

| LEGEND | | |
|-----------------|----------|----------|
| DESCRIPTION | PROPOSED | EXISTING |
| SITE PROPERTY | --- | --- |
| SECTION | --- | --- |
| RIGHT OF WAY | --- | --- |
| EASEMENT | --- | --- |
| LOT | --- | --- |
| BENCHMARK | △ | △ |
| SURVEY MONUMENT | ⊙ | ⊙ T · X |
| CENTERLINE | --- | --- |
| PAVEMENT | --- | --- |
| PAVERS | --- | --- |
| CONCRETE | --- | --- |
| SIDEWALK | --- | --- |
| GRAVEL | --- | --- |
| RIP RAP | --- | --- |
| CURB & GUTTER | --- | N/A |
| STRIPING | --- | --- |
| ADA DOMES | --- | --- |
| FLAG POLE | --- | --- |
| MAIL BOX | --- | --- |
| POST | --- | --- |
| BOLLARD | --- | --- |
| PARKING METER | --- | --- |
| SIGN | --- | --- |
| CHAIN LINK FNC | --- | --- |
| BARB WIRE FNC | --- | --- |
| FNC | --- | --- |
| GUARD RAIL | --- | --- |
| VEGETATION | --- | --- |
| TREE | --- | --- |
| WETLAND | N/A | --- |
| BUILDING | --- | --- |
| WALL | --- | --- |
| DOORS | --- | --- |
| OVERHANG | --- | --- |
| STOOP | --- | N/A |
| FOOTING | --- | --- |
| DOWN DRAIN | --- | --- |
| MJR CONTOUR | 500 | 500 |
| MNR CONTOUR | 499 | 499 |
| TOP OF SLOPE | TOP | TOP |
| TOE OF SLOPE | TOE | TOE |
| DAYLIGHT FILL | F | N/A |
| DAYLIGHT CUT | C | N/A |
| FLOW LINE | --- | --- |
| OVERHEAD | OH | OH |
| UTILITY POLE | --- | --- |
| GUY WIRE | --- | --- |
| VALVE | --- | --- |
| UTILITY BOX | --- | --- |
| METER | --- | --- |
| CLEANOUT | --- | --- |
| STORM PIPE | --- | --- |
| STORM MH | --- | --- |
| CB - SQUARE | --- | --- |
| CB - ROUND | --- | --- |
| APRON | --- | --- |
| FORCEMAIN | FM | FM |
| SANITARY | --- | --- |
| SANITARY MH | --- | --- |
| WATER LINE | W | W |
| WATER MH | --- | --- |
| HYDRANT | --- | --- |
| WELL | --- | --- |
| GAS PIPE | G | G |
| GAS MH | --- | --- |
| REGULATOR | --- | --- |
| ELECTRICAL | E | E |
| ELEC MH | --- | --- |
| LIGHT POLE | --- | --- |
| TRANSFORMER | --- | --- |
| OUTLET | --- | --- |
| FIBER OPTIC | FO | FO |
| TELECOM | T | T |
| CABLE | CBL | CBL |
| COMM MH | --- | --- |

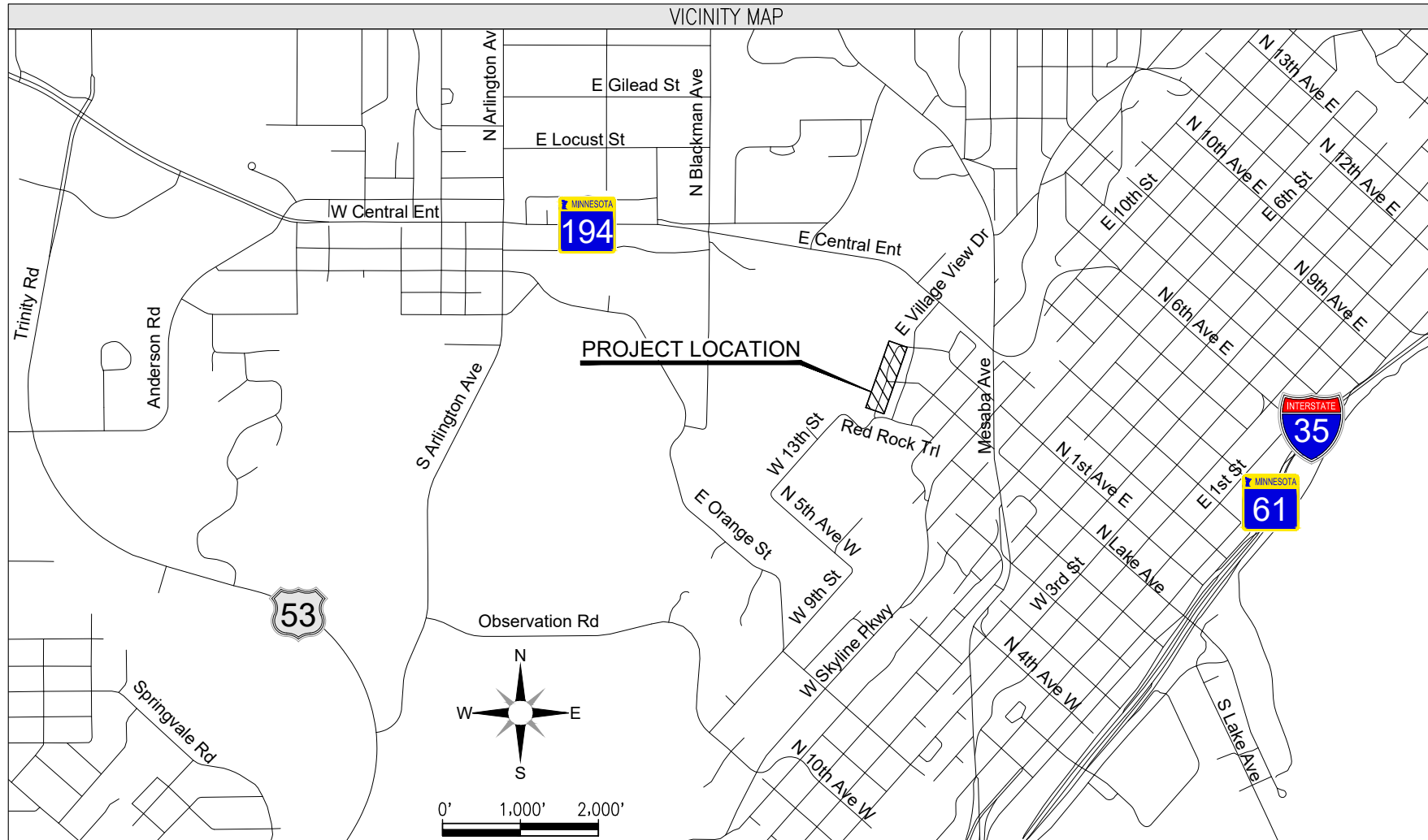
CITY OF DULUTH

DEPARTMENT OF PUBLIC WORKS AND UTILITIES

ENGINEERING DIVISION

CONSTRUCTION PLANS FOR:
W HARBOR HIGHLANDS DR IMPROVEMENTS
 DULUTH, MN 55805

CITY PROJECT NO. 2237



GOVERNING SPECIFICATIONS

THE 2025 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION 'STANDARD SPECIFICATIONS FOR CONSTRUCTION' SHALL GOVERN. AVAILABLE AT: <http://www.dot.state.mn.us/pre-letting/spec/>

THE 2026 EDITION OF THE CITY OF DULUTH STANDARD CONSTRUCTION SPECIFICATIONS AND SUPPLEMENTS OR ADDENDUMS SHALL APPLY. AVAILABLE AT: <http://www.duluthmn.gov/engineering/standard-construction-specifications/>

UTILITY DETAIL LEVEL

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

WARNING:

LOCATION OF UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR. CALL BEFORE DIGGING. GOPHER STATE ONE CALL 1-800-252-1166 REQUIRED BY LAW.

BASIS OF BEARING/CONTROL

CONTROL BASED ON THE ST. LOUIS COUNTY TRANSVERSE MERCATOR COORDINATE SYSTEM OF 1996

| POINT NAME: | NORTHING: | EASTING: | ELEVATION: |
|-------------|------------|------------|------------|
| TNH | 3345969.67 | 4841749.93 | 1161.93 |

SHEET INDEX

| SHEET NO | DESCRIPTION |
|----------|--|
| 1 | TITLE |
| 2 | GENERAL NOTES |
| 3-4 | TOPOGRAPHIC & BOUNDARY SURVEY + PLAT SHEET |
| 5-6 | DETAILS |
| 7-10 | EXISTING CONDITIONS & REMOVALS |
| 11-14 | SITE PLAN |
| 15-18 | GRADING PLAN |
| 19-22 | UTILITY PLAN |
| 23-26 | SWPPP LAYOUT |
| 27 | SWPPP TABLE |
| 28 | SWPPP NARRATIVE |
| 29-30 | SWPPP DETAILS |

---THIS PLAN CONTAINS 30 SHEETS---

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

David G. Bolf
PROJECT ENGINEER

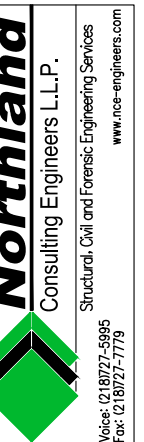
(Signature)

PROJECT ENGINEER 6/19/26 40926
DATE LIC. NO.

CITY APPROVAL

| APPROVED | CHIEF ENGINEER OF TRANSPORTATION | DATE |
|----------|----------------------------------|------|
| | | |
| APPROVED | CHIEF ENGINEER OF UTILITIES | DATE |
| | | |
| APPROVED | CITY ENGINEER | DATE |
| | | |

CITY OF DULUTH PROJECT NO. 2237



W HARBOR HIGHLANDS DR IMPROVEMENTS
 DULUTH, MN 55805

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
 6/19/26
 Lic. No.: 40926
 Engineer: DAVID G. BOLF

revision

Proj: 26-096
Date: 6/19/26
Drawn: JFM
Checked: TLL

TITLE

Sheet Title
Sheet Number
1

GENERAL CIVIL NOTES

SHOP DRAWINGS

SHOP DRAWINGS FOR THE FOLLOWING ITEMS, BUT NOT LIMITED TO, SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION IF APPLICABLE;

- A. BITUMINOUS MIX DESIGN
- B. CONCRETE MIX DESIGN
- C. STORM SEWER COMPONENTS
- D. WATER MAIN COMPONENTS
- E. SANITARY SEWER COMPONENTS
- F. CONCRETE STRUCTURES
- G. STORM WATER TREATMENT MATERIALS
- H. GEOSYNTHETIC PRODUCTS

DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER OF RECORD; THEREFORE, THEY SHALL BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW AND STAMP DRAWINGS PRIOR TO REVIEW BY THE ENGINEER OF RECORD. CONTRACTOR SHALL REVIEW DRAWINGS FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND ALL SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO. SUBMITTALS SHALL INCLUDE ONE ELECTRONIC COPY TO BE MARKED AND RETURNED.

SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS, IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATION SHALL CONTROL AND SHALL BE FOLLOWED.

UTILITIES

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS TO UTILITY LEVEL "D" AS DEFINED BY CI/ASCE 38-22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "GSOC" AT (1-800-252-1166) TWO WORKING DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION.

GEOTECHNICAL & MATERIAL TESTING

THE CONTRACTOR SHALL VERIFY RECOMMENDATIONS NOTED IN THE GEOTECHNICAL REPORT PRIOR TO INSTALLATION OF SITE IMPROVEMENT MATERIALS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE GEOTECHNICAL REPORT AND THE PLANS.

OWNER HAS OPTION TO COMPLETE QUALITY ASSURANCE OF MATERIAL TESTING. MATERIAL TESTING SHALL FOLLOW THE MnDOT SCHEDULE OF MATERIAL CONTROL UNLESS NOTED IN THE CONTRACT DOCUMENTS.

AMERICANS WITH DISABILITIES ACT (ADA)

ALL PEDESTRIAN FACILITIES ON THIS PROJECT MUST BE CONSTRUCTED ACCORDING TO PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) WHICH CAN BE FOUND AT: <http://www.dot.state.mn.us/ada/pdf/PROWAG.pdf> and MnDOT STANDARD PLANS 5-297.250 & 5-297.254

THE CONTRACTOR MUST DESIGNATE A RESPONSIBLE PERSON COMPETENT IN ALL ASPECTS OF PROWAG TO ASSESS PROPOSED SIDEWALK LAYOUT AT EACH SITE BEFORE WORK BEGINS. THE DESIGNATED PERSON MUST HAVE ATTENDED THE MnDOT ADA CONSTRUCTION CERTIFICATION COURSE AND RECEIVED A PASSING SCORE, WITHIN THE PAST 3 YEARS. FOR CLASS DATES AND LOCATIONS PLEASE REFER TO THE FOLLOWING LINK AT: <http://www.dot.state.mn.us/ada/training.html>. A MINIMUM OF ONE PERSON PER PROJECT MUST POSSESS A VALID ADA CONSTRUCTION CERTIFICATION CARD ANYTIME ADA WORK IS BEING PERFORMED ON THE PROJECT. IF WORK ON ELECTRICAL COMPONENTS IS THE ONLY ADA WORK TAKING PLACE ON THE PROJECT THE ELECTRICIAN MUST HAVE IN THEIR POSSESSION A CURRENT MnDOT SIGNALS AND LIGHTING CERTIFICATION.

THE CONTRACTOR AND THE ENGINEER SHALL WORK TOGETHER TO CONSTRUCT ALL PEDESTRIAN FACILITIES SET FORTH IN THE PLANS AND REQUIREMENTS OF PROWAG.

IF THE PLAN OR SITE CONDITIONS DO NOT ALLOW ACCESSIBILITY STANDARDS TO BE MET, THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER TO DETERMINE A RESOLUTION. THE ENGINEER SHALL RESPOND TO THE CONTRACTOR, IN A TIMELY MANNER (UP TO 24 HOURS), WITH A SOLUTION ON HOW TO PROCEED. THE CONTRACTOR SHALL MITIGATE ANY POTENTIAL DELAYS BY PROGRESSING OTHER AVAILABLE WORK ON THE PROJECT.

IF THE CONTRACTOR CONSTRUCTS ANY PEDESTRIAN FACILITIES THAT ARE NOT PER PLAN, DO NOT MEET THE REQUIREMENTS OF PROWAG, OR DO NOT FOLLOW THE AGREED UPON RESOLUTION WITH THE ENGINEER, THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTING THE DEFICIENT FACILITIES WITH NO COMPENSATION PAID FOR THE CORRECTIVE WORK.

SURVEY STAKES & BENCHMARKS

THE CONTRACTOR IS RESPONSIBLE FOR ALL STAKING OPERATIONS UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.

IF NOTED IN THE CONTRACT DOCUMENTS FOR THE OWNER TO PROVIDE STAKING OPERATIONS, THE CONTRACTOR SHALL GIVE THE ENGINEER AT LEAST 72 HOURS NOTICE IN WRITING BEFORE REQUIRING ANY SURVEYS OR CONSTRUCTION STAKES TO BE SET, OR BEFORE COMMENCING WORK ON ANY PORTION OF THE CONTRACT, OR AT ANY NEW PLACE, AS WELL AS AT ANY PLACE WHERE WORK HAS BEEN RELINQUISHED OR STOPPED FOR ANY CAUSE.

THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ALL SUCH STAKES AND BENCH MARKS IN THEIR PROPER POSITIONS, AND IN CASE OF ANY OF THEM BEING LOST, DESTROYED, OR OBLITERATED AFTER ONCE HAVING BEEN GIVEN, THE CONTRACTOR SHALL AT ONCE NOTIFY THE OWNER IN WRITING AND ALL EXPENSE INCURRED BY THE OWNER IN REPLACING THE SAME MAY BE CHARGED AGAINST THE CONTRACTOR AND DEDUCTED FROM THE ESTIMATES.

ENGINEER'S AUTHORITY

THE ENGINEER SHALL GIVE ALL ORDERS AND DIRECTIONS CONTEMPLATED UNDER THIS CONTRACT AND SPECIFICATIONS RELATIVE TO THE EXECUTION OF THE WORK. THE ENGINEER SHALL DETERMINE THE AMOUNT, QUALITY, ACCEPTABILITY, AND FITNESS OF THE SEVERAL KINDS OF WORK AND MATERIALS WHICH ARE TO BE PAID FOR UNDER THIS CONTRACT AND SHALL DECIDE ALL QUESTIONS WHICH MAY ARISE IN RELATION TO SAID WORK AND THE CONSTRUCTION THEREOF.

THE ENGINEER'S ESTIMATES AND DECISIONS SHALL BE FINAL AND CONCLUSIVE, EXCEPT AS HEREIN OTHERWISE EXPRESSLY PROVIDED. IN CASE ANY QUESTIONS SHALL ARISE BETWEEN THE PARTIES HERETO RELATIVE TO SAID CONTRACT OR SPECIFICATIONS, THE DETERMINATION OF DECISION OF THE ENGINEER SHALL BE A CONDITION PRECEDENT TO THE RIGHT OF THE CONTRACTOR TO RECEIVE ANY MONEY OR PAYMENT FOR WORK UNDER THIS CONTRACT AFFECTED IN ANY MANNER OR TO ANY EXTENT BY SUCH QUESTION.

THE ENGINEER SHALL DECIDE THE MEANING AND INTENT OF ANY PORTION OF THE SPECIFICATIONS AND OF ANY PLAN OR DRAWINGS WHERE THE SAME MAY BE FOUND OBSCURE OR BE IN DISPUTE. ANY DIFFERENCES OR CONFLICTS IN REGARD TO THEIR WORK WHICH MAY ARISE BETWEEN THE CONTRACTOR UNDER THIS CONTRACT AND OTHER CONTRACTORS PERFORMING WORK FOR THE OWNER SHALL BE ADJUSTED AND DETERMINED BY THE ENGINEER.

THE CONTRACTOR IS TO FURNISH THE ENGINEER OR SUPERVISOR WITH ALL REQUIRED ASSISTANCE TO FACILITATE THOROUGH INSPECTION, OR CULLING OVER REMOVAL OF DOUBTFUL OR DEFECTIVE MATERIAL, OR FOR THE THOROUGH EXAMINATION INTO ANY OF THE WORK PERFORMED, OR FOR ANY OTHER PURPOSE REQUIRED IN THE DISCHARGE OF THEIR DUTIES, FOR WHICH SERVICE NO ADDITIONAL ALLOWANCE WILL BE MADE. THE ENGINEER OR SUPERVISOR MAY STOP THE WORK ENTIRELY IF THERE IS NOT SUFFICIENT QUANTITY OF SUITABLE AND APPROVED MATERIALS ON THE SITE TO CARRY IT ON PROPERLY, OR FOR ANY GOOD AND SUFFICIENT CAUSE; ALSO TO SEE THAT ALL OF THE PROVISIONS OF THIS CONTRACT AND SPECIFICATION ARE FAITHFULLY ADHERE TO, AND SHALL HAVE THE POWER TO DISMISS ANY EMPLOYEE OF THE CONTRACTOR FOR INCOMPETENCE, INTOXICATION, WILLFUL NEGLIGENCE, OR DISREGARD OF ORDERS.

THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE ACTS OF OMISSIONS OF THE CONTRACTOR, OR ANY SUBCONTRACTORS, OR ANY OF THE THEIR SUPERINTENDENCE, AGENTS, OR EMPLOYEES.

CHANGES IN WORK

NO CHANGES IN THE WORK COVERED BY THE APPROVED CONTRACT DOCUMENTS SHALL BE MADE WITHOUT HAVING PRIOR WRITTEN APPROVAL BY THE ENGINEER.



