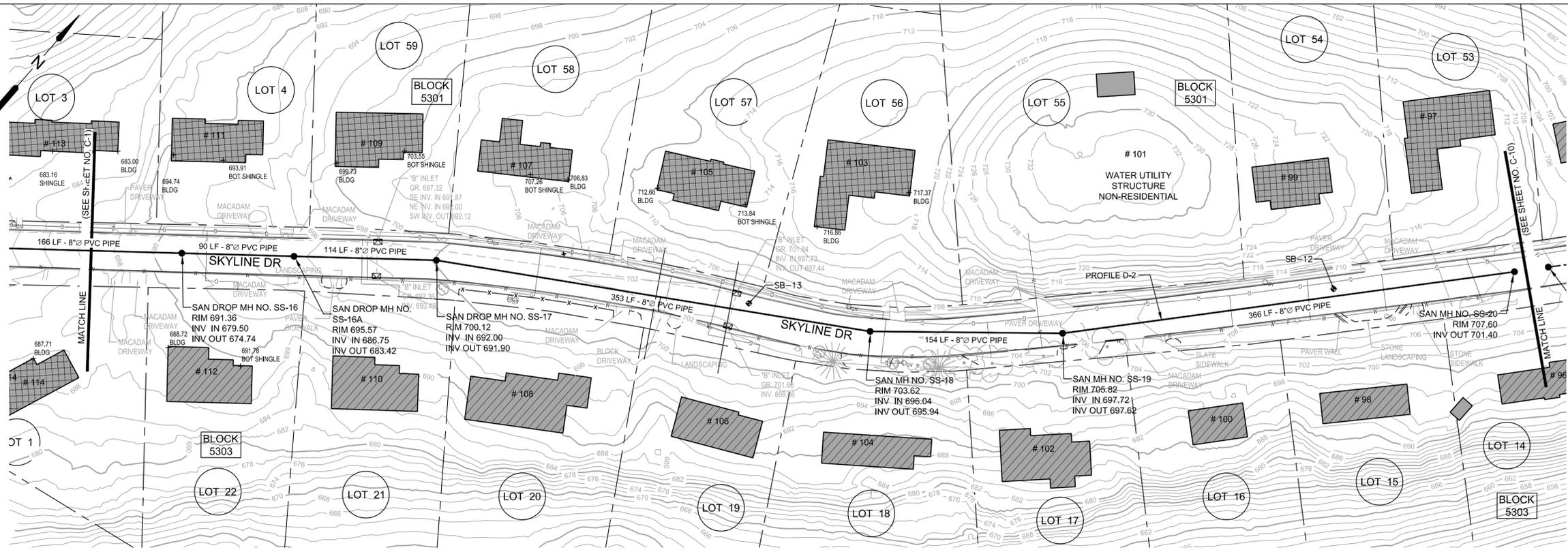
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 PROFESSIONAL ENGINEER LIC. NO. 38672
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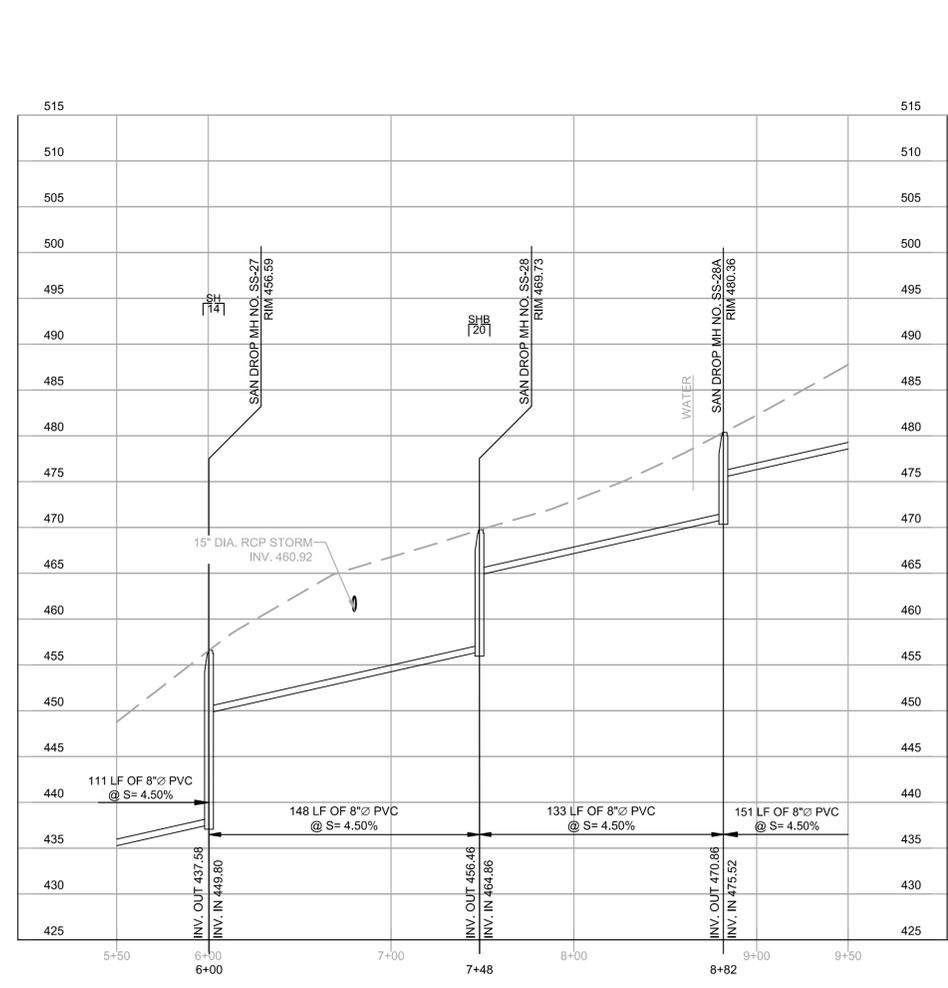
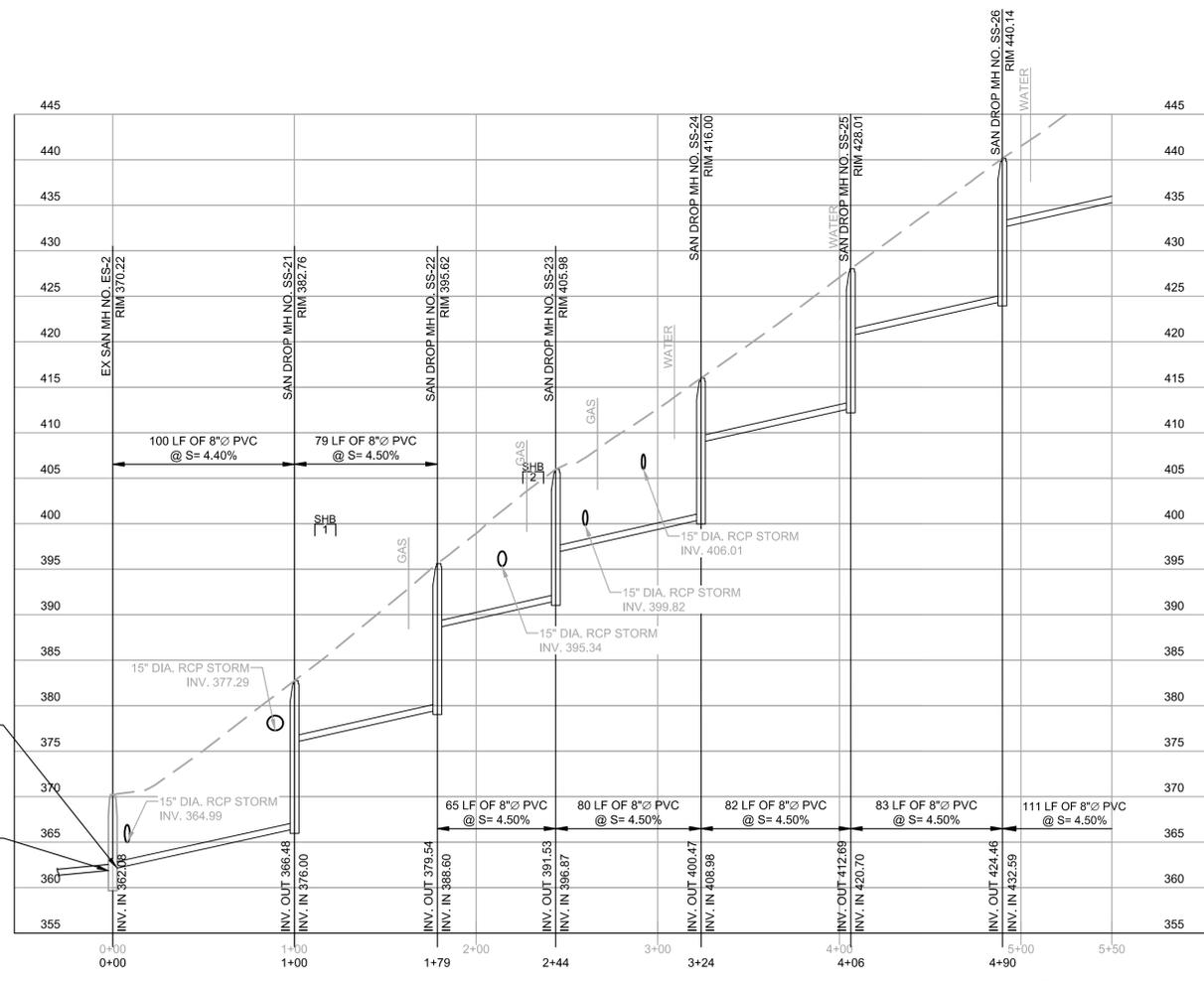
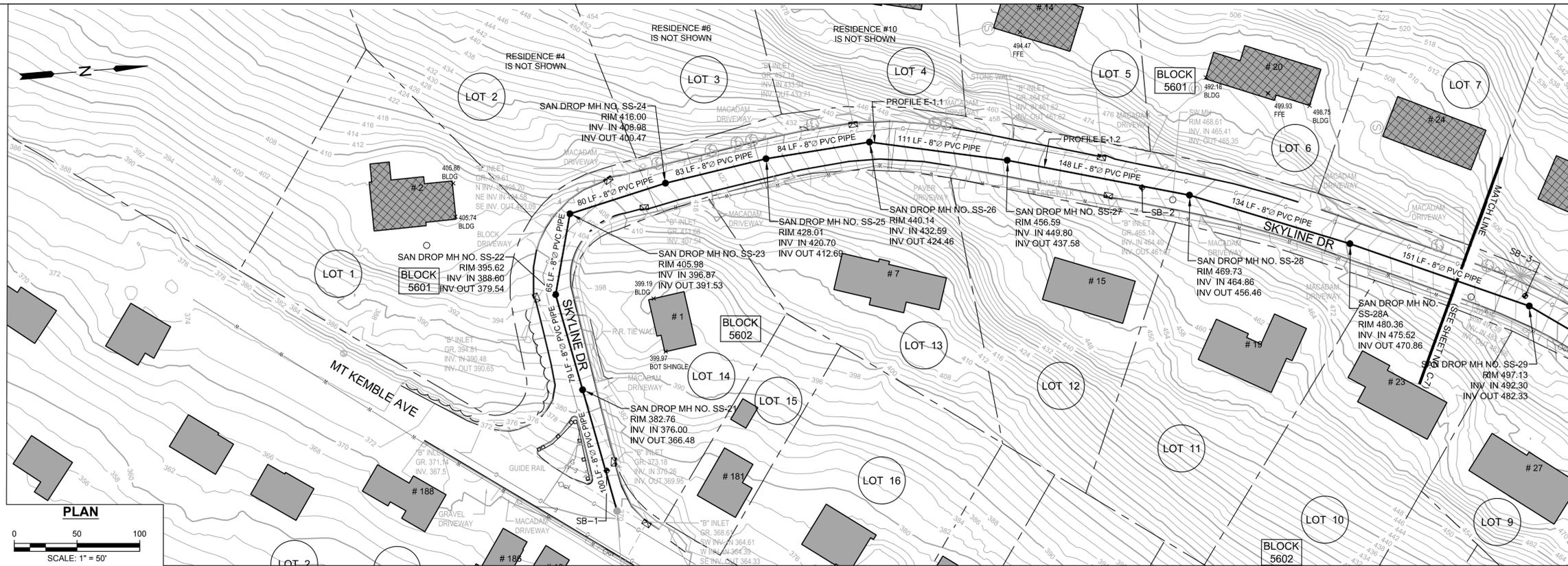
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DAVID L. KLEMM
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EXISTING SAN. PIPE INV. 361.93

