



ARAMCO RESEARCH CENTER JSP22-19

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Consideration at the request of Aramco Americas, for Preliminary Site Plan approval. The subject property is located in Section 4, east of Hudson Drive and north of West Road, and is zoned I-1, Light Industrial. The applicant is proposing to install outdoor storage tanks with liquid hydrogen and natural gas in the existing parking area on the south side of the building.

Required Action

Approval/denial of the Preliminary Site Plan

REVIEW	RESULT	DATE	COMMENTS
Planning	Approval recommended	5-25-22	<ul style="list-style-type: none"> • Deviations from Ordinance standards are required in order to be in compliance with NFPA standards (Screening on only 3 sides of the proposed tanks, vent pipe extending above screening wall) • Parcel combination required prior to Final Stamping Set approval in order to meet minimum side yard setback • Items to be addressed on the Final Site Plan submittal
Engineering	Approval recommended	5-24-22	<ul style="list-style-type: none"> • Items to be addressed on the Final Site Plan submittal
Landscaping	Approval recommended	5-12-22	<ul style="list-style-type: none"> • Items to be addressed on the Final Site Plan submittal
Fire	Approved with Conditions	5-17-22	<ul style="list-style-type: none"> • Items to be addressed on the Final Site Plan submittal

MOTION SHEET

Approval – Preliminary Site Plan

In the matter of Aramco Research Center, JSP22-19, motion to **approve** the Preliminary Site Plan based on and subject to the following:

- a. The City's Zoning Ordinance states such outdoor storage shall be in compliance with any applicable state and federal regulations;
- b. Waivers from Ordinance screening requirements are needed in order to be in compliance with NFPA standards which prohibits liquid hydrogen tanks greater than 600 gallons to be enclosed on all sides and requires a vent stack to extend above the screening enclosure, which is hereby granted;
- c. Property combination shall be completed prior to Final Stamping Set approval in order to comply with setback requirements;
- d. The findings of compliance with Ordinance standards in the staff and consultant review letters and the conditions and the items listed in those letters being addressed on the Final Site Plan; and
- e. *(additional conditions here if any)*

(This motion is made because the plan is otherwise in compliance with Article 3, Article 4, and Article 5 of the Zoning Ordinance and all other applicable provisions of the Ordinance.)

- OR -

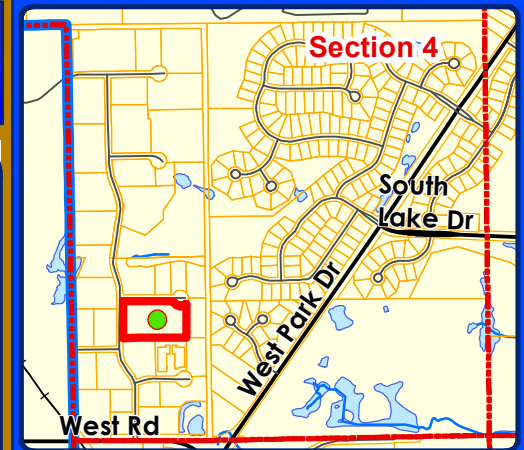
Denial – Preliminary Site Plan

In the matter of Aramco Research Center, JSP22-19, motion to **deny** the Preliminary Site Plan ...*(because the plan is not in compliance with Article 3, Article 4, and Article 5 of the Zoning Ordinance and all other applicable provisions of the Ordinance.)*

MAPS
Location
Zoning
Future Land Use
Natural Features

JSP22-19 ARAMCO RESEARCH CENTER

LOCATION



LEGEND

 Subject Property



City of Novi

Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org

Map Author: Lindsay Bell
Date: 6/2/22
Project: ARAMCO
Version #: 1



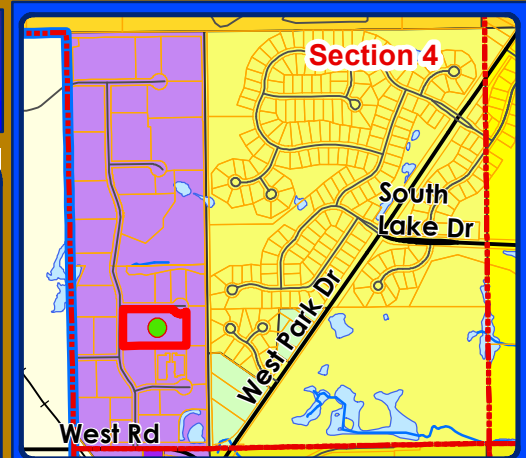
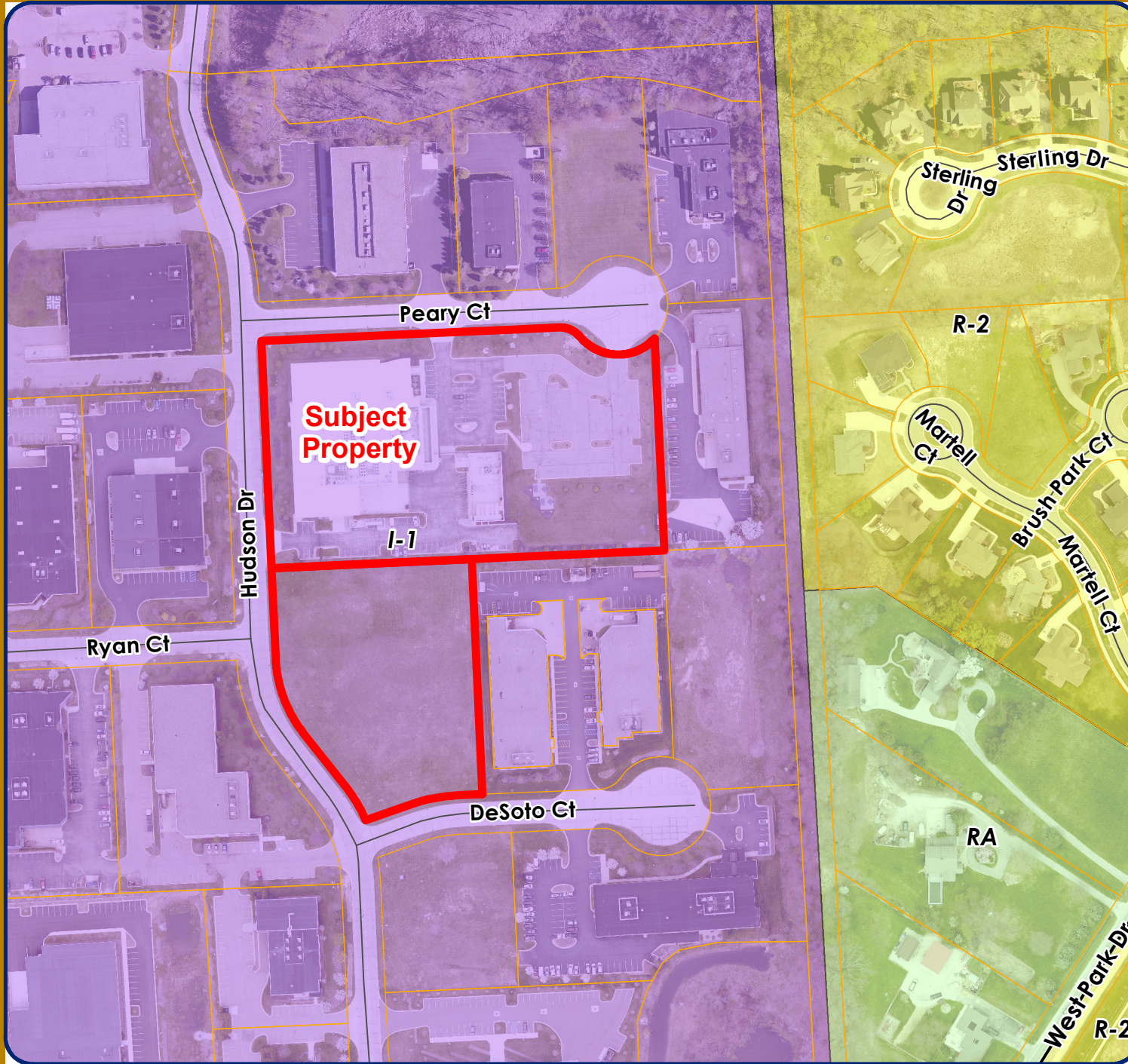
1 inch = 223 feet



MAP INTERPRETATION NOTICE

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.

JSP22-19 ARAMCO RESEARCH CENTER ZONING



LEGEND

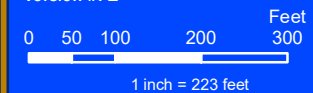
- R-A: Residential Acreage
- R-1: One-Family Residential District
- R-2: One-Family Residential
- R-4: One-Family Residential District
- RM-1: Low-Density Multiple Family
- I-1: Light Industrial District
- I-2: General Industrial District
- Subject Property



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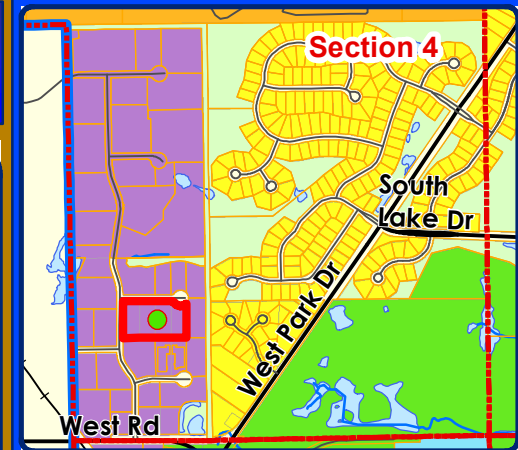
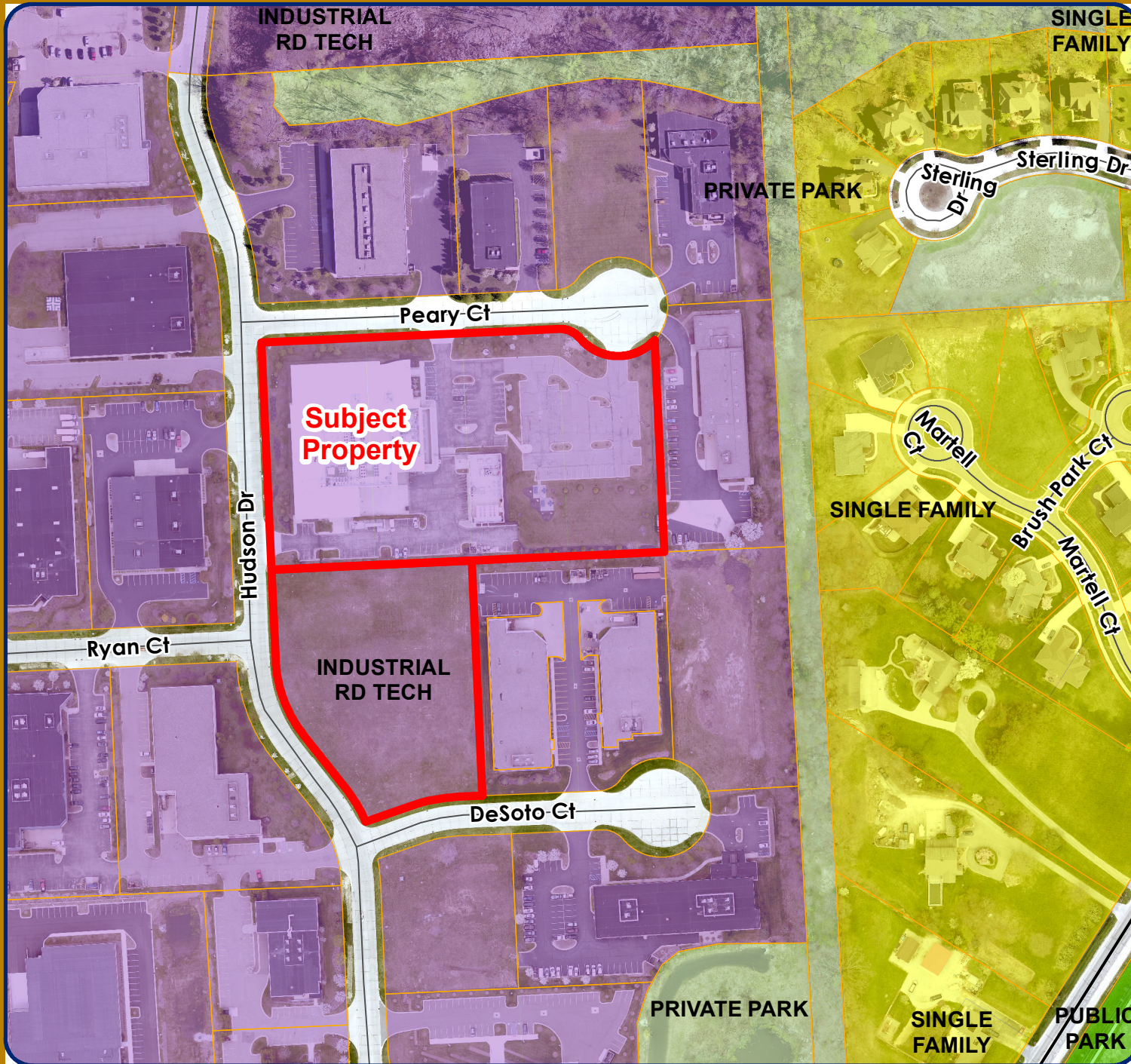


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JSP22-19 ARAMCO RESEARCH CENTER

FUTURE LAND USE



LEGEND

- Single Family
- Multiple Family
- Industrial Research Development Technology
- Public
- Public Park
- Private Park
- Subject Property



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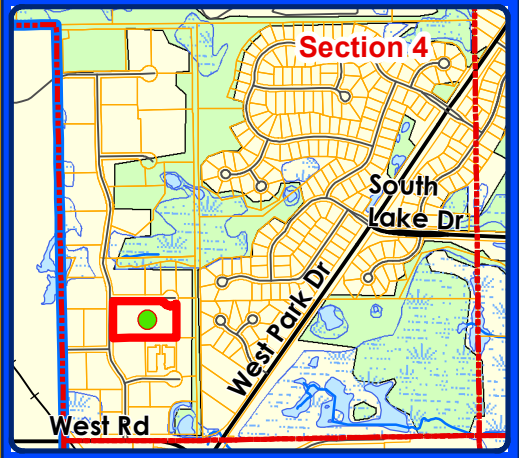
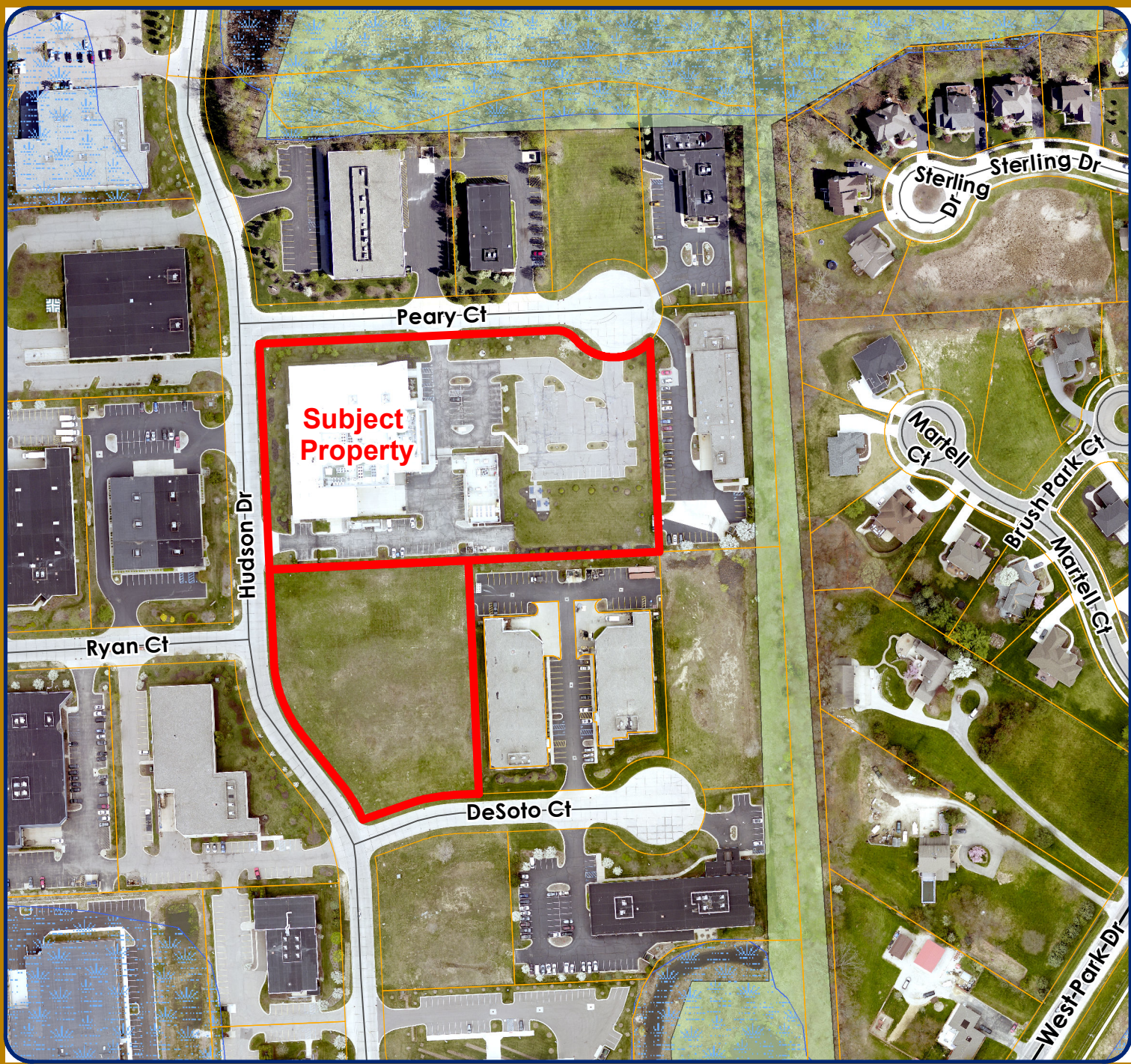


