Section II - Specific Air Contaminant Source Information

NOTE: One copy of this section should be filled out for each air contaminant source covered by this PTI application. See the line by line PTI instructions for additional information.

1. Company identification (name for air contaminant source for which you are applying): Coke Conveyor

2. List all equipment that are part of this air contaminant source: A new coke handling system (designated F028) will be installed from the end of the new SunCoke coke conveyor to a railcar loading operation at a location within the slag processing plant.

3. Air Contaminant Source Installation or Modification Schedule (must be completed regardless of date of installation or modification):

   When did/will you begin to install or modify the air contaminant source? (month/year) upon issuance of PTI

   When did/will you begin to operate the air contaminant source? (month/year) _____ **OR** after issuance of PTI after issuance of PTI

4. Emissions Information: The following table requests information needed to determine the applicable requirements and the compliance status of this air contaminant source with those requirements. Suggestions for how to estimate emissions may be found in the instructions to the Emissions Activity Category (EAC) forms required with this application. If you need further assistance, contact your Ohio EPA permit representative.

   - If total potential emissions of HAPs or any Air Toxic is greater than 1 ton/yr, fill in the table for that (those) pollutant(s). For all other pollutants, if "Emissions before controls (max), lb/hr" multiplied by 24 hours/day is greater than 10 lb/day, fill in the table for that pollutant.
   - If you have no add-on control equipment, "Emissions before controls= will be the same as "Actual emissions"
   - Annual emissions should be based on operating 8760 hr/yr unless you are requesting operating restrictions to limit emissions in line # 8 or have described inherent limitations below.
   - If you use units other than lb/hr or ton/yr, specify the units used (e.g., gr/dscf, lb/ton charged, lb/MMBtu, ton/12-months).
   - Requested Allowable (ton/yr) is often equivalent to Potential to Emit (PTE) as defined in OAC rule 3745-31-01 and OAC rule 3745-77-01.

Pollutant	Emissions before controls (max) (lb/hr)	Actual emissions (lb/hr)	Actual emissions (ton/year)	Requested Allowable (lb/hr)	Requested Allowable (ton/year)
Particulate emissions (PE) (formerly particulate matter, PM)		0.40	1.77		1.77
PM_{10} (PM < 10 microns in diameter)		0.19	0.84		0.84
Sulfur dioxide (SO_2)					
Nitrogen oxides (NO_x)					
Carbon monoxide (CO)					
Organic compounds (OC)					
Volatile organic compounds (VOC)					
Total HAPs					
Highest single HAP:					

Section II - Specific Air Contaminant Source Information

Air Toxics (see instructions):					

Provide your calculations as an attachment and explain how all process variables and emission factors were selected. Note the emissions factor(s) employed and document the origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

5. **Does this air contaminant source employ emissions control equipment?**

☒ **Yes** - fill out the applicable information below.

☐ **No** - proceed to item # 6.

Note: Pollutant abbreviations used below: Particulates = PE; Organic compounds = OC; Sulfur dioxide = SO_2; Nitrogen oxides = NOx; Carbon monoxide = CO

☐ **Cyclone/Multiclone**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%): _____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Type: ☐ Cyclone ☐ Multiclone ☐ Rotoclone ☐ Other _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Fabric Filter/Baghouse**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Operating pressure drop range (inches of water): Minimum: _____Maximum: _____
Pressure type: ☐ Negative pressure ☐ Positive pressure
Fabric cleaning mechanism: ☐ Reverse air ☐ Pulse jet ☐ Shaker ☐ Other _____
☐ Lime injection or fabric coating agent used: Type: _____ Feed rate: _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
Note: information on the MgO baghouse is not included since the modification does not result in an emissions increase to the MgO addition portion of the No. 4 Hard Pickle Line.

☐ **Wet Scrubber**

Manufacturer: Year installed:
What do you call this control equipment: No. 4 Hard Pickle Scrubber on pickling section
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other acids fume
Estimated capture efficiency (%): Basis for efficiency: enclosed pickle tubs; Title V application
Design control efficiency (%): Basis for efficiency:
Type: ☐ Spray chamber ☐ Packed bed ☐ Impingement ☐ Venturi ☐ Other _____
Operating pressure drop range (inches of water): Minimum: _____ Maximum: _____
pH range for scrubbing liquid: Minimum: _____ Maximum: _____
Scrubbing liquid flow rate (gal/min): _____
Is scrubber liquid recirculated? ☐ Yes ☐ No
Water supply pressure (psig): _____ NOTE: This item for spray chambers only.
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

Section II - Specific Air Contaminant Source Information

☐ **Electrostatic Precipitator**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Type: ☐ Plate-wire ☐ Flat-plate ☐ Tubular ☐ Wet ☐ Other _____
Number of operating fields: _____

☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Concentrator**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design regeneration cycle time (minutes): _____
Minimum desorption air stream temperature (^oF): _____
Rotational rate (revolutions/hour): _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Catalytic Incinerator**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Minimum inlet gas temperature (^oF): _____
Combustion chamber residence time (seconds): _____
Minimum temperature difference (^oF) across catalyst during air contaminant source operation: _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Thermal Incinerator/Thermal Oxidizer**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Minimum operating temperature (^oF) and location: _____ (See line by line instructions.)
Combustion chamber residence time (seconds): _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Flare**

Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____

Section II - Specific Air Contaminant Source Information

Type: ☐ Enclosed ☐ Elevated (open)
Ignition device: ☐ Electric arc ☐ Pilot flame
Flame presence sensor: ☐ Yes ☐ No
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Condenser**
Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____

Type: ☐ Indirect contact ☐ Direct contact
Maximum exhaust gas temperature (^oF) during air contaminant source operation: _____
Coolant type: _____
Design coolant temperature (^oF): Minimum _____ Maximum _____
Design coolant flow rate (gpm): _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Carbon Absorber**
Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Type: ☐ On-site regenerative ☐ Disposable
Maximum design outlet organic compound concentration (ppmv): _____
Carbon replacement frequency or regeneration cycle time (specify units): _____
Maximum temperature of the carbon bed, after regeneration (including any cooling cycle): _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Dry Scrubber**
Manufacturer: _____ Year installed: _____
What do you call this control equipment: _____
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%):_____ Basis for efficiency: _____
Design control efficiency (%):_____ Basis for efficiency: _____
Reagent(s) used: Type: _____ Injection rate(s): _____
Operating pressure drop range (inches of water): Minimum: _____ Maximum: _____
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

☐ **Paint booth filter**
Type: ☐ Paper ☐ Fiberglass ☐ Water curtain ☐ Other _____
Design control efficiency (%):_____ Basis for efficiency: _____

☒ **Other**, describe Enclosures
Manufacturer: Year installed: with installation
What do you call this control equipment:

Section II - Specific Air Contaminant Source Information

Pollutant(s) controlled: ☒ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _____
Estimated capture efficiency (%): N/A Basis for efficiency: _____

Design control efficiency (%): 70% Basis for efficiency: Ohio RACM
☒ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
_____

6. Attach a Process or Activity Flow Diagram to this application for each air contaminant source included in the application. The diagram should indicate their relationships to one another. See the line by line PTI instructions for additional information.

7. Emissions egress point(s) information: PTIs which allow total emissions in excess of the thresholds listed below will be subject to an air quality modeling analysis. This analysis is to assure that the impact from the requested project will not exceed Ohio=s Acceptable Incremental Impacts for criteria pollutants and/or Maximum Allowable Ground Level Concentrations (MAGLC) for air toxics. Permit requests that would have unacceptable impacts can not be approved as proposed. See the line by line PTI instructions for additional information.

   Complete the tables below if the requested allowable annual emission rate for this PTI exceeds any of the following:

   - Particulate Matter (PM10): 10 tons per year
   - Sulfur Dioxide (SO2): 25 tons per year
   - Nitrogen Oxides (NOx): 25 tons per year
   - Carbon Monoxide (CO): 100 tons per year
   - Air Toxic: 1 ton per year. An air toxic is any air pollutant for which the American Council of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV).

   Complete Table 7-A below for each stack emissions egress point. An egress point is a point at which emissions from an air contaminant source are released into the ambient (outside) air. List each individual egress point on a separate line.

Table 7-A, Stack Egress Point Information

Company Name or ID for the Egress Point (examples: Stack A; Boiler Stack; etc.)	Type Code*	Stack Egress Point Shape and Dimensions (in)(examples: round 10 inch ID; rectangular 14 X 16 inches; etc.)	Stack Egress Point Height from the Ground (ft)	Stack Temp. at Max. Capacity (F)	Stack Flow Rate at Max. Capacity (ACFM)	Minimum Distance to the Property Line (ft)
N/A						

*Type codes for stack egress points:

Section II - Specific Air Contaminant Source Information

A. vertical stack (unobstructed): There are no obstructions to upward flow in or on the stack such as a rain cap.
B. vertical stack (obstructed): There are obstructions to the upward flow, such as a rain cap, which prevents or inhibits the air flow in a vertical direction.
C. non-vertical stack: The stack directs the air flow in a direction which is not directly upward.

Complete Table 7-B below for each fugitive emissions egress point. List each individual egress point on a separate line. Refer to the description of the fugitive egress point type codes below the table for use in completing the type code column of the table. For air contaminant sources like roadways and storage piles, only the first 5 columns need to be completed. For an air contaminant source with multiple fugitive emissions egress points, include only the primary egress points.