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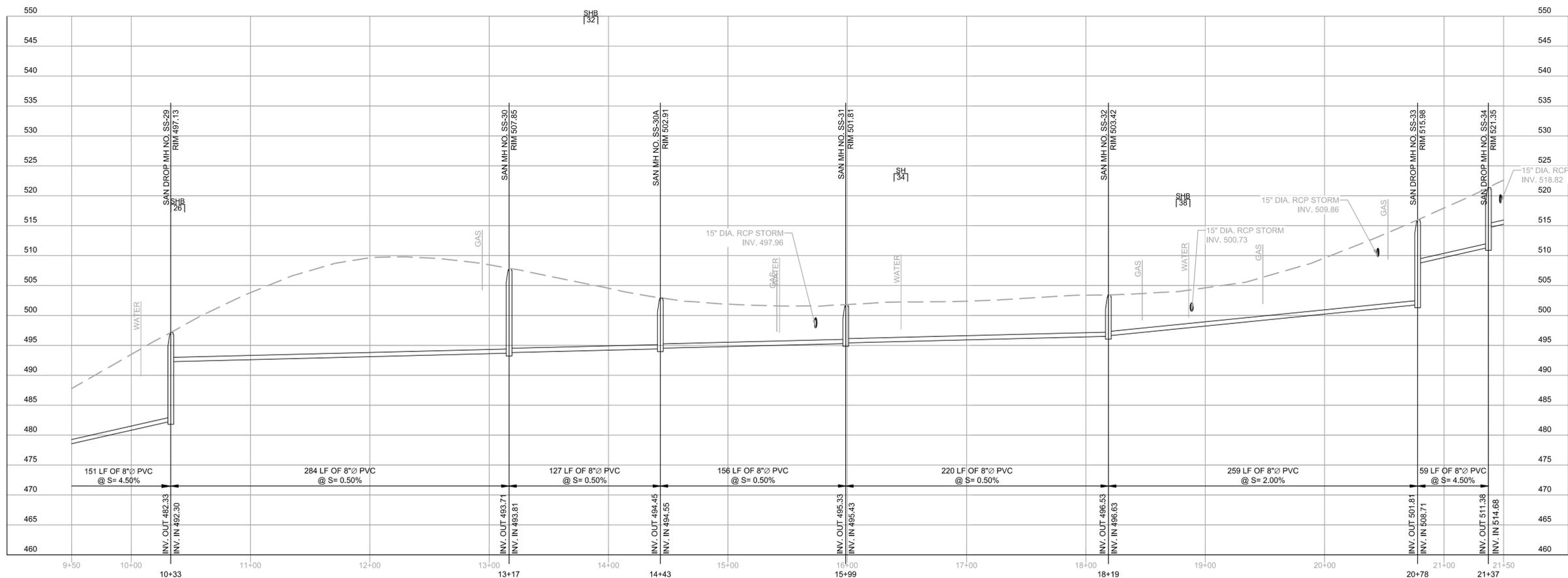
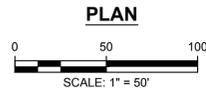
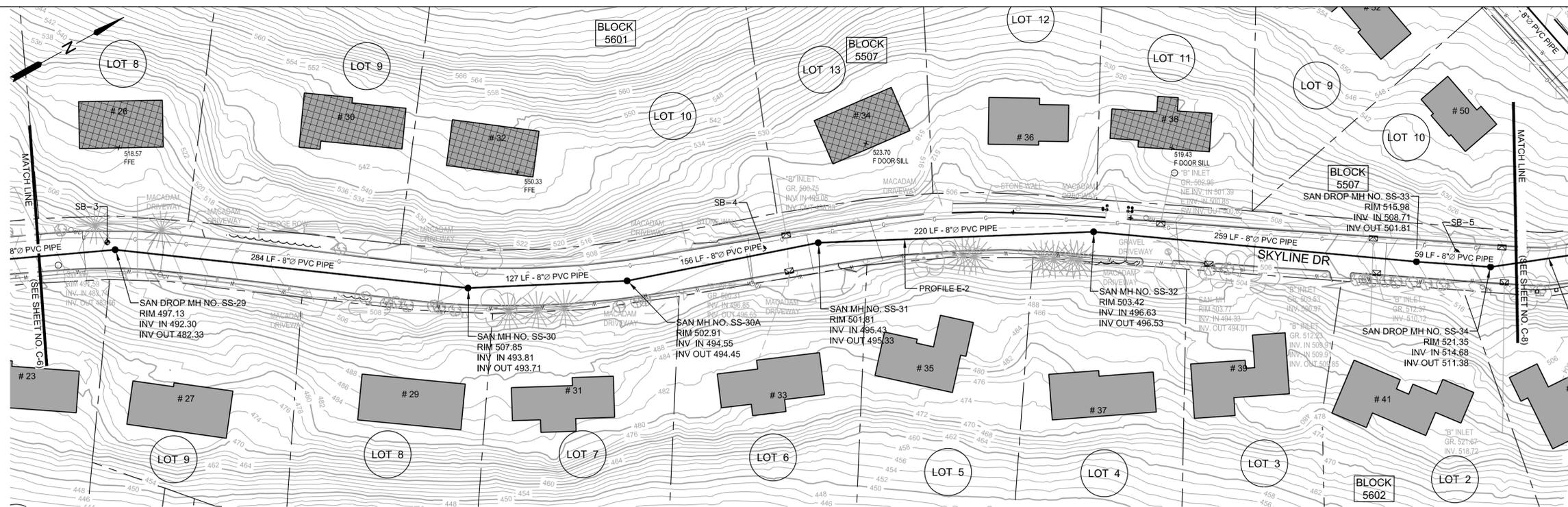
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Title
SKYLINE DRIVE
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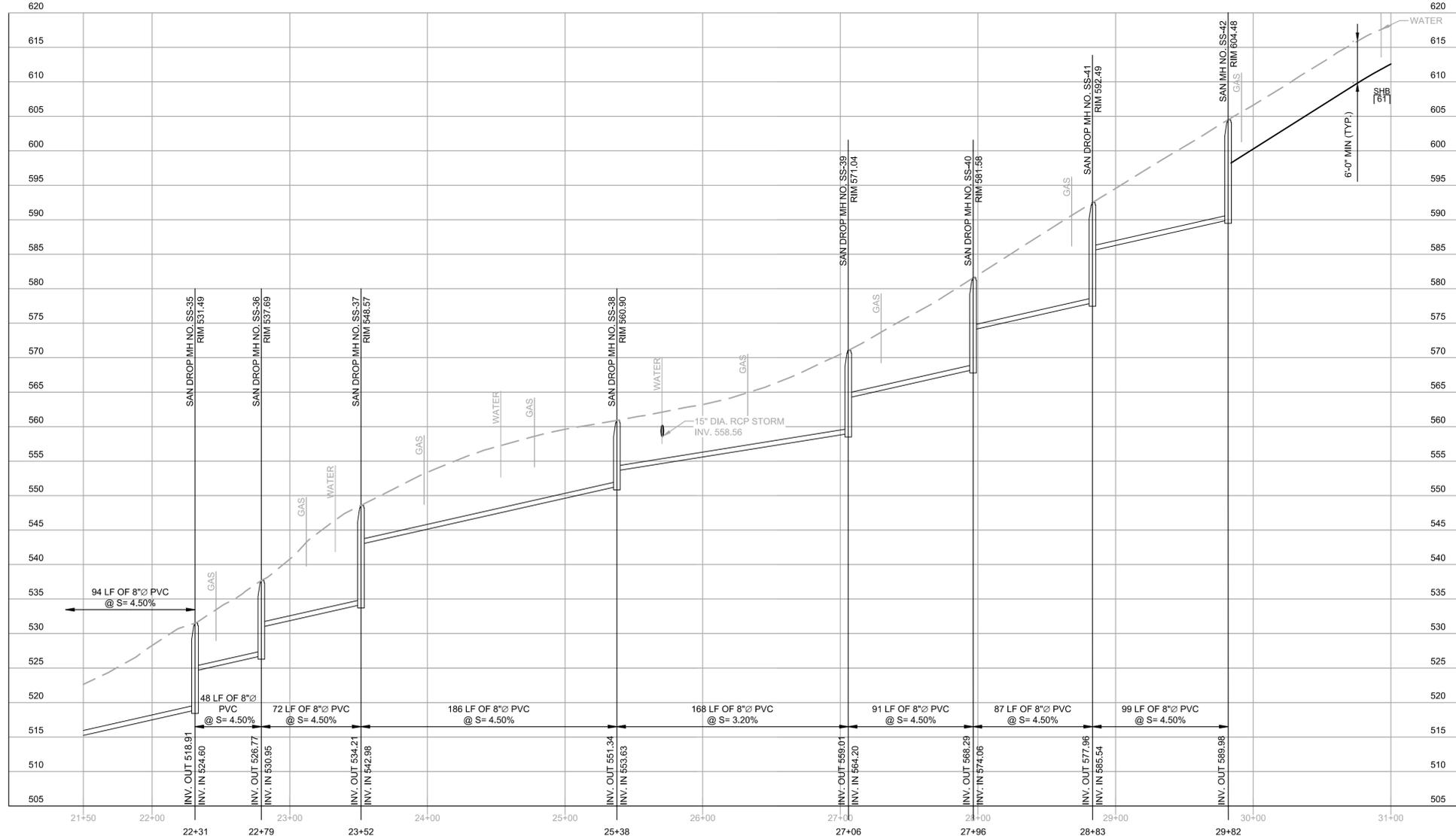
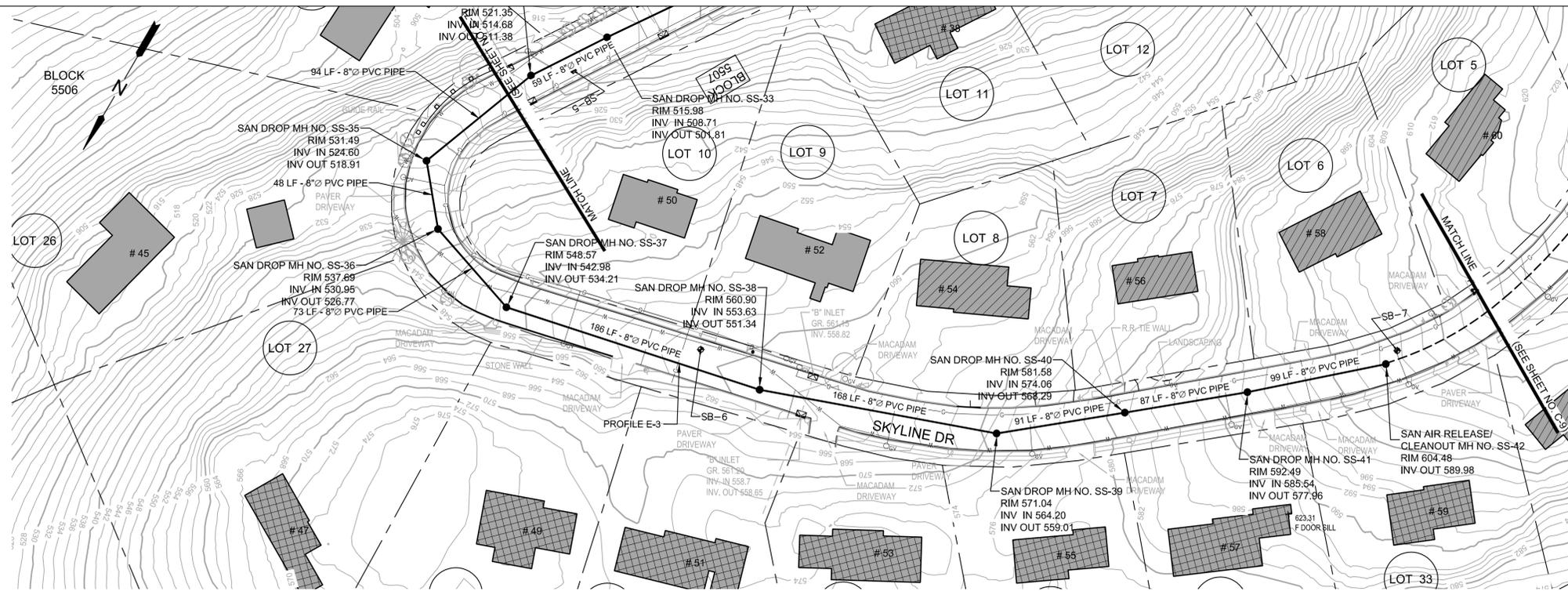