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JSP22-19 ARAMCO RESEARCH CENTER

NATURAL FEATURES



LEGEND

-  WETLANDS
-  WOODLANDS
-  Subject Property



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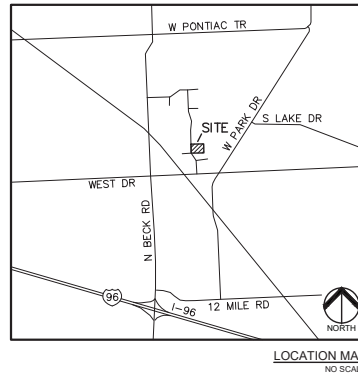
SITE PLAN

PRELIMINARY SITE PLANS

ARAMCO RESEARCH CENTER

46535 PEARY CT
NOVI, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL



Sheet List Table	
Sheet Number	Sheet Title
C-0.0	COVER SHEET
C-1.0	TOPOGRAPHIC SURVEY
C-3.0	PRELIMINARY SITE PLAN
C-4.0	PRELIMINARY GRADING PLAN
C-6.0	PRELIMINARY UTILITY PLAN
C-9.0	NOTES AND DETAILS
L-1.0	PRELIMINARY LANDSCAPE PLAN
A-201	SITE LAYOUT PLAN
A-301	ELEVATIONS AND DETAILS
ED-100	SITE LAYOUT DEMO ELECTRICAL
E-100	SITE LAYOUT UNDERGROUND UTILITIES ELECTRICAL
MD-100	SITE LAYOUT DEMO
M-100	SITE LAYOUT AND UNDERGROUND UTILITIES
M-101	SITE LAYOUT CNG AND GASEOUS HYDROGEN
M-102	SITE LAYOUT AND LIQUID HYDROGEN
M-200	ROOF PLAN
M-600	ELEVATION EXTERIOR WALL
M-800	DETAILS

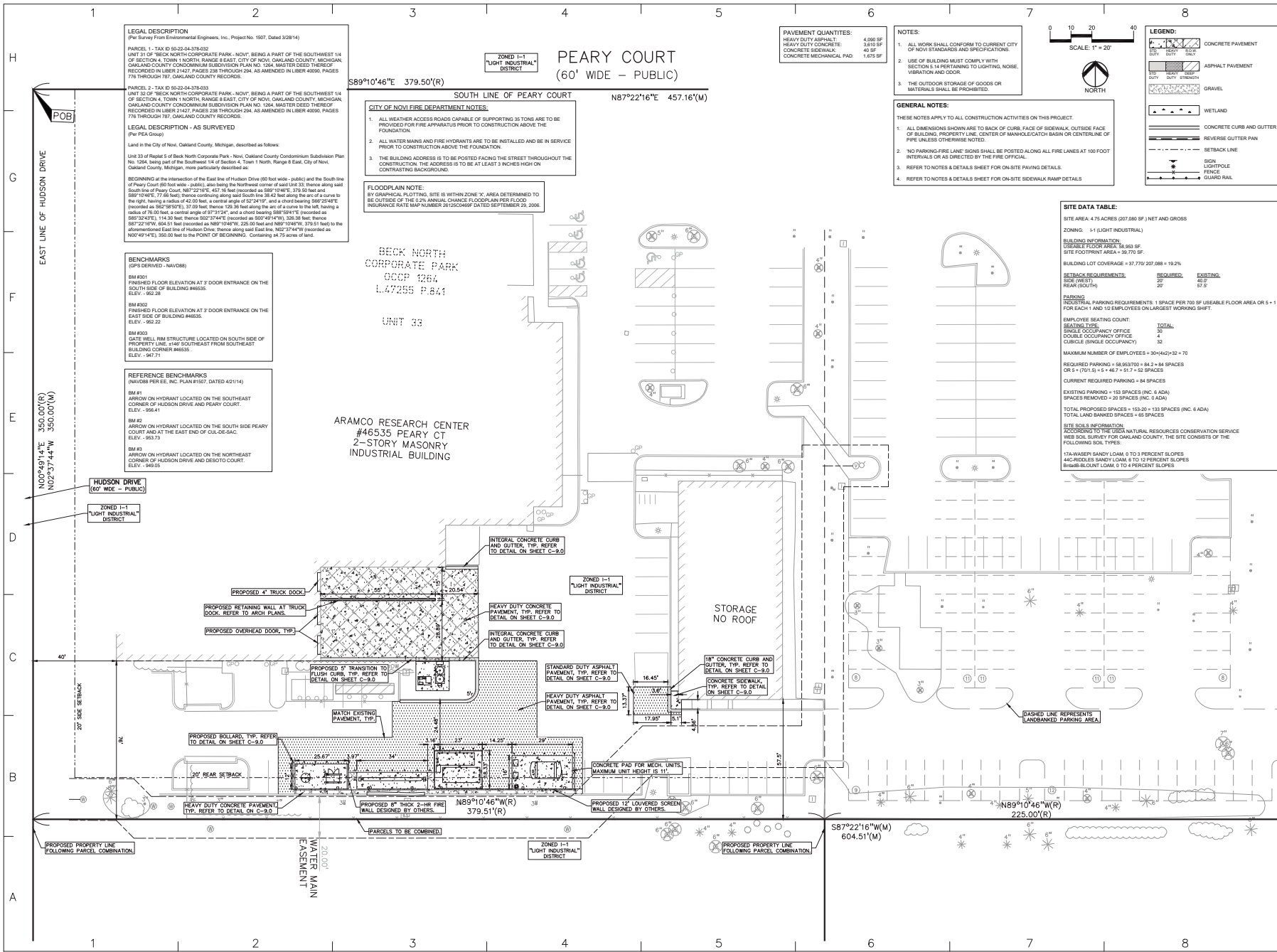
DESIGN TEAM

<p>OWNER</p> <p>ARAMCO AMERICAS DETROIT RESEARCH CENTER 46535 PEARY CT. NOVI, MI 48377 CONTACT: DENNIS FLYNN PHONE: 248.308.8594 EMAIL: DENNIS.FLYNN@ARAMCOAMERICAS.COM</p>	<p>CIVIL ENGINEER</p> <p>PEA GROUP 2438 ROCHESTER COURT, STE. 100 TROY, MI 48063-1872 CONTACT: STEVEN A. SORENSEN, PE PHONE: 844.813.2949 EMAIL: SSORENSEN@PEAGROUP.COM</p>
<p>LANDSCAPE ARCHITECT</p> <p>PEA GROUP 7927 NEMCO WAY, STE. 115 BRIGHTON, MI 48116 CONTACT: JANET EVANS, PLA PHONE: 844.813.2949 EMAIL: JEVANS@PEAGROUP.COM</p>	



REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	4/1/2022
PRELIMINARY SITE PLAN SUBMITTAL	5/9/2022





LEGAL DESCRIPTION
(Per Survey From Environmental Engineers, Inc., Project No. 1507, Dated 3/28/14)

PARCEL 1 - TAX ID 90-23-04-378-032
UNIT 31 OF BECK NORTH CORPORATE PARK - NOVY, BEING A PART OF THE SOUTHWEST 1/4 OF SECTION 4, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVY, OAKLAND COUNTY, MICHIGAN, OAKLAND COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 1284, MASTER DEED THEREOF RECORDED IN LIBER 24477, PAGES 238 THROUGH 264, AS AMENDED IN LIBER 40060, PAGES 778 THROUGH 787, OAKLAND COUNTY RECORDS.

PARCEL 2 - TAX ID 90-23-04-378-033
UNIT 32 OF BECK NORTH CORPORATE PARK - NOVY, BEING A PART OF THE SOUTHWEST 1/4 OF SECTION 4, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVY, OAKLAND COUNTY, MICHIGAN, OAKLAND COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 1284, MASTER DEED THEREOF RECORDED IN LIBER 24477, PAGES 238 THROUGH 264, AS AMENDED IN LIBER 40060, PAGES 778 THROUGH 787, OAKLAND COUNTY RECORDS.

LEGAL DESCRIPTION - AS SURVEYED
(Per P.E. Oros)

Land in the City of Novi, Oakland County, Michigan, described as follows:

Unit 33 of Beck North Corporate Park - Novi, Oakland County Condominium Subdivision Plan No. 1284, being part of the Southwest 1/4 of Section 4, Town 1 North, Range 8 East, City of Novi, Oakland County, Michigan, more particularly described as:

BEGINNING at the intersection of the East line of Hudson Drive (80 foot wide - public) and the South line of Peary Court (60 foot wide - public); also being the Northwest corner of said Unit 33; thence along said South line of Peary Court, N87°22'16"E, 607.56 feet (recorded as S88°10'06"E, 379.50 feet and S89°10'46"E, 379.50 feet); thence continuing along said South line 38.42 feet along the arc of a curve to the right, having a radius of 42.00 feet, a central angle of 82°34'07", and a chord bearing S88°25'58"E, (recorded as S82°58'59"E), 37.03 feet; thence 129.36 feet along the arc of a curve to the left, having a radius of 70.00 feet, a central angle of 97°31'24", and a chord bearing S88°59'51"E, (recorded as S87°32'43"E), 114.30 feet; thence S02°37'44"W, 326.38 feet; thence S87°22'16"W, 604.51 feet (recorded as S88°10'06"W, 379.50 feet and N87°22'16"W, 379.51 feet) to the aforementioned East line of Hudson Drive; thence along said East line, N02°37'44"W (recorded as N02°37'44"W), 350.00 feet to the POINT OF BEGINNING. Containing 4.75 acres of land.

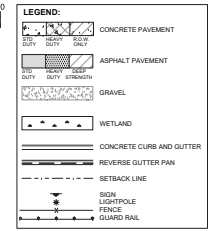
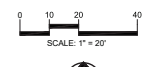
- CITY OF NOVY FIRE DEPARTMENT NOTES:**
1. ALL WEATHER ACCESS ROADS CAPABLE OF SUPPORTING 35 TONS ARE TO BE PROVIDED FOR FIRE APPARATUS PRIOR TO CONSTRUCTION ABOVE THE FOUNDATION.
 2. ALL WATER MAINS AND FIRE HYDRANTS ARE TO BE INSTALLED AND BE IN SERVICE PRIOR TO CONSTRUCTION ABOVE THE FOUNDATION.
 3. THE BUILDING ADDRESS IS TO BE POSTED FACING THE STREET THROUGHOUT THE CONSTRUCTION. THE ADDRESS IS TO BE AT LEAST 3 INCHES HIGH ON CONTRASTING BACKGROUND.

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE "X" AREA DETERMINED TO BE OUTSIDE OF THE 1% ANNUAL CHANCES FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26125C049P DATED SEPTEMBER 20, 2006.

PAVEMENT QUANTITIES:
HEAVY DUTY ASPHALT: 4,990 SF
HEAVY DUTY CONCRETE: 2,818 SF
CONCRETE SIDEWALK: 45 SF
CONCRETE MECHANICAL PAD: 1,675 SF

- NOTES:**
1. ALL WORK SHALL CONFORM TO CURRENT CITY OF NOVY STANDARDS AND SPECIFICATIONS.
 2. USE OF BUILDINGS MUST COMPLY WITH SECTION 5.14 PERTAINING TO LIGHTING, NOISE, VIBRATION AND ODOR.
 3. THE OUTDOOR STORAGE OF GOODS OR MATERIALS SHALL BE PROHIBITED.

- GENERAL NOTES:**
- THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.
1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB. FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
 2. NO PARKING/FIRE LANE SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AT 100 FOOT INTERVALS OR AS DIRECTED BY THE FIRE OFFICIAL.
 3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
 4. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS.



SITE DATA TABLE:

SITE AREA: 4.75 ACRES (207,880 SF) NET AND GROSS
ZONING: I-1 (LIGHT INDUSTRIAL)
BUILDING INFORMATION:
USABLE FLOOR AREA: 14,593 SF
SITE FOOTPRINT AREA: 39,770 SF
BUILDING LOT COVERAGE = 37,770 / 207,880 = 19.2%

TRACK REQUIREMENTS	REQUIRED	EXISTING
SIZE (FEET)	20'	40'
REAR (SOUTH)	20'	57.5'

PARKING
INDUSTRIAL PARKING REQUIREMENTS: 1 SPACE PER 700 SF USABLE FLOOR AREA OR 5:1 FOR EACH 1 AND 1/2 EMPLOYEES ON LARGEST WORKING SHIFT.

EMPLOYEE SEATING COUNT:

SEATING TYPE	TOTAL
SINGLE OCCUPANCY OFFICE	30
DOUBLE OCCUPANCY OFFICE	4
CUBICLE (SINGLE OCCUPANCY)	32

MAXIMUM NUMBER OF EMPLOYEES = 30 + (4)(2) + 32 = 70
REQUIRED PARKING = 565,370 / 84 = 6730 + 84 = 6814 SPACES
OR 5 + (70 / 5) + 4 = 47 + 16 + 7 = 64 SPACES
CURRENT REQUIRED PARKING = 84 SPACES
EXISTING PARKING = 153 SPACES (INC. 6 ADA)
SPACES REMOVED = 20 SPACES (INC. 6 ADA)
TOTAL PROPOSED SPACES = 163 - 20 = 143 SPACES (INC. 6 ADA)
TOTAL LAND BANKED SPACES = 65 SPACES

SITE SOIL INFORMATION:
ACCORDING TO THE 2005 NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY FOR OAKLAND COUNTY, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
17A-BASSET SANDY LOAM, 6 TO 3 PERCENT SLOPES
4C-BROOKS SANDY LOAM, 8 TO 12 PERCENT SLOPES
8bW-BLUNT LOAM, 0 TO 4 PERCENT SLOPES

Affiliated Engineers, Inc.
5802 Research Park Boulevard
Madison, Wisconsin 53719
Tel: 608.238.2616 Fax: 608.238.2614

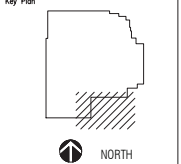
PEA GROUP
t: 844.813.2949
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Flad
Flad & Associates, Inc.
644 Science Drive
Madison, WI 53711
Tel: 608-238-2681
Fax: 608-238-6727
Flad.com

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF LAND AND WATER UTILIZATION
REGISTERED PROFESSIONAL ENGINEER
No. 48159
JMS

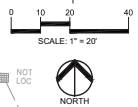
Rev	Date	Description of Issue
1	05/03/22	PRELIMINARY SITE PLAN SUBMITAL
	04/01/22	PRELIMINARY SITE PLANS

Project Title
ARAMCO SERVICES COMPANY
ARAMCO RESEARCH CENTER - DETROIT
Beck North Corporate park
46535 Peary Court
City of Novi, Oakland County, MI



Project Phase	SITE PLANS
Date	04/01/2022
Project Number	22782-00
Sheet Title	PRELIMINARY SITE PLAN
Sheet Number	C-3.0
Drawn By	KM
Checked By	JKS
Rev. No.	