Table 7-B, Fugitive Egress Point Information

Company ID for the Egress Point (examples; Garage Door B, Building C; Roof Monitor; etc.)	Type Code*	Egress Point Description (examples: garage door, 12 X 30 feet, west wall; outside gravel storage piles; etc.)	Fugitive Egress Point Height from the Ground (ft)	Minimum Distance to the Property Line (ft)	Exit Gas Temp. (F)
Coke Transfer	F	coke conveying system to rail car or truck loadout stations	5' to 10'	1500'	ambient

*Type codes for fugitive egress point:

D. door or window
E. other opening in the building without a duct
F. no stack and no building enclosing the air contaminant source (e.g., roadways)

Complete Table 7-C below for each Stack Egress Point identified in Table 7-A above. In each case, use the dimensions of the largest nearby building, building segment or structure. List each individual egress point on a separate line. Use the same Company Name or ID for the Egress Point in Table 7-C that was used in Table 7-A. See the line by line PTI instructions for additional information.

Table 7-C, Egress Point Additional Information (Add rows as necessary)

Company ID or Name for the Egress Point	Building Height (ft)	Building Width (ft)	Building Length (ft)
N/A			

Section II - Specific Air Contaminant Source Information

8. Request for Federally Enforceable Limits

As part of this permit application, do you wish to propose voluntary restrictions to limit emissions in order to avoid specific requirements listed below, (i.e., are you requesting federally enforceable limits to obtain synthetic minor status)?

☐ yes
☒ no
☐ not sure - please contact me if this affects me

If yes, why are you requesting federally enforceable limits? Check all that apply.

a. ☐ to avoid being a major source (see OAC rule 3745-77-01)
b. ☐ to avoid being a major MACT source (see OAC rule 3745-31-01)
c. ☐ to avoid being a major modification (see OAC rule 3745-31-01)
d. ☐ to avoid being a major stationary source (see OAC rule 3745-31-01)
e. ☐ to avoid an air dispersion modeling requirement (see Engineering Guide # 69)
f. ☐ to avoid another requirement. Describe: _____

If you checked a., b. or d., please attach a facility-wide potential to emit (PTE) analysis (for each pollutant) and synthetic minor strategy to this application. (See line by line instructions for definition of PTE.) If you checked c., please attach a net emission change analysis to this application.

9. If this air contaminant source utilizes any continuous emissions monitoring equipment for indicating or demonstrating compliance, complete the following table. This does not include continuous parametric monitoring systems.

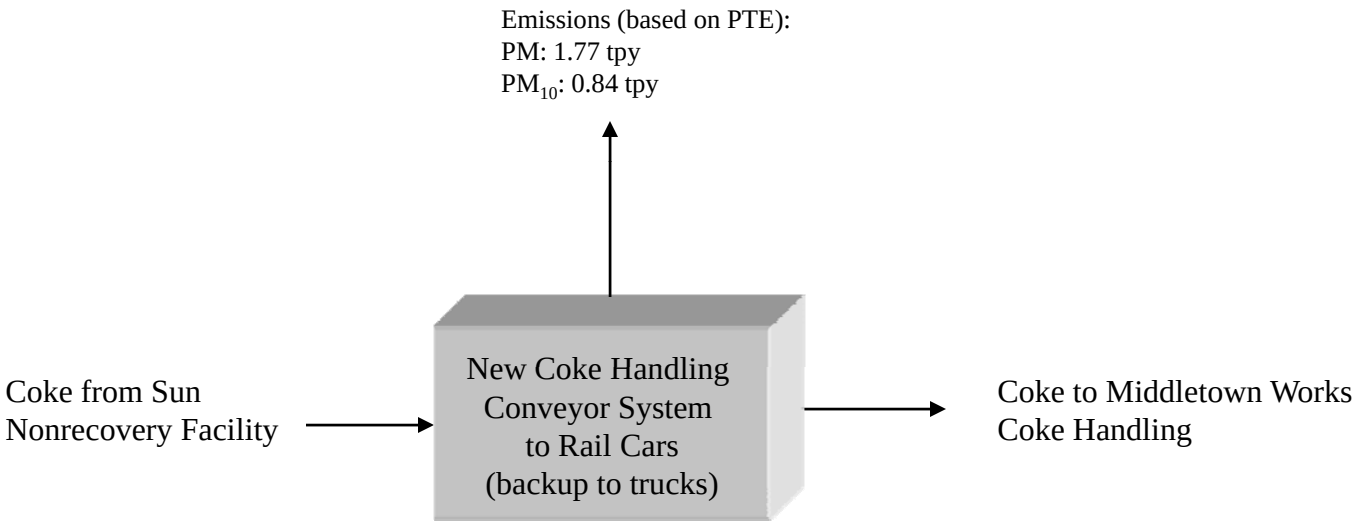
Company ID for Egress Point	**Type of Monitor**	**Applicable performance specification (40 CFR 60, Appendix B)**	**Pollutant(s) Monitored**
	N/A		