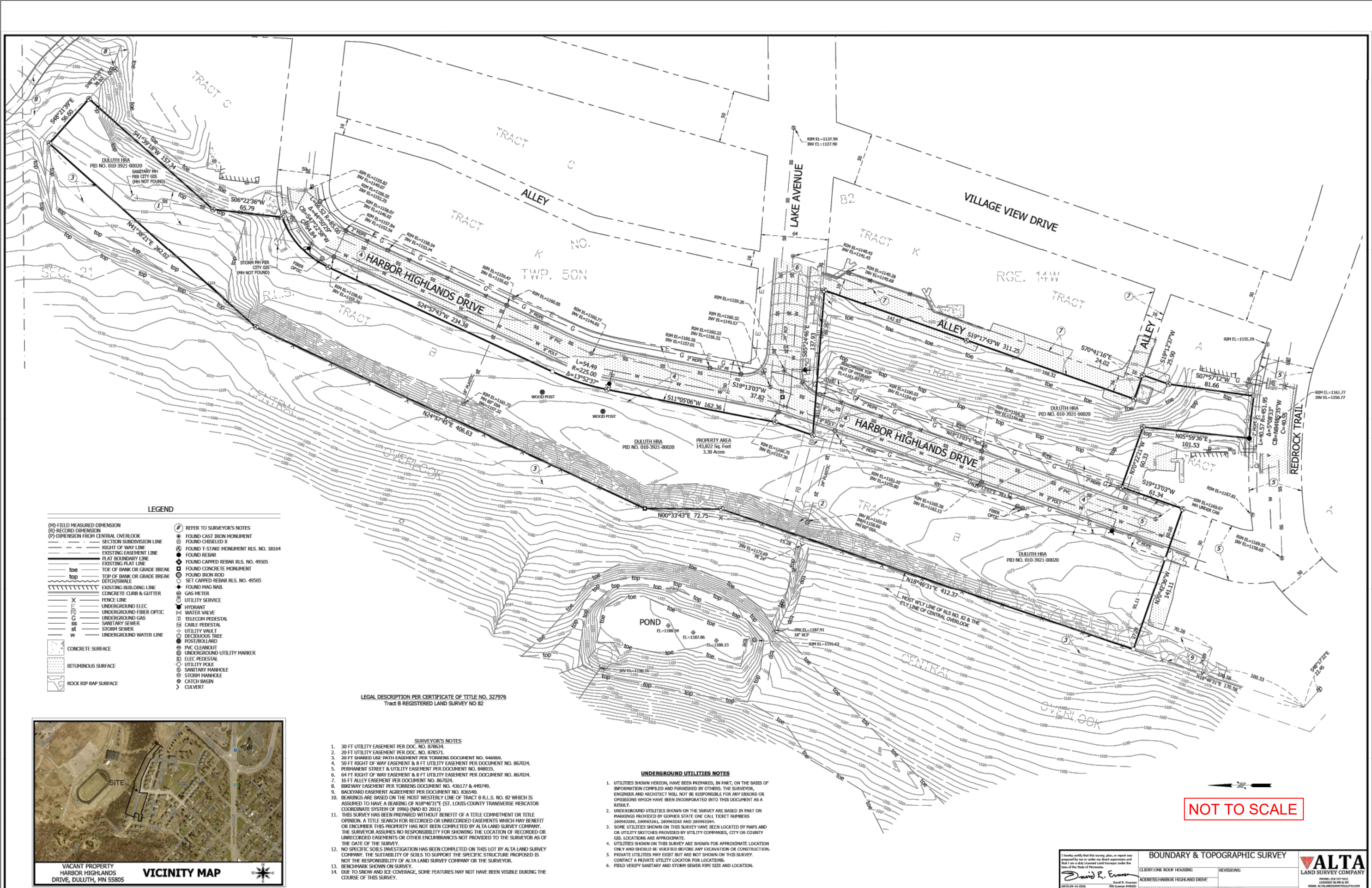
**W HARBOR HIGHLANDS DR
IMPROVEMENTS**
DULUTH, MN 55805

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
6/19/26
Engineer: DAVID G. BOLF

revision

Proj: 26-096
Date: 6/19/26
Drawn: JFM
Checked: TLL

GENERAL NOTES
Sheet Title
Sheet Number
2



LEGEND

| | | | |
|------------------------------|----------------------------|---------------------------------------|---------------------------------------|
| (M) FIELD MEASURED DIMENSION | (R) RECORD DIMENSION | (P) DIMENSION FROM CENTRAL OVERLOOK | REFER TO SURVEYOR'S NOTES |
| SECTION SUBDIVISION LINE | FOUND CHISELED X | FOUND T-STAKE MONUMENT RLS. NO. 18164 | FOUND CAST IRON MONUMENT |
| RIGHT OF WAY LINE | EXISTING EASEMENT LINE | FOUND REBAR | FOUND T-STAKE MONUMENT RLS. NO. 49505 |
| FLAT BOUNDARY LINE | EXISTING PLAT LINE | FOUND CAPPED REBAR RLS. NO. 49505 | FOUND CONCRETE MONUMENT |
| TOE OF BANK OR GRADE BREAK | TOE OF BANK OR GRADE BREAK | FOUND IRON ROD | SET CAPPED REBAR RLS. NO. 49505 |
| DITCH/SWALE | EXISTING BUILDING LINE | FOUND MAG NAIL | GAS METER |
| CONCRETE CURB & GUTTER | UTILITY SERVICE | HYDRANT | WATER VALVE |
| FENCE LINE | UNDERGROUND ELEC | TELECOM PEDESTAL | SANITARY SEWER |
| UNDERGROUND FIBER OPTIC | UNDERGROUND GAS | SANITARY SEWER | UTILITY VAULT |
| SS | ST | W | DECIDUOUS TREE |
| POST/ROLLAND | PVC CLEANOUT | UNDERGROUND UTILITY MARKER | ELEC PEDESTAL |
| UTILITY POLE | SANITARY MANHOLE | STORM MANHOLE | CATCH BASIN |
| CLUMBERT | | | |

LEGAL DESCRIPTION PER CERTIFICATE OF TITLE NO. 327976
Tract B REGISTERED LAND SURVEY NO 82

- SURVEYOR'S NOTES**
- 30 FT UTILITY EASEMENT PER DOC. NO. 878634.
 - 20 FT UTILITY EASEMENT PER DOC. NO. 878771.
 - 20 FT SHARED USE PATH EASEMENT PER TORRENS DOCUMENT NO. 046969.
 - 50 FT RIGHT OF WAY EASEMENT & 8 FT UTILITY EASEMENT PER DOCUMENT NO. 867024.
 - PERMANENT STREET & UTILITY EASEMENT PER DOCUMENT NO. 848935.
 - 64 FT RIGHT OF WAY EASEMENT & 8 FT UTILITY EASEMENT PER DOCUMENT NO. 867024.
 - 10 FT ALLEY EASEMENT PER DOCUMENT NO. 867024.
 - BIKEWAY EASEMENT PER TORRENS DOCUMENT NO. 436177 & 449749.
 - BACKYARD EASEMENT AGREEMENT PER DOCUMENT NO. 836590.
 - BEARINGS ARE BASED ON THE MOST WESTERLY LINE OF TRACT B R.L.S. NO. 82 WHICH IS ASSUMED TO HAVE A BEARING OF N18°46'31"E CST. LOUIS COUNTY TRANSVERSE MERCATOR COORDINATE SYSTEM OF 1996 (NAD 83 2011)
 - THIS SURVEY HAS BEEN PREPARED WITHOUT BENEFIT OF A TITLE COMMITMENT OR TITLE OPINION. A TITLE SEARCH FOR RECORDED OR UNRECORDED EASEMENTS WHICH MAY BENEFIT OR ENCUMBER THIS PROPERTY HAS NOT BEEN COMPLETED BY ALTA LAND SURVEY COMPANY. THE SURVEYOR ASSUMES NO RESPONSIBILITY FOR SHOWING THE LOCATION OF RECORDED OR UNRECORDED EASEMENTS OR OTHER ENCUMBRANCES NOT PROVIDED TO THE SURVEYOR AS OF THE DATE OF THE SURVEY.
 - NO SPECIFIC SOILS INVESTIGATION HAS BEEN COMPLETED ON THIS LOT BY ALTA LAND SURVEY COMPANY. THE SUITABILITY OF SOILS TO SUPPORT THE SPECIFIC STRUCTURE PROPOSED IS NOT THE RESPONSIBILITY OF ALTA LAND SURVEY COMPANY OR THE SURVEYOR.
 - BENCHMARK SHOWN ON SURVEY.
 - DOE TO SNOW AND ICE COVERAGE, SOME FEATURES MAY NOT HAVE BEEN VISIBLE DURING THE COURSE OF THIS SURVEY.

- UNDERGROUND UTILITIES NOTES**
- UTILITIES SHOWN HEREON, HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE SURVEYOR, ENGINEER AND ARCHITECT WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT AS A RESULT.
 - UNDERGROUND UTILITIES SHOWN ON THE SURVEY ARE BASED IN PART ON MARKINGS PROVIDED BY GOPHER STATE ONE CALL TICKET NUMBERS 28993286, 28993291, 28993283 AND 28993296.
 - SOME UTILITIES SHOWN ON THIS SURVEY HAVE BEEN LOCATED BY MAPS AND/OR UTILITY SKETCHES PROVIDED BY UTILITY COMPANIES, CITY OR COUNTY GIS. LOCATIONS ARE APPROXIMATE.
 - UTILITIES SHOWN ON THIS SURVEY ARE SHOWN FOR APPROXIMATE LOCATION ONLY AND SHOULD BE VERIFIED BEFORE ANY EXCAVATION OR CONSTRUCTION.
 - PRIVATE UTILITIES MAY EXIST BUT ARE NOT SHOWN ON THIS SURVEY. CONTACT A PRIVATE UTILITY LOCATOR FOR LOCATIONS.
 - FIELD VERIFY SANITARY AND STORM SEWER PIPE SIZE AND LOCATION.



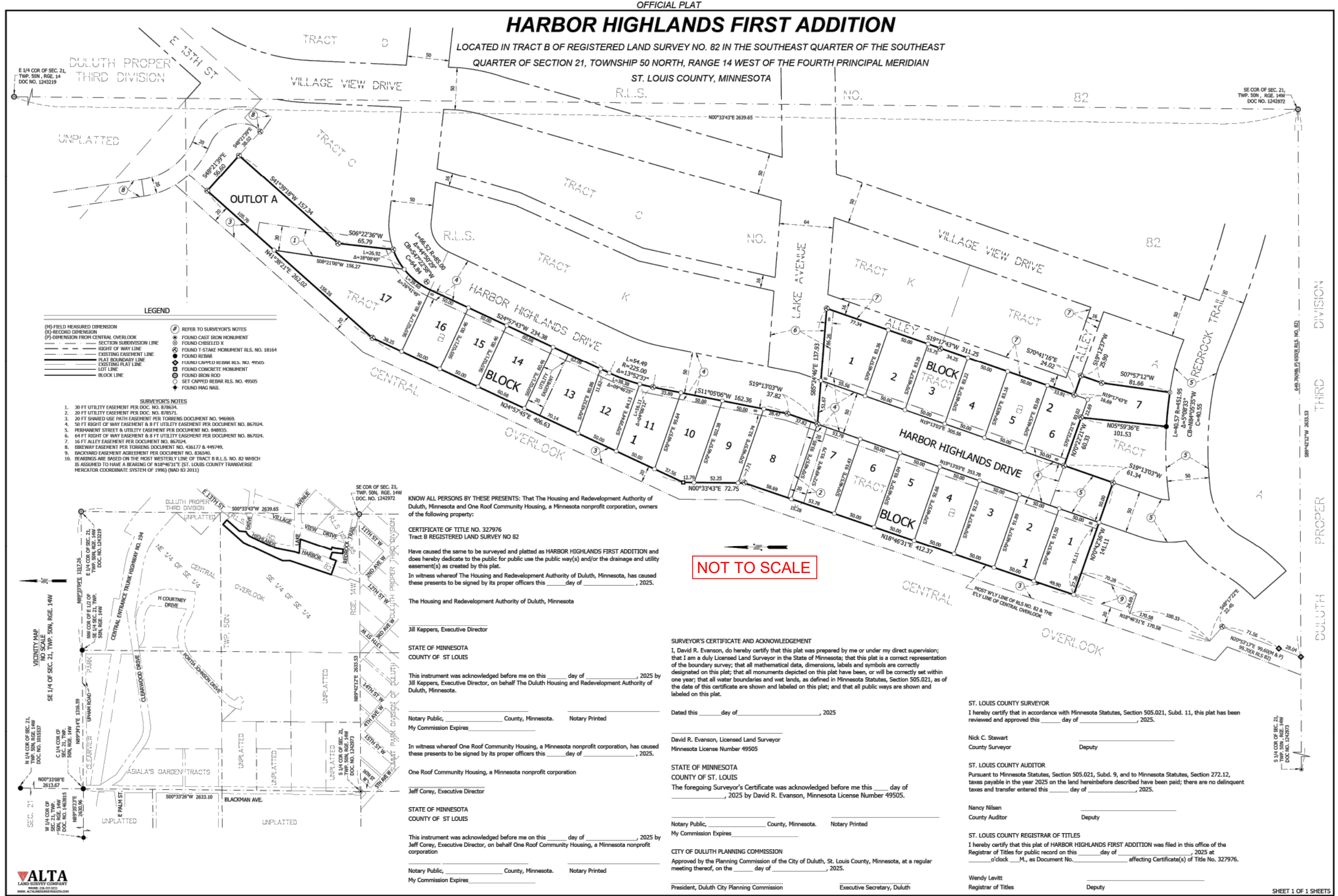
NOT TO SCALE

BOUNDARY & TOPOGRAPHIC SURVEY

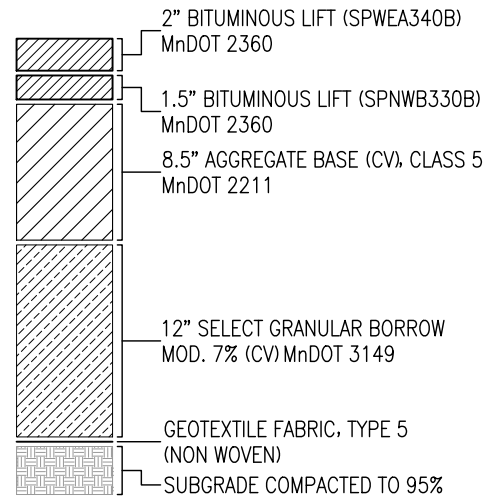
CLIENT: ONE ROOF HOUSING
ADDRESS: HARBOR HIGHLAND DRIVE
DATE: 04-15-2026

REVISIONS:

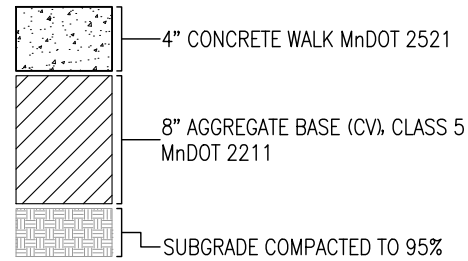
ALTA
LAND SURVEY COMPANY
REVISION: 239 727-5511
WWW.ALTAENGINEERS.COM



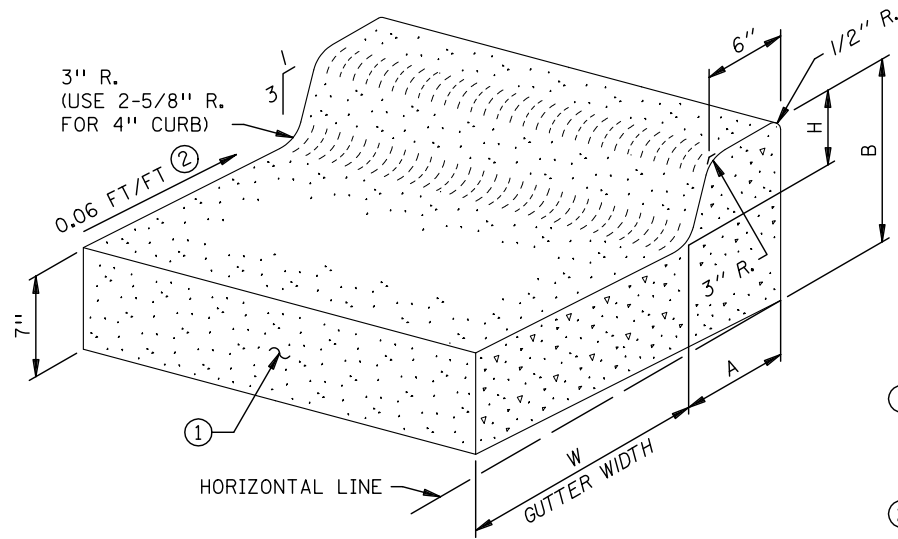
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1
5 BITUMINOUS PAVEMENT SECTION
SCALE: 1" = 12"



2
5 CONCRETE SIDEWALK SECTION
SCALE: 1" = 12"



DESIGN B



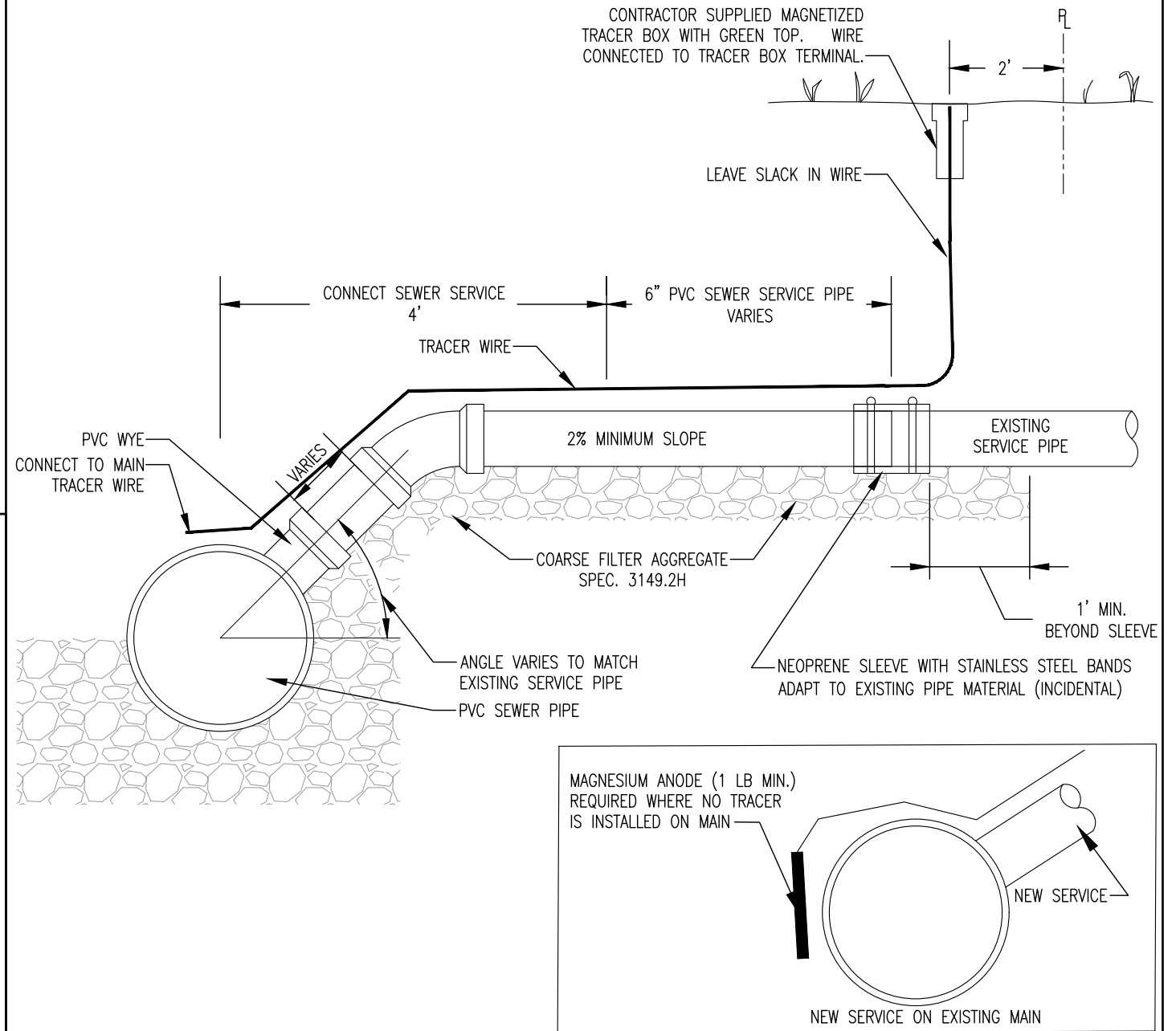
REVERSE SLOPE GUTTER SECTION
(FORMS MAY BE TILTED)

NOTES:

- ① LONGITUDINAL JOINT WHEN ADJACENT TO RIGID PAVEMENT OR BASE. SEE STANDARD PLANS MANUAL FOR JOINT INFORMATION.
- ② SLOPE 0.06 FT/FT NORMAL, UNLESS OTHERWISE SPECIFIED. IF A DIFFERENT GUTTER SLOPE IS PERMITTED, THE FORM MAY BE TILTED.

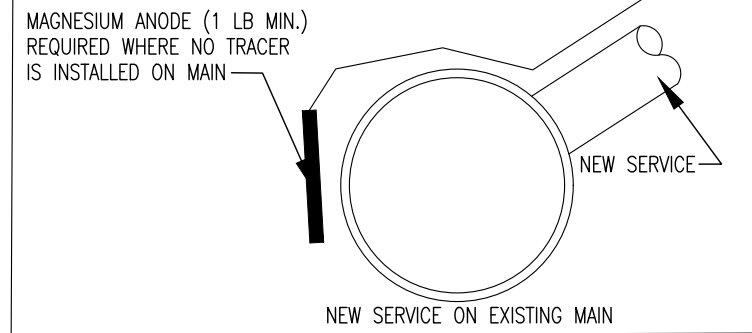
| DESIGN B | | | W = 12" | | | W = 18" | | | W = 24" | | |
|------------|----|---------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|
| DIMENSIONS | | | DESIGN NO. | CONCRETE | | DESIGN NO. | CONCRETE | | DESIGN NO. | CONCRETE | |
| H | A | B | | CU. YDS. PER LIN. FT. | LIN. FT. PER CU. YD. | | CU. YDS. PER LIN. FT. | LIN. FT. PER CU. YD. | | CU. YDS. PER LIN. FT. | LIN. FT. PER CU. YD. |
| 6 | 8" | 13-1/2" | B612 | 0.0474 | 21.1 | B618 | 0.0582 | 17.2 | B624 | 0.0690 | 14.5 |

3
5 CONCRETE CURB AND GUTTER - DESIGN B624
SEE MnDOT STANDARD PLATE 7100H NTS.



NOTES

- 1. BID ITEM FOR PVC WYE INCLUDES FURNISHING AND INSTALLING WYE IN SEWER MAIN.
- 2. CONNECT SEWER SERVICE INCLUDES 6" PVC SEWER SERVICE PIPE (TO 4' FROM C/L) AND ALL FITTINGS
- 3. 6" PVC SEWER SERVICE PIPE IS INTENDED FOR THE RECONSTRUCTION OF SEWER SERVICES (WHEN FOUND TO BE IN NEED BY THE ENGINEER) COMPLETE IN PLACE FROM 4.0' BEYOND THE C/L OF THE SEWER MAIN TO A POINT DESIGNATED BY THE ENGINEER FOR NEW SERVICES, PIPE TO STOP AT RIGHT OF WAY
- 5. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH SANITARY SEWER MAINS AND SERVICES. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER
- 6. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP.
- 7. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.