PEARY COURT
(60' WIDE - PUBLIC)



GRADING LEGEND:

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PLAN
- PROPOSED RIDGE LINE
- PROPOSED SWALEDITCH

ABBREVIATIONS

- TC = TOP OF CURB
- TP = TOP OF PAVEMENT
- TS = TOP OF SIDEWALK
- TW = TOP OF WALL
- G = GUTTER GRADE
- F.G. = FINISH GRADE
- RM = RISE ELEVATION
- BW = BOTTOM OF WALL
- REFER TO GRADING NOTES ON SHEET C-0.0

BENCHMARKS
(GPS DERIVED - NAVD83)

BM #301
FINISHED FLOOR ELEVATION AT 3' DOOR ENTRANCE ON THE SOUTH SIDE OF BUILDING #4635. ELEV. = 952.38

BM #302
FINISHED FLOOR ELEVATION AT 3' DOOR ENTRANCE ON THE EAST SIDE OF BUILDING #4635. ELEV. = 952.22

BM #303
DATE WELL RIM STRUCTURE LOCATED ON SOUTH SIDE OF PROPERTY LINE. +44' SOUTHEAST FROM SOUTHEAST BUILDING CORNER #4635. ELEV. = 947.71

REFERENCE BENCHMARKS
(NAVD83 PER EE, INC. PLAN #1507, DATED 4/21/14)

BM #1
ARROW ON HYDRANT LOCATED ON THE SOUTHEAST CORNER OF HUDSON DRIVE AND PEARY COURT. ELEV. = 956.41

BM #2
ARROW ON HYDRANT LOCATED ON THE SOUTH SIDE PEARY COURT AND AT THE EAST END OF CURB/SIDWALK. ELEV. = 953.73

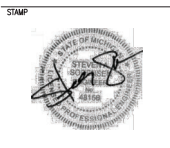
BM #3
ARROW ON HYDRANT LOCATED ON THE NORTHEAST CORNER OF HUDSON DRIVE AND DESOTO COURT. ELEV. = 948.05

- GENERAL GRADING AND EARTHWORK NOTES:**
- THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.
 - CONTRACTOR TO FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
 - THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
 - ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE CITY OF NOWI. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE CITY PRIOR TO CONSTRUCTION.
 - SEE ADDITIONAL GRADING AND EARTHWORK NOTES ON DETAIL SHEET C-0.0
 - REFER TO CONSTRUCTION PLANS FOR ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
 - ALL SLOPES EXCEEDING 1:6 MUST BE STABILIZED BY SOODOG OR BY PLACING A MULCH BLANKET PROTECTED IN PLACE OVER SEED.
 - ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SOODOG IN ACCORDANCE WITH THE LANDSCAPE PLAN. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
 - THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSATURABLE BACKFILL MATERIAL, IN THE OPINION OF THE GEOTECHNICAL ENGINEER THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
 - EDGES OF PROPOSED ASPHALT PAVEMENT SHALL MATCH EXISTING PAVEMENT ELEVATIONS.

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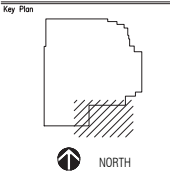
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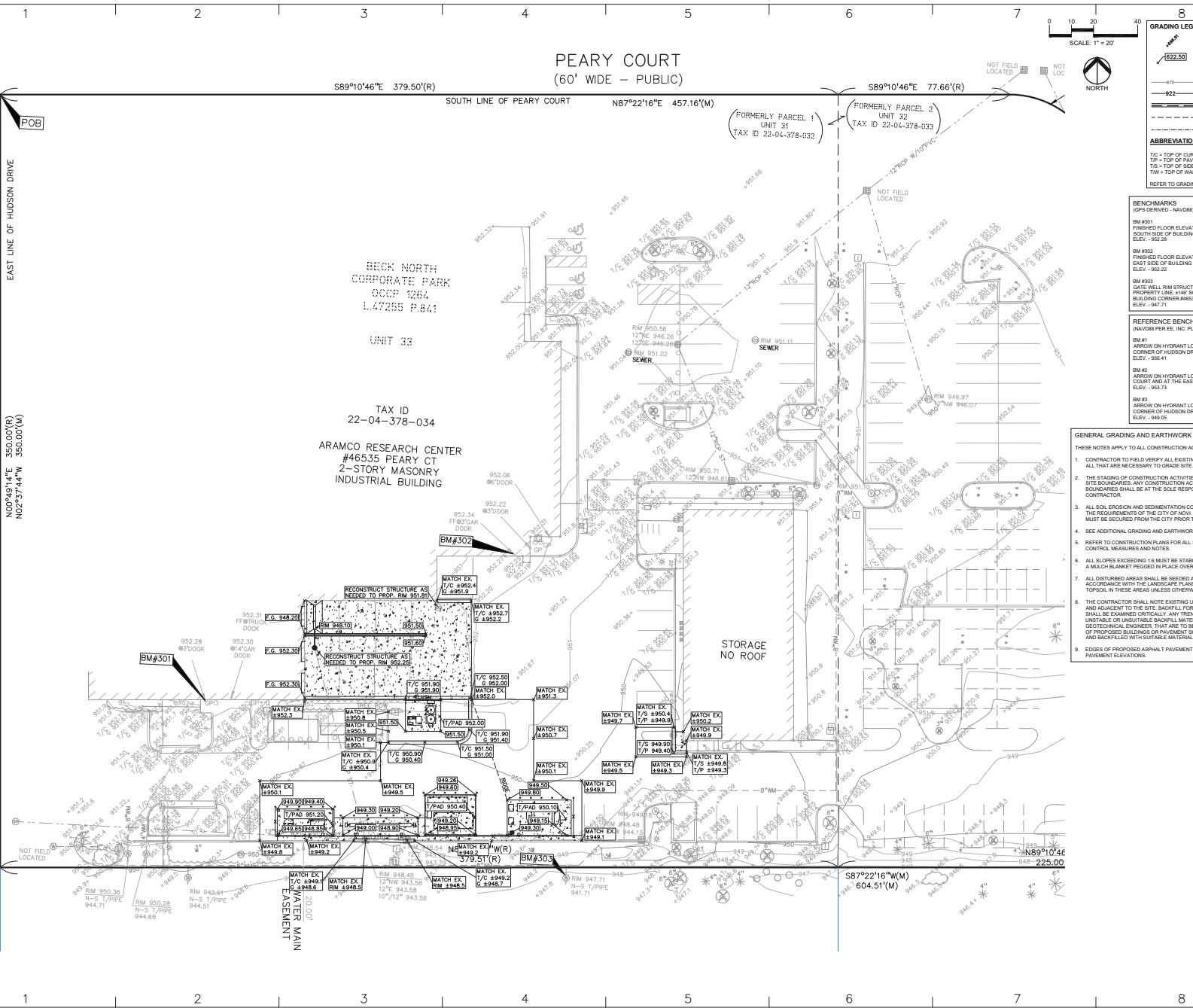
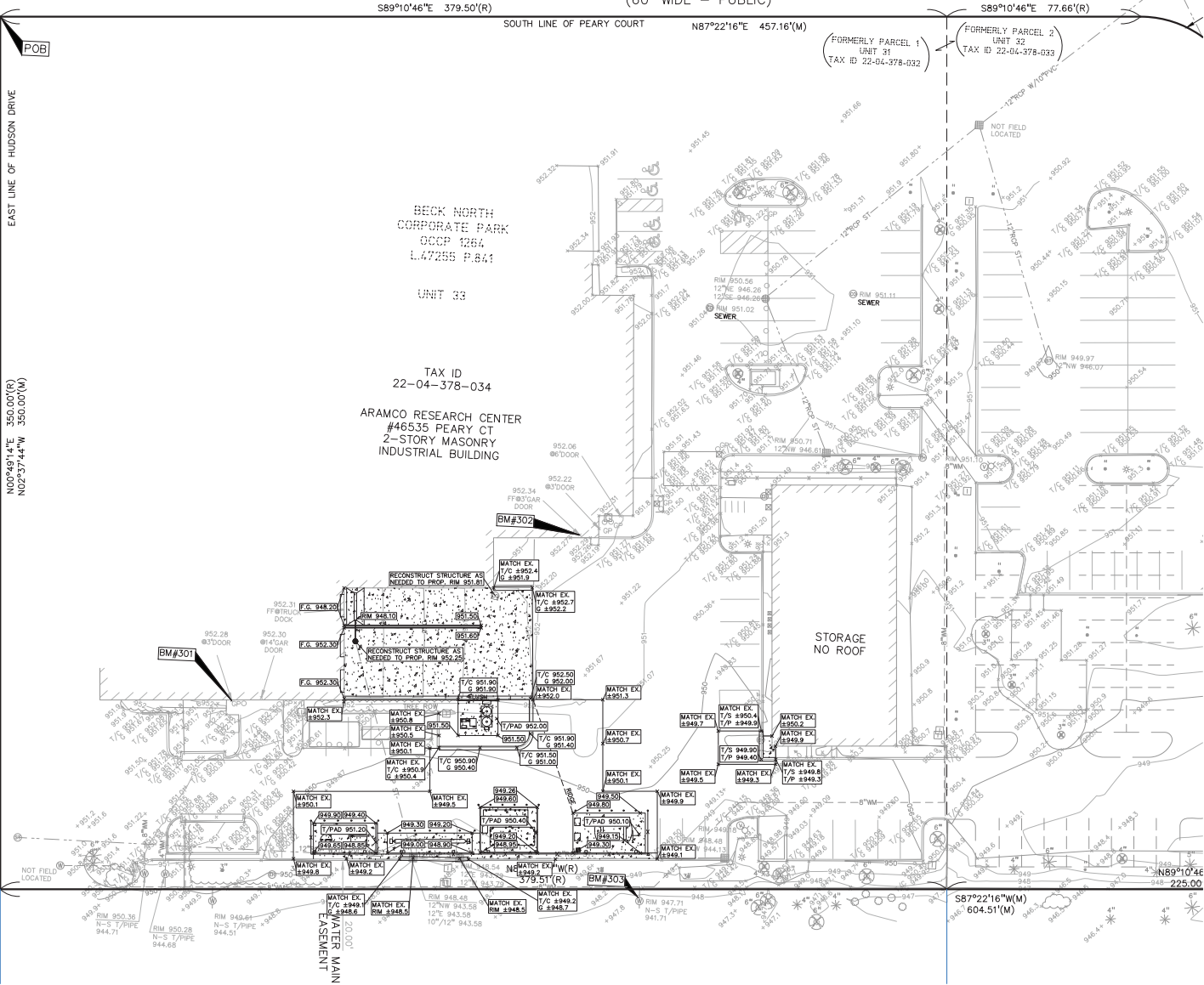


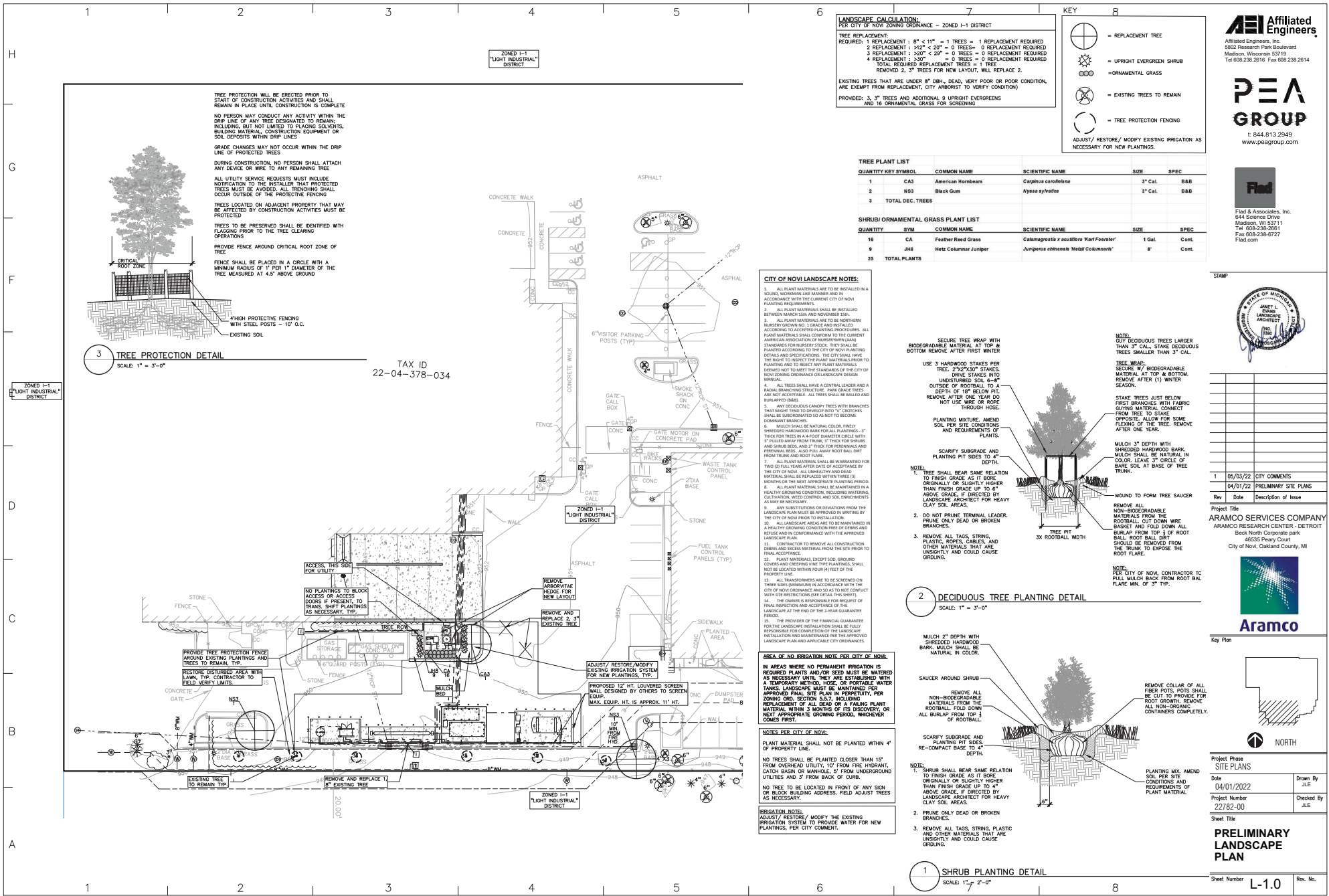
Project Phase
SITE PLANS

Date	04/01/2022	Drawn By	KM
Project Number	22782-00	Checked By	JKS

Sheet Title
PRELIMINARY GRADING PLAN

Sheet Number **C-4.0** Rev. No.

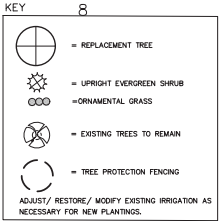




LANDSCAPE CALCULATION:
PER CITY OF NOV ZONING ORDINANCE - ZONED I-1 DISTRICT

TREE REPLACEMENT:
 1 REPLACEMENT : 8" < 11" = 1 TREES = 1 REPLACEMENT REQUIRED
 2 REPLACEMENT : >12" < 20" = 0 TREES = 0 REPLACEMENT REQUIRED
 3 REPLACEMENT : >20" < 29" = 0 TREES = 0 REPLACEMENT REQUIRED
 4 REPLACEMENT : >30" = 0 TREES = 0 REPLACEMENT REQUIRED
TOTAL REQUIRED REPLACEMENT TREES = 1 TREES
 REMOVED 2, 3" TREES FOR NEW LAYOUT, WILL REPLACE 2.