Title
SKYLINE DRIVE
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 PLANS, PROFILES AND SOIL EROSION AND
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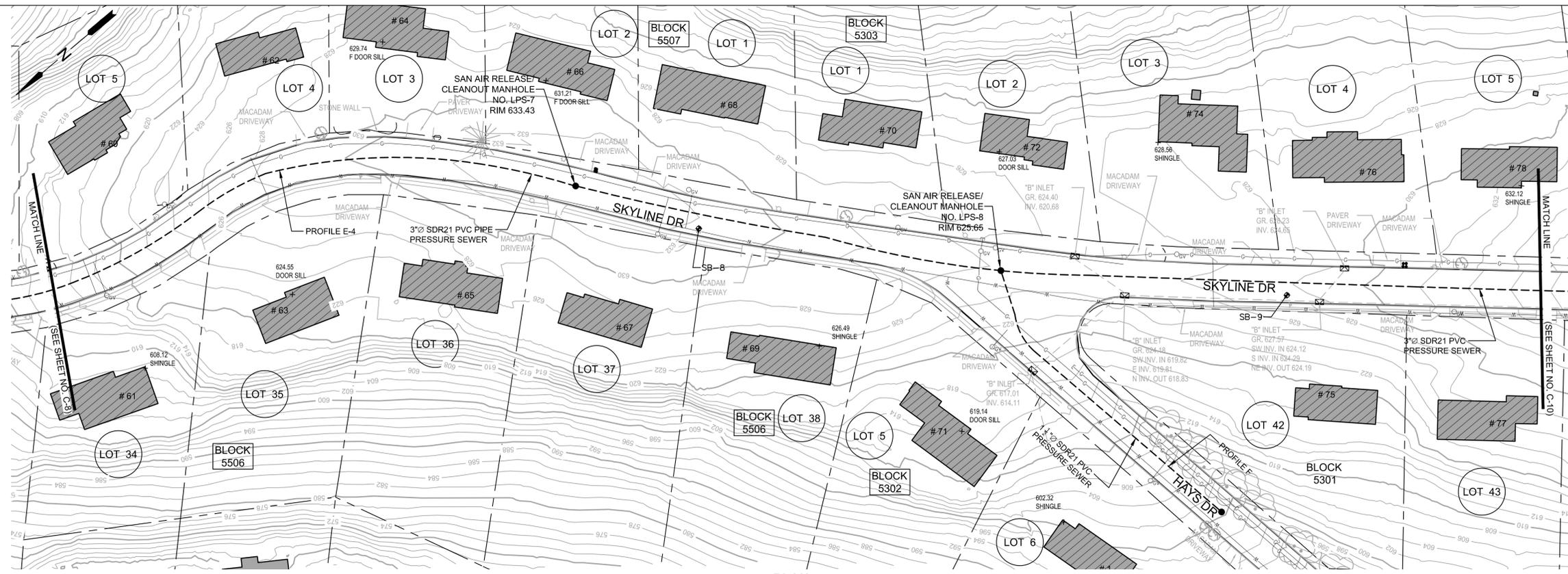
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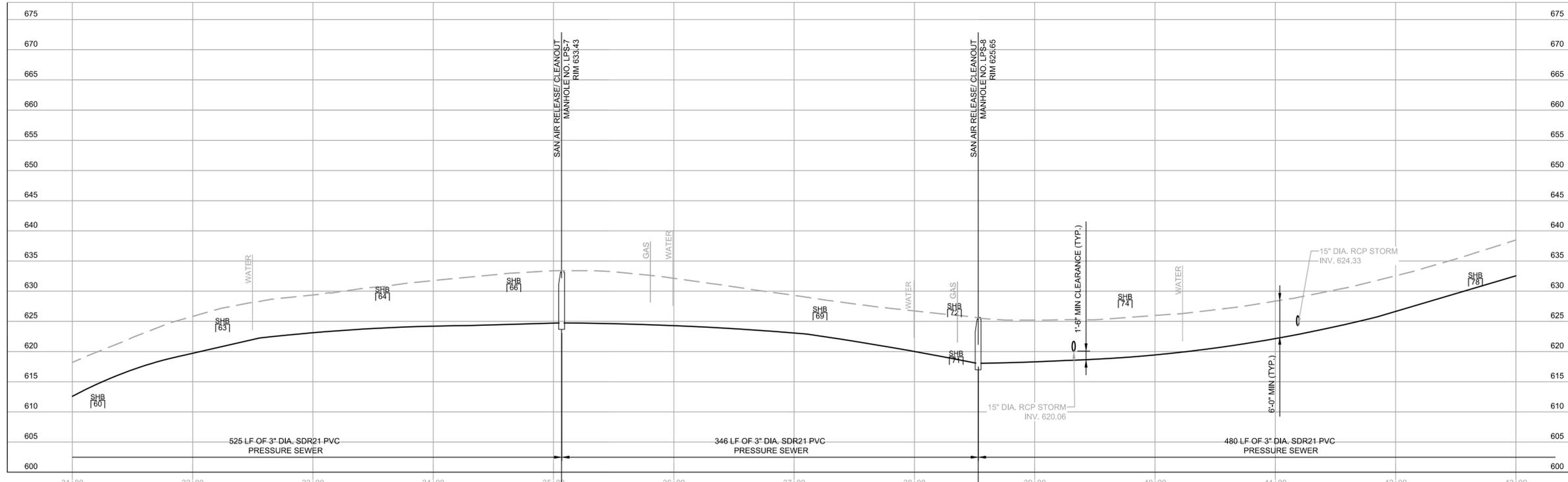
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PLAN
 0 50 100
 SCALE: 1" = 50'