TYPICAL SEWER SERVICE CONNECTION

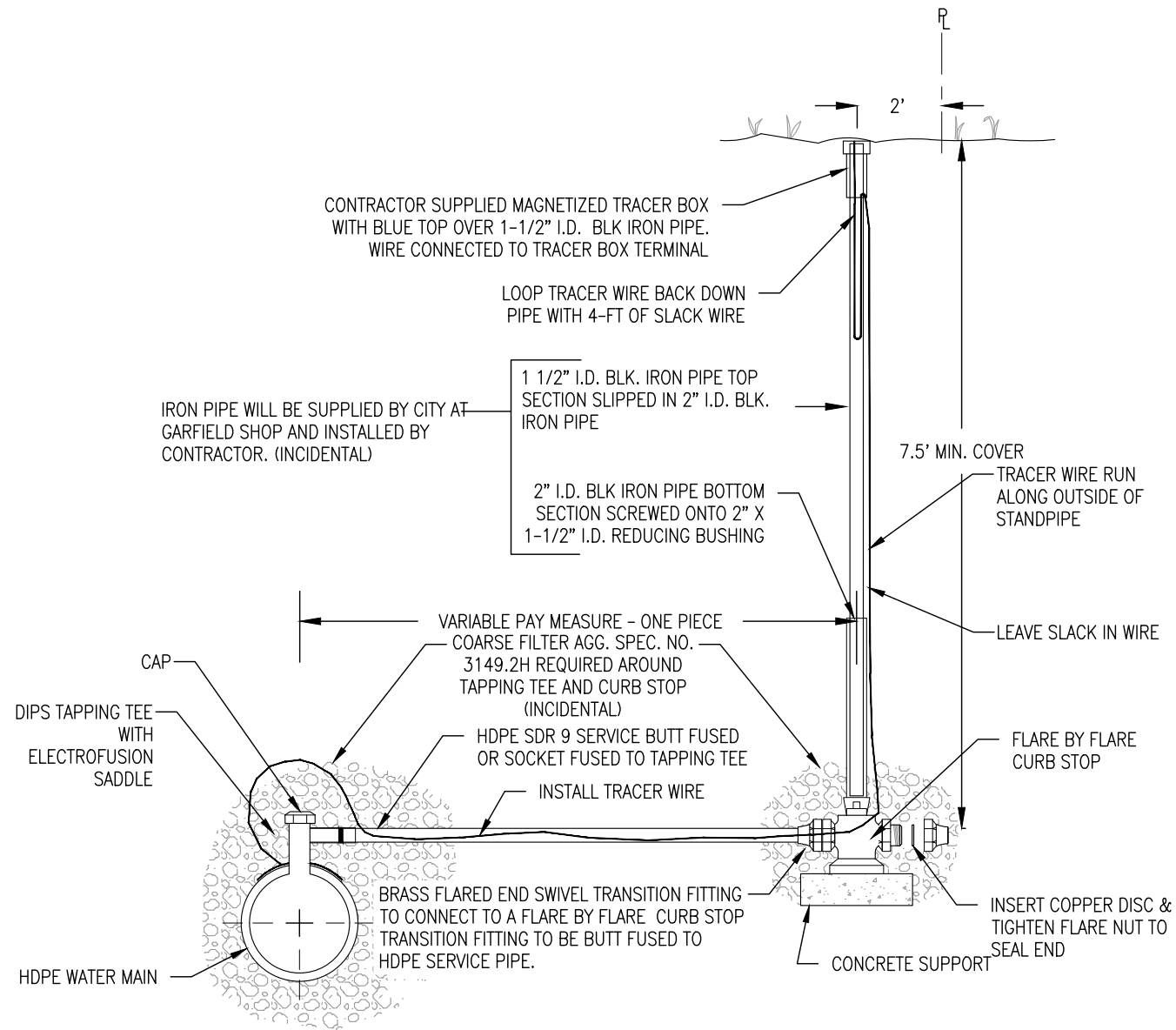
4
5 SAN-2

REVISED/APPROVED 02/19/2015

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

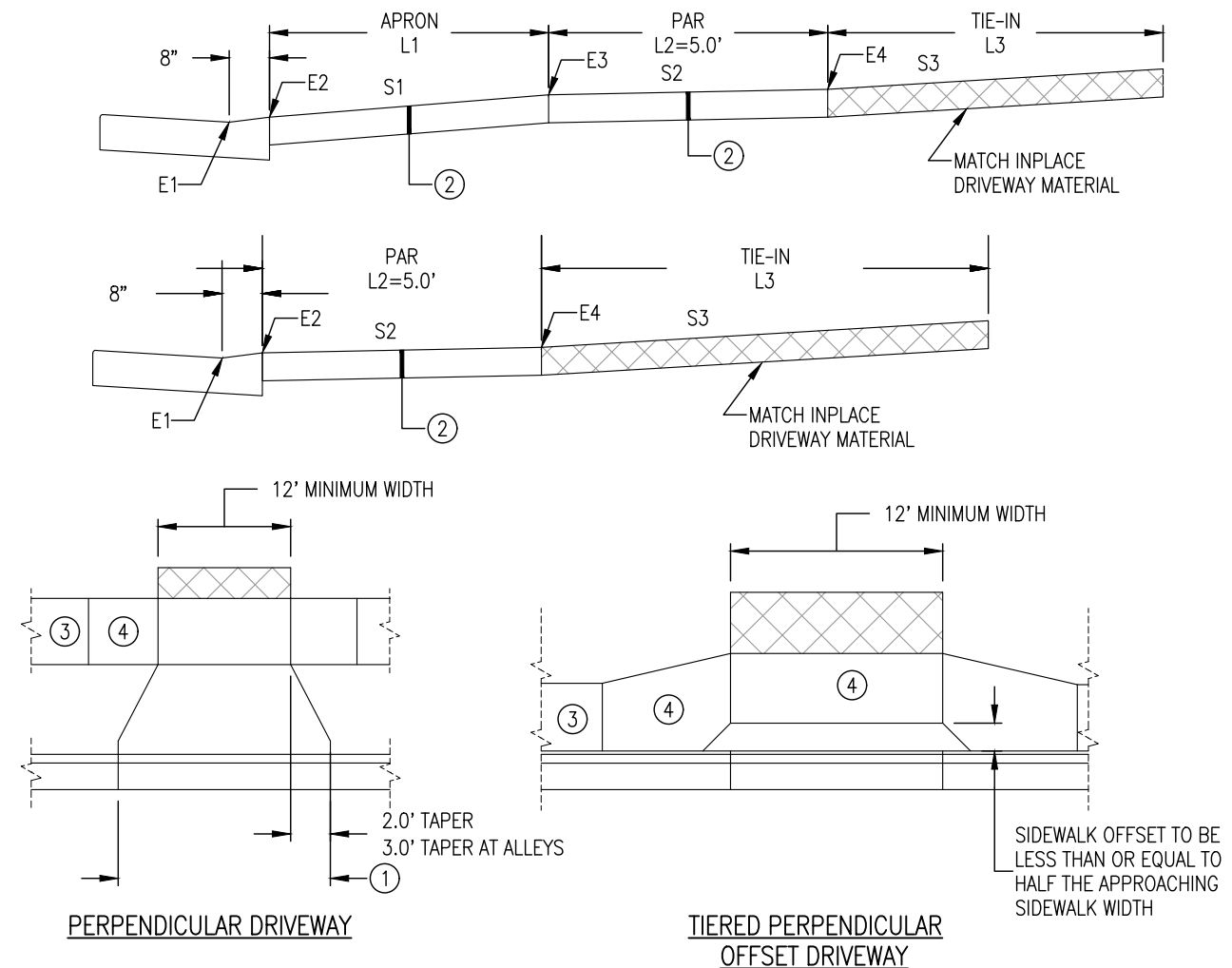
NO SCALE

NOTE: EXCAVATE 6" UNDER IN-PLACE MAIN AND BACKFILL WITH COURSE FILTER AGGREGATE MNDOT SPEC. # 3149.2H. CONTRACTOR SHALL PROVIDE & PLACE A TRENCH BOX WHEN REQUIRED.



GENERAL NOTES

- EXCAVATE 6" UNDER IN-PLACE MAIN AND BACKFILL WITH COURSE FILTER AGGREGATE MNDOT SPEC. #3149.2H. CONTRACTOR SHALL PROVIDE & PLACE A TRENCH BOX WHEN REQUIRED.
- SERVICE IS TO BE AIR TESTED PRIOR TO TAPPING MAIN.
- THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. THE NUMBER OF CONNECTIONS MUST BE KEPT TO A MINIMUM. ANY SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS OR CLIP TYPE CONNECTORS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.



NOTES:

- WHERE THERE IS NO SIDEWALK OR THERE IS A GRASS BOULEVARD BETWEEN THE SIDEWALK AND THE BACK OF CURB THE DIFFERENCE BETWEEN E1 AND E4 MUST BE AT LEAST 6" TO CONTAIN RUNOFF.
- ALL ENTRANCES SHALL BE CONSTRUCTED ACCORDING TO MNDOT STANDARD PLAN 5-297.254 "DRIVEWAY AND SIDEWALK DETAILS" EXCEPT WHERE NOTED WITHIN THIS DETAIL AND FOLLOW THE REQUIREMENTS OF ALL PEDESTRIAN ACCESS ROUTES.
- PLAN VIEWS WITHIN ARE EXAMPLES ONLY. ACTUAL DESIGNED DRIVEWAY ENTRANCE GEOMETRY AND SLOPES WILL VARY ACCORDING TO MNDOT STANDARD PLAN 5-297.254.
- THE GRADE DIFFERENTIAL BETWEEN GUTTER AND S1 SHALL NOT EXCEED A 15%.

- 16' MINIMUM WIDTH, 26' MAXIMUM (28' AT ALLEYS)
- 7" CONCRETE DRIVEWAY PAVEMENT FOR RESIDENTIAL DRIVES AND 8" CONCRETE DRIVEWAY PAVEMENT FOR ALLEY AND COMMERCIAL DRIVES. PAVEMENT IS TO BE CONSTRUCTED ON 12" OF AGGREGATE BASE CLASS 5 (INCIDENTAL).
- 4" CONCRETE WALK
- TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS
- PEDESTRIAN ACCESS ROUTE (S2 PAR) IS RECOMMENDED TO BE 1.5% NOT TO EXCEED 2.0%

TYPICAL HDPE WATER SERVICE FOR ≤12" HDPE MAINS - 1", 1-1/4", AND 2"

W-5A

REVISED/APPROVED 02/25/2026

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES



NO SCALE

DRIVEWAY & ALLEY ENTRANCES

STR-5

REVISED/APPROVED 01/16/2026

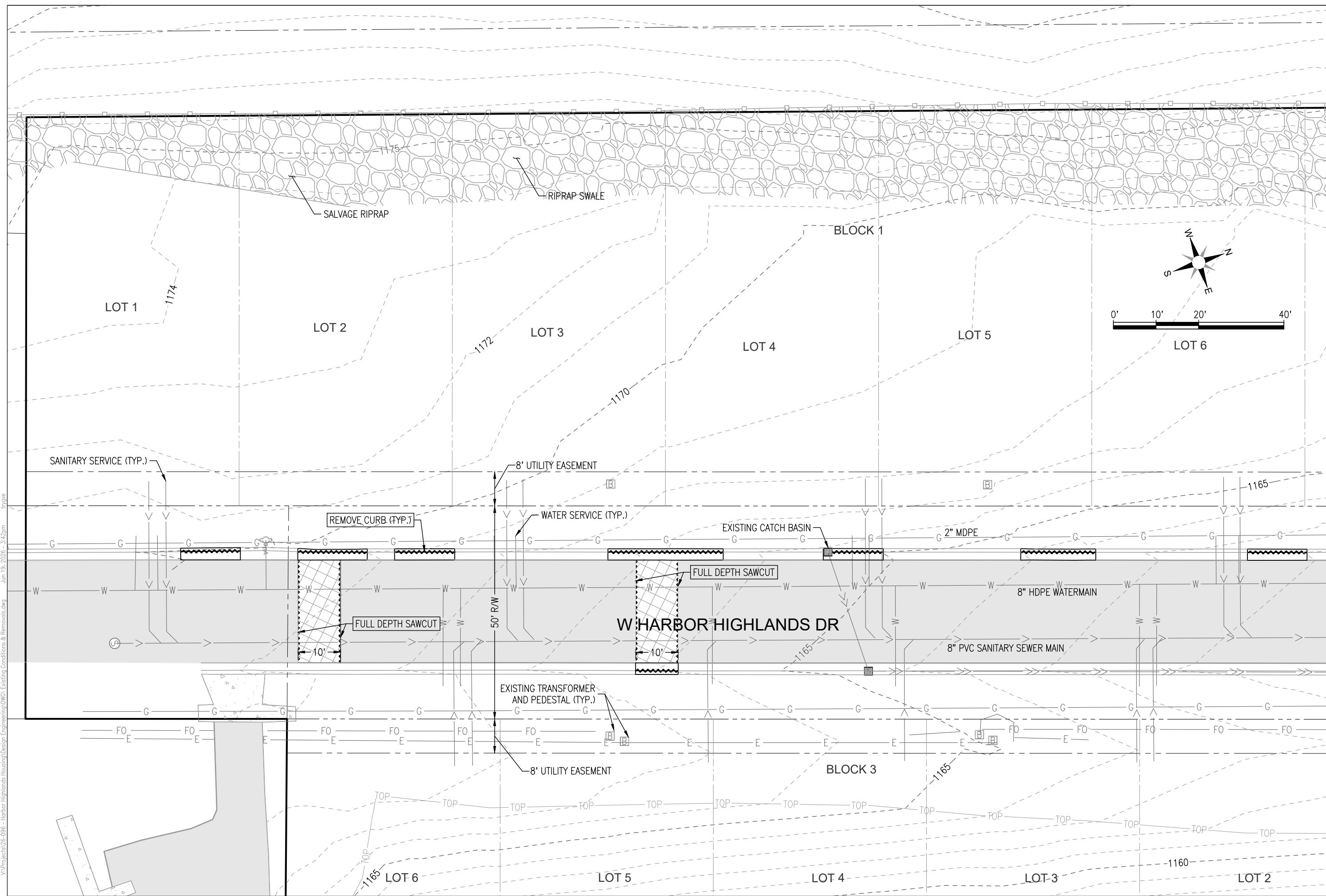
CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES



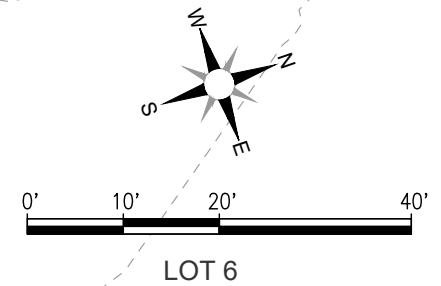
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DETAILS

Sheet Title
Sheet Number



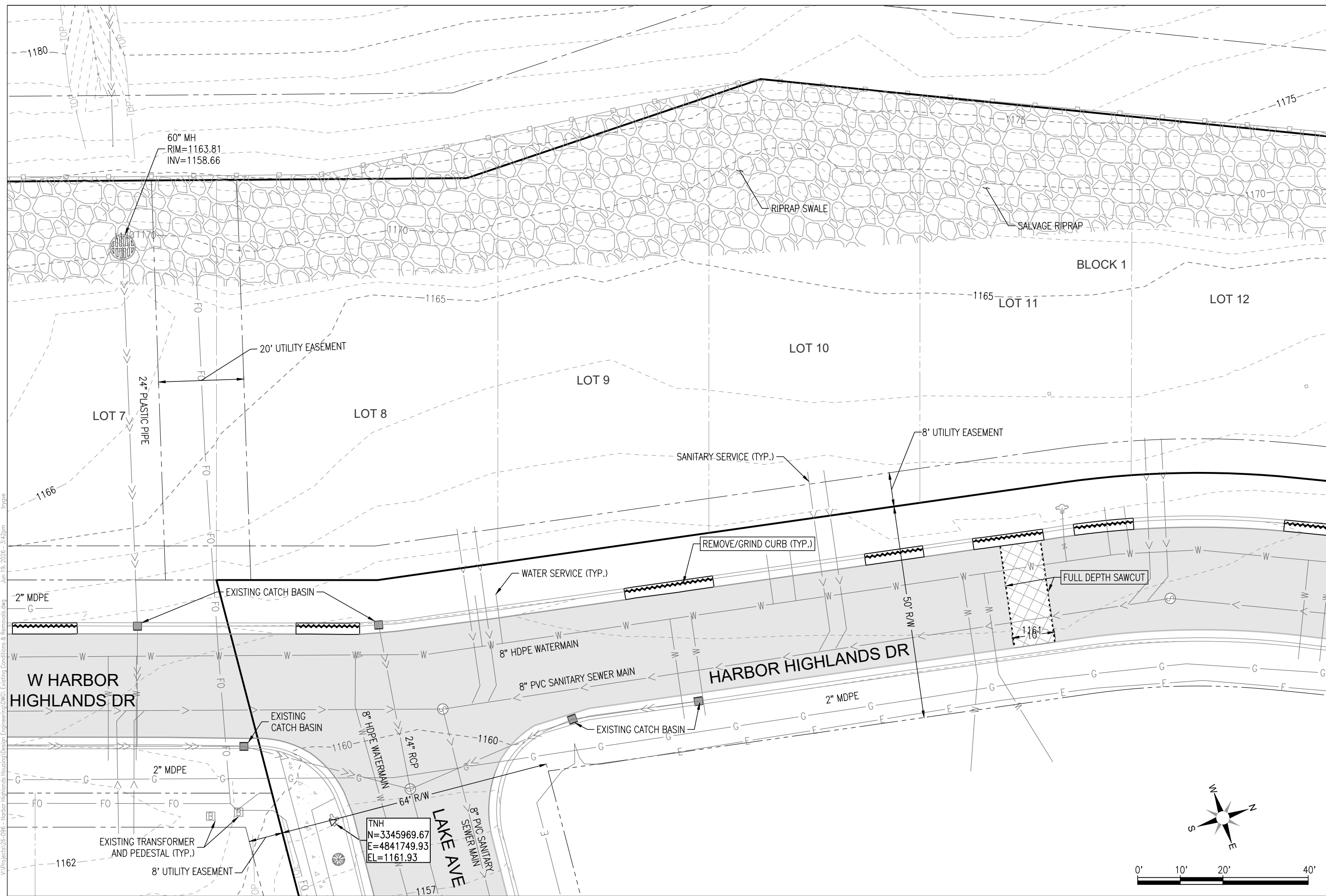
**W HARBOR HIGHLANDS DR
 IMPROVEMENTS**
 DULUTH, MN 55805



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
 6/19/26
 Lic. No.: 40926
 Engineer: DAVID G. BOLF

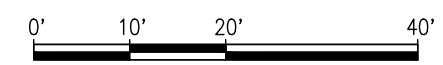
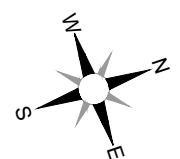
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| Date: 6/19/26 | |
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| Checked: TLL | |
| EXISTING & REMOVALS Sheet Title | |
| Sheet Number | 7 |

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60" MH
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INV=1158.66

TNH
N=3345969.67
E=4841749.93
EL=1161.93



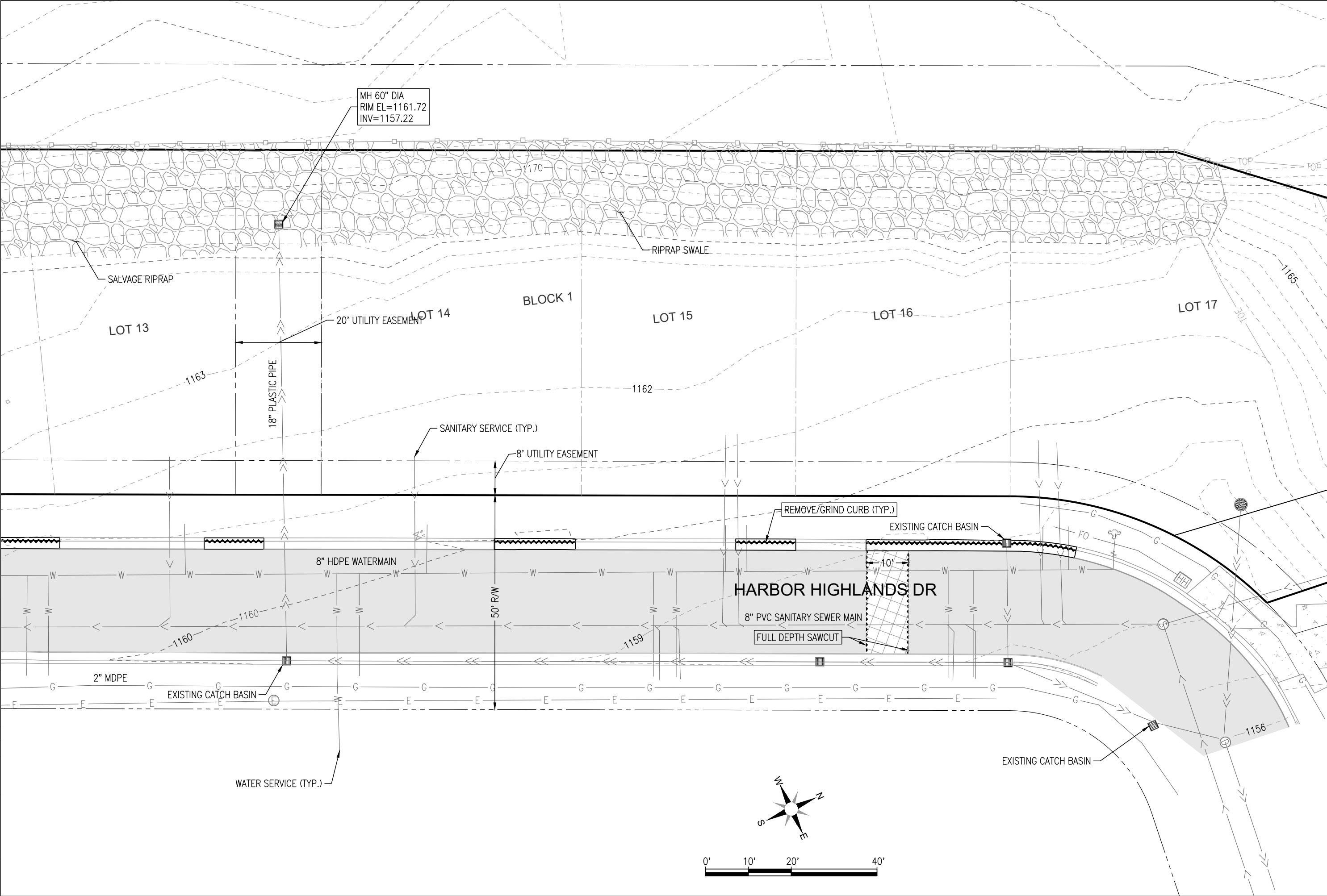
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| revision | |
| Proj: 26-096 | Date: 6/19/26 |
| Drawn: JFM | Checked: TLL |
| EXISTING & REMOVALS Sheet Title | |
| Sheet Number | 8 |

V:\Projects\26-096 - Harbor Highlands Housing\Design\Engineering\DWG_Existing Conditions & Removals.dwg Jun 19, 2026 - 3:42pm Trygve