EXISTING TREES THAT ARE UNDER 8" DBH, DEAD, VERY POOR OR POOR CONDITION, ARE EXEMPT FROM REPLACEMENT, CITY ARBORIST TO VERIFY CONDITION)
PROVIDED: 3, 3" TREES AND ADDITIONAL 9 UPRIGHT EVERGREENS AND 16 ORNAMENTAL GRASS FOR SCENING



TREE PLANT LIST

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
1	CA3	American Hornbeam	<i>Carpinus caroliniana</i>	3" CAL.	B&B
2	NS3	Black Gum	<i>Nyssa sylvatica</i>	3" CAL.	B&B
3	TOTAL DEC. TREES				

SHRUB/ ORNAMENTAL GRASS PLANT LIST

QUANTITY	SYM	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
16	CA	Feather Reed Grass	<i>Calamagrostis x acutiflora 'Karl Foerster'</i>	1 Gal.	Cont.
9	JH8	Hetz Columnar Juniper	<i>Juniperus chinensis 'Natal Columnaris'</i>	8"	Cont.
25	TOTAL PLANTS				

CITY OF NOV LANDSCAPE NOTES:

- ALL PLANT MATERIALS ARE TO BE INSTALLED IN A SOUND, WORKMAN-LIKE MANNER AND IN ACCORDANCE WITH THE CURRENT CITY OF NOV PLANTING REQUIREMENTS.
- ALL PLANT MATERIALS SHALL BE INSTALLED BETWEEN MARCH 15th AND NOVEMBER 15th.
- ALL PLANT MATERIALS ARE TO BE SUPPLIED BY A NURSERY GROWN IN 1.5 GRADE AND INSTALLED ACCORDING TO THE CITY OF NOV PLANTING DETAILS AND SPECIFICATIONS. THE CITY SHALL HAVE THE RIGHT TO INSPECT THE PLANT MATERIALS PRIOR TO PLANTING AND TO REJECT ANY PLANT MATERIALS DETERMINED NOT TO MEET THE STANDARDS OF THE CITY OF NOV ZONING ORDINANCE OR LANDSCAPE DESIGN.
- ALL TREES SHALL HAVE A GENERAL LEADER AND A RABAL BRANCHING STRUCTURE. PARK GRADE TREES SHALL BE MAINTAINED TO MEET THE STANDARDS OF THE CITY OF NOV ZONING ORDINANCE OR LANDSCAPE DESIGN.
- ANY DECIDUOUS CANOPY TREES WITH BRANCHES THAT MIGHT TEND TO DEVELOP INTO "Y" SHAPES SHALL BE MAINTAINED TO MEET THE STANDARDS OF THE CITY OF NOV ZONING ORDINANCE OR LANDSCAPE DESIGN.
- ALL PLANT MATERIALS SHALL BE MAINTAINED IN A HEALTHY GROWING CONDITION FREE OF DISEASE AND WEEDS AND IN COMPLIANCE WITH THE APPROVED LANDSCAPE PLAN.
- CONTRACTOR TO REMOVE ALL CONSTRUCTION DEBRIS AND EXCESS MATERIAL FROM THE SITE PRIOR TO FINAL ACCEPTANCE.
- PLANT MATERIALS EXCEPT SOIL, GROUND COVERS AND CREEPING VINE TYPE PLANTING SHALL NOT BE LOCATED WITHIN FOUR (4) FEET OF THE PROPERTY LINE.
- ALL TRANSFORMERS ARE TO BE SCREENED ON THREE (3) SIDES MINIMUM IN ACCORDANCE WITH THE CITY OF NOV ORDINANCE AND SO AS TO NOT CONFLICT WITH OTHER RESTRICTIONS (SEE DETAIL TPO SHEET).
- THE OWNER IS RESPONSIBLE FOR REQUEST OF FINAL INSPECTION AND ACCEPTANCE OF THE LANDSCAPE AT THE END OF THE 2-YEAR GUARANTEE PERIOD.
- THE PROVIDER OF THE FINANCIAL GUARANTEE FOR THE LANDSCAPE INSTALLATION SHALL BE FULLY RESPONSIBLE FOR COMPLETION OF THE LANDSCAPE INSTALLATION AND MAINTENANCE PER THE APPROVED LANDSCAPE PLAN AND APPLICABLE CITY ORDINANCES.

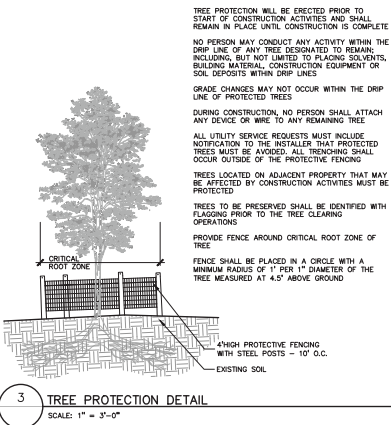
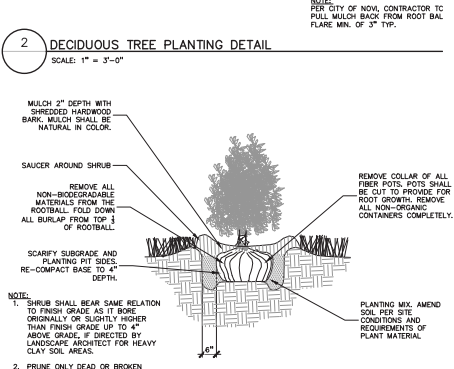
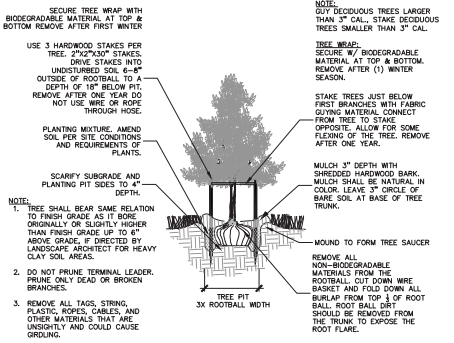
AREA OF NO IRRIGATION NOTE PER CITY OF NOV:

IN AREAS WHERE NO PERMANENT IRRIGATION IS REQUIRED PLANTS AND FLOW BEDS MAY BE MAINTAINED AS NECESSARY UNTIL THEY ARE ESTABLISHED WITH PERMANENT IRRIGATION HOSE. PERMANENT WATER TANKS, LANDSCAPE MUST BE MAINTAINED PER ZONING ORD. SECTION 5.5.7, INCLUDING REPLACEMENT OF ALL DEAD OR FAILING PLANT MATERIAL WITHIN 3 MONTHS OF ITS DISCOVERY OR NEXT APPROPRIATE GROWING PERIOD, WHICHEVER COMES FIRST.

NOTES PER CITY OF NOV:

- PLANT MATERIAL SHALL NOT BE PLANTED WITHIN 4' OF PROPERTY LINE.
- NO TREES SHALL BE PLANTED CLOSER THAN 15' FROM OVERHEAD UTILITY, 10' FROM FIRE HYDRANT, CATCH BASIN OR MANHOLE, 5' FROM UNDERGROUND UTILITIES AND 4' FROM BACK OF CURB.
- NO TREE TO BE LOCATED IN FRONT OF ANY SIGN OR BLOCK BUILDING ADDRESS. FIELD ADJUST TREES AS NECESSARY.

IRRIGATION NOTE:
ADJUST/ RESTORE/ MODIFY THE EXISTING IRRIGATION SYSTEM TO PROVIDE WATER FOR NEW PLANTINGS, PER CITY COMMENT.



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STAMP

Rev	Date	Description of Issues
1	05/03/22	CITY COMMENTS
	04/01/22	PRELIMINARY SITE PLAN

Project Title: **ARAMCO SERVICES COMPANY**
ARAMCO RESEARCH CENTER - DETROIT
Bank North Corporate park
46555 Peary Court
City of Novi, Oakland County, MI

Aramco

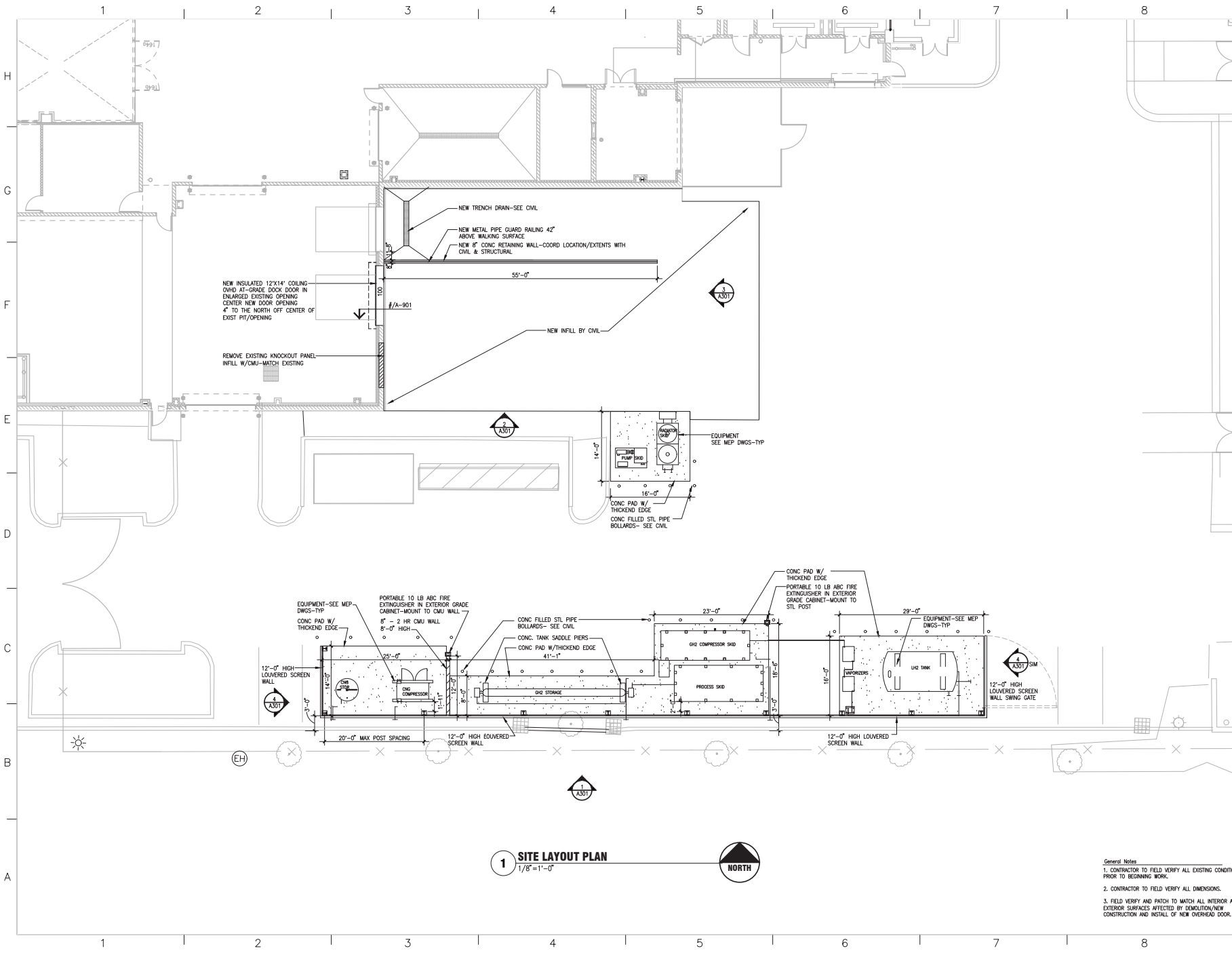
Key Plan

Project Phase: **SITE PLANS**

Date: 04/01/2022
Project Number: 22782-00
Sheet Title: **PRELIMINARY LANDSCAPE PLAN**

Drawn By: JLE
Checked By: JLE

Sheet Number: **L-1.0** Rev. No.



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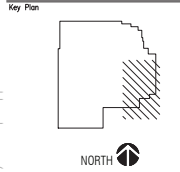
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Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLAN SUBMITTAL

Project Title
ARAMCO SERVICES COMPANY
 ARAMCO RESEARCH CENTER - DETROIT
 Beck North Corporate park
 46335 Peary Court
 City of Novi, Oakland County, MI



Project Phase STUDY	Drawn By PKL
Date 03/17/2022	Checked By FLAD
Project Number 22782-00	Sheet Title

SITE LAYOUT PLAN

1 SITE LAYOUT PLAN
 1/8"=1'-0"

- General Notes
- CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SECURING WORK.
 - CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS.
 - FIELD VERIFY AND PATCH TO MATCH ALL INTERIOR AND EXTERIOR SURFACES AFFECTED BY DEMOLITION/NEW CONSTRUCTION AND INSTALL OF NEW OVERHEAD DOOR.

Sheet Number A-201	Rev. No.
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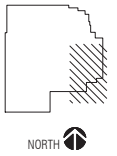
STAMP

Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLAN SUBMITTAL

ARAMCO SERVICES COMPANY
 ARAMCO RESEARCH CENTER - DETROIT
 Beck North Corporate park
 46535 Peary Court
 City of Novi, Oakland County, MI



Key Plan



Project Phase
 STUDY

Date
 03/17/2022

Project Number
 22782-00

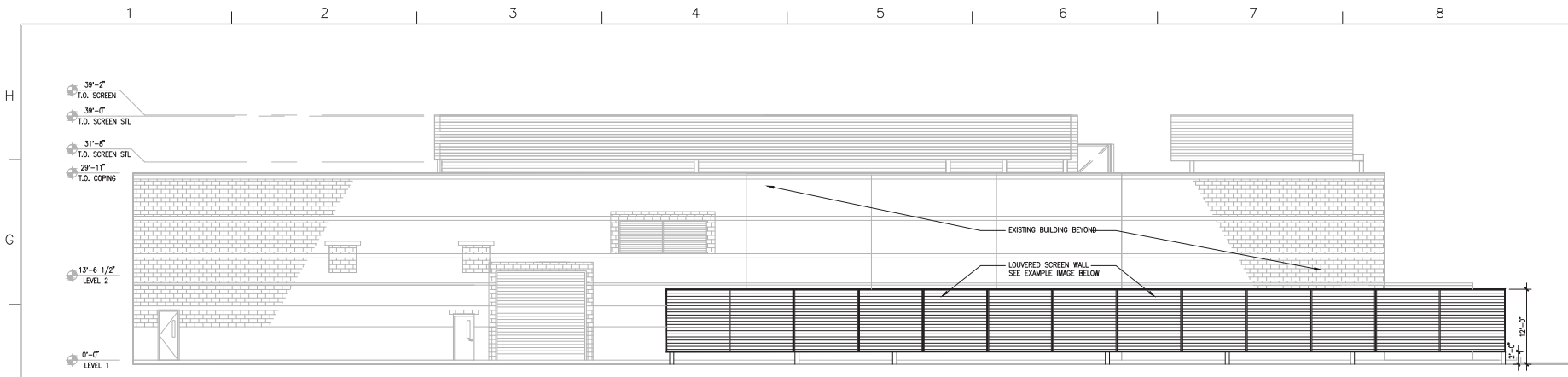
Sheet Title
ELEVATIONS & DETAILS

Drawn By
 PKL

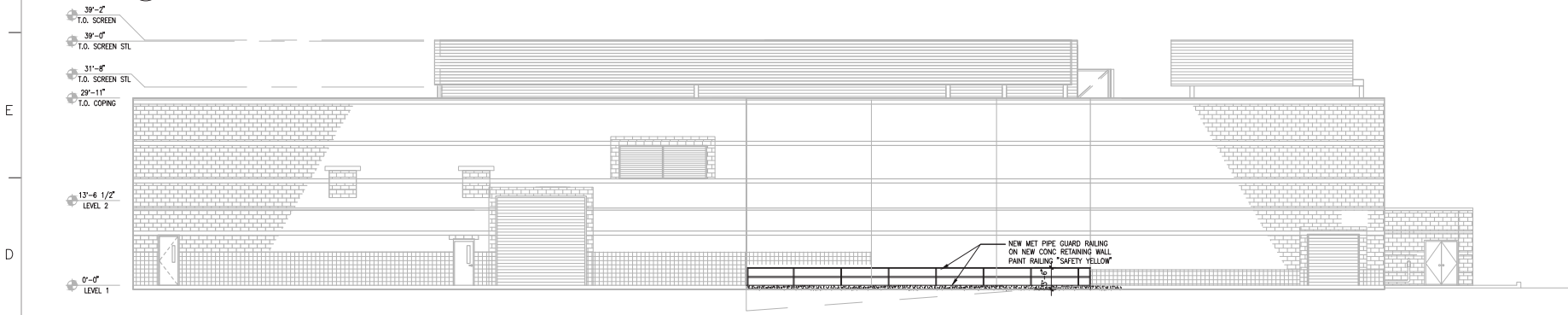
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Sheet Number
A-301

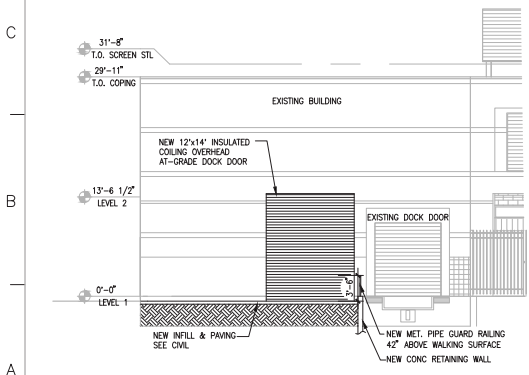
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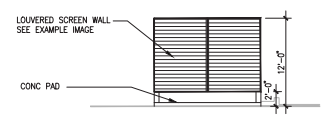
1 SOUTH ELEVATION - SCREENWALL
 1/8"=1'-0"