PROFILE 'E-4'
 0 50 100
 SCALE: 1" = 50'
 HORIZONTAL
 0 10 20
 SCALE: 1" = 10'
 VERTICAL

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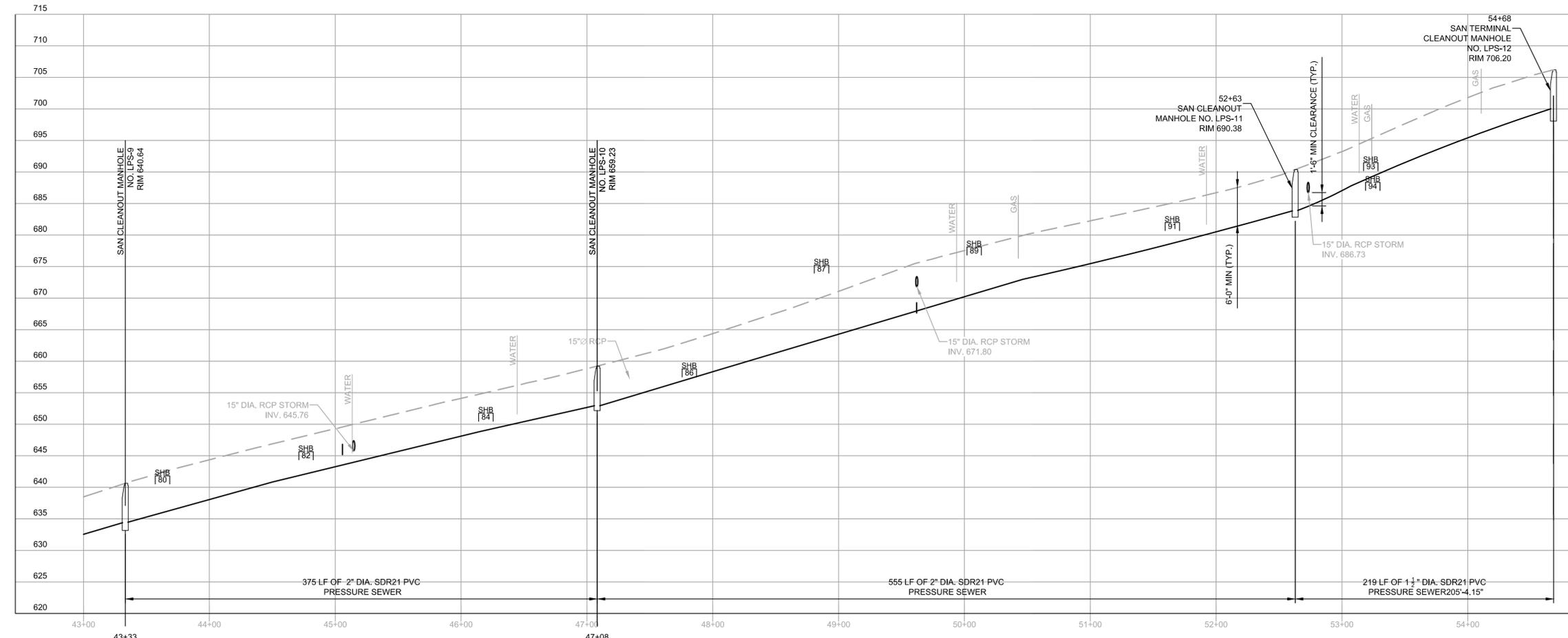
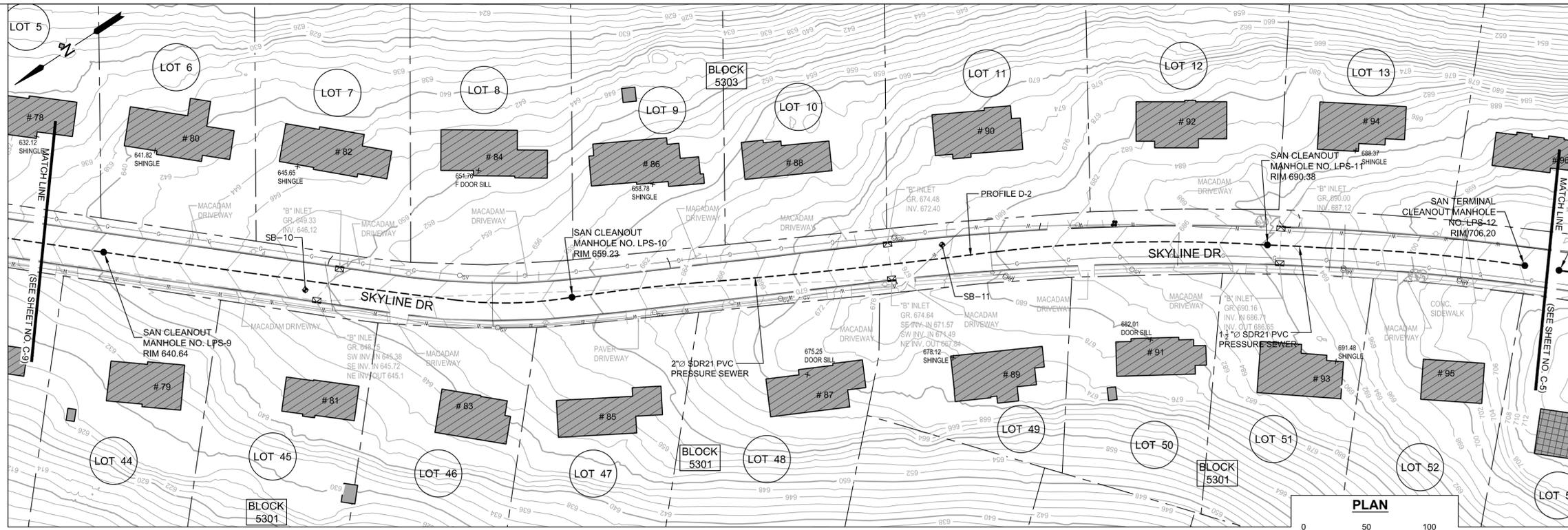
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MORRIS COUNTY, NEW JERSEY