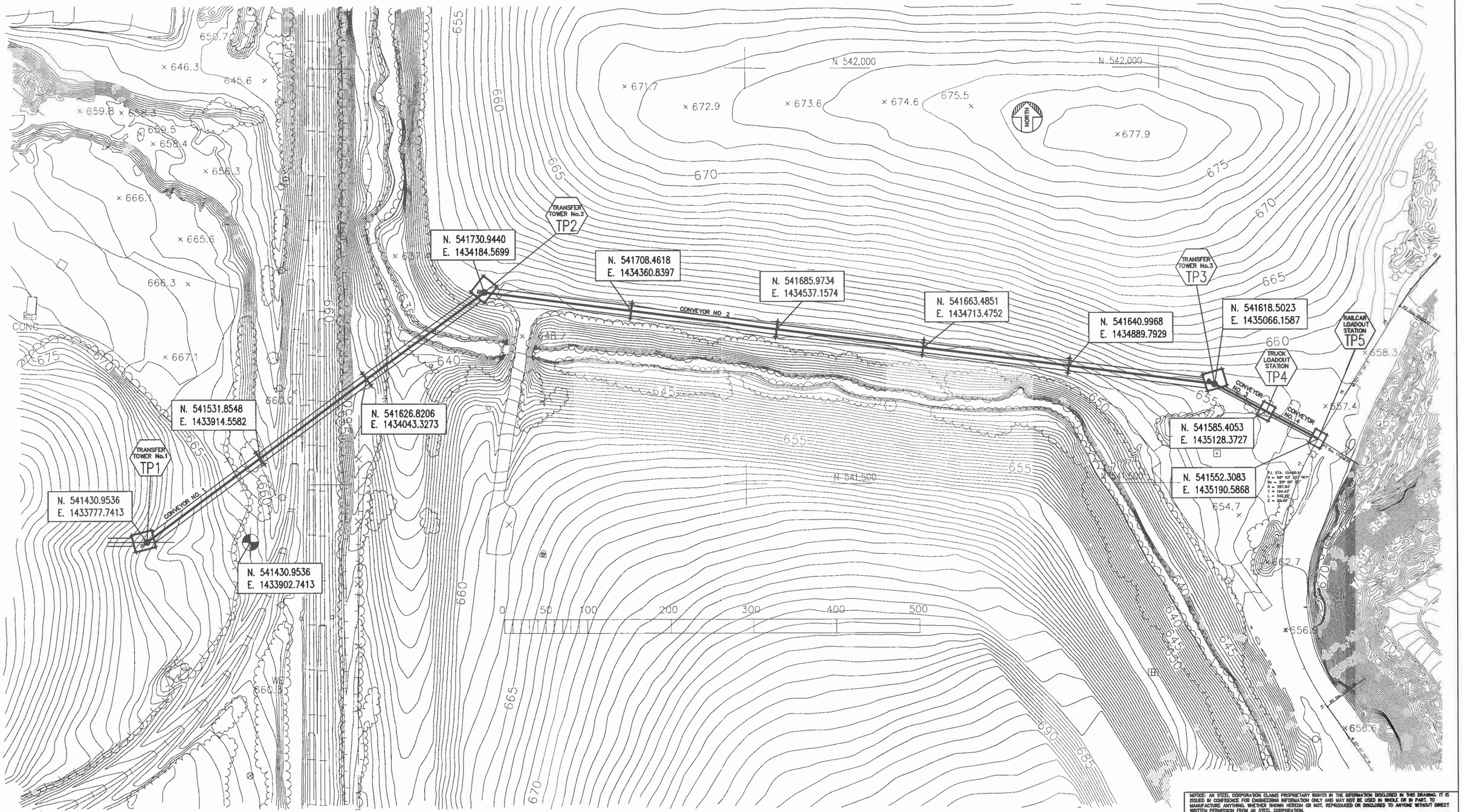
10. Do you wish to permit this air contaminant source as a portable source, allowing relocation within the state in accordance with OAC rule 3745-31-03 or OAC rule 3745-31-05?

☐ yes - Note: notification requirements in rules cited above must be followed.
☒ no

11. The appropriate Emissions Activity Category (EAC) form(s) must be completed and attached for each air contaminant source. At least one complete EAC form must be submitted for each air contaminant source for the application to be considered complete. Refer to the list attached to the PTI instructions.

Middletown Works Coke Conveyor (new F028) Flow Diagram





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AK Steel — MIDDLETOWN WORKS, MIDDLETOWN, OHIO

DEPT.	COKEMAKING
UNIT	COKE HANDLING CONVEYOR
SUBJECT	INTEGRATION OF SUN COKE FACILITIES
DESCR.	NEW CONVEYOR PATH OPTION 2
MIC.	
DR.	GR
TR.	X
CKD.	X
APP.	X
SCALE	1"=50'-0"
DATE	10/27/08
CHECKED FOR SAFETY DEVICES	
SHEET	1

C207011-201

EQUIP.NO. XXXXXXXXXX BLDG.NO. XXXX

REV.	DATE	NAME	DESCRIPTION
F	X/X/XX	NAME	X
E	X/X/XX	NAME	X
D	X/X/XX	NAME	X
C	X/X/XX	NAME	X
B	X/X/XX	NAME	X
A	X/X/XX	NAME	X
0	11/07/08	GR	MOVED RR LDOUT STATION, CHG TWR SPC CONVEYOR 2