2 SOUTH ELEVATION - NEW RETAINING WALL & RAILING @ BUILDING
 1/8"=1'-0"



3 EAST BUILDING ELEVATION
 1/8"=1'-0"

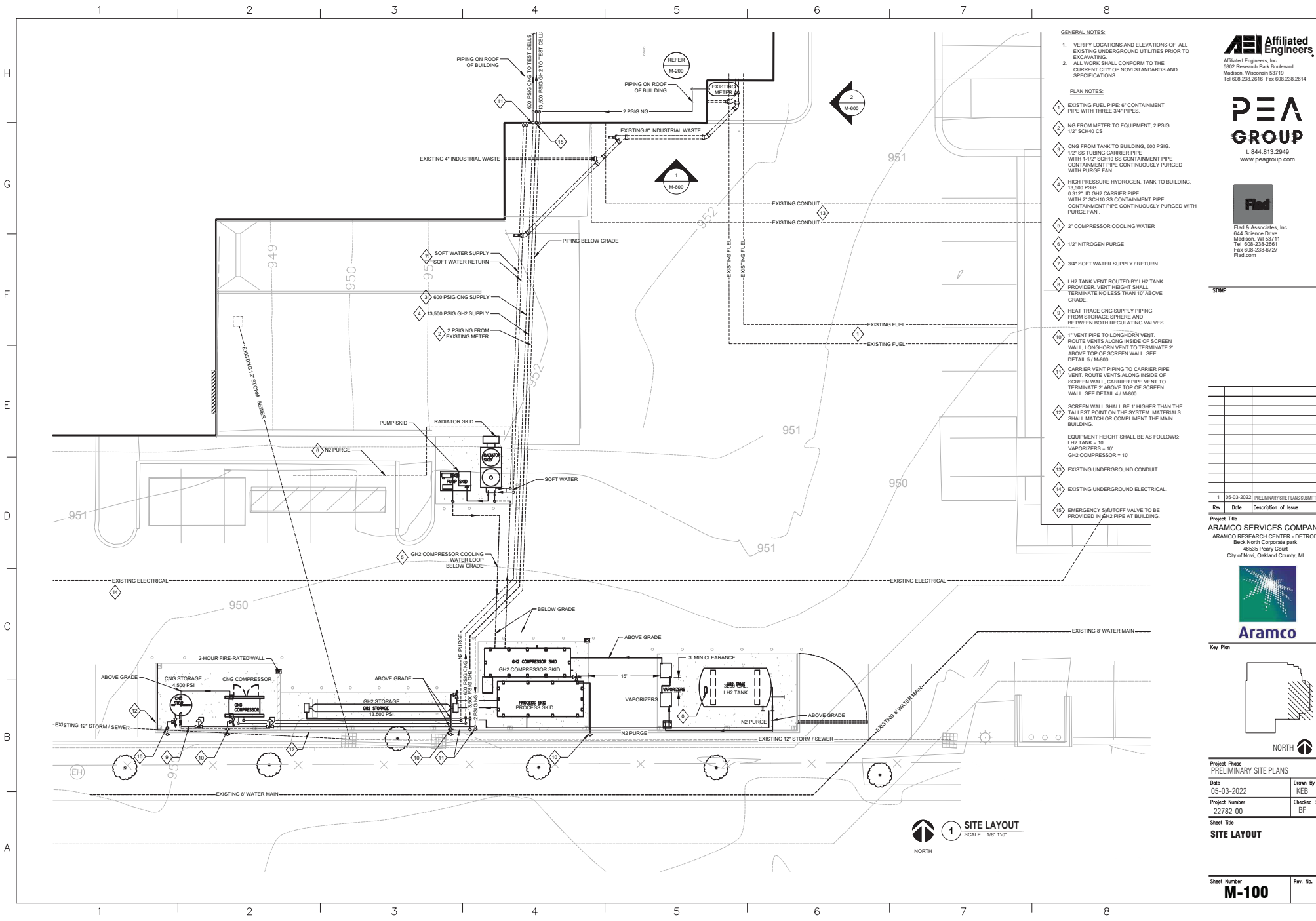


4 WEST ELEVATION - SCREENWALL (EAST SIMILAR)
 1/8"=1'-0"



5 SCREENWALL EXAMPLE IMAGE
 1/8"=1'-0"

1 2 3 4 5 6 7 8



GENERAL NOTES:

1. VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING.
2. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.

PLAN NOTES:

1. EXISTING FUEL PIPE: 6" CONTAINMENT PIPE WITH THREE 3/4" PIPES.
2. NG FROM METER TO EQUIPMENT, 2 PSIG: 1/2" SCH40 CS.
3. CNG FROM TANK TO BUILDING, 600 PSIG: 1/2" SS TUBING CARRIER PIPE WITH 1-1/2" SCH10 SS CONTAINMENT PIPE. CONTAINMENT PIPE CONTINUOUSLY PURGED WITH PURGE FAN.
4. HIGH PRESSURE HYDROGEN, TANK TO BUILDING, 13,500 PSIG: 0.312" ID GH2 CARRIER PIPE WITH 2" SCH10 SS CONTAINMENT PIPE. CONTAINMENT PIPE CONTINUOUSLY PURGED WITH PURGE FAN.
5. 2" COMPRESSOR COOLING WATER.
6. 1/2" NITROGEN PURGE.
7. 3/4" SOFT WATER SUPPLY / RETURN.
8. LH2 TANK VENT ROUTED BY LH2 TANK PROVIDER. VENT HEIGHT SHALL TERMINATE NO LESS THAN 10' ABOVE GRADE.
9. HEAT TRACE CNG SUPPLY PIPING FROM STORAGE SPHERE AND BETWEEN BOTH REGULATING VALVES.
10. 1" VENT PIPE TO LONGHORN VENT. ROUTE VENTS ALONG INSIDE OF SCREEN WALL. LONGHORN VENT TO TERMINATE 2' ABOVE TOP OF SCREEN WALL. SEE DETAIL 5 / M-800.
11. CARRIER VENT PIPING TO CARRIER PIPE VENT. ROUTE VENTS ALONG INSIDE OF SCREEN WALL. CARRIER PIPE VENT TO TERMINATE 2' ABOVE TOP OF SCREEN WALL. SEE DETAIL 4 / M-800.
12. SCREEN WALL SHALL BE 1" HIGHER THAN THE TALLEST POINT ON THE SYSTEM. MATERIALS SHALL MATCH OR COMPLEMENT THE MAIN BUILDING.
13. EQUIPMENT HEIGHT SHALL BE AS FOLLOWS: LH2 TANK = 10'; VAPORIZERS = 10'; GH2 COMPRESSOR = 10'.
14. EXISTING UNDERGROUND CONDUIT.
15. EXISTING UNDERGROUND ELECTRICAL.
16. EMERGENCY SHUTOFF VALVE TO BE PROVIDED IN GH2 PIPE AT BUILDING.

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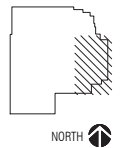
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Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLANS SUBMITTAL

Project Title
ARAMCO SERVICES COMPANY
 ARAMCO RESEARCH CENTER - DETROIT
 Beck North Corporate park
 46335 Peary Court
 City of Novi, Oakland County, MI



Key Plan



Project Phase PRELIMINARY SITE PLANS	
Date 05-03-2022	Drawn By KEB
Project Number 22782-00	Checked By BF
Sheet Title	

SITE LAYOUT

Sheet Number M-100	Rev. No.
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1 SITE LAYOUT
 SCALE: 1/8" = 1'-0"



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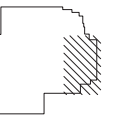
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Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLANS SUBMITTAL

Project Title
ARAMCO SERVICES COMPANY
 ARAMCO RESEARCH CENTER - DETROIT
 Beck North Corporate park
 46335 Peary Court
 City of Novi, Oakland County, MI



Key Plan



NORTH

Project Phase
 PRELIMINARY SITE PLANS

Date
 05-03-2022

Project Number
 22782-00

Sheet Title
**SITE LAYOUT
 CNG & GASEOUS HYDROGEN**

Project Name
 PRELIMINARY SITE PLANS

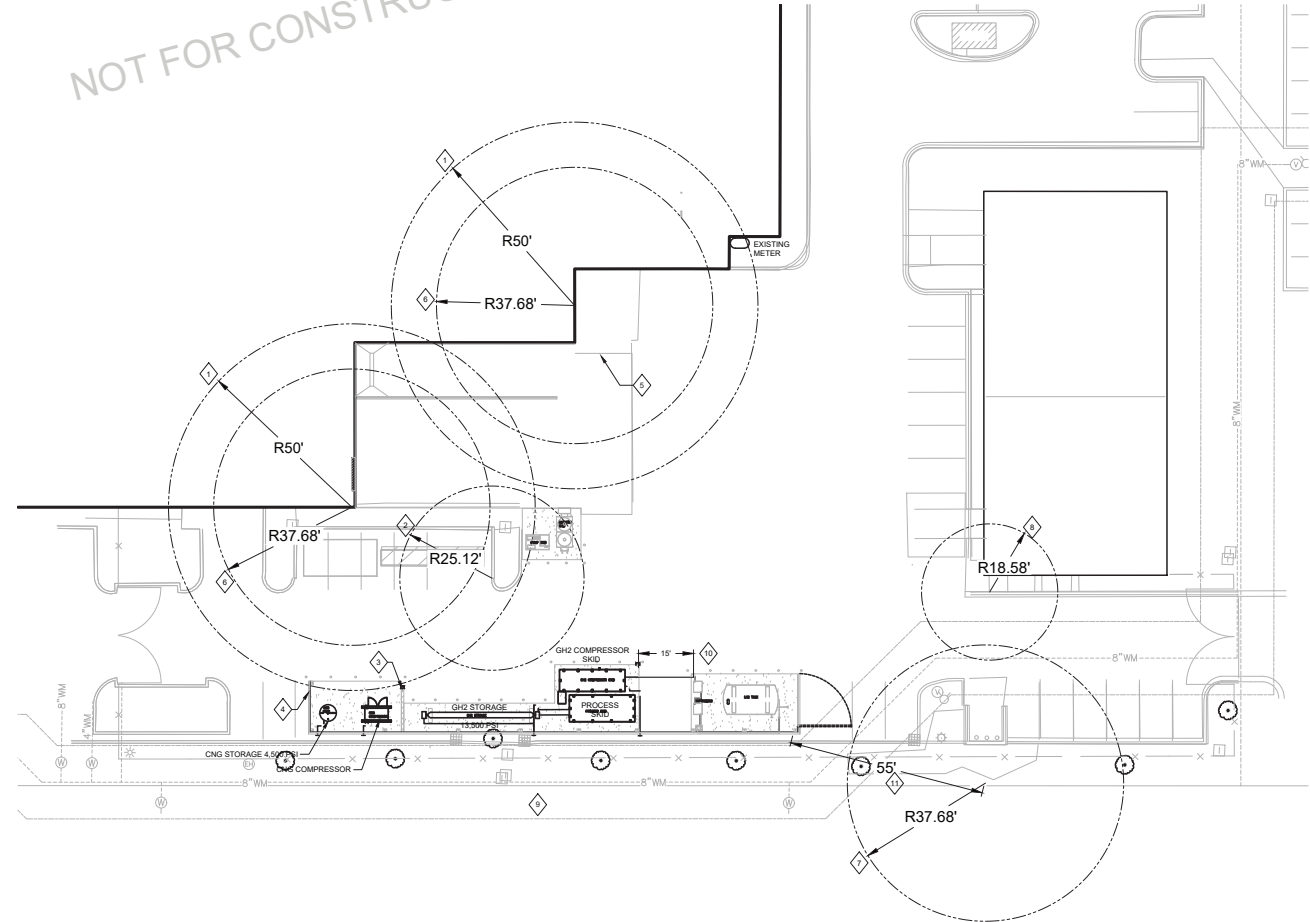
Drawn By
 KEB

Checked By
 BF

Rev. No.
M-101

- PLAN NOTES:**
- 1 NFPA 55 (2013), SECTION 7.6.2.4. CLEARANCE BETWEEN FLAMMABLE COMPRESSED GASES AND AIR INTAKES.
 - 2 NFPA 2 (2011), TABLE 7.3.2.3.1.2(c); CALCULATED CLEARANCE FROM FLAMMABLE GAS STORAGE SYSTEMS (EXPOSURE NO. 11) FOR A 15,000 PSIG GASEOUS HYDROGEN SYSTEM WITH 0.312" INTERCONNECTING PIPE, USING EQUATION (b).
 - 3 2-HOUR FIRE-RATED WALL PER NFPA 2 (2011), SECTION 7.3.2.3.1.1(b). CLEARANCE BETWEEN BULK GASEOUS HYDROGEN SYSTEM AND FLAMMABLE GAS STORAGE SYSTEMS (EXPOSURE NO. 11) CAN BE ELIMINATED WHERE A FIRE BARRIER WALL IS INSTALLED BETWEEN THE SYSTEM AND THE EXPOSURE.
 - 4 SCREEN WALL SHALL BE 1' HIGHER THAN THE TALLEST POINT ON THE SYSTEM MATERIALS SHALL MATCH OR COMPLEMENT THE MAIN BUILDING.
 - 5 NOT USED.
 - 6 NFPA 2 (2011), TABLE 7.3.2.3.1.2(c); CALCULATED CLEARANCE FROM AIR INTAKES (EXPOSURE NO. 5) FOR A 15,000 PSIG GASEOUS HYDROGEN SYSTEM WITH 0.312" INTERCONNECTING PIPE, USING EQUATION (a).
 - 7 NFPA 2 (2011), TABLE 7.3.2.3.1.2(c); CALCULATED CLEARANCE FROM LOT LINES (EXPOSURE NO. 11) FOR A 15,000 PSIG GASEOUS HYDROGEN SYSTEM WITH 0.312" INTERCONNECTING PIPE, USING EQUATION (a).
 - 8 NFPA 2 (2011), TABLE 7.3.2.3.1.2(c); CALCULATED CLEARANCE FROM HAZARDOUS MATERIAL STORAGE, ABOVE GROUND (EXPOSURE NO. 14) FOR A 15,000 PSIG GASEOUS HYDROGEN SYSTEM WITH 0.312" INTERCONNECTING PIPE, USING EQUATION (b).
 - 9 ARAMCO OWNS LOT TO SOUTH OF EXISTING PROPERTY. LOT LINE OF EXISTING PROPERTY TO BE EXTENDED INTO SOUTHERN LOT TO PROVIDE CLEARANCE TO H2 EQUIPMENT.
 - 10 GASEOUS HYDROGEN EQUIPMENT SHALL BE LOCATED NO LESS THAN 15' FROM LIQUID HYDROGEN EQUIPMENT. THE VAPORIZER DISCHARGE SHALL BE CONSIDERED THE POINT WHERE THE GASEOUS AND LIQUID HYDROGEN SYSTEMS ARE INTERCONNECTED.
 - 11 DISTANCE FROM H2 EQUIPMENT TO NEAREST LOT LINE.

NOT FOR CONSTRUCTION



1 SITE LAYOUT - CNG AND GASEOUS HYDROGEN
 SCALE: 1/16" = 1'-0"



NORTH

1 2 3 4 5 6 7 8

H

G

F

E

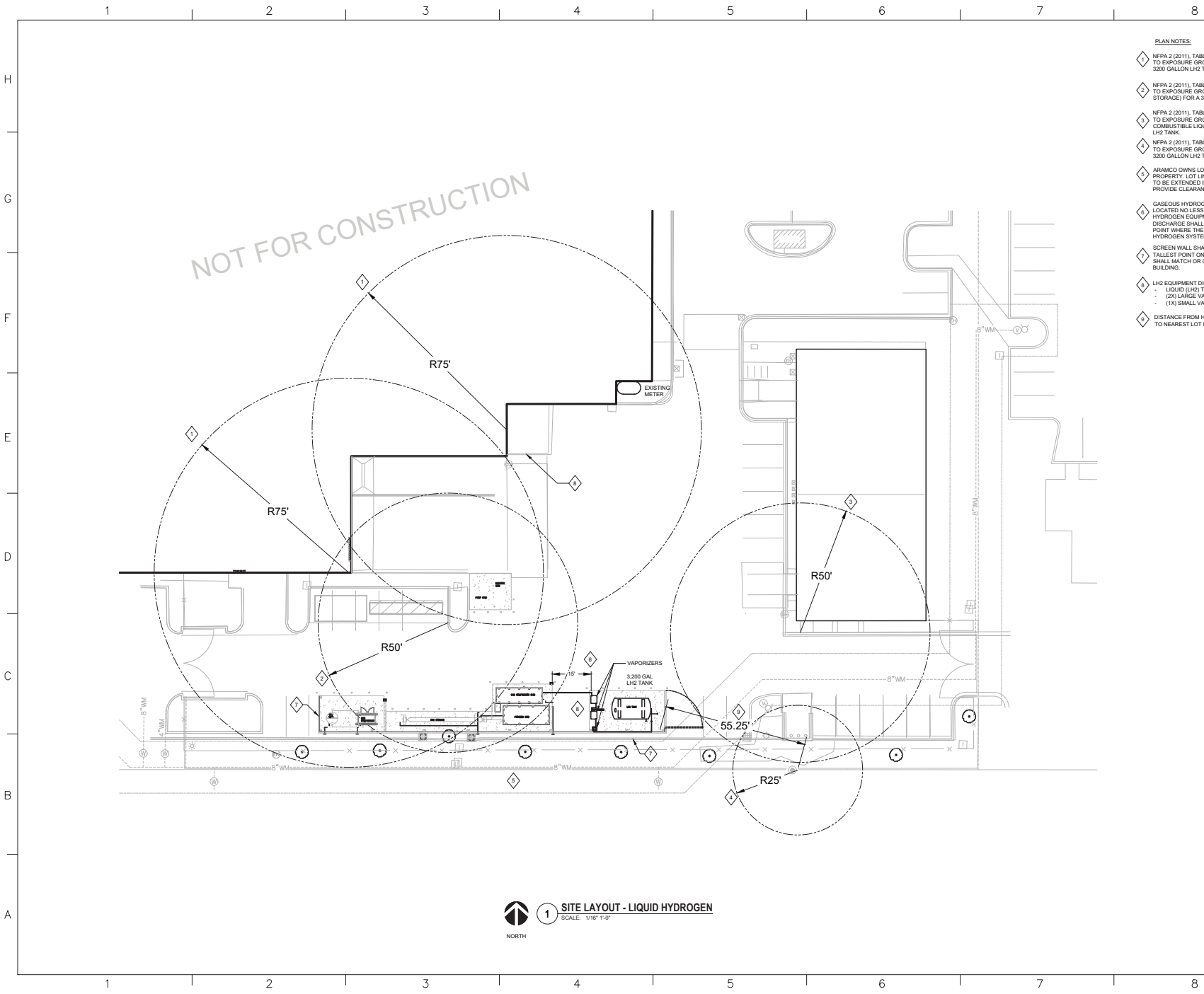
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A