Title
SKYLINE DRIVE
SANITARY SEWER PROJECT
 PLANS, PROFILES AND SOIL EROSION AND
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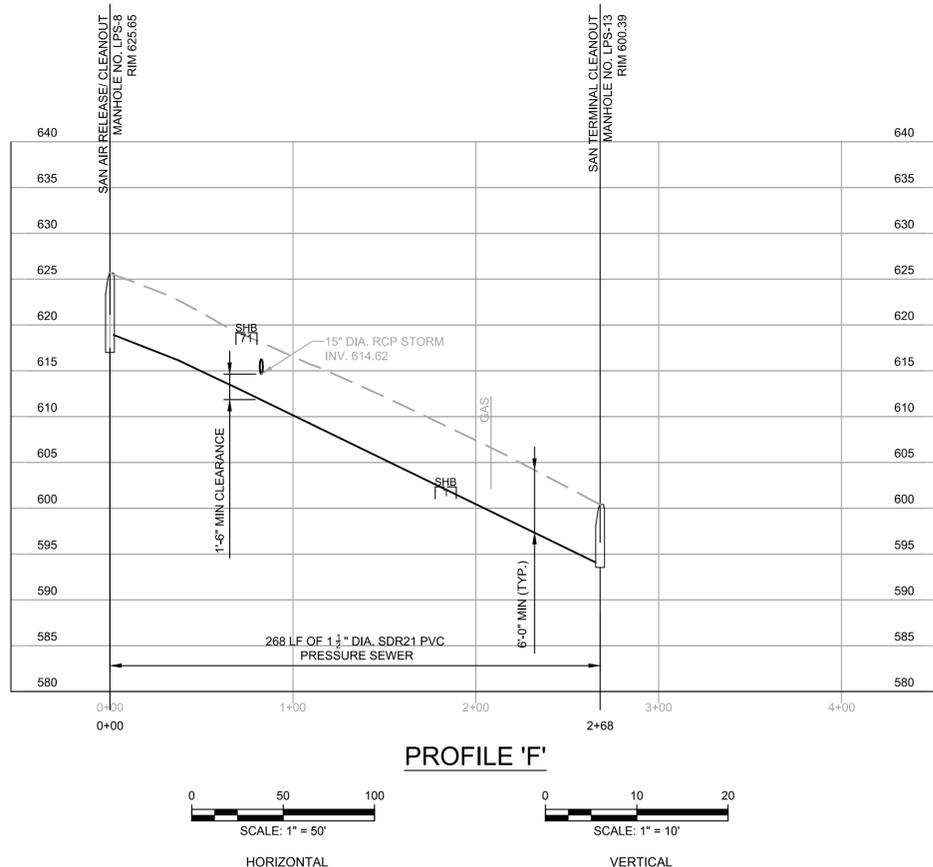
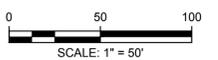
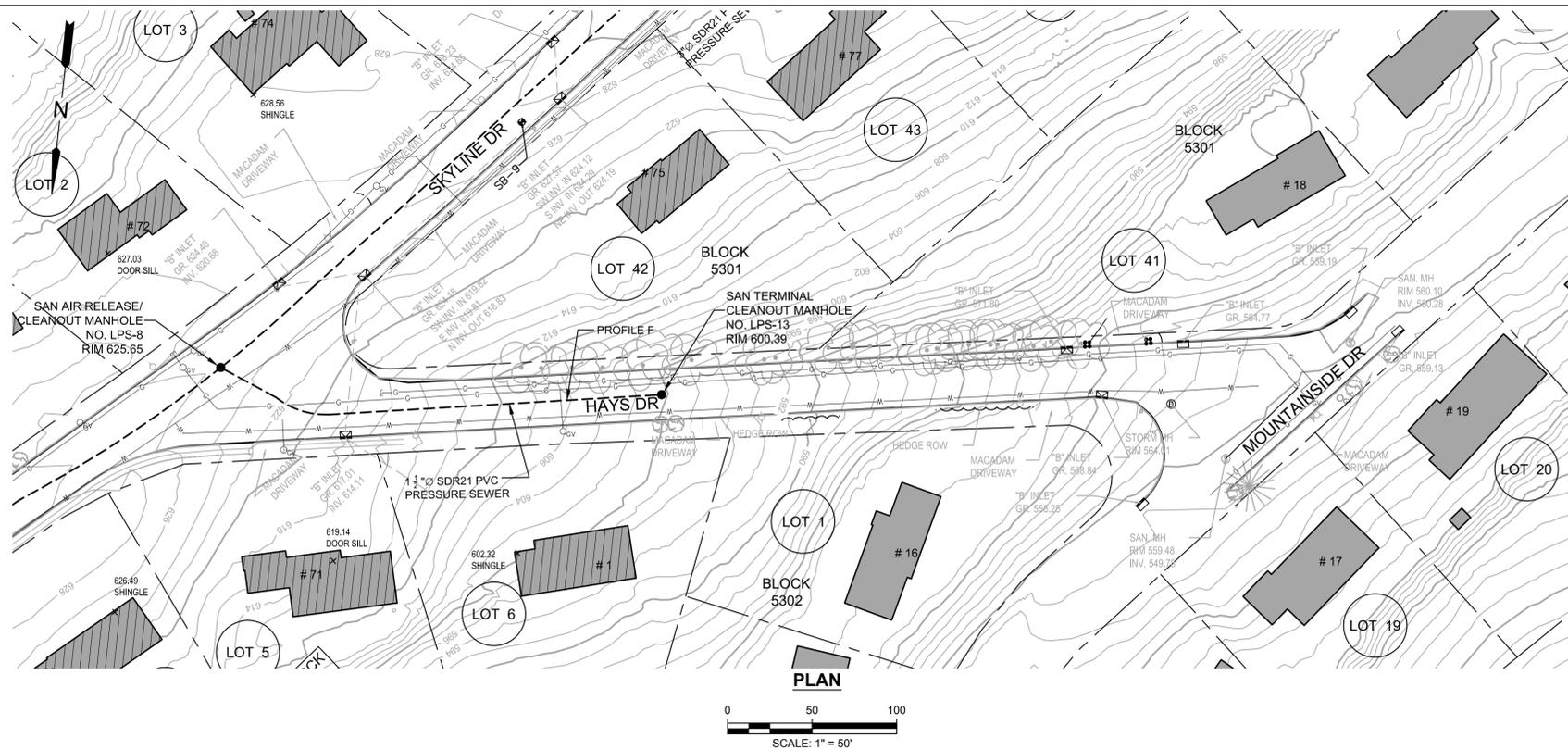
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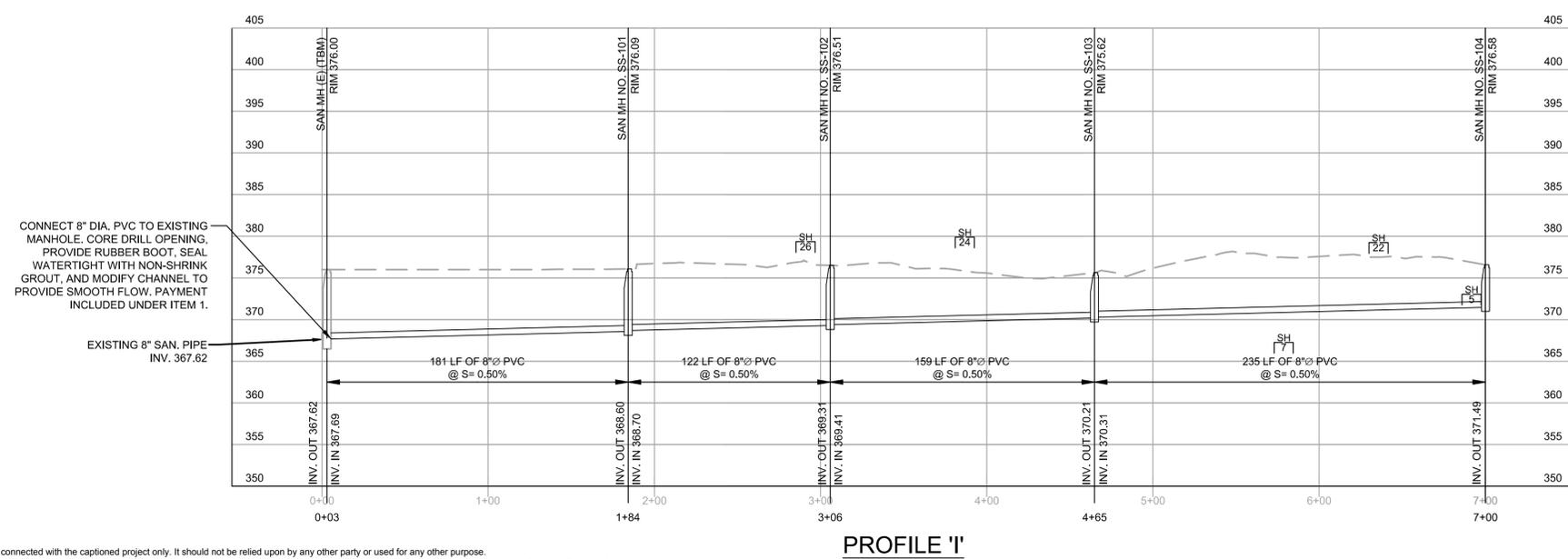
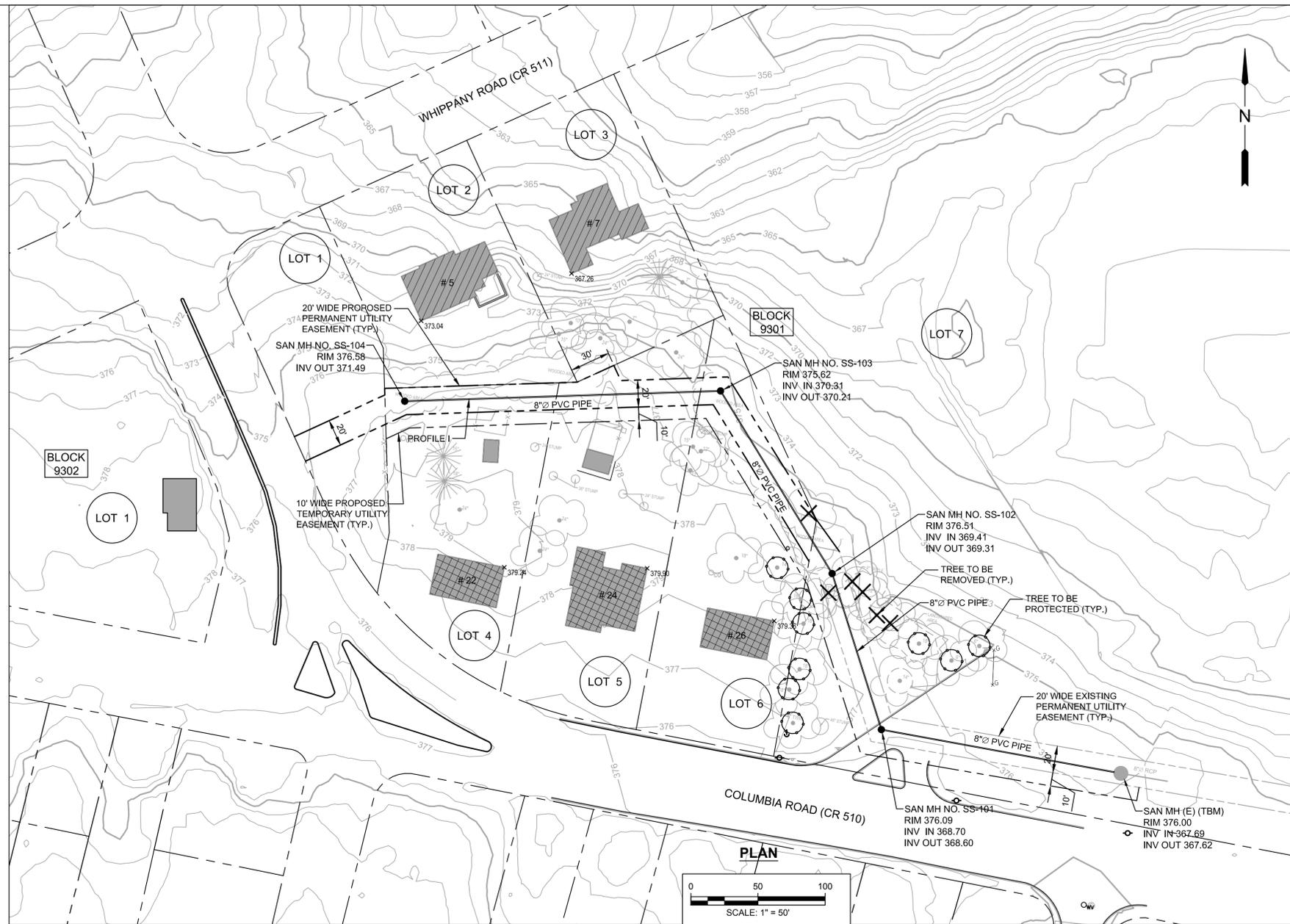