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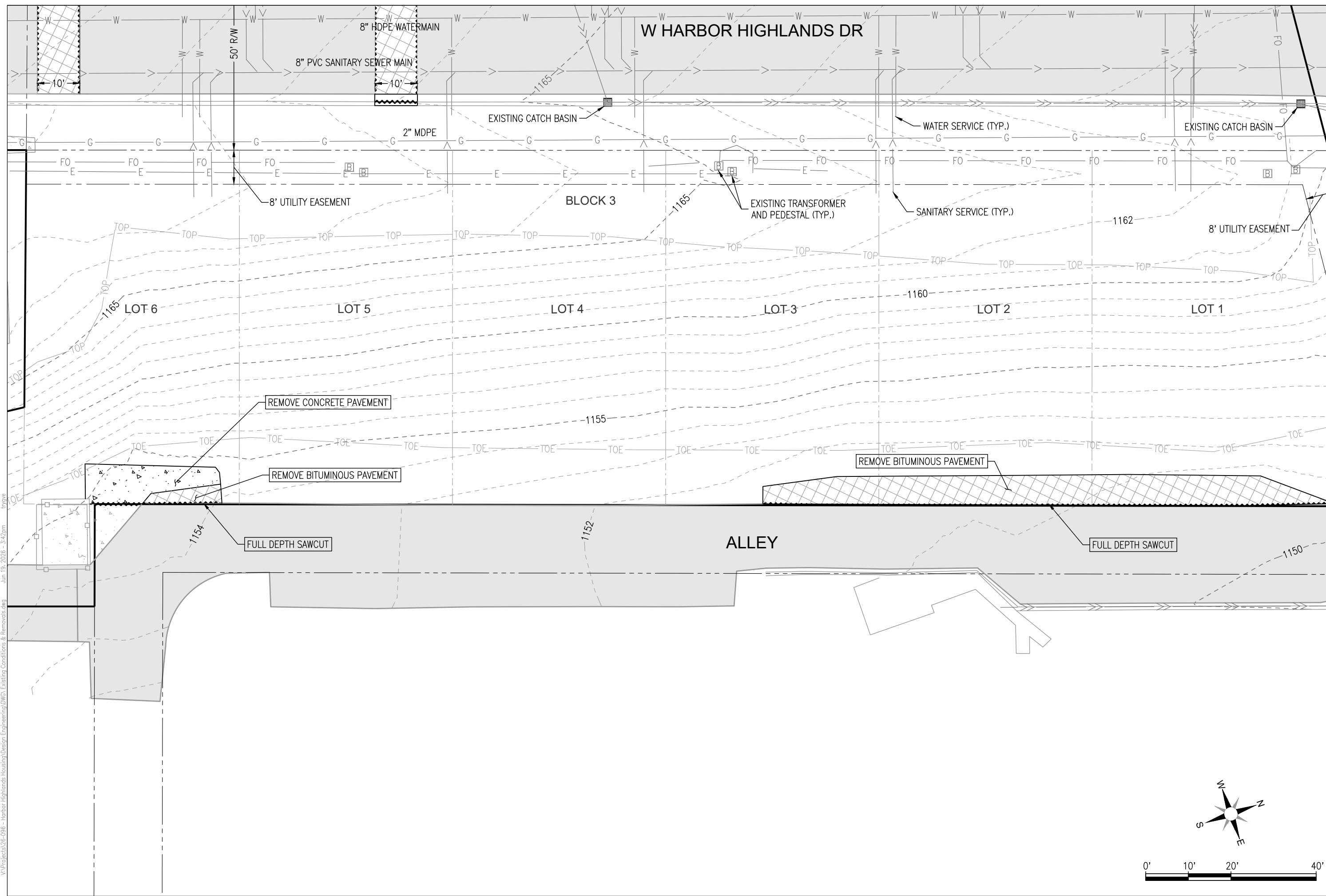


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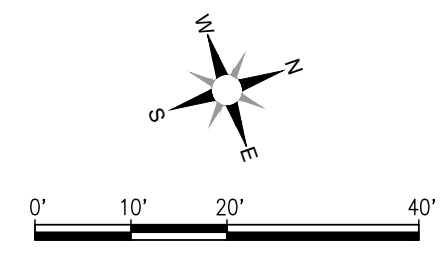
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| Date: 6/19/26 | |
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| EXISTING & REMOVALS Sheet Title | |
| Sheet Number | 9 |

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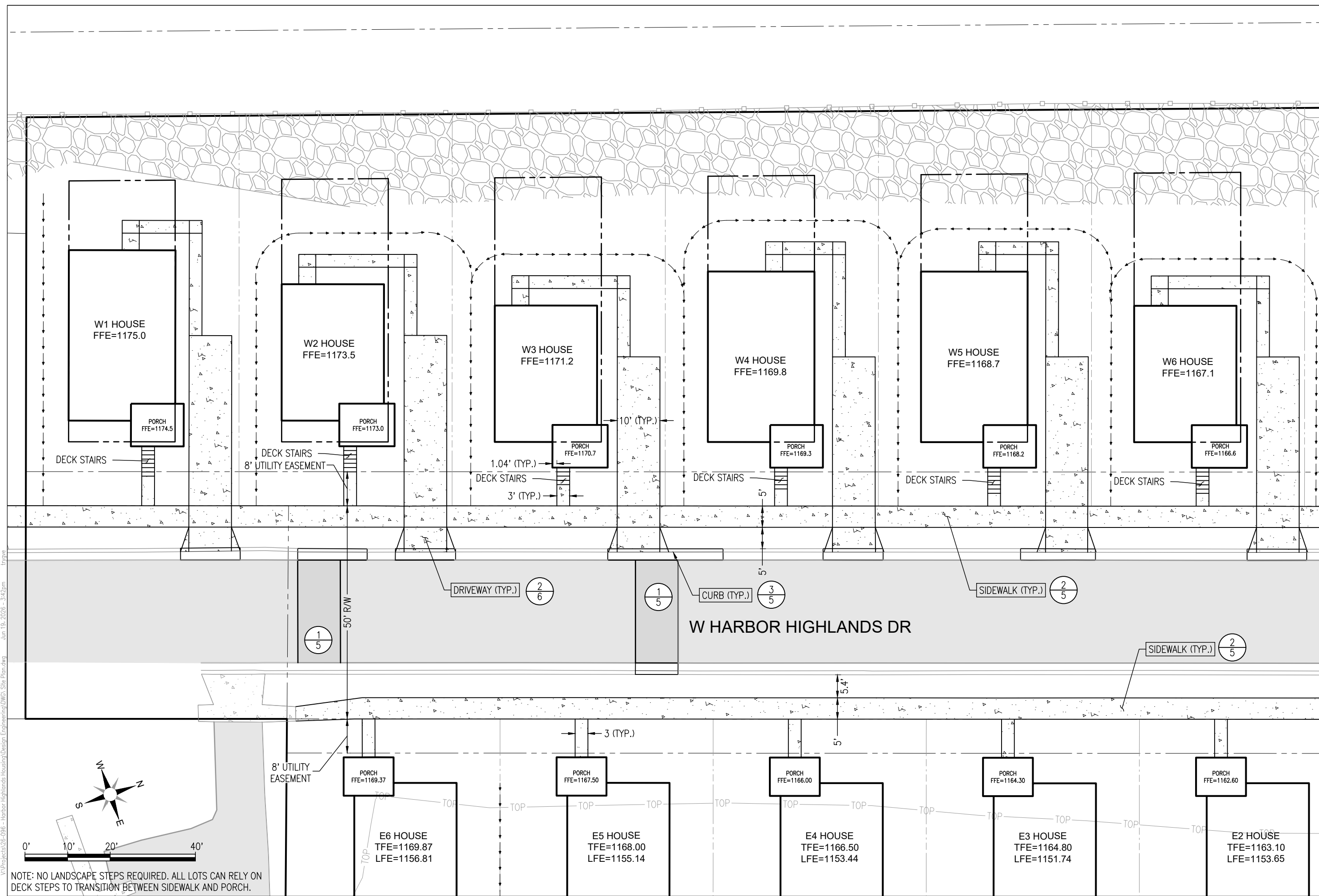


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 6/19/26
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 Engineer: DAVID G. BOLF

| | |
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| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
| Checked: TLL | |
| EXISTING CONDITIONS & REMOVALS | |
| Sheet Title | |
| Sheet Number | 10 |



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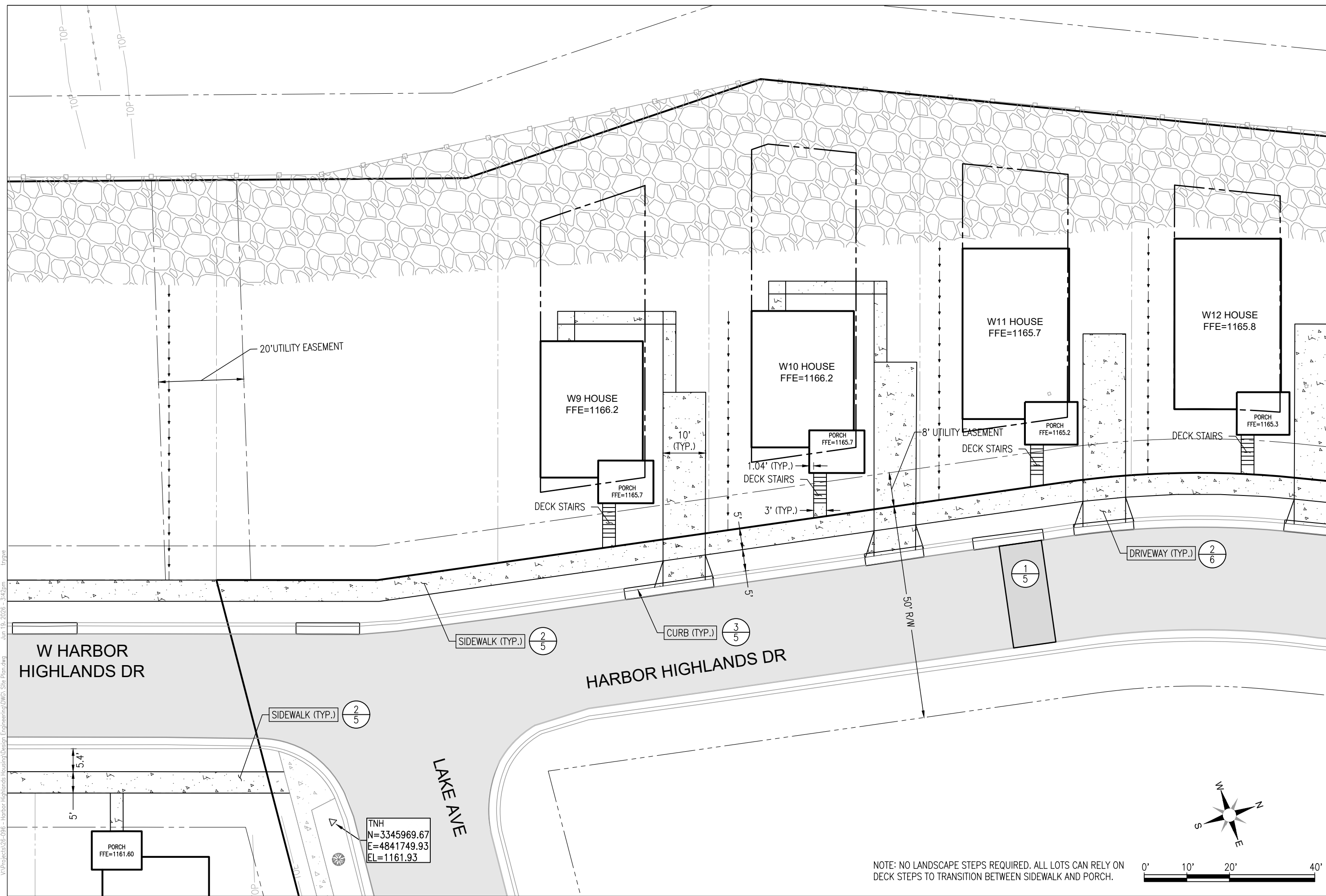
W:\Projects\26-096 - Harbor Highlands Housing\Design\Engineering\DWG_Site Plan.dwg Jun 19, 2026 - 5:42pm tryne

NOTE: NO LANDSCAPE STEPS REQUIRED. ALL LOTS CAN RELY ON DECK STEPS TO TRANSITION BETWEEN SIDEWALK AND PORCH.

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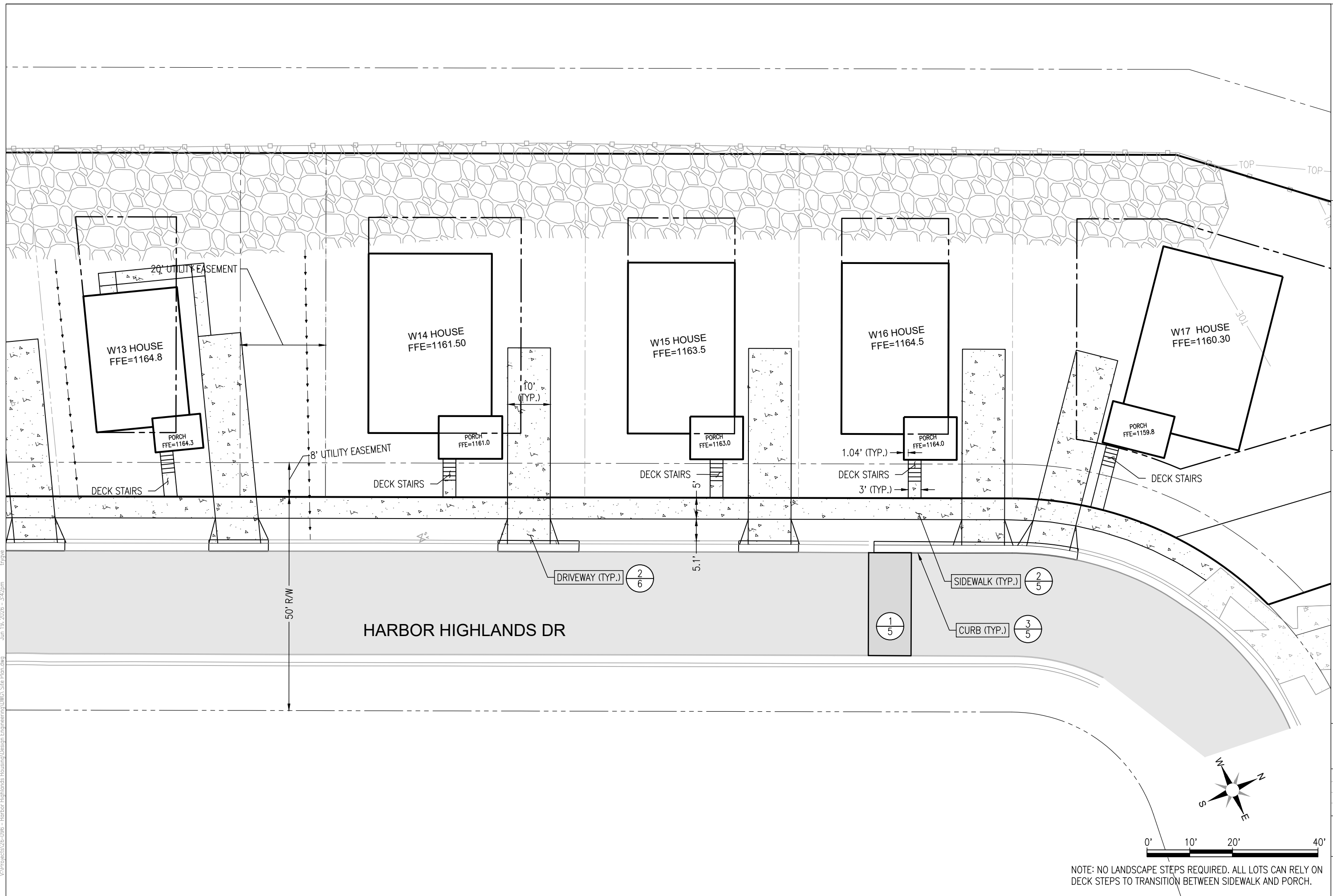
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| Date: 6/19/26 | |
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| Checked: TLL | |
| SITE PLAN | |
| Sheet Title | |
| Sheet Number | 11 |



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Engineer: DAVID G. BOLF
6/19/26
Lic. No.: 40926

| | |
|------------------|-----------|
| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
| Checked: TLL | |
| SITE PLAN | |
| Sheet Title | |
| Sheet Number | 12 |

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 DULUTH, MN 55805



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 Engineer: DAVID G. BOLF
 6/19/26
 Lic. No: 40926

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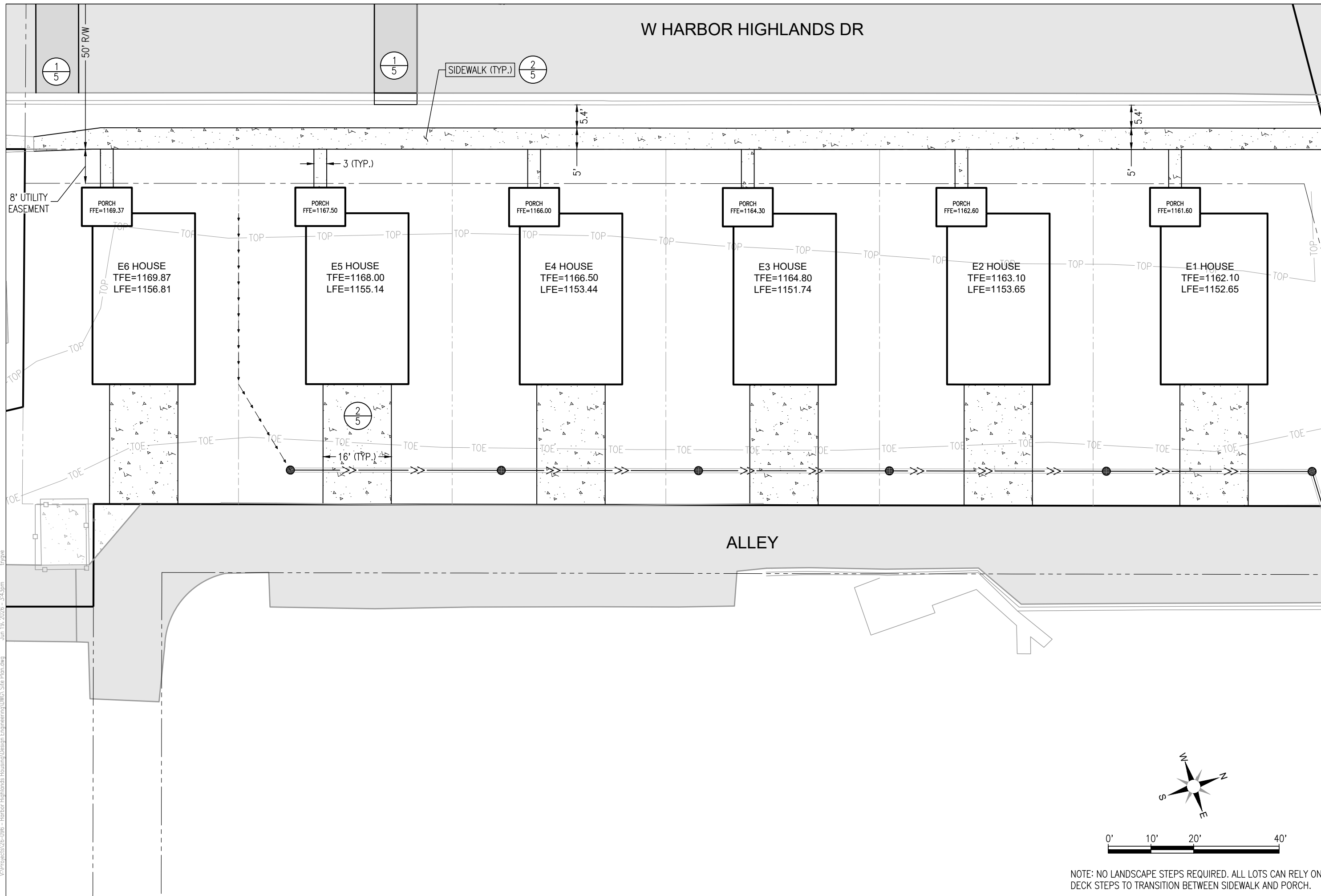
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SITE PLAN

Sheet Title
 Sheet Number

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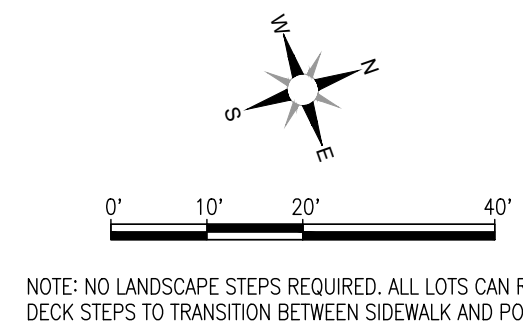
W HARBOR HIGHLANDS DR