1 2 3 4 5 6 7 8



- PLAN NOTES:**
- 1 NFPA 2 (2011), TABLE 8.3.2.4.5.1: CLEARANCE TO EXPOSURE GROUP 3 (AIR INTAKE) FOR A 3200 GALLON LH2 TANK.
 - 2 NFPA 2 (2011), TABLE 8.3.2.4.5.1: CLEARANCE TO EXPOSURE GROUP 6 (FLAMMABLE GAS STORAGE) FOR A 3200 GALLON LH2 TANK.
 - 3 NFPA 2 (2011), TABLE 8.3.2.4.5.1: CLEARANCE TO EXPOSURE GROUP 4 (FLAMMABLE / COMBUSTIBLE LIQUIDS) FOR A 3200 GALLON LH2 TANK.
 - 4 NFPA 2 (2011), TABLE 8.3.2.4.5.1: CLEARANCE TO EXPOSURE GROUP 11 (LOT LINES) FOR A 3200 GALLON LH2 TANK.
 - 5 ARAMCO OWNS LOT TO SOUTH OF EXISTING PROPERTY. LOT LINE OF EXISTING PROPERTY TO BE EXTENDED INTO SOUTHERN LOT TO PROVIDE CLEARANCE TO H2 EQUIPMENT.
 - 6 GASEOUS HYDROGEN EQUIPMENT SHALL BE LOCATED NO LESS THAN 15' FROM LIQUID HYDROGEN EQUIPMENT. THE VAPORIZER DISCHARGE SHALL BE CONSIDERED THE POINT WHERE THE GASEOUS AND LIQUID HYDROGEN SYSTEMS ARE INTERCONNECTED.
 - 7 SCREEN WALL SHALL BE 1' HIGHER THAN THE TALLEST POINT ON THE SYSTEM. MATERIALS SHALL MATCH OR COMPLEMENT THE MAIN BUILDINGS.
 - 8 LH2 EQUIPMENT DIMENSIONS:
 - LIQUID (LH2) TANK = 18"Ø x 9'2" DIAMETER
 - (2X) LARGE VAPORIZER = 2'4" x 2'4"
 - (1X) SMALL VAPORIZER = 1' x 1'10"
 - 9 DISTANCE FROM H2 EQUIPMENT TO NEAREST LOT LINE.

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Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLANS SUBMITTAL

Project Title
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 46335 Peary Court
 City of Novi, Oakland County, MI



Key Plan



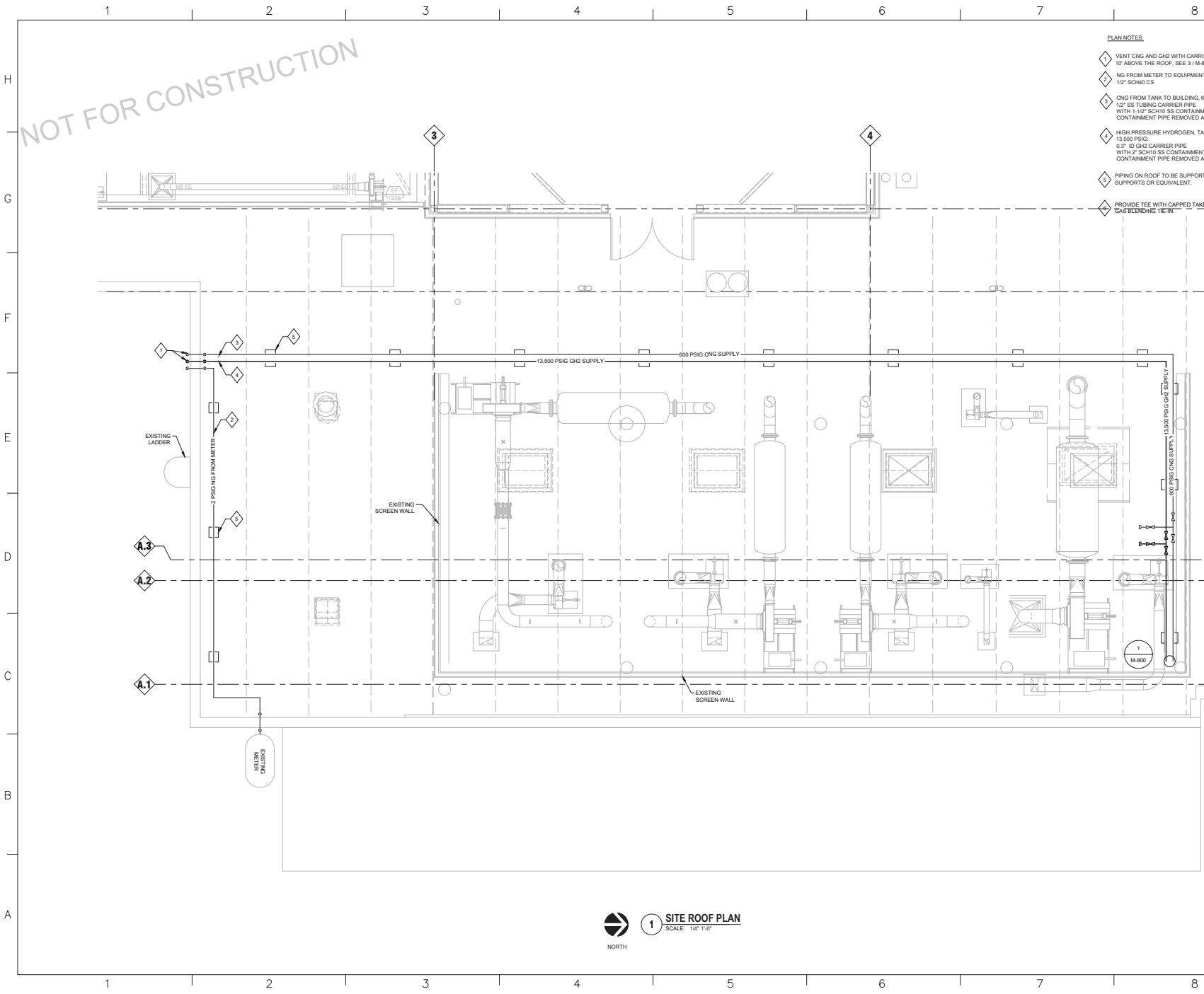
Project Phase
PRELIMINARY SITE PLANS

Date	05-03-2022	Drawn By	KEB
Project Number	22782-00	Checked By	BF

Sheet Title
**SITE LAYOUT
 LIQUID HYDROGEN**

Sheet Number	M-102	Rev. No.	
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1 SITE LAYOUT - LIQUID HYDROGEN
 SCALE: 1/16" = 1'-0"
 NORTH



- PLAN NOTES:**
- ◇ VENT CNG AND GH2 WITH CARRIER PIPES 10' ABOVE THE ROOF. SEE 3 / M-800.
 - ◇ NG FROM METER TO EQUIPMENT, 2" SIG: 1/2" SCH40 CS
 - ◇ CNG FROM TANK TO BUILDING, 600 PSIG: 1/2" SS TUBING CARRIER PIPE WITH 1 1/2" SCH10 SS CONTAINMENT PIPE. CONTAINMENT PIPE REMOVED AFTER THE VENT.
 - ◇ HIGH PRESSURE HYDROGEN, TANK TO BUILDING, 13,500 PSIG: 0.3" Ø GH2 CARRIER PIPE WITH 2" SCH10 SS CONTAINMENT PIPE. CONTAINMENT PIPE REMOVED AFTER THE VENT.
 - ◇ PIPING ON ROOF TO BE SUPPORTED BY H-BLOCK ROOF SUPPORTS OR EQUIVALENT.
 - ◇ PROVIDE TEE WITH CAPPED TAKEOFF FOR FUTURE GAS BLENDING TIE-IN.

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Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLANS SUBMITTAL

Project Title
ARAMCO SERVICES COMPANY
 ARAMCO RESEARCH CENTER - DETROIT
 Beck North Corporate park
 46335 Peary Court
 City of Novi, Oakland County, MI



1 SITE ROOF PLAN
 SCALE: 1/8" = 1'-0"
 NORTH

Project Phase
PRELIMINARY SITE PLANS

Date	05-03-2022	Drawn By	KEB
Project Number	22782-00	Checked By	BF

Sheet Title
ROOF PLAN

Sheet Number
M-200

Rev. No.

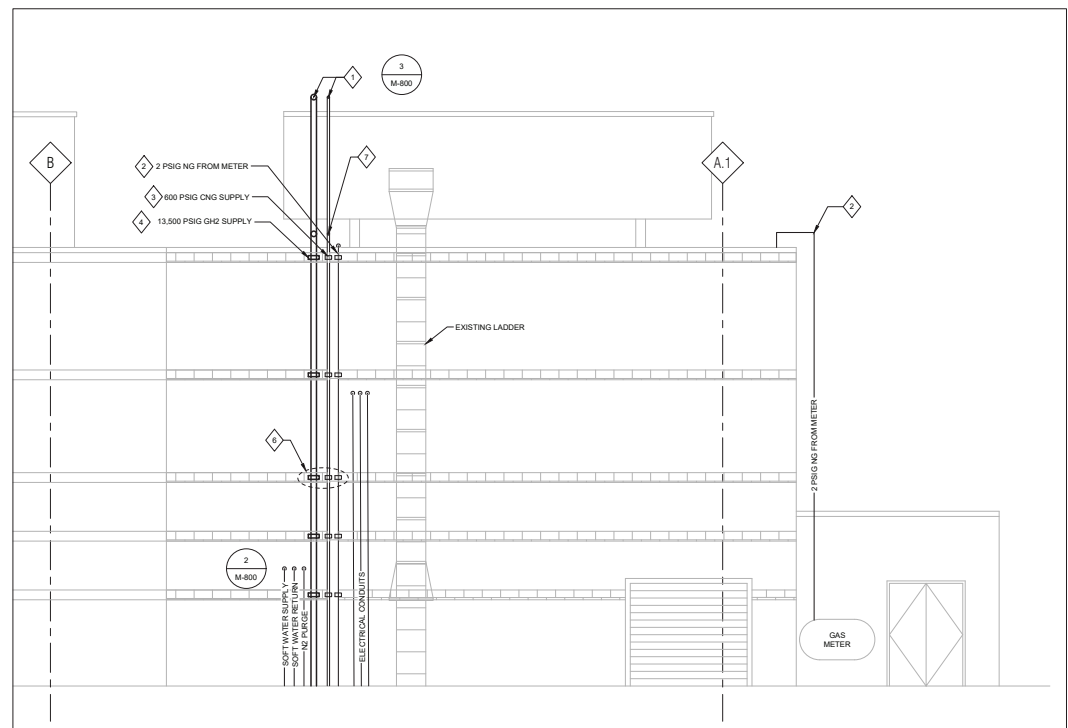
NOT FOR CONSTRUCTION

- PLAN NOTES:**
- ◇ VENT CNG AND GH2 WITH CONTAINMENT PIPES 10' ABOVE THE ROOF, SEE 3 / M-800.
 - ◇ NG FROM METER TO EQUIPMENT, 2PSIG: 1/2" SCH40 CS
 - ◇ CNG FROM TANK TO BUILDING, 600 PSIG: 1/2" SS TUBING CARRIER PIPE WITH 1-1/2" SCH10 SS CONTAINMENT PIPE.
 - ◇ HIGH PRESSURE HYDROGEN, TANK TO BUILDING, 13,500 PSIG: 0.3" ID GH2 CARRIER PIPE WITH 2" SCH10 SS CONTAINMENT PIPE.
 - ◇ FASTEN PIPING TO THE EXTERIOR WALL WITH BRACKETS. ATTACH THE BRACKETS TO THE SMOOTH FLAT BRICKS ON THE WALL, SIMILAR TO WHERE EXISTING LADDERS IS ATTACHED.
 - ◇ ROUTE GH2 AND CNG CARRIER PIPING BELOW EXISTING EQUIPMENT SCREEN WALL. SEE 3 / M-800.

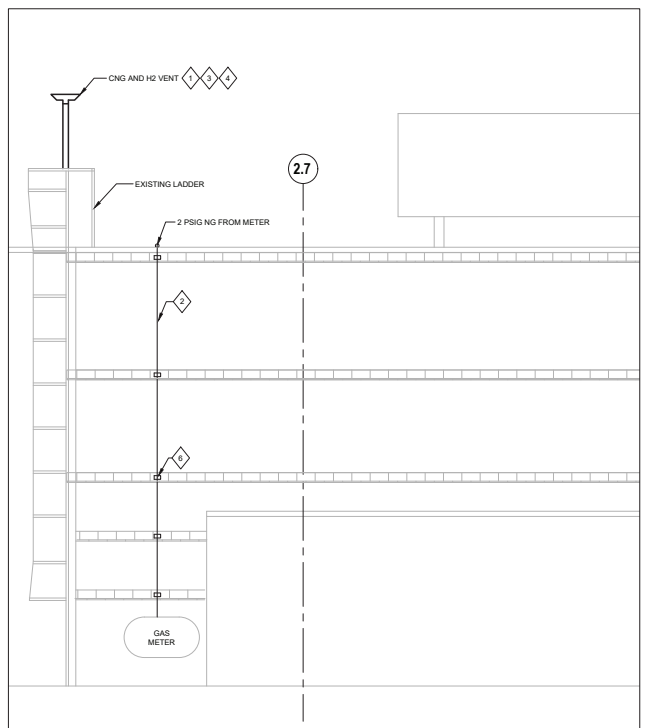
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1 ELEVATION LOOKING NORTH
 SCALE: 1/4" = 1'-0"

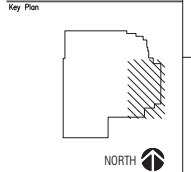


2 ELEVATION LOOKING WEST
 SCALE: 1/4" = 1'-0"

NOT FOR CONSTRUCTION

Rev	Date	Description of Issue
1	05-03-2022	PRELIMINARY SITE PLANS SUBMITTAL

Project Title
 ARAMCO SERVICES COMPANY
 ARAMCO RESEARCH CENTER - DETROIT
 Beck North Corporate park
 46535 Peary Court
 City of Novi, Oakland County, MI



Project Phase PRELIMINARY SITE PLANS	
Date 05-03-2022	Drawn By KEB
Project Number 22782-00	Checked By BF

Sheet Title
ELEVATION EXTERIOR WALL

Sheet Number M-600	Rev. No.
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PLANNING REVIEW



PLAN REVIEW CENTER REPORT

May 25, 2022

Planning Review

Aramco Tank Enclosure

JSP22-19

PETITIONER

Aramco Americas

REVIEW TYPE

Preliminary Site Plan – Accessory

PROPERTY CHARACTERISTICS

- Site Location: 46535 Peary Ct
- Site School District: Walled Lake Consolidated School District
- Site Zoning: I-1: Light Industrial
- Site Use(s): Office and Research
- Adjoining Zoning: I-1: Light Industrial
- Site Size: 4.75 acres (7.14 if parcels combined)
- Site Plan Date: May 3, 2022

PROJECT SUMMARY

The applicant is proposing to add liquid & gaseous hydrogen and liquid natural gas tanks near the southeast side of the building. The louvered screen enclosure would be about 12 feet deep by 134 feet in length, 12 feet in height. Protective bollards would be installed around north side of the enclosure. Twenty parking spaces would be removed to accommodate the various elements of the project.

RECOMMENDATION

Approval of the Site Plan is **recommended** contingent on items in this and other review letters being addressed on the Final Site Plan. The site plan will require Planning Commission approval.

ORDINANCE REQUIREMENTS

This project was reviewed for conformance with the Zoning Ordinance with respect to Article 3 (Zoning Districts), Article 4 (Use Standards), Article 5 (Site Standards), and any other applicable provisions of the Zoning Ordinance. Items in **bold** below must be addressed and incorporated as part of the final stamping sets.