CAD FILENAME: X PLOT DATE: X DO NOT SCALE THIS DRAWING

DWG. No.	REFERENCE	REV.DESCRIPTION
X X		
X X		
X X		
X X		
X X		
X X		
X X		
X X		

FOR OHIO EPA USE
FACILITY ID:_____
EU ID:_____ PTI#:_____

EMISSIONS ACTIVITY CATEGORY FORM
MATERIAL HANDLING: FUGITIVE DUST EMISSIONS

This form is to be completed for any material handling operation with fugitive dust emissions. State/Federal regulations which may apply to material handling operations are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

1. Reason this form is being submitted (Check one)

   ☒ New Permit ☐ Renewal or Modification of Air Permit Number(s) (e.g. F001)_____

2. Maximum Operating Schedule: 24 hours per day; 365 days per year

   If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. _____

3. What is the material being handled? Coke

4. Mean wind speed at or near facility 9.9 miles per hour

5. Complete the following table for all unloading operations.

ID	Type of Unloading (see examples below)	Material Unloaded	Annual Quantity Unloaded (tons/yr)	Hourly Maximum Unloading Rate (tons/hr)	Avg. Moisture Content, as Unloaded (%)
A	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: bifurcated chute into rail cars	Coke	654,449	500	4.8%
B	Truck: ☒ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: chute to trucks	Coke	as backup in case rail cars not available	500	4.8%
C	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: _____				

D	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: _____				

6. Complete the following table for all loading operations.

ID	Type of Loading (see examples below)	Material Loaded	Annual Quantity Loaded (tons/yr)	Hourly Maximum Loading Rate (tons/hr)	Avg. Moisture Content, as Loaded (%)
E	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☒ other: Conveyor from SunCoke to AK Conveyor No. 1	Coke	654,449	500	4.8%
F	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☐ other:				
G	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☐ other: _____				
H	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☐ other: _____				

7. Complete the following table for all transfer operations.

ID	Type of Transfer Point (see examples below)	Number of Such Points	Type of Material Handled	Max. Transfer Rate (tons/hr)
I	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☒ belt conveyor to belt conveyor Other:_____	4	Coke	500
J	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:Conveyor No. 4 to bifurcated chute	1	Coke	500
K	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:bifurcated chute into rail cars	2	Coke	500
L	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:Conveyor No. 3 to truck chute (backup)	1	Coke	500
M	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:_____			
N	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:_____			
O	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:_____			

8. Summarize the material handling operations covered in items 5 through 7 above and identify the applicable control method(s) from available options. Complete the remaining table based upon the selected control method(s).

ID	Enclosure, Control Equipment (describe)	Chemical Stabilization	Application Frequency	Overall Control Eff. (%)	Basis for Overall Control Efficiency
A	Conveyor No. 4 to bifurcated chute into rail cars (Main Railcar Loadout Station)	☐ water ☐ dust suppressant ☐ other: _____			
B	Conveyor No. 3 to Truck Loadout Station	☐ water ☐ dust suppressant ☐ other: _____			
C		☐ water ☐ dust suppressant ☐ other: _____			
D		☐ water ☐ dust suppressant ☐ other: _____			
E	SunCoke conveyor to AK Steel (enclosed) No. 1 Conveyor	☐ water ☐ dust suppressant ☒ other: wet		70%	Ohio RACM
F		☐ water ☐ dust suppressant ☐ other: wet			
G		☐ water ☐ dust suppressant ☐ other: _____			
H		☐ water ☐ dust suppressant ☐ other: _____			
I	Enclosure (coke transfer)	☐ water ☐ dust suppressant ☒ other: wet material		70%	Ohio RACM
J	No enclosure (coke transfer)	☐ water ☐ dust suppressant ☒ other: wet material			

K	No enclosure (coke transfer)	☐ water ☐ dust suppressant ☐ other: _____			
L	No enclosure (coke transfer) (backup)	☐ water ☐ dust suppressant ☐ other: _____			
M		☐ water ☐ dust suppressant ☐ other: _____			
N		☐ water ☐ dust suppressant ☐ other: _____			
O		☐ water ☐ dust suppressant ☐ other: _____			

PM EMISSION CALCULATIONS FOR NEW MIDDLETOWN WORKS COKE CONVEYOR

Coke Handling Transfer Emissions:

Partially Enclosed Transfer Points:

At TP1 - Sun Coke Conveyor to AK Conveyor No. 1
Conveyor No. 1 to Conveyor No. 2
Conveyor No. 2 to Conveyor No. 3
Conveyor No. 3 to Conveyor No. 4

Unenclosed Transfer Points:

End of Conveyor No. 4 to the Bifurcated Chute
Side One of the Bifurcated Chute to the Hopper Car
Side Two of the Bifurcated Chute to the Hopper Car

Number of enclosed coke transfer points:	4	
Number of unenclosed coke transfer points:	2	(see assumptions below)
Maximum annual coke produced:	654,449	tons wet coke/yr
Maximum daily coke produced:	1793	tons wet coke/day

Assumptions:

Each transfer point, except the two sides of the bifurcated chute, handles the maximum annual coke produced based on the maximum annual coal charge rate.
Assume that all the coke goes through one of the sides of the bifurcated chute for purposes of these calculations. This then reduces the number of unenclosed transfer points to two.