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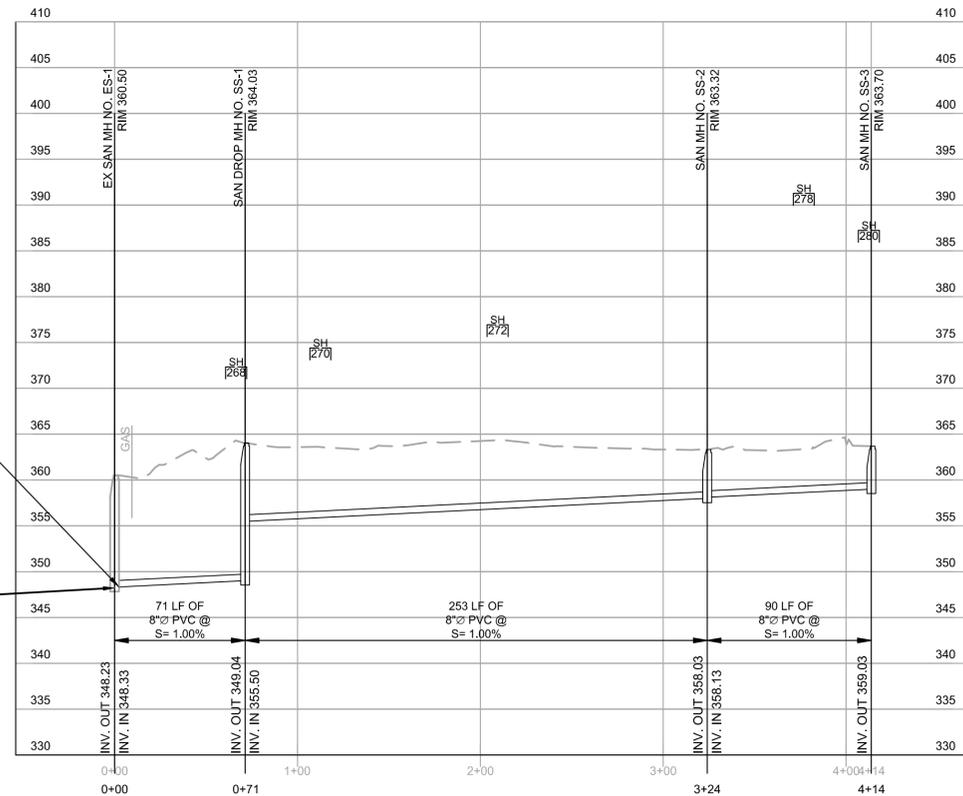
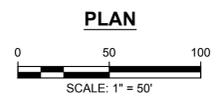
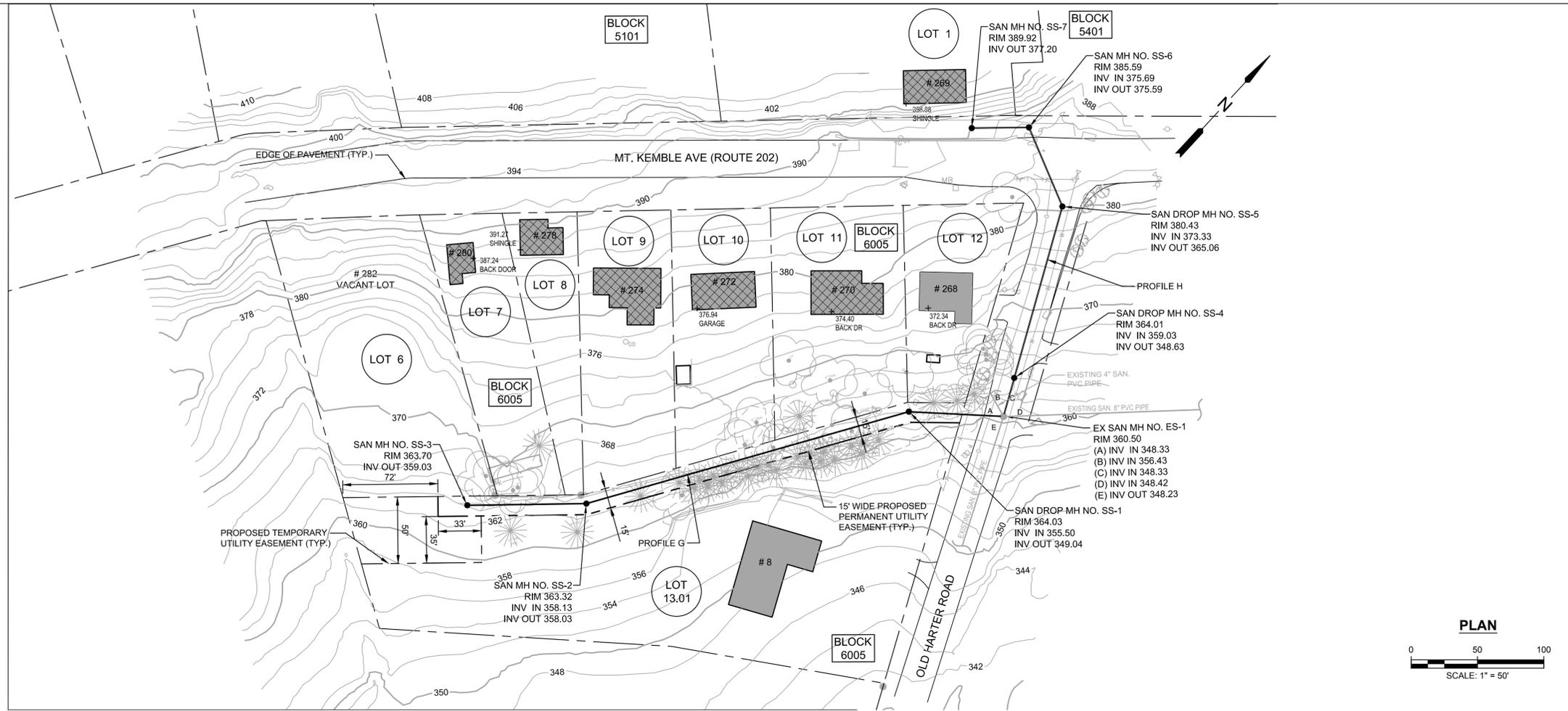
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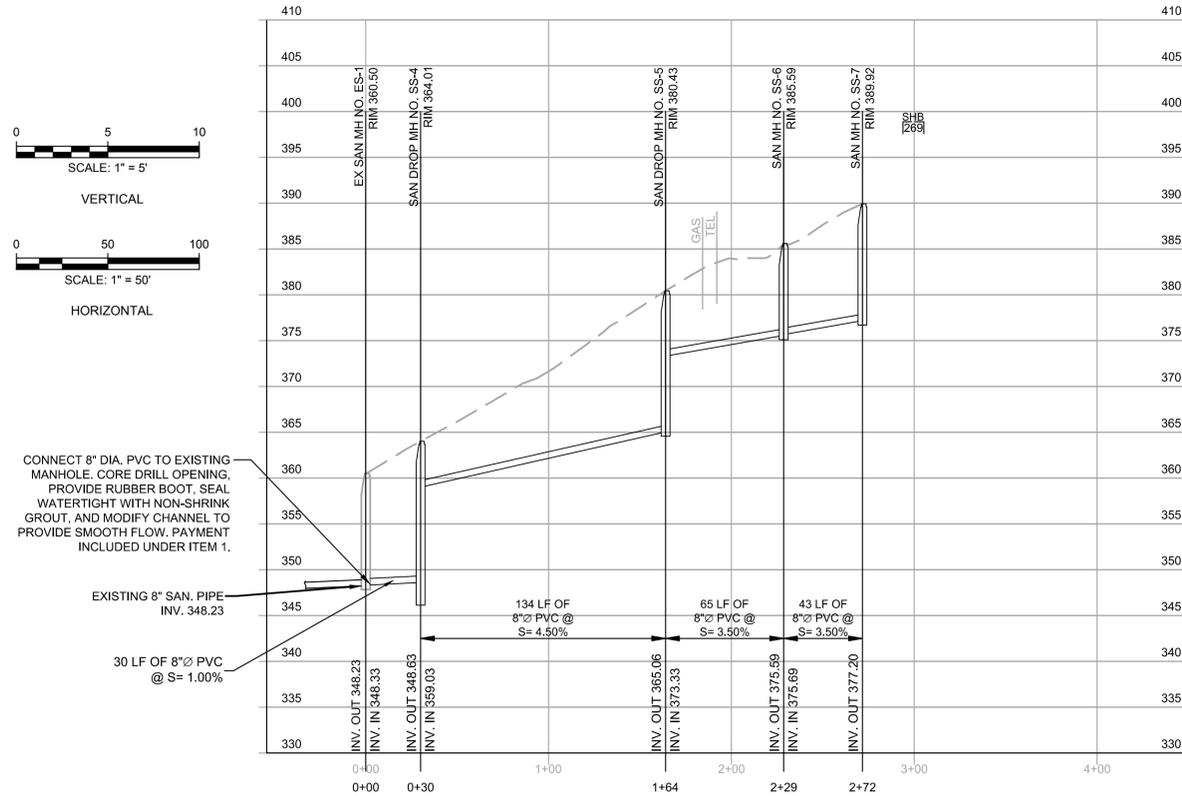
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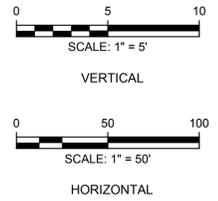
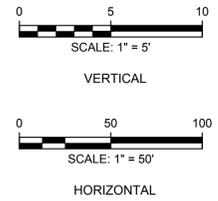
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PROFILE 'G'