1. Administrative Approval (Sec. 6.1.C): A site plan may be reviewed for approval administratively without formal review by the approving body under the following circumstances: when the site is already the subject of a previously approved site plan and the reviewed plan only proposes the construction of an accessory structure, provided the structure does not exceed 1,000 square feet in area. **The tanks and enclosure area exceed 1,000 square feet, and therefore cannot be approved administratively. Planning Commission approval is required.**
2. Permitted Use (Sec. 3.14.B.ii): Outdoor placement of above-ground storage tanks is permitted if accessory to an otherwise permitted use
3. Location: Tanks shall be located in a non-required rear or interior side yard that does not abut a residential district. *The storage tanks are located in the side yard and does not abut a*

*residential district. **Once the parcel combination is completed, the side yard setback will meet the Zoning Ordinance requirements (Sec. 5.14 requires minimum of 40 feet from lot lines). The parcel combination must be completed prior to the final approval of the site plan.***

4. Other Code Compliance: Placement and use of the aboveground storage tanks shall be in compliance with the City's adopted fire prevention code and any State of Michigan and federal regulations related to such use. **The National Fire Prevention Act requires these types of tanks to not be fully enclosed, so screening is proposed on 3 sides to screen from off-site properties.**
5. Screening (Sec. 3.14.B.ii): All storage tanks shall be screened from public view by a wall not less than 1 foot higher than the height of the storage tank. The screening materials shall match the primary building on site. *Proposed 11-foot-high tank is screened by the proposed 12-foot-high enclosure made of louvered metal. Similar louvered metal is used to screen rooftop equipment on the building.* **A vent pipe is proposed to extend above the screening wall, which is required by NFPA.**
6. Utilities: The applicant is proposing a permanent structure, which requires consideration of any easements in the proposed location. All easements appear to be represented on sheet 2, and do not conflict with the proposed tank enclosure location.
7. Parking (Sec. 5.2): The number of required parking spaces to accommodate the building's use is 110 spaces. The proposed tank enclosure and other equipment will remove 20 spaces, resulting in 133 spaces provided on the site. *Adequate parking spaces are provided.*
8. Performance Standards (Sec. 5.14.): "Storage, utilization, or manufacture of materials, goods or products ranging from free or active burning is permitted... providing that the following conditions are met: i. Said materials or projects shall be stored, utilized or produced within completely enclosed buildings or structures having incombustible exterior walls, which meet the requirements of the Building Code of the Municipality." **The applicant shall confirm that the NFPA code does not allow the proposed tanks to be completely enclosed in a building, and that the proposed screening walls meet the requirements of the Building and NFPA.**
9. Building permits: Building permits are required for this project. Please contact the building department to determine what is required.

OTHER REVIEWS

1. Engineering Review: Engineering recommends approval. Additional comments to be addressed in Electronic Stamping Set submittal.
2. Landscape Review: Landscape recommends approval. However, some landscaping should be added for Electronic Stamping Set approval. See review letter for further details.
3. Fire Review: Fire recommends approval with conditions. Address all comments on Final Site Plan submittal

NEXT STEP: PLANNING COMMISSION MEETING

Since the plan will require approval by the Planning Commission, this item will be placed on the June 8, 2022, agenda for consideration. **Please submit the following no later than noon on June 2, 2022 if you wish to keep this schedule:**

1. Original Site Plan submittal in PDF format (maximum of 10MB).

2. A response letter addressing ALL the comments from ALL the review letters and **a request for waivers & variances as necessary.**

FINAL SITE PLAN SUBMITTAL

If the Planning Commission approves the Preliminary Site Plan, please submit the following for Final Site Plan review and approval:

1. Three copies of Final Site Plan addressing all comments from Preliminary review
2. Response letter **addressing all comments and refer to sheet numbers where the change is reflected**
3. [Final Site Plan Application](#)
4. [Final Site Plan Checklist](#)
5. Engineering Cost Estimate
6. Landscape Cost Estimate
7. [Other Agency Checklist](#)
8. [Non-Domestic User Survey](#) (Non-residential developments)
9. Drafts of any legal documents (note that off-site easements need to be executed and any on-site easements need to be submitted in draft form before stamping sets will be stamped)

ELECTRONIC STAMPING SET SUBMITTAL AND RESPONSE LETTER

After receiving Final Site Plan approval, please submit the following for Electronic stamping set approval:

1. Plans addressing the comments in all of the staff and consultant review letters in PDF format.
2. Response letter addressing all comments in ALL letters and ALL charts and **refer to sheet numbers where the change is reflected.**

STAMPING SET APPROVAL

Stamping sets are still required for this project. After having received all of the review letters from City staff the applicant should make the appropriate changes on the plans and submit **7 size 24" x 36" copies with original or electronic signature and original or electronic seals on the cover sheet (subsequent pages may use electronic seal with signature)**, to the Community Development Department for Final Stamping Set approval.

PRE-CONSTRUCTION MEETING

A Pre-Construction meeting may be required for this project. Prior to the start of any work on the site, Pre-Construction (Pre-Con) meetings must be held with the applicant's contractor and the City's consulting engineer. Pre-Con meetings are generally held after Stamping Sets have been issued and prior to the start of any work on the site. There are a variety of requirements, fees and permits that must be issued before a Pre-Con can be scheduled, so it is suggested you contact Sarah Marchioni [248.347.0430 or smarchioni@cityofnovi.org] once the Final Site Plan has been approved to begin the Pre-Con checklist. If you have questions regarding the checklist or the Pre-Con itself, please contact Sarah.

CHAPTER 26.5

Chapter 26.5 of the City of Novi Code of Ordinances generally requires all projects be completed within two years of the issuance of any starting permit. Please contact Sarah Marchioni at 248.347.0430 for additional information on starting permits. The applicant should review and be aware of the requirements of Chapter 26.5 before starting construction.

If the applicant has any questions concerning the above review or the process in general, do not hesitate to contact me at 248.347.0484 or lbell@cityofnovi.org.

A handwritten signature in black ink that reads "Lindsay Bell". The signature is written in a cursive, flowing style.

Lindsay Bell, AICP – Senior Planner



PLANNING REVIEW CHART

Review Date: May 24, 2022
Review Type: Preliminary Site Plan
Project Name: **JSP 22-19: ARAMCO TANK ENCLOSURE**
Location: 22-04-378-034; 46535 Peary Ct
Plan Date: May 3, 2022
Prepared by: Lindsay Bell, AICP, Senior Planner
E-mail: lbell@cityofnovi.org; **Phone:** (248) 347-0484

Bold To be addressed with the next submittal
Italics To be noted

Item	Required Code	Proposed	Meets Code	Comments
Zoning and Use Requirements				
Master Plan <i>(adopted July 26, 2017)</i>	Industrial Research Development and Technology	Research & Devel	Yes	
Area Study	The site does not fall under any special category	NA	NA	
Zoning <i>(Effective January 8, 2015)</i>	I-1: Light Industrial District	No Change	Yes	
Uses Permitted <i>(Sec 3.1.18.B & C)</i>	Principal Uses Permitted Special Land Uses	Outdoor storage tanks for flammable gases	Yes?	See qualifying standards in chart below
Uses Not Permitted <i>(Sec. 3.1.18)</i>	Processing of raw material for shipment in bulk form to be used at another location	Not proposed	Yes	
Height, bulk, density, and area limitations (Sec 3.1.18)				
Frontage on a Public Street. <i>(Sec. 5.12)</i>	Frontage on a Public Street is required	Hudson Drive and Peary Ct	Yes	
Access to Major Thoroughfare <i>(Sec. 5.13)</i>	Vehicular access shall be provided only to an existing or planned major thoroughfare or freeway service drive OR access driveway on other street type is not across street from existing or planned single-family uses	Access to Beck and West Road	Yes	
Minimum Zoning Lot Size for each Unit in Ac <i>(Sec 3.6.2.D)</i>	Except where otherwise provided in this Ordinance, the minimum lot area and width, and the maximum percent of lot coverage shall be determined on the basis of off-	4.75 acres	NA	
Minimum Zoning			NA	

Item	Required Code	Proposed	Meets Code	Comments
Lot Size for each Unit: Width in Feet	street parking, loading, greenbelt screening, yard setback or usable open space			
Open Space Area	----	----	----	----
Maximum % of Lot Area Covered (By All Buildings)	(Sec 3.6.2.D)	Complies	Yes	
Building Height (Sec. 3.1.18.D)	40 ft.	Existing building; 11 ft height for new equipment, with 12 foot screening wall	Yes	
Building Setbacks (Sec 3.1.18.D)				
Front (south)	40 ft.			Building Existing
Rear (north)	20 ft.			
Side (east)	20 ft.			
Side (west)	20 ft.			
Parking Setback (Sec 3.1.18.D) & Refer to applicable notes in Sec 3.6.2				
Front (south)	40 ft. (See 3.6.2.E)			Parking lot existing
Rear (north)	10 ft.			
Side (east)	10 ft.			
Side (west)	10 ft.			
Note To District Standards (Sec 3.6.2)				
Exterior Side Yard Abutting a Street (Sec 3.6.2.C)	All exterior side yards abutting a street shall be provided with a setback equal to front yard.		NA	
Off-Street Parking in Front Yard (Sec 3.6.2.E)	Off-street parking is allowed in front yard if <ul style="list-style-type: none"> - the site is a minimum 2 acre site, - does not extend into the minimum required front yard setback of the district, - cannot occupy more than 50% of the area between min. front yard setback & bldg. setback, - must be screened by brick wall or landscaped berm - lighting compatible with surrounding neighborhood 	Not proposed	Yes	
Off-Street Parking in Side and Rear Yards (Sec 3.6.2.F)	Off-street parking is allowed in side and rear yards if the site does not abut residential. If it does, additional conditions	Existing parking	NA	

Item	Required Code	Proposed	Meets Code	Comments
	apply: i. shall not occupy more than 50% of side yard area abutting residential ii. parking setback no less than 100 ft from res district			
Setback from Residential District - Building (Sec 3.6.2.H)	I-1 and I-2 districts, five (5) feet of horizontal setback for each foot of building height, or one hundred (100) feet, whichever is greater. c. Except when a side or rear yard is separated from a residential district by a railroad right-of-way, the right-of-way may be included as part of the setback requirement.	Existing	NA	
Wetland/ Watercourse Setback (Sec 3.6.2.M)	A setback of 25 ft. from wetlands and from high watermark course shall be maintained		NA	
Additional Height (Sec 3.6.2.O)	Additional height for selected building is allowed based on conditions listed in Sec 3.6.2.O	Applicant not requesting	NA	
Parking setback screening (Sec 3.6.2.P)	Required parking setback area shall be landscaped per Sec 5.5.3. When abutting a residential district, a screening wall or berm/landscape planting screen shall be observed	Provided	NA	
Modification of parking setback requirements (Sec 3.6.2.Q)	The Planning Commission may modify parking setback requirements based on conditions listed in Sec 3.6.2.Q	Not requested	NA	
I-1 District Required Conditions				
Outdoor placement of above-ground storage tanks (Sec 3.14.1.B.ii)	<ul style="list-style-type: none"> - accessory to otherwise permitted use - located in non-required rear or interior side yard - compliance with Fire Prevention Code, State/Federal regulations - shall be enclosed and screened from public view by wall not less than 1 foot higher than height of 	Screened with 12' height louvered fencing on 3 sides	Yes Yes Yes? Yes	

Item	Required Code	Proposed	Meets Code	Comments
	storage tank - Tank shall not project outside of enclosure - Screening materials shall match primary building on site, or reinforced concrete	Tanks do not project Louvered screen used on rooftop	Yes Yes	
Parking and Loading Requirements				
Number of Parking Spaces Research/Dev (Sec. 5.2.12.D)	Research/Development: One space per 700 sf Useable floor area or 5 spaces + 1.5 space/employee 58,953 sf/ 700 sf = 84 spaces 70 employees*(1.5) + 5 = 110 spaces	Total existing = 153 spaces (20 removed as part of the proposed equipment expansion) 133 spaces to remain, + site has 65 landbanked spaces that could be built	Yes	
Parking Space Dimensions and Maneuvering Lanes (Sec. 5.3.2)	- 90° Parking: 9 ft. x 19 ft. - 24 ft. two-way drives - 9 ft. x 17 ft. parking spaces permitted as long as detail indicates a 4" curb at these locations	24 ft. drive aisles maintained	Yes	
Parking stall located adjacent to a parking lot entrance (Sec. 5.3.13)	Shall not be located closer than twenty-five (25) feet from the street right-of-way (ROW) line, street easement or sidewalk, whichever is closer	Parking existing	NA	
End Islands (Sec. 5.3.12)	- End Islands with landscaping and raised curbs are required at the end of all parking bays that abut traffic circulation aisles. - The end islands shall generally be at least 8 feet wide, have an outside radius of 15 feet, and be constructed 3' shorter than the adjacent parking stall as illustrated in the Zoning Ordinance		NA	
Barrier Free Spaces (Barrier Free Code)	For 187 total spaces, 6 barrier free required		NA	
Barrier Free Space Dimensions (Barrier Free Code)	- 8' wide with an 8' wide access aisle for van accessible spaces - 8' wide with a 5' wide access aisle for regular accessible spaces		NA	

Item	Required Code	Proposed	Meets Code	Comments
Barrier Free Signs (Barrier Free Code)	One sign for each accessible parking space.		NA	
Minimum number of Bicycle Parking (Sec. 5.16.1)	Five (5) percent of required automobile spaces: 10 spaces required		NA	
Bicycle Parking General requirements (Sec. 5.16)	<ul style="list-style-type: none"> - No farther than 120 ft. from the entrance being served - When 4 or more spaces are required for a building with multiple entrances, the spaces shall be provided in multiple locations - Spaces to be paved and the bike rack shall be inverted "U" design - Shall be accessible via 6 ft. paved sidewalk 		NA	
Bicycle Parking Lot layout (Sec 5.16.6)	Parking space width: 6 ft. One tier width: 10 ft. Two tier width: 16 ft. Maneuvering lane width: 4 ft. Parking space depth: 2 ft. single, 2 ½ ft. double		NA	
Loading Spaces (Sec. 5.4.3)	Loading area in the rear yard, unless abutting residential or interior side yard if adjacent to I, EXPO, or EXO district		NA	
Accessory Structures				
Dumpster (Sec 4.19.2.F)	<ul style="list-style-type: none"> - Located in rear yard - Attached to the building or no closer than 10 ft. from building if not attached - Not located in parking setback - If no setback, then it cannot be any closer than 10 ft, from property line. - Away from Barrier free Spaces 	No change	NA	
Dumpster Enclosure (Sec. 21-145. (c)	<ul style="list-style-type: none"> - Screened from public view - A wall or fence 1 ft. higher than height of refuse bin - And no less than 5 ft. on three sides - Posts or bumpers to protect the screening - Hard surface pad - Screening Materials: Masonry, wood, or 	No change	NA	

Item	Required Code	Proposed	Meets Code	Comments
	evergreen shrubbery			
Roof top equipment and wall mounted utility equipment (Sec. 4.19.2.E.ii)	All roof top equipment must be screened and all wall mounted utility equipment must be enclosed and integrated into the design and color of the building	No change	NA	
Roof top appurtenances screening	Roof top appurtenances shall be screened in accordance with applicable facade regulations, and shall not be visible from any street, road, or adjacent property.	No change	NA	
Transformer/ Generator	Provide location of any proposed transformers/ generators, etc.	No change	NA	
I-1 District Required Conditions (Sec 3.14)				
Outdoor Storage of above ground storage tanks (Sec. 3.14.1.B.ii)	Outdoor placement of above-ground storage tanks accessory to an otherwise permitted use. <ul style="list-style-type: none"> • Located in non-required rear or interior side yard, not abutting residential. • Shall be in compliance with state and federal regulations, Fire Prevention Code. • Must be screened with materials matching building. 	Complies	Yes	
Outdoor Storage of recreational equipment (Sec. 3.14.1.B.iii)	See Zoning Ordinance	Not Proposed	NA	
Other (Sec 3.14.2)	Unless otherwise provided, dealing directly with consumer at retail, is prohibited.		Yes	
Adjacent to Freeway ROW (Sec 3.14.4)	Where a permitted use abuts a freeway right-of way, special conditions listed in section 3.14.4 apply	Not adjacent to Freeway ROW	NA	
Planning Commission findings for permitted uses (Sec 3.14.3)				
Protecting current and future residential uses from adverse impact (Sec 3.14.3.A)	The scale, size, building design, façade materials, landscaping and activity of the use is such that current and future residential uses will be protected from adverse impacts.	Complies	NA	
Long term truck parking	No long-term delivery truck parking on site	Noted	Yes	

Item	Required Code	Proposed	Meets Code	Comments
(Sec 3.14.3.B)				
Performance standards (Sec 3.14.3.C)	The lighting, noise, vibration, odor, and other possible impacts are in compliance with standards and intent of the article and performance standards of Section 5.14	Noted	Yes	
Performance standards (Sec 5.14)	Smoke: emission of any smoke to a density greater than No. 1 on Ringelman Chart is unlawful			
	Dust, Dirt and Fly Ash: quantity of gas-borne or air-borne solids shall not exceed 0.20 grains per cubic foot of carrying medium at 500 degrees Fahrenheit			
	Odor: Offensive, noxious, or foul odors shall not be allowed to escape into the atmosphere			
	Gases: emissions of any gas that may be injurious or destructive is prohibited. Compliance with state and federal regulations required.			
	Airborne Matter: no discharge of air contaminants that endanger public health			
	Glare and Radioactive Materials: no emission of harmful ultraviolet rays, radioactive or electromagnetic radiation outside of the property line			
	Fire & Explosive Hazards: B. storage, utilization, or manufacture of materials, goods or products ranging from free or active burning to intense burning is permitted subject to compliance with yard requirements and above performance standards, and: - said materials shall be stored within completely enclosed buildings or structures which meet the Building Code - Such buildings or structures shall be set back a min. 40 feet from lot lines, or have automatic sprinkler system - storage and handling shall	Louvered screen wall proposed – not a building; Setback does not meet the 40 ft min – property line to be adjusted	No? Yes?	See Planning Review letter If the property is combined with the one to the south the setback complies. Approval of the Final Site Plan will not be granted until the property combination is final

Item	Required Code	Proposed	Meets Code	Comments
	comply with state rules and regulations			
Storage and/use of material (Sec 3.14.3.D)	The storage and/or use of any volatile, flammable, or other materials shall be fully identified in application and shall comply with any city ordinances regarding toxic or hazardous materials.	Checklist provided	Yes	
Hazardous material checklist (Sec 3.14.3.E)	Compliance of City's hazardous materials checklist	Checklist provided	Yes	

NOTES:

1. This table is a working summary chart and not intended to substitute for any Ordinance or City of Novi requirements or standards.
2. The section of the applicable ordinance or standard is indicated in parenthesis. Please refer to those sections in Article 3, 4, and 5 of the zoning ordinance for further details.
3. Please include a written response to any points requiring clarification or for any corresponding site plan modifications to the City of Novi Planning Department with future submittals.