Control efficiency for enclosed transfer points:	70%	(Ohio RACM Table 2.2 1-2)

Calculations:

Use emission factors for coke handling from AP-42, 5th Edition, p. 13.2.4-1

EF (lbs/ton) = k x 0.0032 x (U/5)^1.3/(M/2)^1.4

k, particulate multiplier for PM =	0.74	(from AP-42, 5th Edition)
k, particulate multiplier for PM_{10} =	0.35	(from AP-42, 5th Edition)
k, particulate multiplier for $PM_{2.5}$ =	0.11	(from AP-42, 5th Edition)
U, mean wind speed =	9.9	mph from Tanks 4.09 for Dayton
M, moisture content =	4.8	%

PM EF (lbs/ton coke)=	0.0016895
PM_{10} EF (lbs/ton coke)=	0.0007991
$PM_{2.5}$ (lbs/ton coke)=	0.0002511

PM emissions:

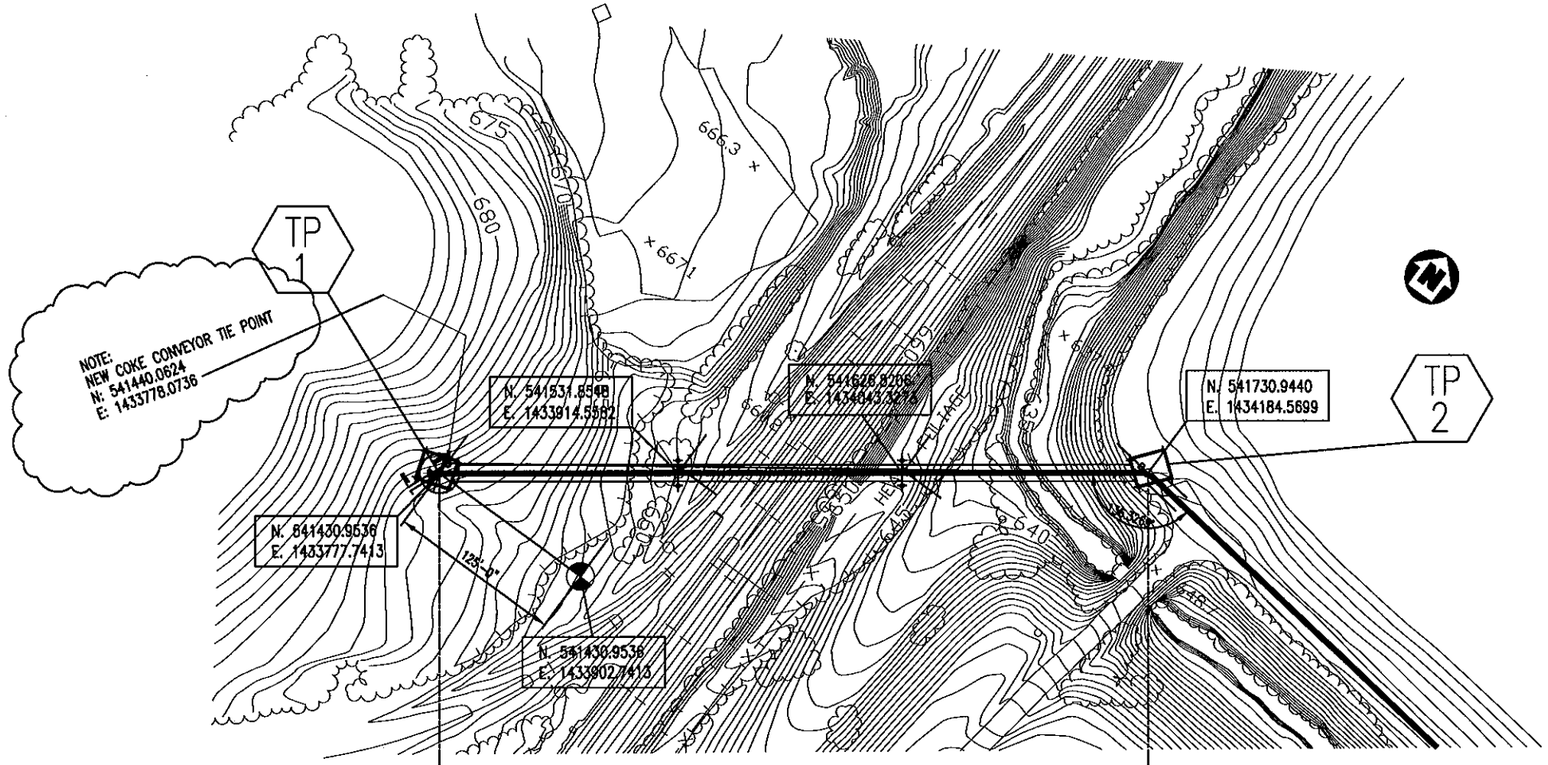
No. of Transfer Points	Type	Throughput	Efficiency	lbs/ton	lbs/hr	tons/yr
4	partially enclosed	100%	70%	2000	0.15	0.66
2	not enclosed	100%	0%	2000	0.25	1.11
				Totals:	**0.40**	**1.77**