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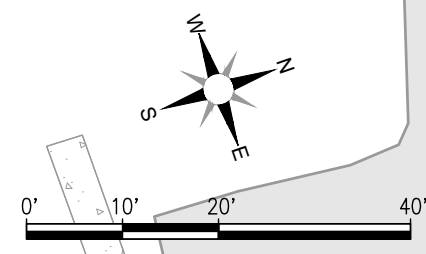
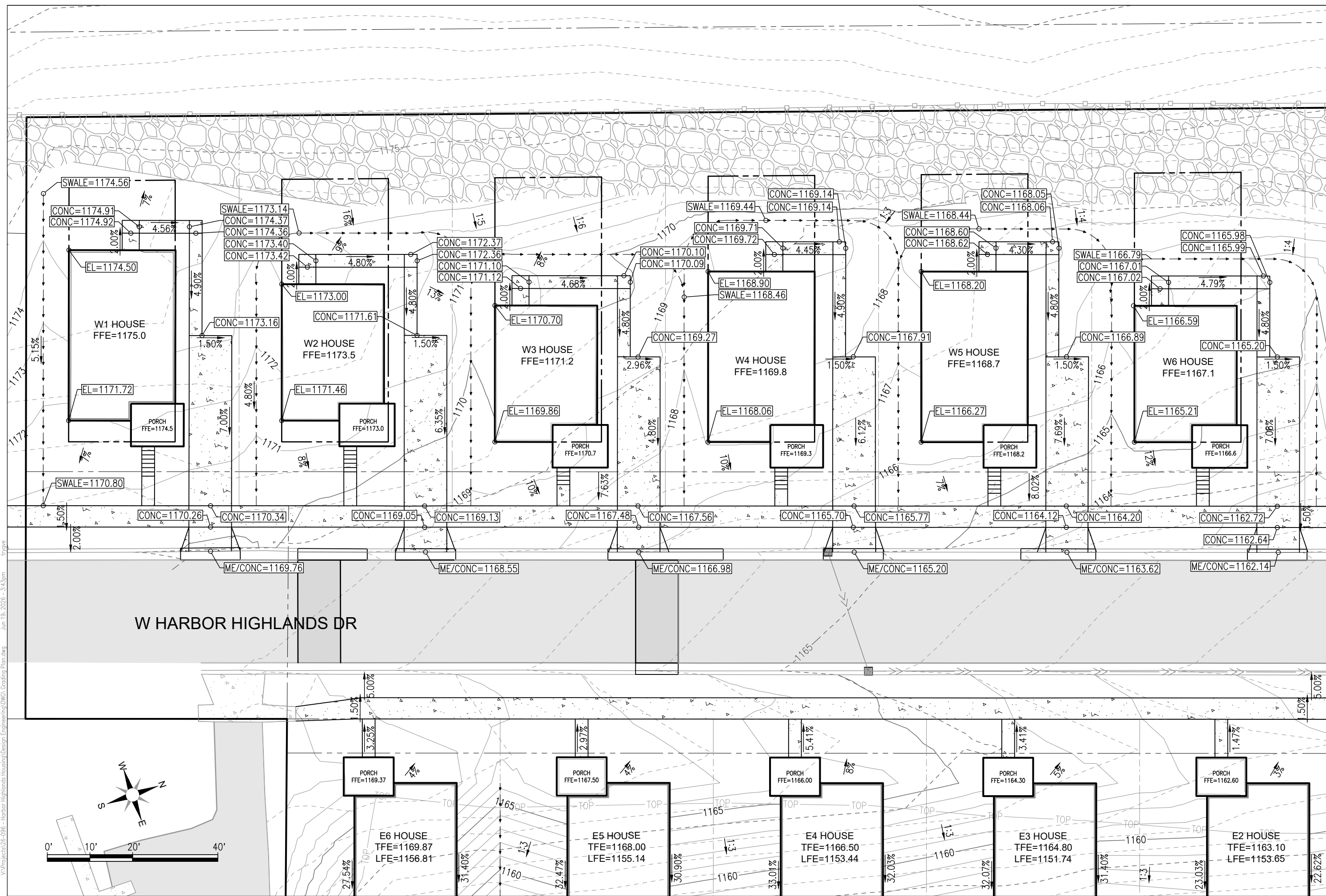
Engineer: DAVID G. BOLF
 6/19/26
 Lic. No: 40926

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| Sheet Title | |
| Sheet Number | 14 |



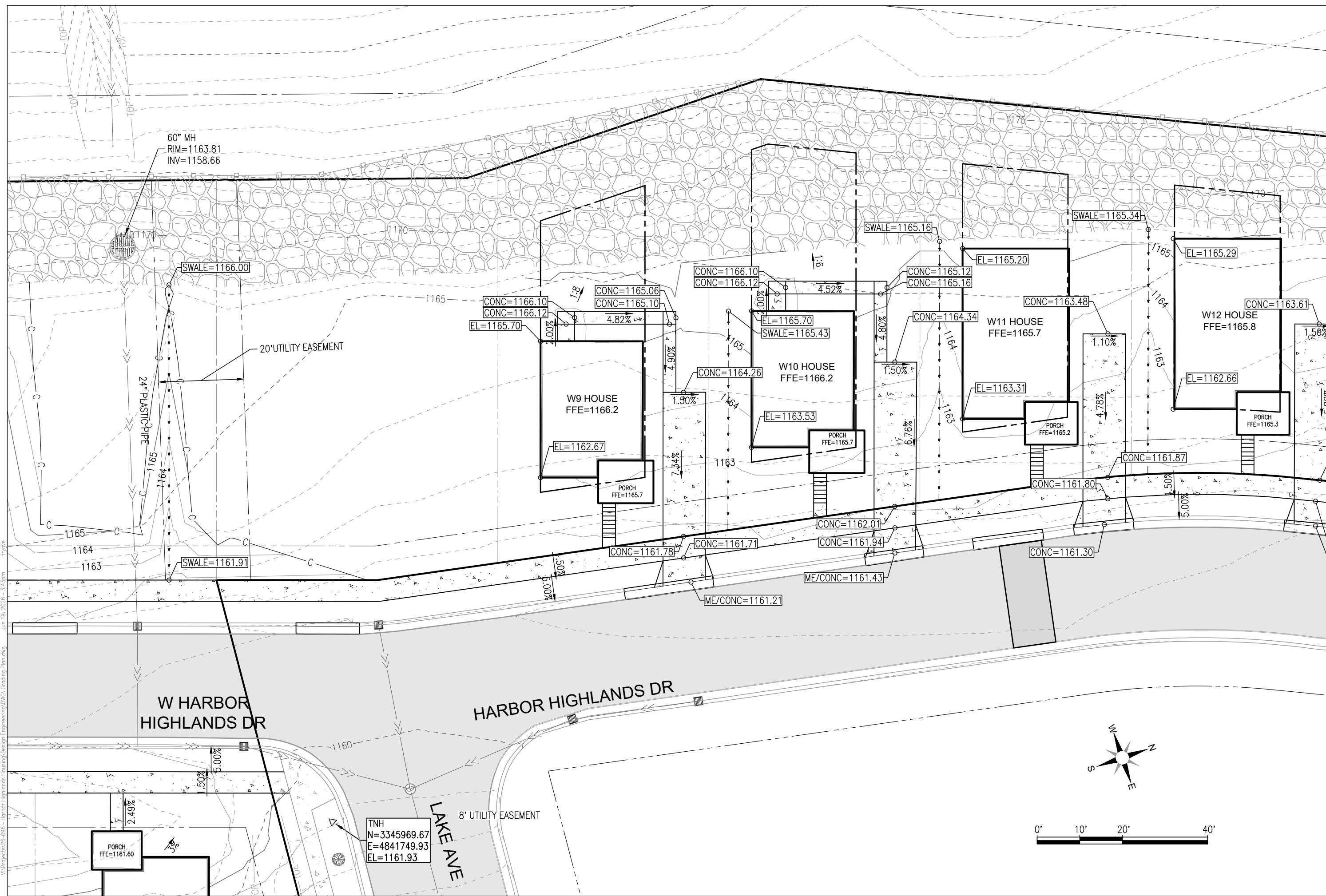
NOTE: NO LANDSCAPE STEPS REQUIRED. ALL LOTS CAN RELY ON DECK STEPS TO TRANSITION BETWEEN SIDEWALK AND PORCH.

W:\Projects\26-096 - Harbor Highlands Housing\Design\Engineering\DWG_Site Plan.dwg
 Jun 19, 2026 - 5:43pm
 tzygre



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 Engineer: DAVID G. BOLF
 Lic. No: 40926
 6/19/26

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| revision | |
| Proj: 26-096 | Date: 6/19/26 |
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| Sheet Title | |
| Sheet Number | |
| 15 | |

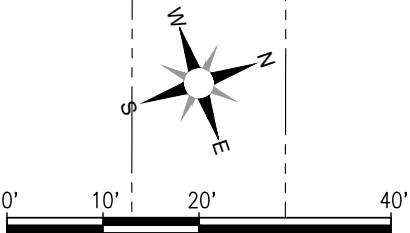
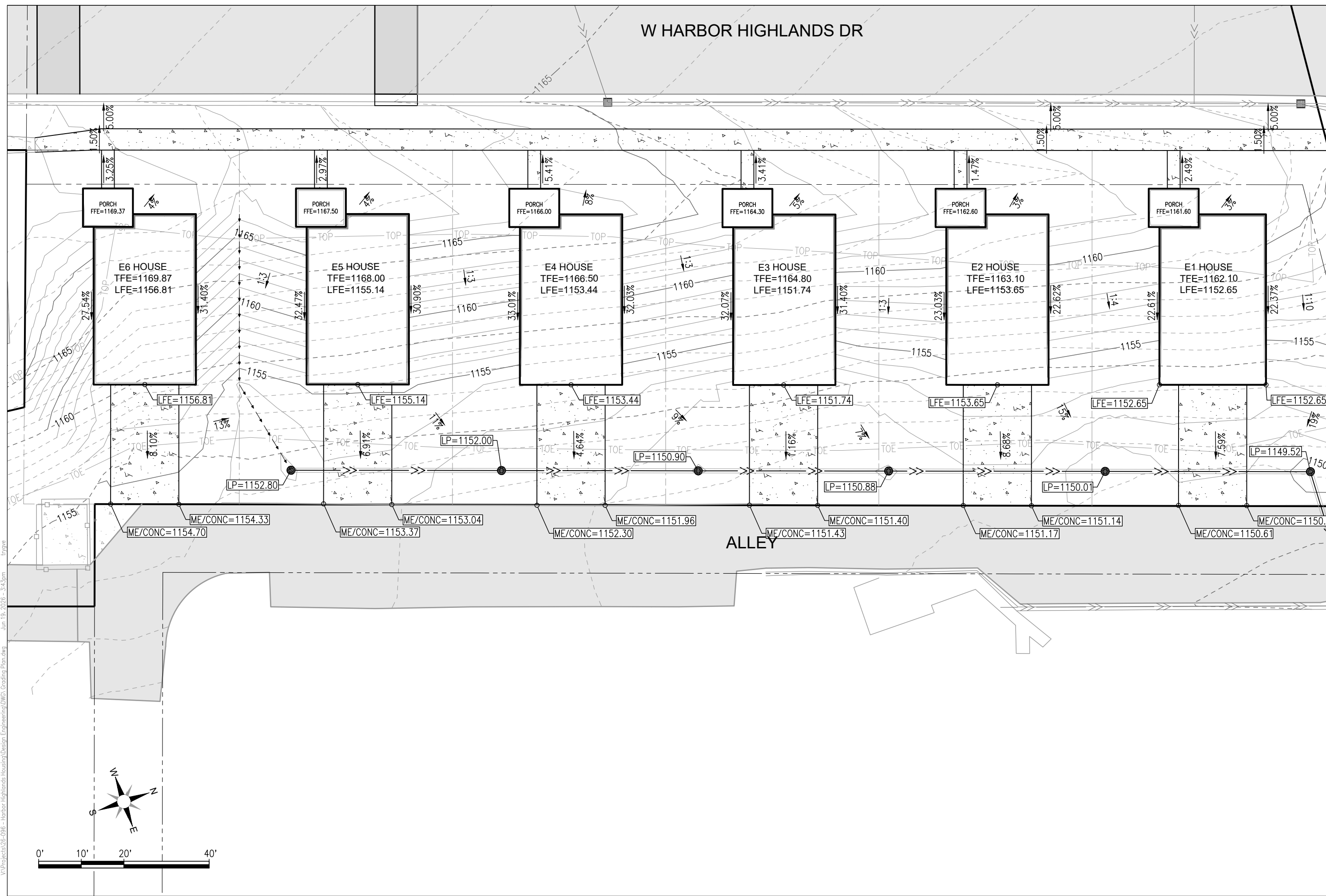


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 Engineer: DAVID G. BOLF

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| Proj: 26-096 | Date: 6/19/26 |
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| Sheet Title | |
| Sheet Number | |
| 16 | |



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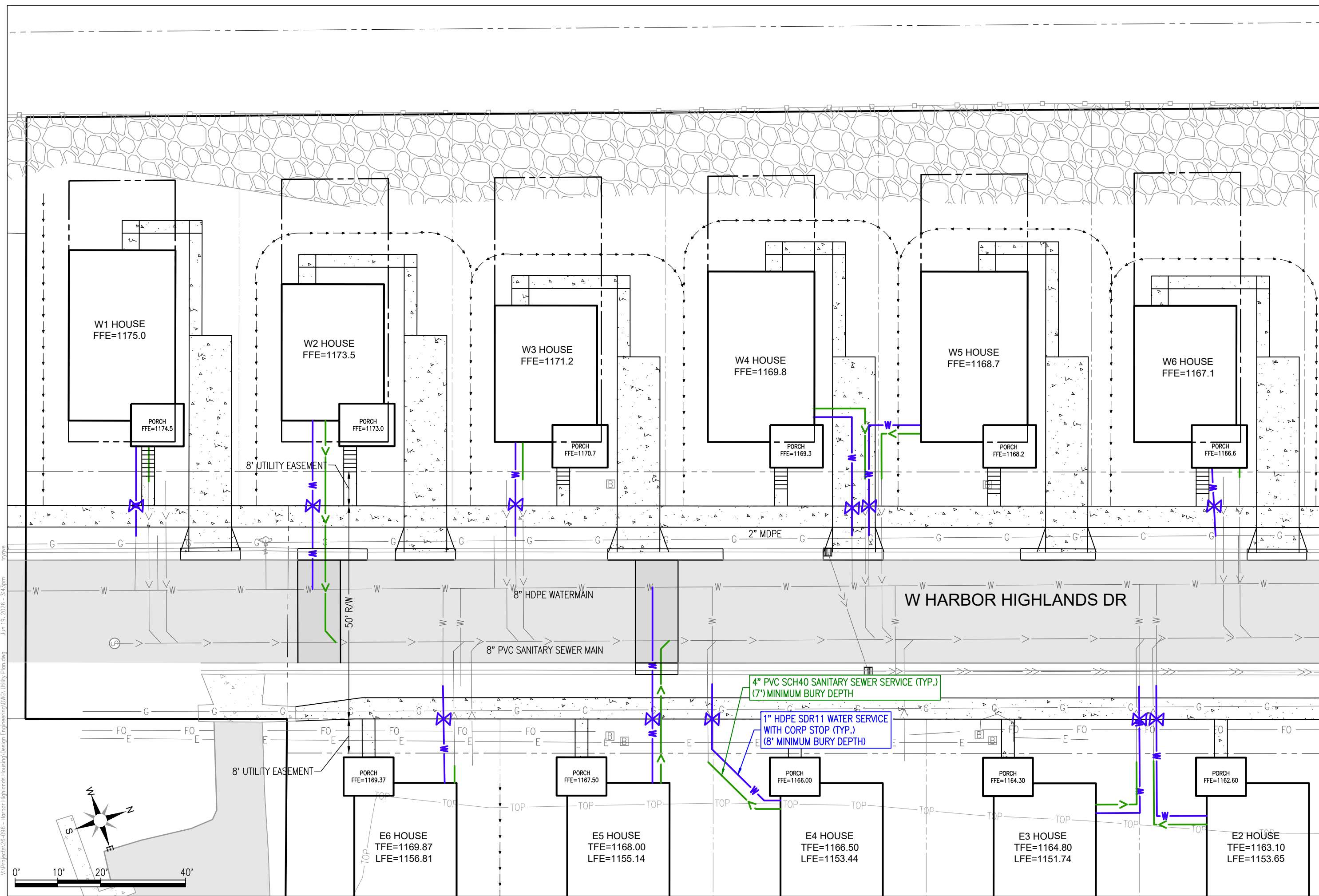
ALLEY

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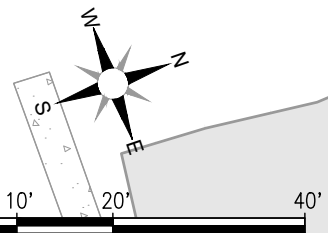
Engineer: DAVID G. BOLF
 Lic. No: 40926
 6/19/26

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| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
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| GRADING PLAN | |
| Sheet Title | |
| Sheet Number | 18 |

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 Jun 19, 2026 - 3:43pm
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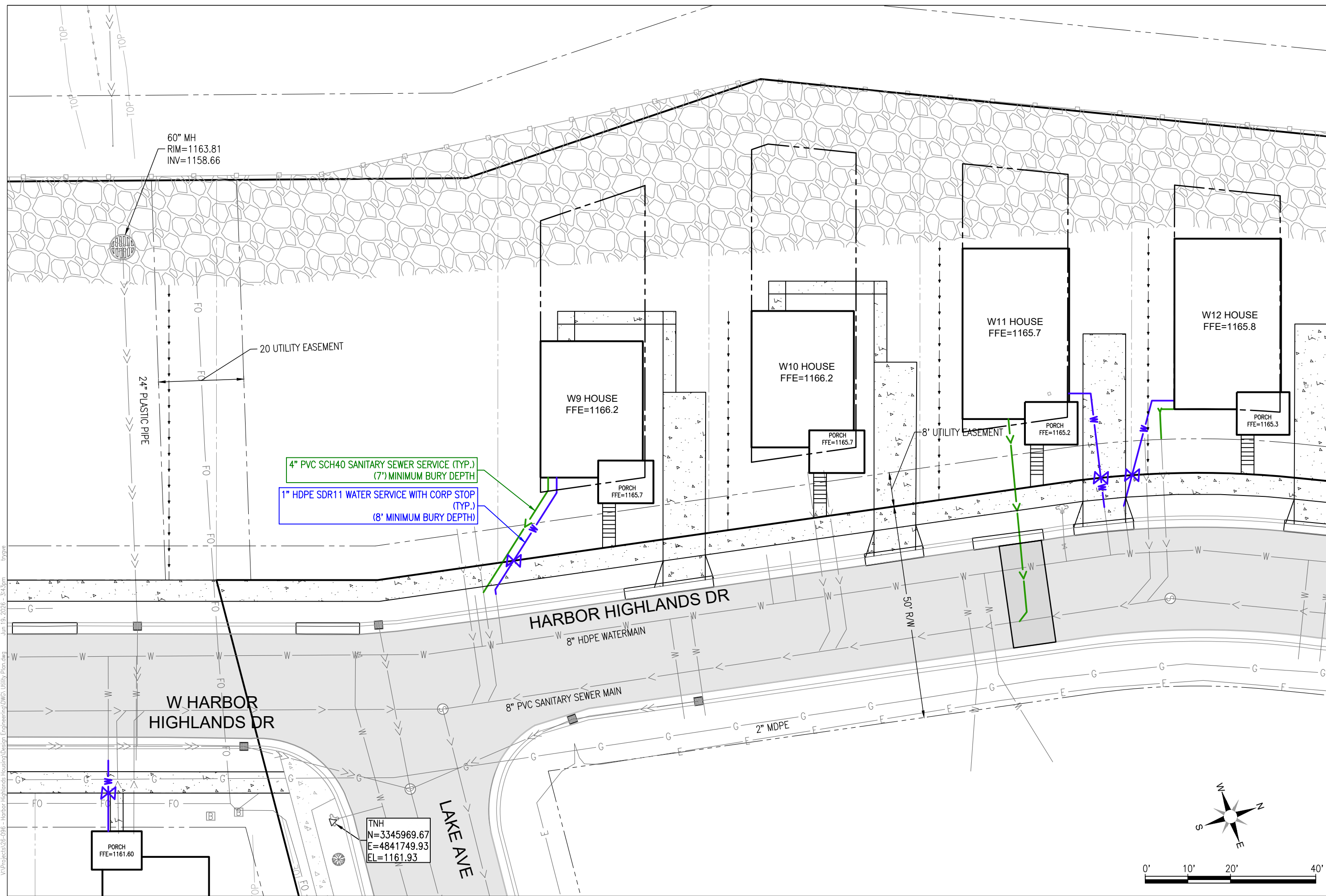
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| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
| Checked: TLL | |
| UTILITY PLAN | |
| Sheet Title | |
| Sheet Number | 19 |



60" MH
RIM=1163.81
INV=1158.66

20 UTILITY EASEMENT

24" PLASTIC PIPE

4" PVC SCH40 SANITARY SEWER SERVICE (TYP.)
(7') MINIMUM BURY DEPTH

1" HDPE SDR11 WATER SERVICE WITH CORP STOP
(TYP.)
(8' MINIMUM BURY DEPTH)

HARBOR HIGHLANDS DR

W HARBOR HIGHLANDS DR

LAKE AVE

TNH
N=3345969.67
E=4841749.93
EL=1161.93

PORCH
FFE=1161.60

W9 HOUSE
FFE=1166.2

W10 HOUSE
FFE=1166.2

W11 HOUSE
FFE=1165.7

W12 HOUSE
FFE=1165.8

PORCH
FFE=1165.7

PORCH
FFE=1165.7

PORCH
FFE=1165.2

PORCH
FFE=1165.3

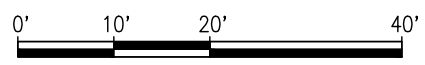
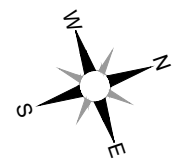
8' UTILITY EASEMENT

50' R/W

8" HDPE WATERMAIN

8" PVC SANITARY SEWER MAIN

2" MDPE

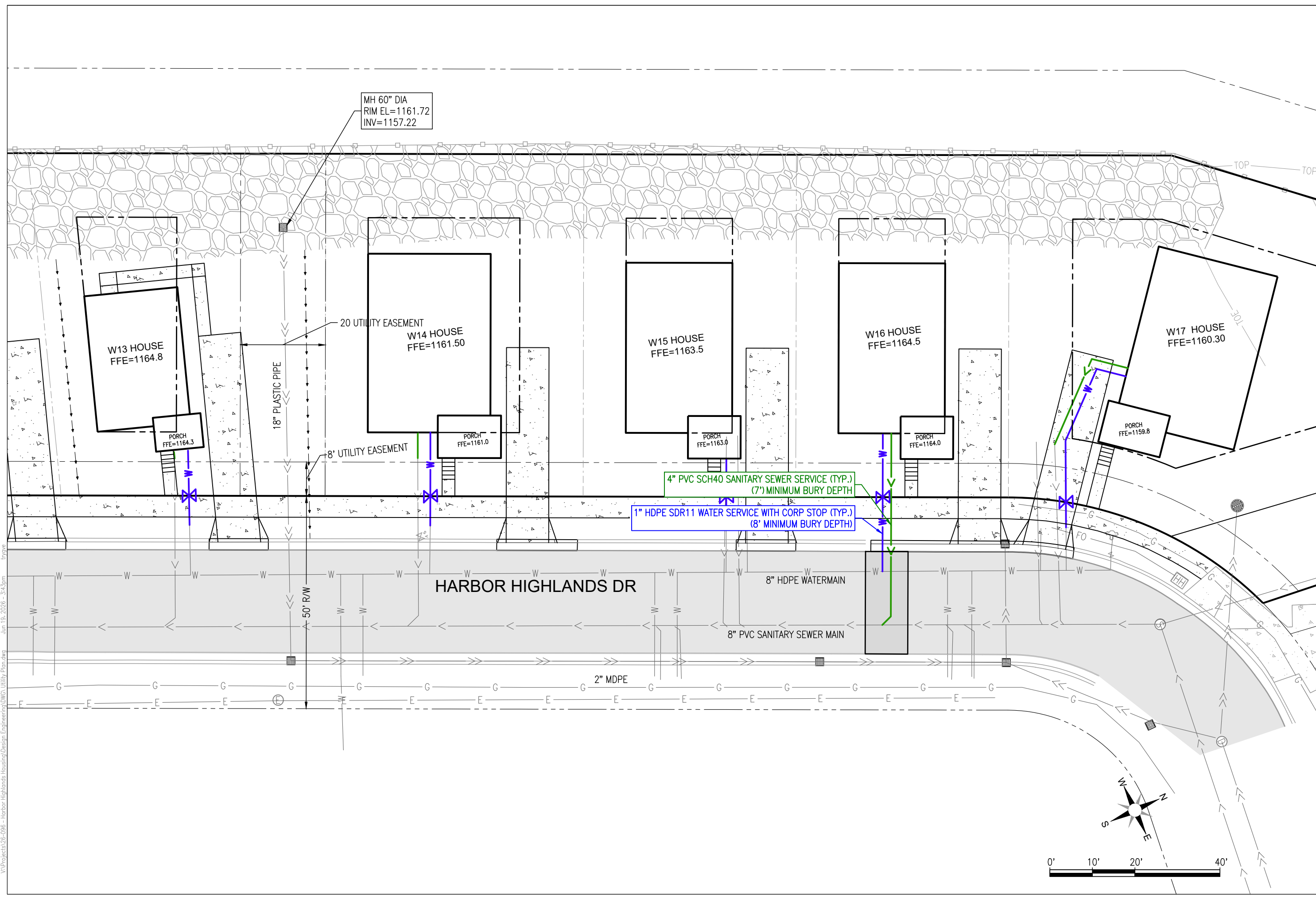


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| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
| Checked: TLL | |
| UTILITY PLAN | |
| Sheet Title | |
| Sheet Number | 20 |