ENGINEERING REVIEW



PLAN REVIEW CENTER REPORT

05/24/2022

Engineering Review
Aramco Research Center
JSP22-0019

Applicant

Aramco Services Company

Review Type

Preliminary Site Plan

Property Characteristics

- Site Location: South side of Peary Ct., east of Hudson Drive
- Site Size: 4.75 acres existing, 7.14 acres after parcel combination
- Plan Date: 05/03/2022
- Design Engineer: PEA Group

Project Summary

- Addition of hydrogen and natural gas tanks on-site, including concrete pads for tanks.
- No changes to the existing water main, sanitary sewer, or storm water system are proposed.

Recommendation

Approval of the Preliminary Site Plan is recommended.

Comments:

The Preliminary Site Plan meets the general requirements of Chapter 11 of the Code of Ordinances, the Storm Water Management Ordinance, and the Engineering Design Manual with the following exceptions, which can be addressed at Final Site Plan submittal:

General

1. **Only at the time of the printed Stamping Set submittal**, provide the City's standard detail sheets for storm sewer (2 sheets) and paving (2 sheets). The most updated details can be found on the City's website at this location:

<https://cityofnovi.org/services/public-works/engineering-division/engineering-standards-and-construction-details>

2. All improvements are proposed outside the existing water main easement.

Storm Sewer

3. Trench drain and storm tie-in details noted on plans. Noted a profile will be provided.
4. Noted a casting schedule will be provided.

Paving & Grading

5. Bollards noted around proposed tanks.
6. Noted a paving materials table will be provided.

Flood Plain

7. The 100-year floodplain does not appear to traverse the site.

Soil Erosion and Sediment Control

8. No SESC permit is required due to the area of disturbance being less than one acre and the site being located more than 500 feet from the nearest waterbody.

The following must be submitted with the Final Site Plan:

9. A letter from either the applicant or the applicant's engineer must be submitted with the Final Site Plan highlighting the changes made to the plans addressing each of the comments listed above and indicating the revised sheets involved. **Additionally, a statement must be provided stating that all changes to the plan have been discussed in the applicant's response letter.**

The following must be addressed prior to issuance of a Temporary Certificate of Occupancy (TCO) approval for the development:

10. The amount of the incomplete site work performance guarantee for any outstanding site improvement items (limited to top course of pavement and other minor items), is calculated at 1.2 times the amount required to complete the site improvements (as specified in the Performance Guarantee Ordinance).

Prior to preparing stamping sets, the Applicant is advised to provide any revised sheets directly to the Engineering Division for an informal review and approval.

To the extent this review letter addresses items and requirements that require the approval of or a permit from an agency or entity other than the City, this review shall not be considered an indication or statement that such approvals or permits will be issued.

Engineering Review of Preliminary Site Plan

Aramco Research Facility
JSP22-0019

05/24/2022

Page 3 of 3

Please contact Victor Boron at (248) 735-5695 with any questions.

A handwritten signature in black ink that reads "Victor F. Boron". The signature is written in a cursive style with a long horizontal flourish at the end.

Victor Boron
Project Engineer

cc: Lindsay Bell, Community Development
Ben Croy, PE, Engineering
Humna Anjum, Engineering

LANDSCAPE REVIEW



PLAN REVIEW CENTER REPORT

May 12, 2022

Aramco Research Facility – Equipment Addition Revised Preliminary/Final Site Plan - Landscaping

Review Type

Revised Preliminary Site Plan Landscape Review

Job

JSP22-0019

Property Characteristics

- Site Location: 46535 Peary Ct
- Site Acreage: 4.75 ac
- Site Zoning: I-1
- Adjacent Zoning: North, West: RM-1, East, South: I-1
- Plan Date: 5/3/2022

Ordinance Considerations

This project was reviewed for conformance with Chapter 37: Woodland Protection, Zoning Article 5.5 Landscape Standards, the Landscape Design Manual and any other applicable provisions of the Zoning Ordinance. Items in **bold** below must be addressed and incorporated as part of the revised Final Site Plan submittal. Please follow guidelines of the Zoning Ordinance and Landscape Design Guidelines. This review is a summary and is not intended to substitute for any Ordinance.

Recommendation

This project is **recommended for approval for Preliminary and Final Site Plan**. The minor revisions noted below can be addressed on the electronic stamping set.

Ordinance Considerations

Existing Trees (Sec 37 Woodland Protection, Preliminary Site Plan checklist #17 and LDM 2.3 (2)).

1. Provided.
2. Three trees will be removed and are shown as being replaced in the same vicinity as the project.

Adjacent to Residential - Buffer (Zoning Sec. 5.5.3.B.ii and iii)

The project is not adjacent to residentially-zoned property so no new screening vegetation or berms are required for this project.

Adjacent to Public Rights-of-Way – Berm/Wall, Buffer and Street Trees (Zoning Sec. 5.5.3.B.ii, iii)

The project does not require any additional right-of-way berms or landscaping.

Existing and Proposed Utilities (Zoning Sec. 5.5.3)

1. Earlier plans indicated that a storm sewer may be passing underneath the landscape island west of the proposed equipment.
2. **Please move the eastern tree south of the existing hydrant to ten feet away from the hydrant and the catch basin (it will probably need to move to the southeast a bit).**
3. **Please move the western NS3 north a bit to provide 5 feet from the underground utility line.**

Parking Lot Landscaping (Zoning Sec. 5.5.3.C.)

1. Approximately fourteen (14) of the existing parking spaces south are being used for new equipment.
2. No additions to the parking lot are proposed to offset the loss of those spaces.
3. As noted above, three parking lot trees are being removed and replaced in islands close to their original position.

Building foundation Landscaping (Zoning Sec 5.5.3.D)

1. The new equipment is being added adjacent to and near the building
2. Screening shrubs are located around the transformer building.

Screening (Zoning Sec. 3.14)

Notes on Sheet C-3.0 indicate that the walls will be 12 feet tall and the equipment no more than 11 feet tall.

Plant List (LDM 4, 10)

1. 2 of 4 species used (50%) are native to Michigan. This is acceptable.
2. The small number of trees added (3) meets the tree diversity as they are new species to the site.

Planting Notations and Details (LDM 10)

Provided

Storm Basin Landscape (Zoning Sec 5.5.3.E.iv and LDM 3)

No detention basin exists or is proposed so no detention basin landscaping is required.

Irrigation (LDM 10)

1. The irrigation note just states the city requirements for irrigation but does not say specifically how the plants will get water. Please add this information.
2. If the existing system will be modified to provide water for the proposed plantings, please add a note to this effect on Sheet L-1.
3. If a new system is proposed for the new landscaping and/or any other landscaping, please provide that plan with revised Final Site Plans.

If the applicant has any questions concerning the above review or the process in general, do not hesitate to contact me at 248.735.5621 or rmeader@cityofnovi.org.



Rick Meader – Landscape Architect

FIRE REVIEW



May 17, 2022

TO: Barbara McBeth - City Planner
Lindsay Bell - Plan Review Center
Christian Carroll - Plan Review Center
Madeleine Daniels – Plan Review Center
Ben Peacock – Planning Assistant

CITY COUNCIL

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Assistant Fire Chief
John B. Martin

RE: Aramco Research Facility

PSP# 22-0050
PSP# 22-0038 (Pre-App)

Project Description:

Addition to parking lot a Liquid Hydrogen, Gaseous Hydrogen and Natural Gas tanks. Also a compressor to convert liquid to gas (hydrogen).

Comments:

- Shall provide emergency shut off valves. **(NFPA 2 10.3.1.18.4 & 10.3.1.18.5.2).**
- All electrical equipment shall be bonded and grounded per NFPA 70. **(NFPA2 8.3.1.2.7).**
- Shall provide at least 2, 20BC fire extinguishers (Spacing <50). **(NFPA 2 10.3.1.19). On plan #A-201 shows 10lb ABC.**
- Shall provide gas detection for possible leaks. **(NFPA 2 10.3.1.19.1).**
- Shall provide documentation or have fire department witness a leak test on piping. **(NFPA 2 10.3.1.10.1).**
- Shall provide "WARNING" signs: NO SMOKING, FLAMMABLE GAS. **(NFPA 2 10.3.2.2.1.12).**
- Shall provide Secondary containment for LH2. **(NFPA 2 8.3.2.4.4.1).**
- **Approved 5/17/2022 KSP:** Shall show lot line on plans for distance to tanks.
- Shall document on site plans the above comments.

Recommendation:

Approved with Conditions

Sincerely,

Kevin S. Pierce-Fire Marshal
City of Novi – Fire Dept.

Novi Public Safety Administration
45125 Ten Mile Road
Novi, Michigan 48375
248.348.7100
248.347.0590 fax

cityofnovi.org

cc: file

APPLICANT RESPONSE LETTER

June 2, 2022

Lindsay Bell, AICP
Senior Planner
City of Novi

1. Administrative Approval: The tanks and enclosure area exceed 1,000 square feet, and therefore cannot be approved administratively. Planning Commission approval is required.
Design Team Response: Noted
3. Location: Once the parcel combination is completed, the side yard setback will meet the Zoning Ordinance requirements (Sec. 5.14 requires minimum of 40 feet from lot lines). The parcel combination must be completed prior to the final approval of the site plan.
Design Team Response: Noted. Parcel combination is in process.
4. Other Code Compliance: The National Fire Prevention Act requires these types of tanks to not be fully enclosed, so screening is proposed on 3 sides to screen from off-site properties.
Design Team Response: The proposed design includes a 3500-gallon liquid hydrogen tank. Per NFPA 2 (2011), Table 8.3.2.2.1.4, liquid hydrogen systems storing more than 600 gallons shall be installed outdoors.
5. Screening: A vent pipe is proposed to extend above the screening wall, which is required by NFPA.
Design Team Response: Correct, agreed.
8. Performance Standards: The applicant shall confirm that the NFPA code does not allow the proposed tanks to be completely enclosed in a building, and that the proposed screening walls meet the requirements of the Building and NFPA.
Design Team Response: Per NFPA 2 (2011), Table 8.3.2.2.1.4, liquid hydrogen systems storing more than 600 gallons shall be installed outdoors. Per NFPA 2 (2011), section 8.3.2.4.4.5(D), stationary liquid hydrogen containers shall not be installed in an enclosed court, which is defined as a court "bounded on all sides by the exterior walls of a building or by the exterior walls and lot lines on which walls are permitted." Installing screen walls on three sides of the liquid hydrogen equipment meets the requirements of NFPA 2.

I-1 District Required Conditions: Compliance with Fire Prevention Code.

Design Team Response: We are in compliance with NFPA 2 and NFPA 55.

Fire and Explosive Standards:

- said materials shall be stored within completely enclosed buildings or structures which meet the Building Code

Design Team Response: The proposed design includes a 3500-gallon liquid hydrogen tank. Per NFPA 2 (2011), Table 8.3.2.2.1.4, liquid hydrogen systems storing more than 600 gallons shall be installed outdoors.

Such buildings or structures shall be set back a min. 40 feet from lot lines, or have automatic sprinkler system

Design Team Response: Combination of parcels is in the works. Lot line will no longer exist.

Rick Meader
Landscape Architect

Existing and Proposed Utilities (Zoning Sec. 5.5.3)

2. Please move the eastern tree south of the existing hydrant to ten feet away from the hydrant and the catch basin (it will probably need to move to the southeast a bit).
Design Team Response: Noted
3. Please move the western NS3 north a bit to provide 5 feet from the underground utility line.
Design Team Response: Noted

Kevin S. Pierce
Fire Marshal

Comments:

- Shall provide emergency shut off valves. (NFPA 2 10.3.1.18.4 & 10.3.1.18.5.2).
Design Team Response: NFPA 2 (2011), section 10 is directed towards vehicle fueling and dispensing facilities. We will not be dispensing hydrogen into vehicles. An emergency shutoff valve will still be provided in the hydrogen supply piping to the building both at the equipment pad and immediately before entering the building as a "best practice" safety measure.

- All electrical equipment shall be bonded and grounded per NFPA 70. (NFPA2 8.3.1.2.7).
Design Team Response: Noted. Equipment will be bonded and grounded in accordance with NFPA 70.

- Shall provide at least 2, 20BC fire extinguishers (Spacing <50). (NFPA 2 10.3.1.19). On plan #A-201 shows 10lb ABC.
Design Team Response: NFPA 2 (2011), section 10 is directed towards vehicle fueling and dispensing facilities. We will not be dispensing hydrogen into vehicles. Fire extinguishers will still be provided both in the test cell and at the equipment pad as a "best practice" safety measure.

- Shall provide gas detection for possible leaks. (NFPA 2 10.3.1.19.1).
Design Team Response: NFPA 2 (2011), section 10 is directed towards vehicle fueling and dispensing facilities. We will not be dispensing hydrogen into vehicles. Gas detection will be provided in the test cell, but will not be provided at the equipment pad. UV/IR flame detectors will be provided at the equipment pad as an additional "best practice" safety measure.

- Shall provide documentation or have fire department witness a leak test on piping. (NFPA 2 10.3.1.10.1).
Design Team Response: NFPA 2 (2011), section 10 is directed towards vehicle fueling and dispensing facilities. We will not be dispensing hydrogen into vehicles. Direction will still be given to ensure the fire department and fire marshal witnesses a leak test of the hydrogen piping system prior to operating the system.

- Shall provide "WARNING" signs: NO SMOKING, FLAMMABLE GAS. (NFPA 2 10.3.2.2.1.12).
Design Team Response: NFPA 2 (2011), section 10 is directed towards vehicle fueling and dispensing facilities. We will not be dispensing hydrogen into vehicles. WARNING and NO SMOKING, FLAMMABLE GAS signs will still be provided at the equipment pad as a "best practice" safety measure and in accordance with section 8.3.1.2.1.2.

- Shall provide Secondary containment for LH2. (NFPA 2 8.3.2.4.4.1).
Design Team Response: NFPA 2 (2011), section 8.3.2.1.2 prohibits the use of diking around stationary liquid hydrogen storage containers for the purpose of containing a liquid hydrogen spill. However, measures will be taken in accordance with section 8.3.2.4.4.1 to ensure liquid hydrogen does not flow into drains, storm sewers, or other sensitive locations in the event of a spill.

- Approved 5/17/2022 KSP: Shall show lot line on plans for distance to tanks.
Design Team Response: Noted

- Shall document on site plans the above comments.
Design Team Response: Noted

General Comment

Aramco, AEI, Flad, and PEA acknowledge all of the comments made in the ALLREVIEWS JSP22-019 Aramco Research Center PSP.pdf file, take no exception, and will comply with all requirements.