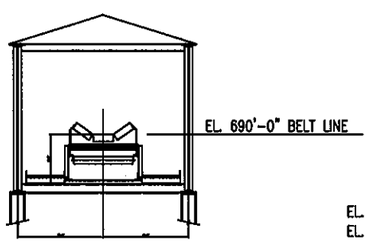
PM_{10} emissions:

No. of Transfer Points	Type	Throughput	Efficiency	lbs/ton	lbs/hr	tons/yr
4	partially enclosed	100%	70%	2000	0.07	0.31
2	not enclosed	100%	0%	2000	0.12	0.52
				Totals:	**0.19**	**0.84**

$PM_{2.5}$ emissions:

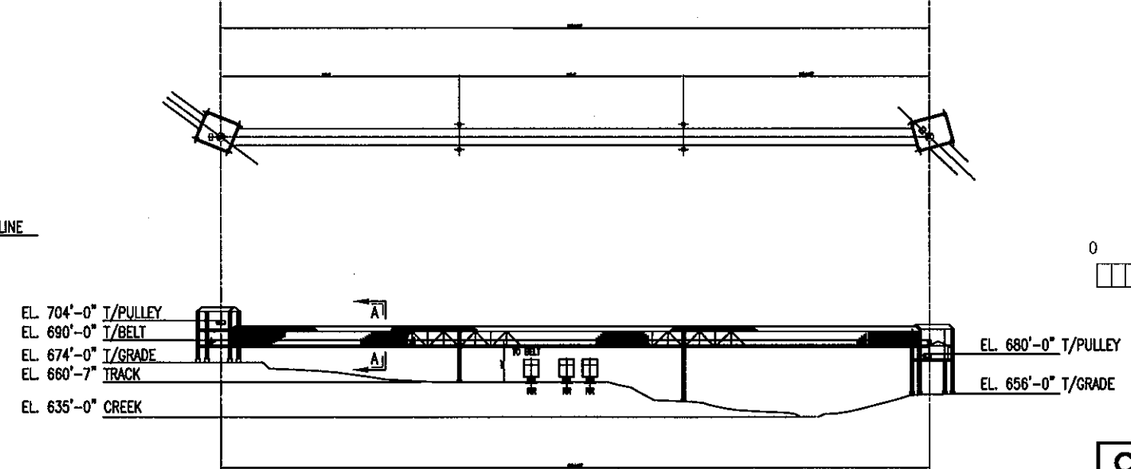
No. of Transfer Points	Type	Throughput	Efficiency	lbs/ton	lbs/hr	tons/yr
4	partially enclosed	100%	70%	2000	0.02	0.10
2	not enclosed	100%	0%	2000	0.04	0.16
				Totals:	**0.06**	**0.26**

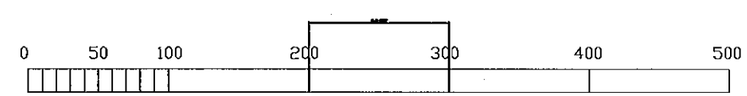




SECTION A-A

1" = 10'-0"





CONCEPT ONLY

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AK Steel MIDDLETOWN WORKS MIDDLETOWN, OHIO

DEPT.	COKEMAKING
UNIT	COKE HANDLING CONVEYOR
SUBJECT	INTEGRATION OF SUN COKE FACILITIES
DESCR.	OPTION No. 2
MSC.	
DR. GR	
TR. X	
CKD. X	SCALE 1"=50'-0"
APP. X	DATE 10/09/08
CHECKED FOR SAFETY DEVICES	SHEET 1

C207011-200

EQUIP.NO. XXXXXXXXXX BLDG.NO. XXXX

REV.	DATE	NAME	DESCRIPTION
1	X/X/XX	NAME	X
2	X/X/XX	NAME	X
3	X/X/XX	NAME	X
4	X/X/XX	NAME	X
5	X/X/XX	NAME	X
6	X/X/XX	NAME	X
7	X/X/XX	NAME	X