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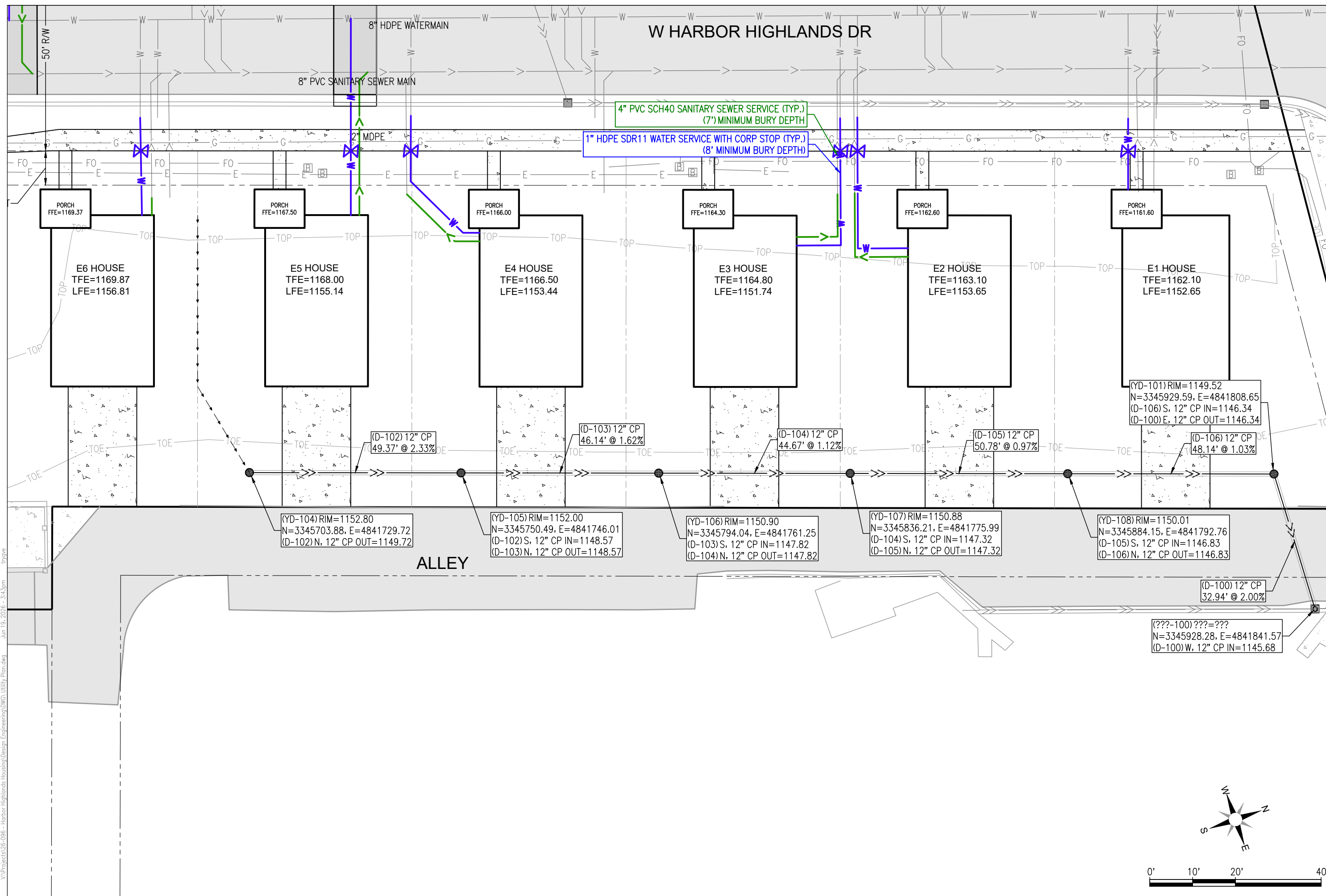


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| revision | |
| Proj: 26-096 | Date: 6/19/26 |
| Drawn: JFM | Checked: TLL |
| UTILITY PLAN | |
| Sheet Title | Sheet Number |
| | 21 |

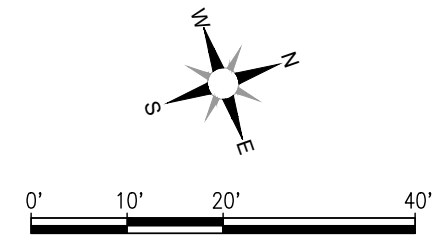
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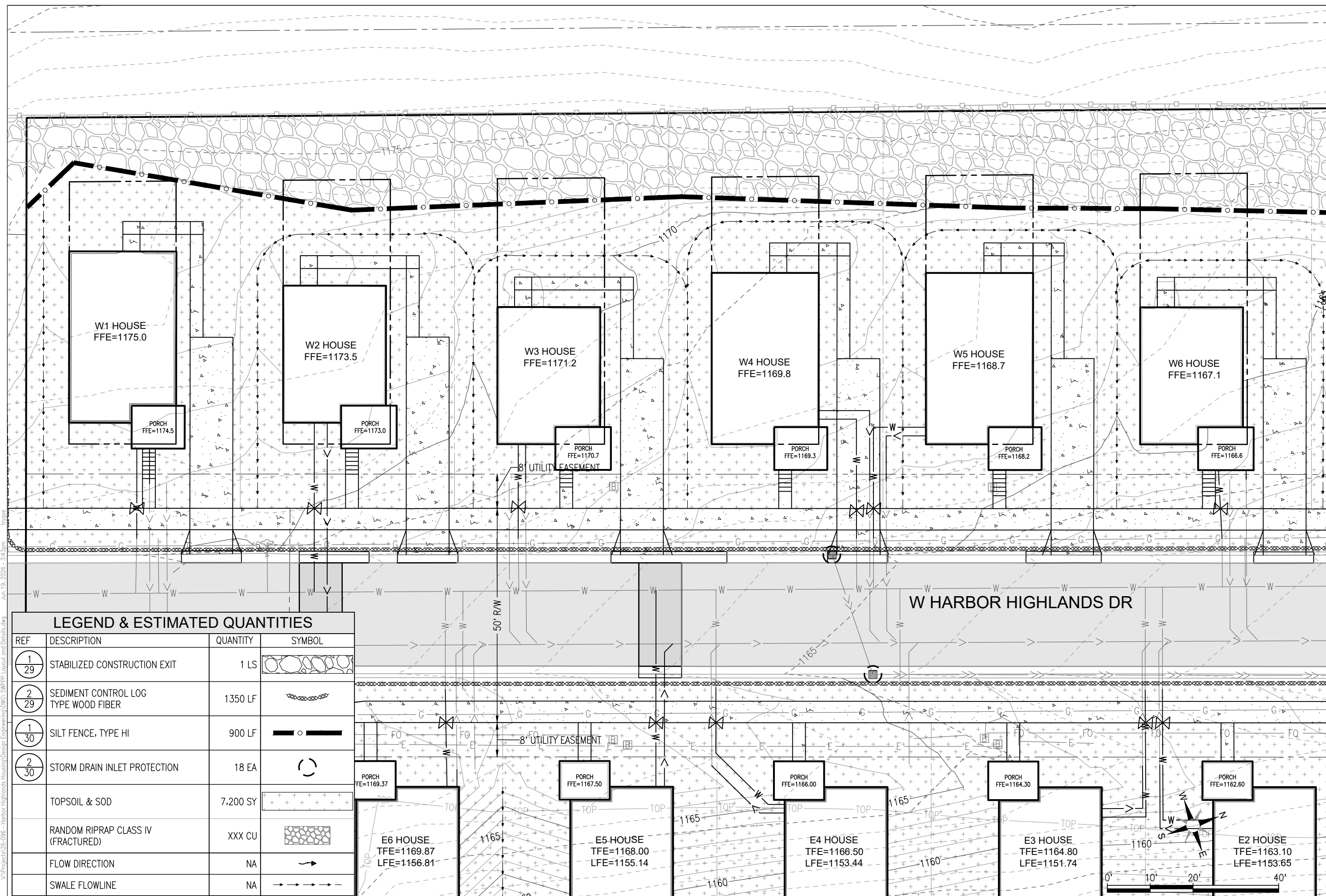
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| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
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| UTILITY PLAN | |
| Sheet Title | |
| Sheet Number | 22 |



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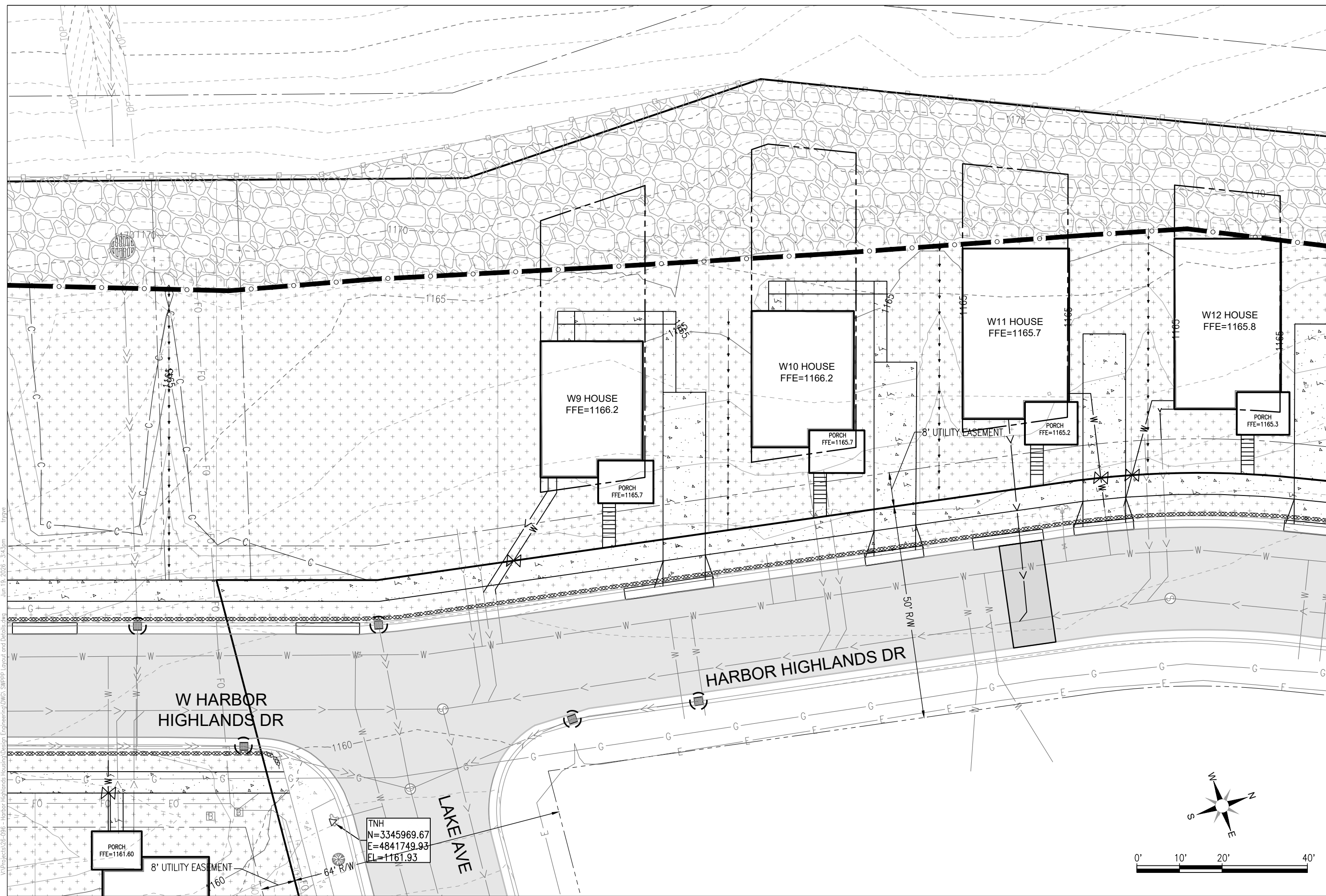


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| REF | DESCRIPTION | QUANTITY | SYMBOL |
|------|--------------------------------------|----------|--------|
| 1/29 | STABILIZED CONSTRUCTION EXIT | 1 LS | |
| 2/29 | SEDIMENT CONTROL LOG TYPE WOOD FIBER | 1350 LF | |
| 1/30 | SILT FENCE, TYPE HI | 900 LF | |
| 2/30 | STORM DRAIN INLET PROTECTION | 18 EA | |
| | TOPSOIL & SOD | 7,200 SY | |
| | RANDOM RIPRAP CLASS IV (FRACTURED) | XXX CU | |
| | FLOW DIRECTION | NA | |
| | SWALE FLOWLINE | NA | |

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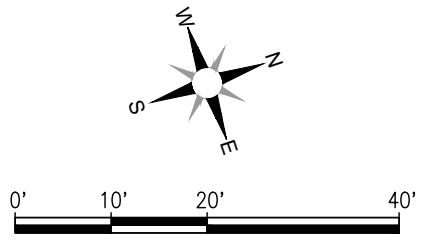
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 Date: 6/19/26
 Drawn: JFM
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 SWPPP LAYOUT
 Sheet Title
 Sheet Number
23



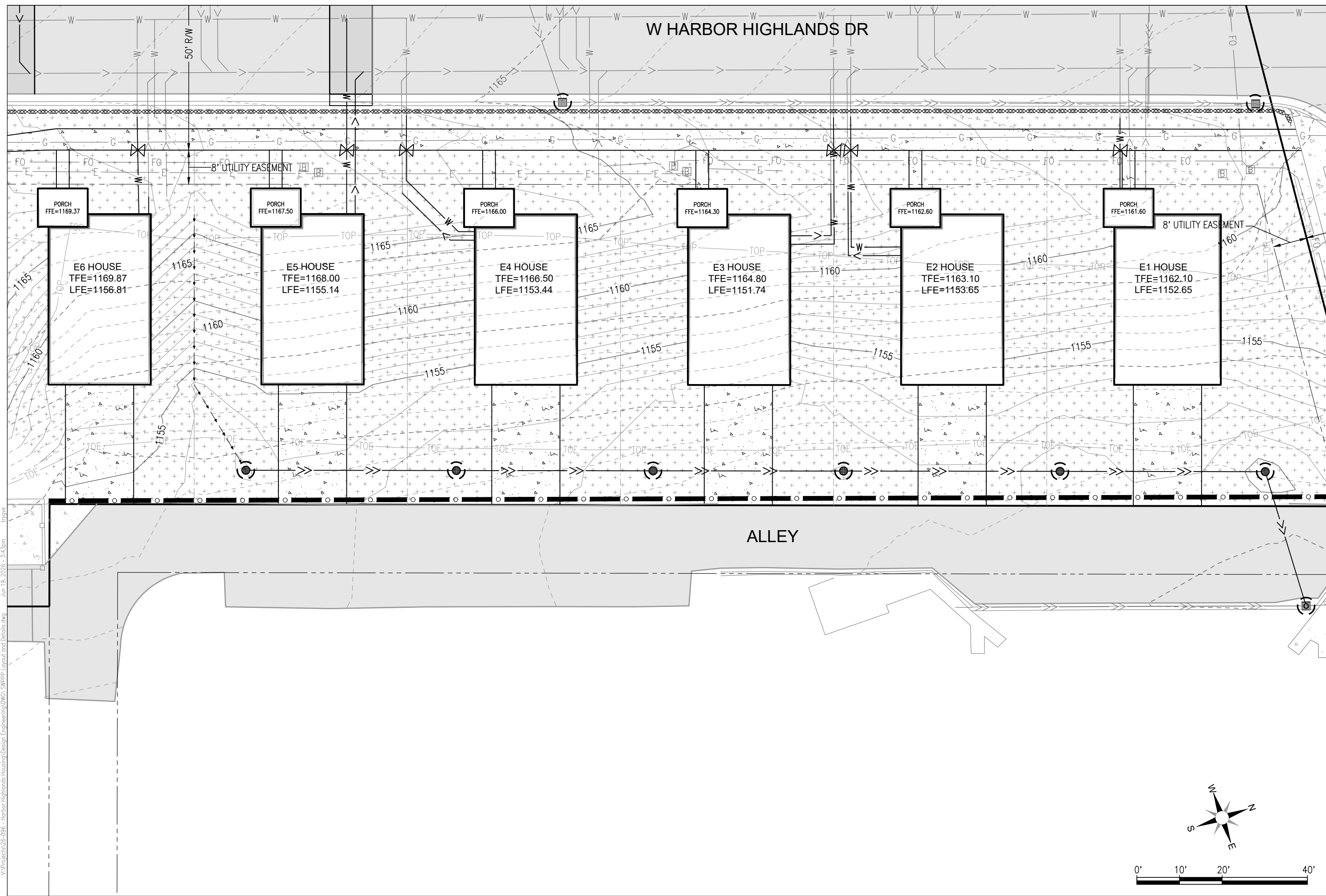
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Lic. No.: 40926
Engineer: DAVID G. BOLF

| | |
|---------------|----|
| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
| Checked: TLL | |
| SWPPP LAYOUT | |
| Sheet Title | |
| Sheet Number | 24 |



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W HARBOR HIGHLANDS DR

50' R/W

8' UTILITY EASEMENT

8' UTILITY EASEMENT

ALLEY

PORCH
FFE=1169.37

E6 HOUSE
TFE=1169.87
LFE=1156.81

PORCH
FFE=1167.50

E5 HOUSE
TFE=1168.00
LFE=1155.14

PORCH
FFE=1166.00

E4 HOUSE
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LFE=1153.44

PORCH
FFE=1164.30

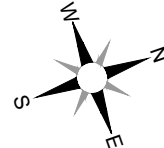
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PORCH
FFE=1162.60

E2 HOUSE
TFE=1163.10
LFE=1153.65

PORCH
FFE=1161.60

E1 HOUSE
TFE=1162.10
LFE=1152.65



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Engineer: DAVID G. BOLF
Lic. No: 40926
6/19/26

| | |
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| revision | |
| Proj: 26-096 | |
| Date: 6/19/26 | |
| Drawn: JFM | |
| Checked: TLL | |
| SWPPP LAYOUT | |
| Sheet Title | |
| Sheet Number | 26 |

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

THIS SWPPP HAS BEEN PREPARED TO SATISFY THE REQUIREMENTS OF THE MPCA NPDES CONSTRUCTION STORM WATER PERMIT. THE SWPPP DOCUMENT INCLUDES THE FOLLOWING DOCUMENTS TO DEFINE THE REQUIREMENTS FOR TEMPORARY AND PERMANENT STORM WATER MANAGEMENT AND EROSION CONTROL:

- 1.) SWPPP NARRATIVE & DETAILS
- 2.) PLAN SHEETS AND PROJECT SPECIFICATIONS
- 3.) STORMWATER MANAGEMENT PLAN

| PROJECT INFORMATION: | |
|-------------------------|--|
| PROJECT LOCATION: | HARBOR HIGHLANDS DR. |
| LATITUDE AND LONGITUDE: | 46.794645, -92.112917 |
| PROJECT NAME: | W HARBOR HIGHLANDS DR IMPROVEMENTS |
| PROJECT DESCRIPTION: | HOUSING DEVELOPMENT WITH DRIVEWAYS, WATER AND SANITARY SEWER SERVICES, AND SIDEWALK. |
| EST. PROJECT TIMELINE: | SUMMER 2026 |

| CONTACTS | |
|---------------|--|
| OWNER: | |
| CONTACT NAME: | DEBBIE FREEDMAN |
| ADDRESS: | 12 E. 4TH STREET DULUTH, MN 55805 |
| PHONE: | 218-206-9152 |
| EMAIL: | DFREEDMAN@1ROOFHOUSING.ORG |
| ENGINEER: | NORTHLAND CONSULTING ENGINEERS, L.L.P. |
| CONTACT NAME: | DAVID BOLF, P.E. |
| ADDRESS: | 102 S. 21ST AVE. W., SUITE ONE, DULUTH, MN 55806 |
| PHONE: | (218) 727-5995 |
| EMAIL: | DAVID@NCE-DULUTH.COM |

| SWPPP DESIGNER TRAINING INFORMATION | |
|--|--|
| SWPPP DESIGNER: | TRYGVE LODIN |
| CERTIFICATION CLASS AND EXPIRATION YEAR: | DESIGN OF CONSTRUCTION SWPPP, 2029 |
| NAME OF INSTRUCTOR: | UNIVERSITY OF MINNESOTA |
| EMPLOYER: | NORTHLAND CONSULTING ENGINEERS, L.L.P. |

CONTRACTOR'S EROSION CONTROL

THE CONTRACTOR MUST PROVIDE AND ATTACH CONTACT INFORMATION FOR THEIR CERTIFIED EROSION CONTROL SUPERVISOR. THIS INFORMATION MUST ACCOMPANY THE SWPPP PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY. THIS PERSON SHALL BE TRAINED, KNOWLEDGEABLE AND EXPERIENCED IN THE IMPLEMENTATION OF EROSION AND SEDIMENT CONTROL MEASURES. THIS INDIVIDUAL MUST OVERSEE INSTALLATION, MAINTENANCE AND INSPECTION OF THE EROSION AND SEDIMENT CONTROL BMPs, AND MAKE PROPER REVISION AND/OR AMENDMENTS TO THE SWPPP. A CERTIFIED PERSON REPRESENTING THE CONTRACTOR MUST BE AVAILABLE FOR AN ONSITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE MPCA.