PROFILE 'H'



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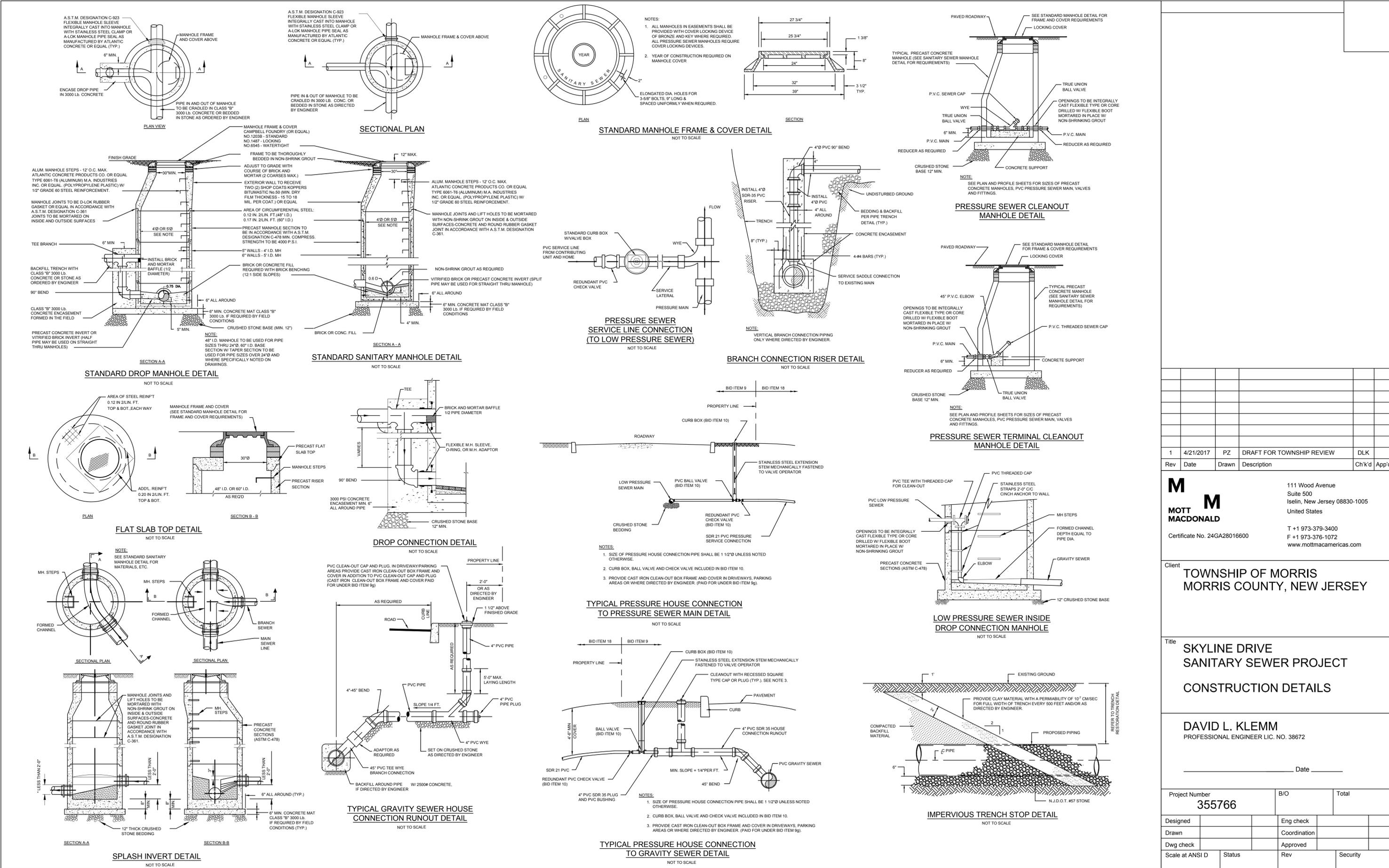
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Title: **SKYLINE DRIVE
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Title **SKYLINE DRIVE SANITARY SEWER PROJECT CONSTRUCTION DETAILS**

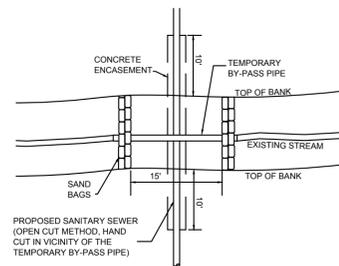
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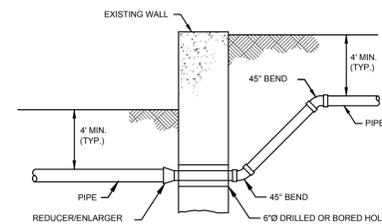
Drawing Number **D-1**

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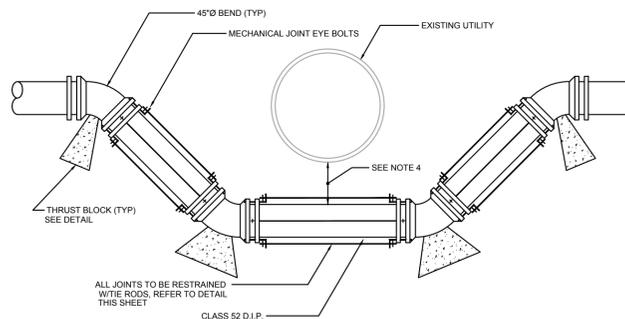


- NOTES:
- TEMPORARY BY-PASS PIPE SHALL BE LAID IN PLACE.
 - SAND BAGS SHALL BE USED TO DIVERT STREAM THROUGH TEMPORARY BY-PASS PIPE. PLACE UPSTREAM SAND BAGS FIRST.
 - SANITARY SEWER SHALL BE SET IN PLACE USING OPEN CUT METHOD. EXCAVATION IN VICINITY OF BY-PASS PIPE SHALL BE BY HAND.
 - SANITARY SEWER SHALL BE ENCASED IN CONCRETE WITHIN LIMITS SHOWN. TRENCH SHALL BE BACKFILLED, SAND BAGS AND TEMPORARY BY-PASS PIPE REMOVED AND STREAM RESTORED IN ITS ORIGINAL COURSE.

PIPE BY-PASS OPEN CUT DETAIL
NOT TO SCALE

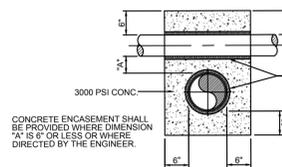


TYPICAL WALL CROSSING DETAIL
NOT TO SCALE

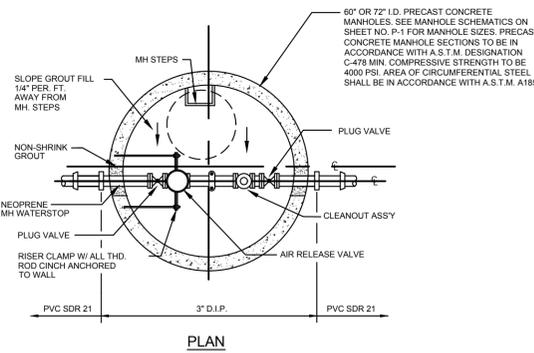


UTILITY BY-PASS
NOT TO SCALE

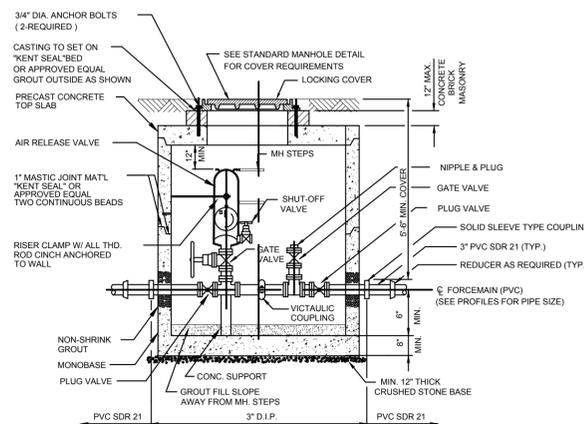
- NOTES:
- WATER MAIN MAY BE LOOPED ABOVE OBSTRUCTION IF 4' MINIMUM COVER IS MAINTAINED ABOVE MAIN.
 - WATER MAIN SHALL BE DUCTILE IRON CEMENT LINED PIPE. ALL JOINTS SHALL BE MECHANICAL JOINT AND ALL FITTINGS SHALL BE MECHANICAL JOINT DUCTILE IRON WITH RETAINER GLANDS.
 - CONCRETE THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS AND OTHER POINTS OF PIPE DIRECTION CHANGE.
 - MINIMUM CLEARANCE BETWEEN SANITARY SEWER AND WATER MAIN SHALL BE 18" MINIMUM. CLEARANCE BETWEEN WATER MAIN AND OTHER OBSTRUCTIONS SHALL BE 12" MINIMUM.