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE NECESSARY TRAINING AND CERTIFICATIONS FOR THEIR RESPONSIBLE INDIVIDUALS AND CONTRACTOR MUST PROVIDE SAID TRAINING CERTIFICATIONS FOR ANY INDIVIDUAL:

- 1.) OVERSEEING IMPLEMENTATION, INSTALLATION AND MAINTENANCE OF SWPPP ELEMENTS.
- 2.) REVISING AND/OR AMENDING OF THE SWPPP.
- 3.) CONDUCTING SWPPP INSPECTIONS.

CONTRACTOR MUST FILL OUT THE TABLE BELOW AND PROVIDE DOCUMENTATION OF TRAINED INDIVIDUALS AT THE TIME OF APPLICATION OR BEFORE CONSTRUCTION ACTIVITY COMMENCES.

| CONTRACTOR'S EROSION CONTROL SUPERVISOR/S | |
|---|--------------------------------|
| NAME/S: | |
| CERTIFICATION CLASS AND EXPIRATION YEAR: | CONSTRUCTION SITE MANAGEMENT - |
| NAME OF INSTRUCTOR: | UNIVERSITY OF MINNESOTA |
| EMPLOYER: | |

| GENERAL SWPPP IMPLEMENTATION PHASING | |
|--------------------------------------|---|
| 1.) | CONSTRUCT VEHICLE TRACKING BMP(S) |
| 2.) | INSTALL SEDIMENT CONTROL BMPs ON ALL DOWN GRADIENT PERIMETERS. |
| 3.) | INSTALL STORM DRAIN INLET PROTECTION WHERE NECESSARY. |
| 4.) | INSTALL ANY TEMPORARY STABILIZATION DURING CONSTRUCTION AS NEEDED. |
| 5.) | MONITOR SITE FOR SEDIMENT AND REPAIR/REPLACE OR SUPPLEMENT BMPs AS REQUIRED. |
| 6.) | INSTALL FINAL STABILIZATION AS REQUIRED PER CONTRACT. |
| 7.) | AFTER SITE HAS ACHIEVED A DENSITY OF 70% PERMANENT COVERAGE, TEMPORARY BMPs MAY BE REMOVED. RE-STABILIZE ANY AREAS DISTURBED BY REMOVAL ACTIVITIES. |

| CONSTRUCTION STORMWATER PERMIT TIMELINES | |
|--|---|
| IMMEDIATELY | INSTALL PERIMETER CONTROL AT BASE STOCK PILES. |
| 24 HOURS | STABILIZE EXPOSED SOILS WITHIN 200 FEET OF PUBLIC WATERS. |
| | STABILIZE WETTED PERIMETER OF DITCHES WITHIN 200 FEET AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE. |
| | INSTALL ENERGY DISSIPATION AT ALL PIPE OUTLETS. |
| | RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITIES. |
| 7 DAYS | IF RECEIVING WATERS WITHIN 1 MILE OF THE SITE ARE SPECIAL OR IMPAIRED , EXPOSED SOILS MUST BE STABILIZED AFTER CONSTRUCTION HAS CEASED FOR 7 DAYS. |
| 14 DAYS | IF RECEIVING WATERS WITHIN 1 MILE OF SITE ARE NOT SPECIAL OR IMPAIRED, EXPOSED SOILS MUST BE STABILIZED AFTER CONSTRUCTION HAS CEASED FOR 14 DAYS. |

INSPECTION RECORDS

CONTRACTOR'S CERTIFIED EROSION CONTROL SUPERVISOR IS RESPONSIBLE FOR ALL INSPECTION AND MAINTENANCE RECORDS. DOCUMENTS SHALL BE KEPT WITH THE SWPPP DOCUMENT.

OPERATION AND MAINTENANCE OF PERMANENT STORM WATER CONTROLS

FOLLOWING CONSTRUCTION COMPLETION THE OWNER AND CONTRACTOR ARE RESPONSIBLE FOR NOTICE OF TERMINATION OR TRANSFER OF PERMIT.

THE OPERATION AND MAINTENANCE OF THE PERMANENT STORM WATER CONTROLS SHALL BE THE RESPONSIBILITY OF THE OWNER. THE OWNER MUST FOLLOW THE LONG TERM OPERATIONS AND MAINTENANCE PLAN AS OUTLINED AS PART OF THE SWPPP IN THE STORM WATER MANAGEMENT PLAN.

TEMPORARY SEDIMENT BASIN CALCULATIONS

CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING OF TEMPORARY SEDIMENT BASINS BASED OFF THE INFORMATION SHOWN BELOW;

THE TEMPORARY BASIN MUST PROVIDE LIVE STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A TWO (2)-YEAR, 24-HOUR STORM FROM EACH ACRE DRAINED TO THE BASIN OR 1,800 CUBIC FEET OF LIVE STORAGE PER ACRE DRAINED, WHICHEVER IS GREATER.

WHERE PERMITTEES HAVE NOT CALCULATED THE TWO (2)-YEAR, 24-HOUR STORM RUNOFF AMOUNT, THE TEMPORARY BASIN MUST PROVIDE 3,600 CUBIC FEET OF LIVE STORAGE PER ACRE OF THE BASINS' DRAINAGE AREA.

| SWPPP IMPLEMENTATION CONTACTS - CITY OF DULUTH | | | | |
|--|--------|-------------------|----------------|----------------------------------|
| AGENCY | PERMIT | NAME | PHONE | E-MAIL |
| MINNESOTA POLLUTION CONTROL AGENCY | NPDES | JIM DEXTER | (218) 529-6253 | JAMES.DEXTER@STATE.MN.US |
| SOIL AND WATER CONSERVATION DISTRICT | N/A | RC BOHEIM | (218) 723-4629 | RC.BOHEIM@SOUTHSTLOUISWCD.ORG |
| MNDNR WATERS AREA HYDROLOGIST | N/A | BRIANNA SPELDRICH | (218) 302-3246 | BRIANNA.SPELDRICH@STATE.MN.US |
| CORPS OF ENGINEERS | N/A | ANDY CHAMBERS | (218) 720-5291 | ANDREW.R.CHAMBERS@USACE.ARMY.MIL |
| STATE DUTY OFFICER | N/A | MPCA | (800) 422-0798 | |
| CITY REVIEW | N/A | TOM JOHNSON | (218) 730-5103 | TAJOHNSON@DULUTHMN.GOV |

| CALCULATIONS | |
|---|----------------------|
| SOILS INFORMATION: PREDOMINATELY CLAY SOILS | |
| DESCRIPTION | AREA (ACRES) |
| TOTAL AREA | 3.302 ACRES |
| TOTAL DISTURBED AREA | 2.381 ACRES |
| EXISTING IMPERVIOUS AREA | 0 ACRES |
| POST CONSTRUCTION IMPERVIOUS AREA | 0.473 ACRES |
| CHANGE IN IMPERVIOUS AREA | 0.473 ACRES INCREASE |

| RECEIVING WATERS WITHIN ONE MILE OF PROJECT | | | |
|---|---------------------|----------------------------|------|
| NAME | SPECIAL OR IMPAIRED | WORK IN WATER RESTRICTIONS | TMDL |
| LAKE SUPERIOR | IMPAIRED | | NONE |

| SENSITIVE AREAS | |
|--|----|
| IS THE PROJECT LOCATION IN A KARST AREA: | NO |
| DOES THE PROJECT FLOW TO A CALCAREOUS FEN? | NO |

SWPPP AMENDMENTS

THIS SWPPP IS A STARTING POINT FOR EROSION PREVENTION AND SEDIMENT CONTROL ON THE SITE. CONTRACTOR'S OPERATIONS AND PHASING OF CONSTRUCTION ACTIVITY WILL REQUIRE THE CONTRACTOR TO MODIFY AND AMEND THE SWPPP AND SUBSEQUENT BMPs USED ON SITE. IF SITE CONDITIONS PROVE IN-PLACE BMPs ARE INEFFECTIVE, THE SWPPP MUST BE AMENDED TO DOCUMENT ADDITIONAL OR MODIFIED BMPs AS NECESSARY TO CORRECT PROBLEMS IDENTIFIED. ANY AMENDMENT SHALL BE NOTED ON THE PLAN AND KEPT AS RECORD AND AVAILABLE AT THE SITE.

AMENDMENTS TO THE SWPPP MUST BE DOCUMENTED AND SENT TO THE OWNER AND ENGINEER.

| AMENDMENTS TO SWPPP | |
|---------------------|-------|
| NO. AND DESCRIPTION | DATE: |
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |



W HARBOR HIGHLANDS DR IMPROVEMENTS
 DULUTH, MN 55805

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
 6/19/26
 Lic. No: 40926
 Engineer: DAVID G. BOLF

revision _____
 Proj: 26-096
 Date: 6/19/26
 Drawn: JFM
 Checked: TLL
 SWPPP TABLE
 Sheet Title _____
 Sheet Number **27**

EROSION PREVENTION PRACTICES

PERMITTEES MUST MINIMIZE THE NEED FOR DISTURBANCE OF PORTIONS OF THE PROJECT WITH STEEP SLOPES. WHEN STEEP SLOPES MUST BE DISTURBED, PERMITTEES MUST USE TECHNIQUES SUCH AS PHASING AND STABILIZATION PRACTICES DESIGNED FOR STEEP SLOPES.

PERMITTEES MUST STABILIZE ALL EXPOSED SOIL AREAS, INCLUDING STOCKPILES. STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHEN CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND IS NOT SCHEDULED FOR WORK ACTIVITIES FOR 7 OR 14 DAYS. SEE CONSTRUCTION STORMWATER PERMIT TIMELINES TABLE.

FOR PUBLIC WATERS THAT THE MNDNR HAS PROMULGATED "WORK IN WATER RESTRICTIONS" DURING SPECIFIED FISH SPAWNING TIME FRAMES, PERMITTEES MUST COMPLETE STABILIZATION OF ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THESE WATERS, WITHIN 24 HOURS DURING THE RESTRICTION PERIOD.

PERMITTEES MUST STABILIZE THE NORMAL WETTED PERIMETER OF THE LAST 200 LINEAR FEET OF TEMPORARY OR PERMANENT DRAINAGE DITCHES OR SWALES THAT DRAIN WATER FROM THE SITE WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE. PERMITTEES MUST COMPLETE STABILIZATION OF REMAINING PORTIONS OF TEMPORARY OR PERMANENT DITCHES OR SWALES WITHIN 14 CALENDAR DAYS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE AND CONSTRUCTION IN THAT PORTION OF THE DITCH TEMPORARILY OR PERMANENTLY CEASES.

TEMPORARY OR PERMANENT DITCHES OR SWALES BEING USED AS SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION DO NO NEED TO BE STABILIZED. PERMITTEES MUST STABILIZE THESE AREAS WITHIN 24 HOURS AFTER THEIR USE AS A SEDIMENT CONTAINMENT SYSTEM CEASES.

PERMITTEES MUST NOT USE MULCH, HYDROMULCH, TACKIFIER, POLYACRYLAMIDE OR SIMILAR EROSION PREVENTION PRACTICES WITHIN ANY PORTION OF THE NORMAL WETTED PERIMETER OF A TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE SECTION WITH A CONTINUOUS SLOPE OF GREATER THAN 2 PERCENT.

PERMITTEES MUST PROVIDE TEMPORARY OR PERMANENT ENERGY DISSIPATION AT ALL PIPE OUTLETS WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER OR PERMANENT STORMWATER TREATMENT SYSTEM.

PERMITTEES MUST NOT DISTURB MORE LAND (I.E., PHASING) THAN CAN BE EFFECTIVELY INSPECTED AND MAINTAINED IN ACCORDANCE WITH SECTION 11.

SEDIMENT CONTROL PRACTICES

PERMITTEES MUST ESTABLISH SEDIMENT CONTROL BMPS ON ALL DOWNGRADE PERIMETERS OF THE SITE AND DOWNGRADE AREAS OF THE SITE THAT DRAIN TO ANY SURFACE WATER, INCLUDING CURB AND GUTTER SYSTEMS. PERMITTEES MUST LOCATE SEDIMENT CONTROL PRACTICES UPGRADIENT OF ANY BUFFER ZONES. PERMITTEES MUST INSTALL SEDIMENT CONTROL PRACTICES BEFORE ANY UPGRADIENT LAND-DISTURBING ACTIVITIES BEGIN AND MUST KEEP THE SEDIMENT CONTROL PRACTICES IN PLACE UNTIL THEY ESTABLISH PERMANENT COVER.

IF DOWNGRADE SEDIMENT CONTROLS ARE OVERLOADED, BASED ON FREQUENT FAILURE OR EXCESSIVE MAINTENANCE REQUIREMENTS, PERMITTEES MUST INSTALL ADDITIONAL UPGRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS TO ELIMINATE THE OVERLOADING AND AMEND THE SWPPP TO IDENTIFY THESE ADDITIONAL PRACTICES AS REQUIRED IN ITEM 6.3.

TEMPORARY OR PERMANENT DRAINAGE DITCHES AND SEDIMENT BASINS DESIGNED AS PART OF A SEDIMENT CONTAINMENT SYSTEM REQUIRE SEDIMENT CONTROL PRACTICES ONLY AS APPROPRIATE FOR SITE CONDITIONS.

PERMITTEES MUST RE-INSTALL ALL SEDIMENT CONTROL PRACTICES ADJUSTED OR REMOVED TO ACCOMMODATE SHORT-TERM ACTIVITIES SUCH AS CLEARING OR GRUBBING, OR PASSAGE OF VEHICLES, IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY IS COMPLETED. PERMITTEES MUST RE-INSTALL SEDIMENT CONTROL PRACTICES BEFORE THE NEXT PRECIPITATION EVENT EVEN IF THE SHORT-TERM ACTIVITY IS NOT COMPLETE.

PERMITTEES MUST PROTECT ALL STORM DRAIN INLETS USING APPROPRIATE BMPS DURING CONSTRUCTION UNTIL THEY ESTABLISH PERMANENT COVER ON ALL AREAS WITH POTENTIAL FOR DISCHARGING TO THE INLET.

PERMITTEES MAY REMOVE INLET PROTECTION FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN IS IDENTIFIED BY THE PERMITTEES OR THE JURISDICTIONAL AUTHORITY. PERMITTEES MUST DOCUMENT THE NEED FOR REMOVAL IN THE SWPPP.

PERMITTEES MUST PROVIDE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS AT THE BASE OF STOCKPILES ON THE DOWNGRADE PERIMETER.

PERMITTEES MUST LOCATE STOCKPILES OUTSIDE OF NATURAL BUFFERS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER.

PERMITTEES MUST INSTALL A VEHICLE TRACKING BMP TO MINIMIZE THE TRACK OUT OF SEDIMENT FROM THE CONSTRUCTION SITE OR ONTO PAVED ROADS WITHIN THE SITE.

PERMITTEES MUST USE STREET SWEEPING IF VEHICLE TRACKING BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT TRACKING ONTO THE STREET.

PERMITTEES MUST INSTALL TEMPORARY SEDIMENT BASINS AS REQUIRED IN SECTION 14.

IN ANY AREAS OF THE SITE WHERE FINAL VEGETATIVE STABILIZATION WILL OCCUR, PERMITTEES MUST RESTRICT VEHICLE AND EQUIPMENT USE TO MINIMIZE SOIL COMPACTION.

PERMITTEES MUST PRESERVE TOPSOIL ON THE SITE, UNLESS INFEASIBLE.

PERMITTEES MUST DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS UNLESS INFEASIBLE.

PERMITTEES MUST PRESERVE A 50 FOOT NATURAL BUFFER OR, IF A BUFFER IS INFEASIBLE ON THE SITE, PROVIDE REDUNDANT PERIMETER SEDIMENT CONTROLS WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF THE PROJECT'S EARTH DISTURBANCES AND STORMWATER FLOWS TO THE SURFACE WATER. PERMITTEES MUST INSTALL PERIMETER SEDIMENT CONTROLS AT LEAST 5 FEET APART UNLESS LIMITED BY LACK OF AVAILABLE SPACE. NATURAL BUFFERS ARE NOT REQUIRED ADJACENT TO ROAD DITCHES, JUDICIAL DITCHES, COUNTY DITCHES, STORMWATER CONVEYANCE CHANNELS, STORM DRAIN INLETS, AND SEDIMENT BASINS. IF PRESERVING THE BUFFER IS INFEASIBLE, PERMITTEES MUST DOCUMENT THE REASONS IN THE SWPPP.

PERMITTEES MUST USE POLYMERS, FLOCCULANTS, OR OTHER SEDIMENTATION TREATMENT CHEMICALS IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES, DOSING SPECIFICATIONS AND SEDIMENT REMOVAL DESIGN SPECIFICATIONS PROVIDED BY THE MANUFACTURER OR SUPPLIER. THE PERMITTEES MUST USE CONVENTIONAL EROSION AND SEDIMENT CONTROLS PRIOR TO CHEMICAL ADDITION AND MUST DIRECT TREATED STORMWATER TO A SEDIMENT CONTROL SYSTEM FOR FILTRATION OR SETTLEMENT OF THE FLOC PRIOR TO DISCHARGE.

DEWATERING AND BASIN DRAINING

PERMITTEES MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATERS RELATED TO DEWATERING OR BASIN DRAINING TO A TEMPORARY OR PERMANENT SEDIMENT BASIN ON THE PROJECT SITE UNLESS INFEASIBLE. PERMITTEES MAY DEWATER TO SURFACE WATERS IF THEY VISUALLY CHECK TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED AND NUISANCE CONDITIONS WILL NOT RESULT FROM THE DISCHARGE. IF PERMITTEES CANNOT DISCHARGE THE WATER TO A SEDIMENTATION BASIN PRIOR TO ENTERING A SURFACE WATER, PERMITTEES MUST TREAT IT WITH APPROPRIATE BMPS SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE SURFACE WATER OR DOWNSTREAM PROPERTIES.

IF PERMITTEES MUST DISCHARGE WATER CONTAINING OIL OR GREASE, THEY MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE (E.G., CARTRIDGE FILTERS, ABSORBENTS PADS) PRIOR TO DISCHARGE.

PERMITTEES MUST DISCHARGE ALL WATER FROM DEWATERING OR BASIN-DRAINING ACTIVITIES IN A MANNER THAT DOES NOT CAUSE EROSION OR SCOUR IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS OR INUNDATION OF WETLANDS IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS THAT CAUSES SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.

IF PERMITTEES USE FILTERS WITH BACKWASH WATER, THEY MUST HAUL THE BACKWASH WATER AWAY FOR DISPOSAL, RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION.

INSPECTIONS AND MAINTENANCE

PERMITTEES MUST ENSURE A TRAINED PERSON, AS IDENTIFIED IN ITEM 21.2.B, WILL INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 1/2 INCH IN 24 HOURS.

PERMITTEES MUST INSPECT AND MAINTAIN ALL PERMANENT STORMWATER TREATMENT BMPS.

PERMITTEES MUST INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS AND POLLUTION PREVENTION MANAGEMENT MEASURES TO ENSURE INTEGRITY AND EFFECTIVENESS. PERMITTEES MUST REPAIR, REPLACE OR SUPPLEMENT ALL NONFUNCTIONAL BMPS WITH FUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY UNLESS ANOTHER TIME FRAME IS SPECIFIED IN ITEM 11.5 OR 11.6. PERMITTEES MAY TAKE ADDITIONAL TIME IF FIELD CONDITIONS PREVENT ACCESS TO THE AREA.

DURING EACH INSPECTION, PERMITTEES MUST INSPECT SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS BUT NOT CURB AND GUTTER SYSTEMS, FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. PERMITTEES MUST REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. PERMITTEES MUST COMPLETE REMOVAL AND STABILIZATION WITHIN SEVEN (7) CALENDAR DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. PERMITTEES MUST USE ALL REASONABLE EFFORTS TO OBTAIN ACCESS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF OBTAINING ACCESS.

PERMITTEES MUST INSPECT CONSTRUCTION SITE VEHICLE EXIT LOCATIONS, STREETS AND CURB AND GUTTER SYSTEMS WITHIN AND ADJACENT TO THE PROJECT FOR SEDIMENTATION FROM EROSION OR TRACKED SEDIMENT FROM VEHICLES. PERMITTEES MUST REMOVE SEDIMENT FROM ALL PAVED SURFACES WITHIN ONE (1) CALENDAR DAY OF DISCOVERY OR, IF APPLICABLE, WITHIN A SHORTER TIME TO AVOID A SAFETY HAZARD TO USERS OF PUBLIC STREETS.

PERMITTEES MUST REPAIR, REPLACE OR SUPPLEMENT ALL PERIMETER CONTROL DEVICES WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE DEVICE.

PERMITTEES MUST DRAIN TEMPORARY AND PERMANENT SEDIMENTATION BASINS AND REMOVE THE SEDIMENT WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME.

PERMITTEES MUST ENSURE THAT AT LEAST ONE INDIVIDUAL PRESENT ON THE SITE (OR AVAILABLE TO THE PROJECT SITE IN THREE (3) CALENDAR DAYS) IS TRAINED IN THE JOB DUTIES DESCRIBED IN ITEM 21.2.B.

PERMITTEES MAY ADJUST THE INSPECTION SCHEDULE DESCRIBED IN ITEM 11.2.

PERMITTEES MUST RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITIES WITHIN 24 HOURS OF BEING CONDUCTED AND

THESE RECORDS MUST BE RETAINED WITH THE SWPPP. THESE RECORDS MUST INCLUDE:

- A. DATE AND TIME OF INSPECTIONS; AND
- B. NAME OF PERSONS CONDUCTING INSPECTIONS; AND
- C. ACCURATE FINDINGS OF INSPECTIONS, INCLUDING THE SPECIFIC LOCATION WHERE CORRECTIVE ACTIONS ARE NEEDED; AND
- D. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES); AND
- E. DATE OF ALL RAINFALL EVENTS GREATER THAN 1/2 INCHES IN 24 HOURS, AND THE AMOUNT OF RAINFALL FOR EACH EVENT. PERMITTEES MUST OBTAIN RAINFALL AMOUNTS BY EITHER A PROPERLY MAINTAINED RAIN GAUGE INSTALLED ONSITE, A WEATHER STATION THAT IS WITHIN ONE (1) MILE OF YOUR LOCATION, OR A WEATHER REPORTING SYSTEM THAT PROVIDES SITE SPECIFIC RAINFALL DATA FROM RADAR SUMMARIES; AND
- F. IF PERMITTEES OBSERVE A DISCHARGE DURING THE INSPECTION, THEY MUST RECORD AND SHOULD PHOTOGRAPH AND DESCRIBE THE LOCATION OF THE DISCHARGE (I.E., COLOR, ODOR, SETTLED OR SUSPENDED SOLIDS, OIL SHEEN, AND OTHER OBVIOUS INDICATORS OF POLLUTANTS); AND
- G. ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED AS REQUIRED IN SECTION 6 WITHIN SEVEN (7) CALENDAR DAYS.

POLLUTION PREVENTION MANAGEMENT MEASURES

PERMITTEES MUST PLACE BUILDING PRODUCTS AND LANDSCAPE MATERIALS THAT ARE CONSIDERED TO BE A SOURCE OF CONTAMINATION, PESTICIDES, FERTILIZERS, AND CHEMICALS UNDER COVER TO MINIMIZE CONTACT WITH STORMWATER.

PERMITTEES MUST STORE HAZARDOUS MATERIALS AND TOXIC WASTE IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.

PERMITTEES MUST PROPERLY STORE, COLLECT AND DISPOSE SOLID WASTE IN COMPLIANCE WITH MINN. R. CH. 7035.

PERMITTEES MUST POSITION PORTABLE TOILETS SO THEY ARE SECURE AND WILL NOT TIP OR BE KNOCKED OVER.

PERMITTEES MUST TAKE REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS, INCLUDING FUEL, FROM ANY AREA WHERE CHEMICALS OR FUEL WILL BE LOADED OR UNLOADED INCLUDING THE USE OF DRIP PANS OR ABSORBENTS UNLESS INFEASIBLE. PERMITTEES MUST ENSURE ADEQUATE SUPPLIES ARE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS AND THAT AN APPROPRIATE DISPOSAL METHOD IS AVAILABLE FOR RECOVERED SPILLED MATERIALS. PERMITTEES MUST REPORT AND CLEAN UP SPILLS IMMEDIATELY AS REQUIRED BY MINN. STAT. 115.061, USING DRY CLEAN UP MEASURES WHERE POSSIBLE.

PERMITTEES MUST LIMIT VEHICLE EXTERIOR WASHING AND EQUIPMENT TO A DEFINED AREA OF THE SITE. PERMITTEES MUST CONTAIN RUNOFF FROM THE WASHING AREA IN A SEDIMENT BASIN OR OTHER SIMILARLY EFFECTIVE CONTROLS AND MUST DISPOSE WASTE FROM THE WASHING ACTIVITY PROPERLY. PERMITTEES MUST PROPERLY USE AND STORE SOAPS, DETERGENTS, OR SOLVENTS.

PERMITTEES MUST PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS RELATED TO THE CONSTRUCTION ACTIVITY. PERMITTEES MUST PREVENT LIQUID AND SOLID WASHOUT WASTES FROM CONTACTING THE GROUND AND MUST DESIGN THE CONTAINMENT SO IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR AREAS. PERMITTEES MUST PROPERLY DISPOSE LIQUID AND SOLID WASTES IN COMPLIANCE WITH MPCA RULES. PERMITTEES MUST INSTALL A SIGN INDICATING THE LOCATION OF THE WASHOUT FACILITY.

PERMIT TERMINATION CONDITIONS

PERMITTEES MUST COMPLETE ALL CONSTRUCTION ACTIVITY AND MUST INSTALL PERMANENT COVER OF ALL AREAS. PERMANENT (VEGETATIVE) COVER MUST CONSIST OF A UNIFORM PERENNIAL VEGETATION WITH A DENSITY OF 70 PERCENT OF ITS EXPECTED FINAL GROWTH.

PERMITTEES MUST CLEAN THE PERMANENT STORMWATER TREATMENT SYSTEM OF ANY ACCUMULATED SEDIMENT AND MUST ENSURE THE SYSTEM MEETS ALL APPLICABLE REQUIREMENTS IN SECTION 15 THROUGH 19 AND IS OPERATING AS DESIGNED.

PERMITTEES MUST REMOVE ALL SEDIMENT FROM CONVEYANCE SYSTEMS

PERMITTEES MUST REMOVE ALL TEMPORARY SYNTHETIC EROSION PREVENTION AND SEDIMENT CONTROL BMPS. CONTRACTOR MAY LEAVE BMPS DESIGNED TO DECOMPOSE ON-SITE IN PLACE.

FOR RESIDENTIAL CONSTRUCTION ONLY, PERMIT COVERAGE TERMINATES ON INDIVIDUAL LOTS IF THE STRUCTURES ARE FINISHED AND TEMPORARY EROSION PREVENTION AND DOWNGRADE PERIMETER CONTROL IS COMPLETE, THE RESIDENCE SELLS TO THE HOMEOWNER, AND THE PERMITTEE DISTRIBUTES THE MPCA'S "HOMEOWNER FACT SHEET" TO THE HOMEOWNER.

FOR CONSTRUCTION PROJECTS ON AGRICULTURAL LAND (E.G., PIPELINES ACROSS CROPLAND), PERMITTEES MUST RETURN THE DISTURBED LAND TO ITS PRECONSTRUCTION AGRICULTURAL USE PRIOR TO SUBMITTING THE NOT.

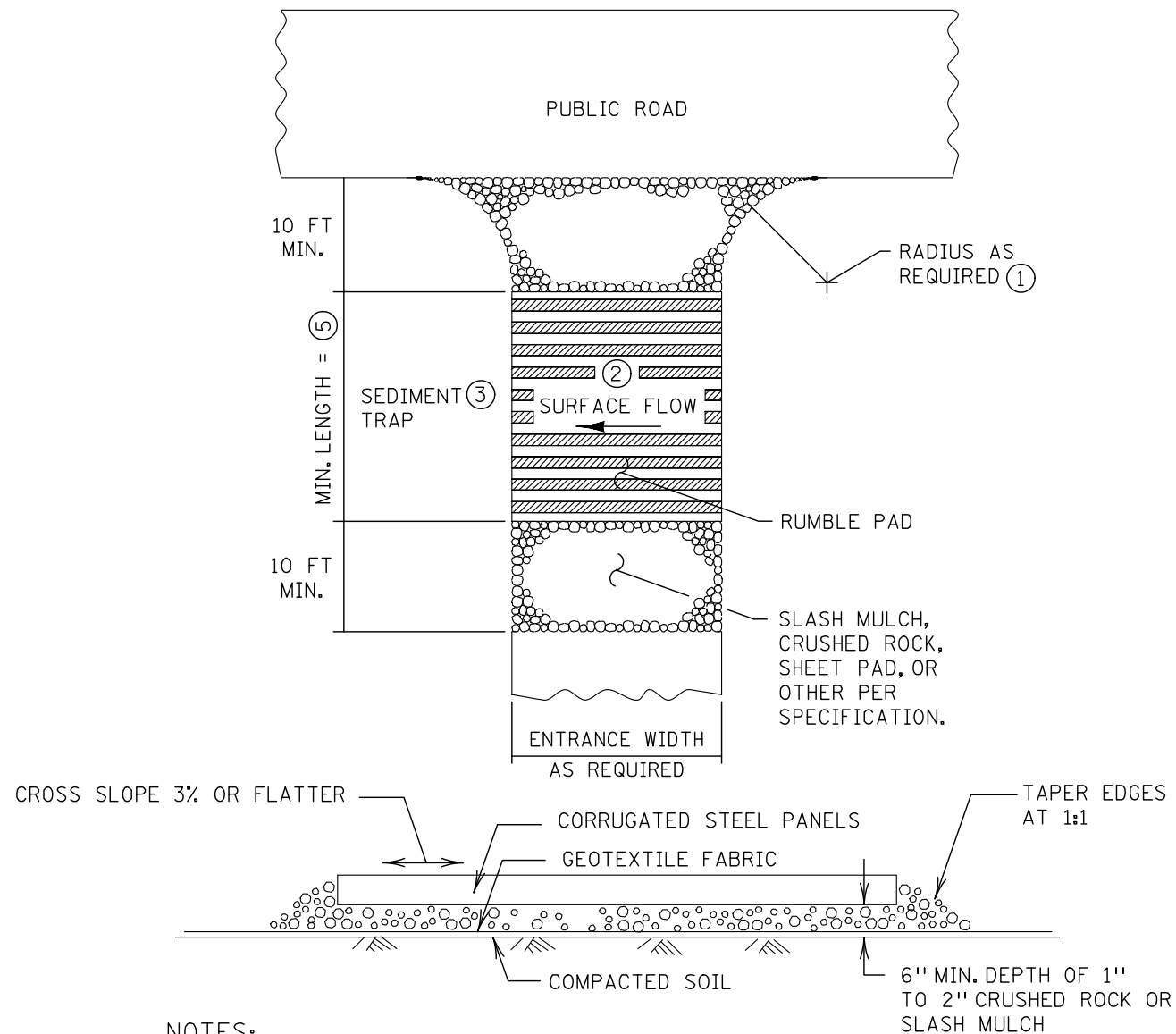


**W HARBOR HIGHLANDS DR
IMPROVEMENTS**
DULUTH, MN 55805

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Engineer: DAVID G. BOLT
Lic. No.: 40926
6/19/26

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|------------------------|
| revision |
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| Proj: 26-096 |
| Date: 6/19/26 |
| Drawn: JFM |
| Checked: TLL |
| SWPPP NARRATIVE |
| Sheet Title |
| Sheet Number |
| 28 |

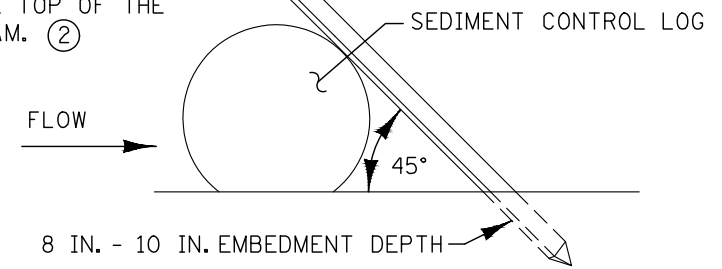


NOTES:
SEE MNDOT SPECS. 2573 & 3882. RUMBLE PAD

- ① PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.
- ② IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.
- ③ IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.
- ④ IF A TIRE WASH OFF IS REQUIRED THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.
- ⑤ MINIMUM LENGTH OF RUMBLE PAD SHALL BE 20 FEET, OR AS REQUIRED TO REMOVE SEDIMENT FROM TIRES. IF SIGNIFICANT SEDIMENT IS TRACKED FROM THE SITE, THE RUMBLE PAD SHALL BE LENGTHENED OR THE DESIGN MODIFIED TO PROVIDE ADDITIONAL VIBRATION. WASH-OFF LENGTH SHALL BE AS REQUIRED TO EFFECTIVELY REMOVE CONSTRUCTION SEDIMENT FROM VEHICLE TIRES.
- ⑥ MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

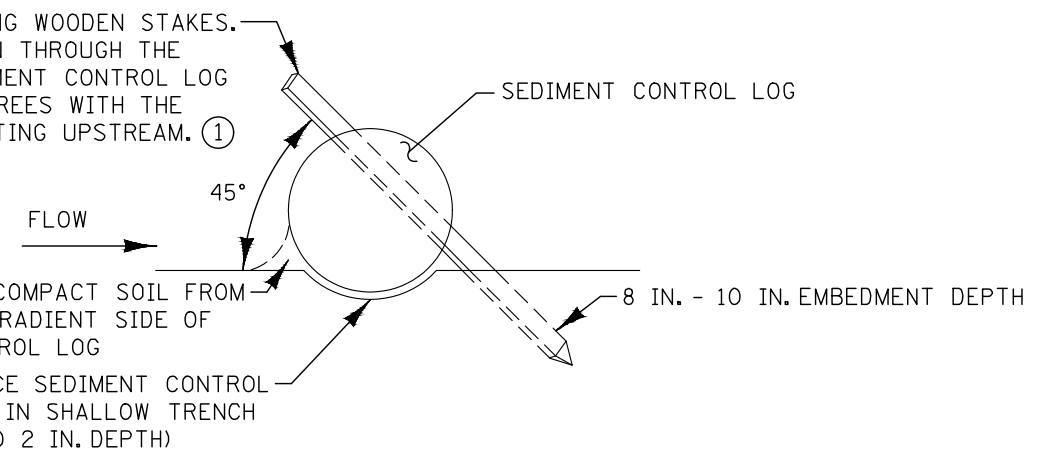
1
29 ——— TEMPORARY SEDIMENT CONTROL CONSTRUCTION EXIT (4) (6) ——— NTS.

1 IN. X 2 IN. X 24 IN. LONG WOODEN STAKES AS NEEDED. STAKES SHALL BE DRIVEN OVER THE SEDIMENT CONTROL LOG AT AN ANGLE OF 45 DEGREES WITH THE TOP OF THE STAKE POINTING UPSTREAM. ②



TYPES: WOOD CHIP, COMPOST, OR ROCK

1 IN. X 2 IN. X 24 IN. LONG WOODEN STAKES. STAKES SHALL BE DRIVEN THROUGH THE BACK HALF OF THE SEDIMENT CONTROL LOG AT AN ANGLE OF 45 DEGREES WITH THE TOP OF THE STAKE POINTING UPSTREAM. ①



TYPES: STRAW, WOOD FIBER, OR COIR

NOTES:

SEE MNDOT SPECS. 2573, 3874, 3882, & 3897.

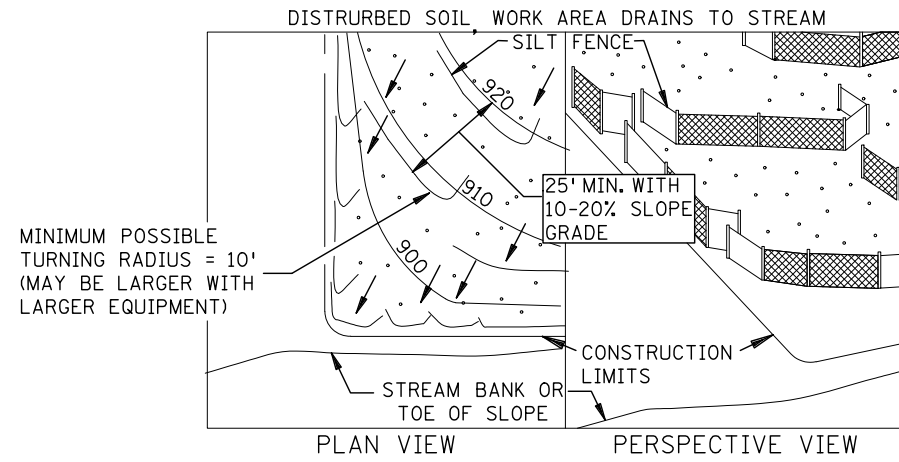
FOR DITCH CHECKS, PLACE SEDIMENT CONTROL LOG PERPENDICULAR TO FLOW AND IN A CRESCENT SHAPE WITH THE ENDS FACING UPSTREAM WITH ENDS 6 INCHES HIGHER THAN MIDDLE TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

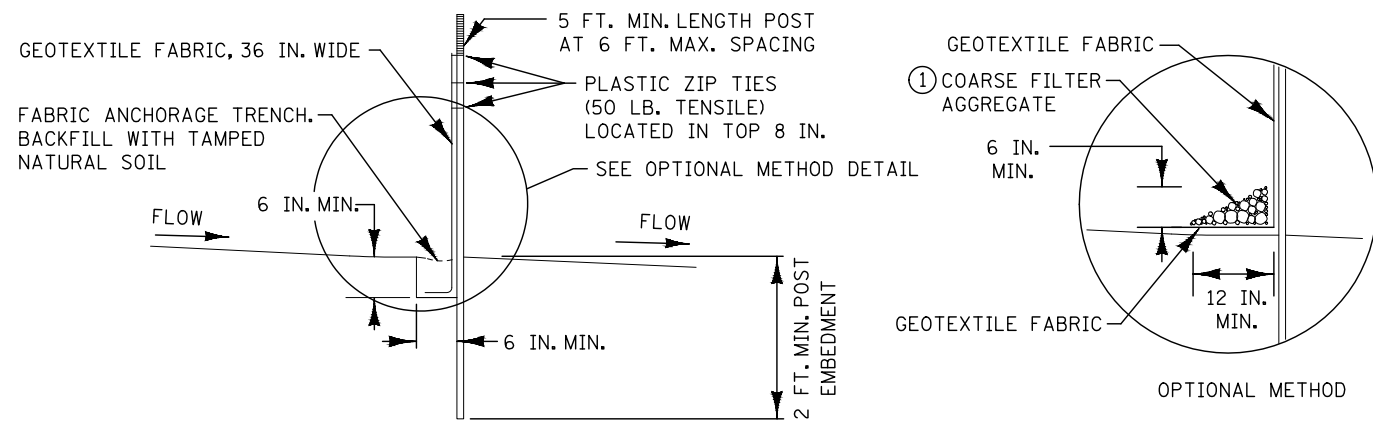
$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = (\text{DITCH CHECK HEIGHT (FT.)} / \% \text{ CHANNEL SLOPE}) \times 100$$

- ① SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
- ② PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.

2
29 ——— TEMPORARY SEDIMENT CONTROL SEDIMENT CONTROL LOGS ——— NTS.



J-HOOK INSTALLATION



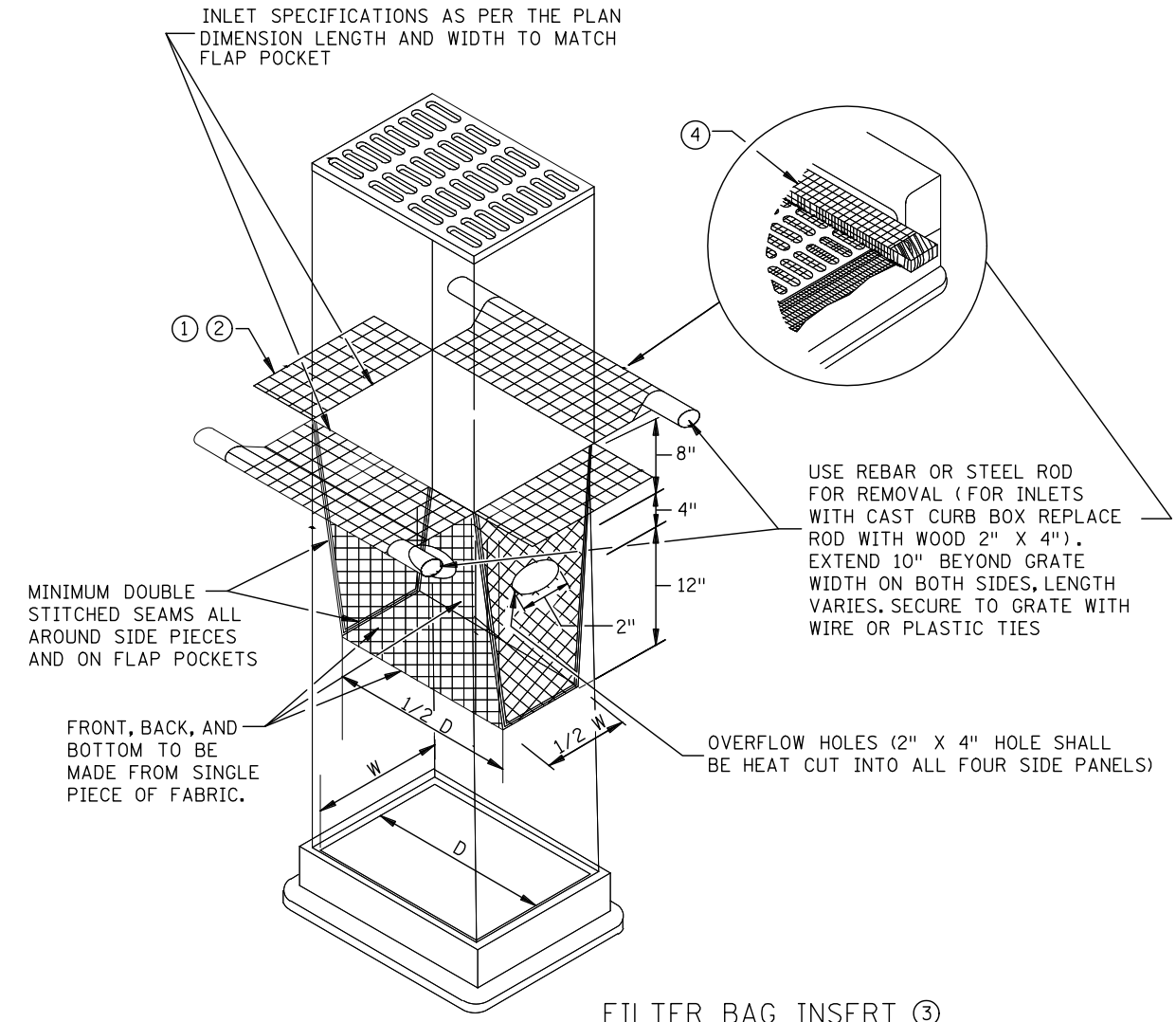
NOTES:

- SEE MNDOT SPECS. 2573, 3149 & 3886.
- ① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.
- ② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

SILT FENCE TYPE HI ②
(HAND INSTALLED)

1
30

NTS.



FILTER BAG INSERT ③
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)

NOTES:

- SEE MNDOT SPECS. 2573, 3137, & 3886.
- DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.
- ① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.
- ② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ③ INSTALLATION NOTES:
DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
- ④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

2
30

TEMPORARY SEDIMENT CONTROL
STORM DRAIN INLET PROTECTION

NTS.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
6/19/26
Lic. No: 40926
Engineer: DAVID G. BOLF

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