PIPE CROSSING DETAIL
NOT TO SCALE



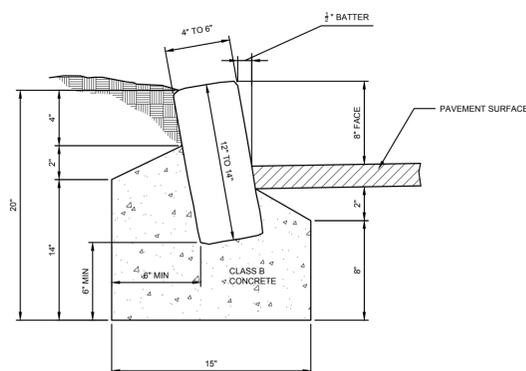
PLAN



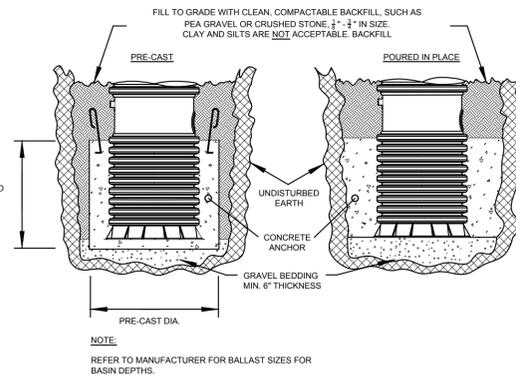
SECTION

NOTE:
WORK THIS DETAIL WITH INDIVIDUAL MANHOLE DETAILS SHOWN ON PLAN SHEET (SEE SHEET NO. P-1) AND ON INDIVIDUAL PARCEL SEWER CONNECTION SHEETS (SHEET NOS. IP-1 THRU IP-5).

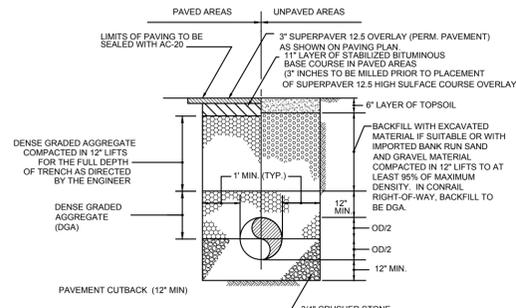
AIR RELEASE/CLEANOUT MANHOLE DETAIL FOR LOW PRESSURE SEWER
NOT TO SCALE



GRANITE BLOCK CURB DETAIL
NOT TO SCALE

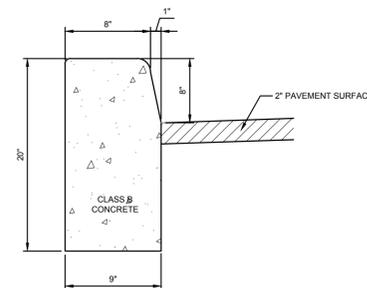


CONCRETE ANCHOR FOR GRINDER PUMP UNITS
NOT TO SCALE

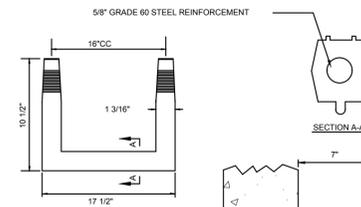


SURFACE RESTORATION AND TRENCH DETAIL (MUNICIPAL ROADS AND RIGHT OF WAY)
NOT TO SCALE

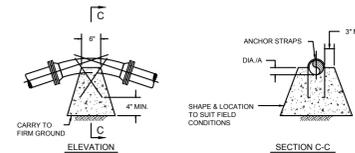
- NOTES: MUNICIPAL ROADS AND RIGHT OF WAY
- LIMITS OF TRENCH TO BE CUT TO A NEAT EDGE AND TACK-COATED WITH EMULSIFIED ASPHALT.
 - ON AREAS SEALED WITH AC-20, DRY SAND SHALL BE SPRINKLED TO PREVENT PICKUP BY TRAFFIC.
 - IN AREAS WITH WET OR UNSTABLE BOTTOMS, USE 3/4\"/>
- SUPERPAVE 12.5 HIGH COURSE SHALL BE CONSTRUCTED PER THE CARRIER N.J.D.O.T. SPECIFICATIONS. RECYCLED CONCRETE AGGREGATE (RCA) SHALL NOT BE USED.



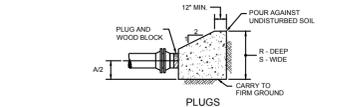
CONCRETE CURB DETAIL
NOT TO SCALE



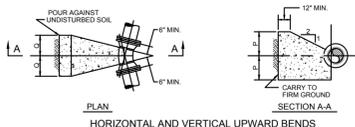
POLYPROPYLENE MANHOLE STEP
NOT TO SCALE



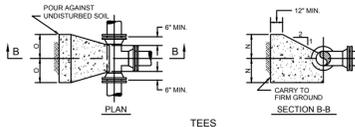
VERTICAL DOWNWARD BENDS



TEES



HORIZONTAL AND VERTICAL UPWARD BENDS



TEES

THRUST BLOCKS FOR TEES, HORIZ. & VERTICAL BENDS AND PLUGS									
THRUST BLOCKS DESIGNED FOR 200 LB. PER SQ. IN. TEST PRESSURE AND 2000 LB. PER SQ. FT. SOIL PRESSURE									
DESCRIPTION	DIMENSION	9\"/>							
TEES	N	1'-0"	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	4'-3"
	Q	1'-4"	1'-10"	3'-3"	4'-3"	6'-6"	13'-2"	14'-6"	17'-11"
90° BENDS	P	1'-0"	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-3"
	Q	1'-4"	1'-10"	3'-3"	4'-3"	6'-6"	13'-2"	14'-6"	17'-11"
45° BENDS	P	0'-6"	1'-0"	1'-3"	1'-6"	1'-9"	2'-0"	2'-6"	4'-3"
	Q	2'-2"	1'-3"	2'-2"	2'-6"	4'-2"	7'-0"	8'-7"	11'-2"
22½° BENDS	P	0'-6"	0'-6"	1'-0"	1'-6"	1'-9"	2'-0"	2'-6"	3'-6"
	Q	0'-6"	0'-11"	1'-4"	1'-7"	2'-1"	4'-2"	5'-1"	8'-2"
1½° BENDS	P	0'-6"	0'-6"	1'-1"	1'-3"	1'-6"	2'-0"	2'-6"	4'-3"
	Q	0'-2"	0'-2"	0'-6"	0'-6"	0'-11"	1'-6"	1'-9"	2'-2"
¾° BENDS	P	0'-5"	0'-5"	0'-8"	1'-0"	1'-3"	2'-0"	2'-6"	3'-6"
	Q	0'-5"	0'-5"	0'-8"	0'-10"	1'-1"	1'-11"	2'-3"	2'-6"
45° BENDS	MIN. CONC. ANCHORAGE	1.4 CY	2.4 CY	5.2 CY	9.0 CY	13.8 CY	43.5 CY	58.8 CY	96.8 CY
	MIN. CONC. ANCHORAGE	0.7 CY	1.2 CY	2.8 CY	4.8 CY	7.1 CY	22.2 CY	30.0 CY	49.3 CY
1½° BENDS	MIN. CONC. ANCHORAGE	0.4 CY	0.6 CY	1.3 CY	2.3 CY	3.5 CY	11.2 CY	15.1 CY	24.8 CY
	MIN. CONC. ANCHORAGE	0.2 CY	0.3 CY	0.7 CY	1.2 CY	1.8 CY	5.8 CY	7.8 CY	12.4 CY
PLUGS	P	1'-0"	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	4'-3"
	Q	1'-4"	1'-10"	3'-3"	4'-3"	6'-6"	13'-2"	14'-6"	17'-11"

FORCE MAIN THRUST BLOCK DETAILS
NOT TO SCALE

Rev	Date	Drawn	Description	Ch'k'd	App'd
1	4/21/2017	PZ	DRAFT FOR TOWNSHIP REVIEW	DLK	

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Client **TOWNSHIP OF MORRIS MORRIS COUNTY, NEW JERSEY**

Title **SKYLINE DRIVE SANITARY SEWER PROJECT CONSTRUCTION DETAILS**

DAVID L. KLEMM
PROFESSIONAL ENGINEER LIC. NO. 38672

Project Number 355766	B/O	Total
Designed	Eng check	
Drawn	Coordination	
Dwg check	Approved	
Scale at ANSI D	Status	Rev
		Security

Drawing Number **D-2**