CAD FILENAME: X PLOT DATE: X DO NOT SCALE THIS DRAWING

ATAC ENGINEERING, INC.
PITTSBURGH, PA (412) 306-0199

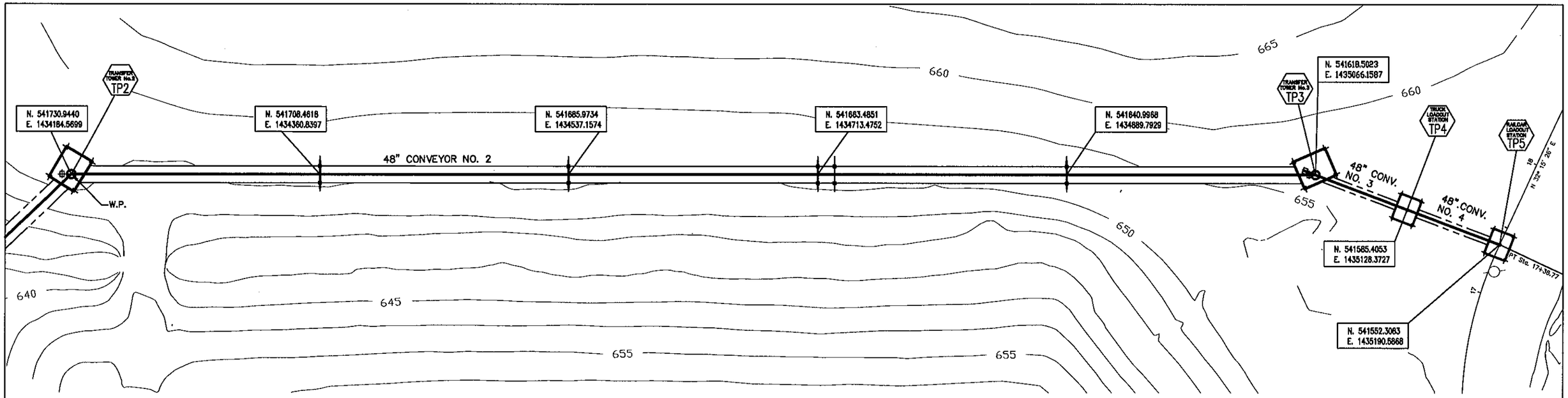
PROJECT No.- C207011 CAD FILE - C207011

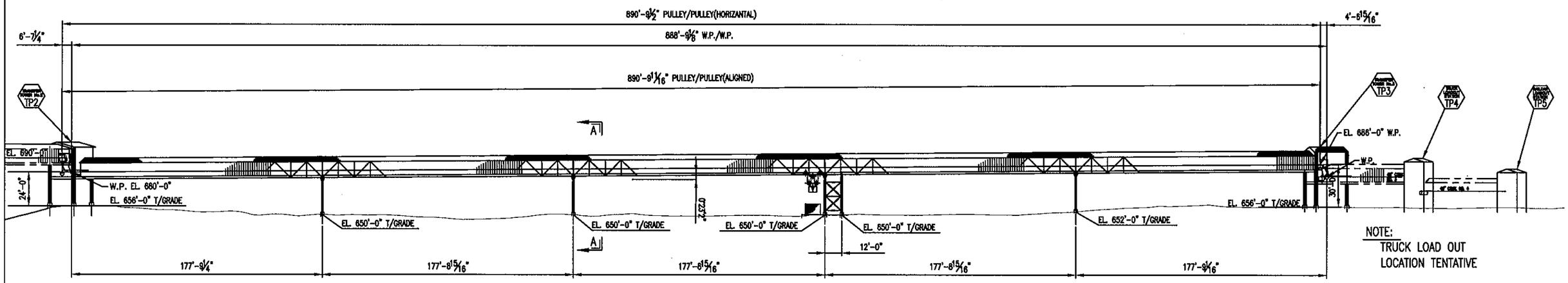
DATE X CHECKED X APPROVED X

DESIGN X DRAWING NUMBER C207011-200 REV. X

DRAWN X

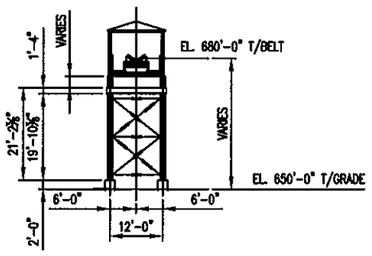
DWG. No.		REFERENCE	REV.DESCRIPTION
X	X		
X	X		
X	X		
X	X		
X	X		
X	X		
X	X		
X	X		





NOTE:
TRUCK LOAD OUT
LOCATION TENTATIVE

48" CONVEYOR NO. 2



SECTION: "A-A"
SCALE: (1/16"=1'-0")

CONCEPT ONLY

DWG. No.		REFERENCE	REV.DESCRIPTION
X	X		
X	X		
X	X		
X	X		
X	X		
X	X		
X	X		
X	X		

ATAC ENGINEERING, INC.
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PROJECT No.- C207011 | CAD FILE - C207011
DATE X | CHECKED X | APPROVED X
DESIGN X | DRAWING NUMBER C207011-202 | REV. X
DRAWN R.TIMM

EQUIP.NO. XXXXXXXXXX BLDG.NO. XXXX

REV.	DATE	NAME	DESCRIPTION
7	X/X/XX	NAME	X
6	X/X/XX	NAME	X
5	X/X/XX	NAME	X
4	X/X/XX	NAME	X
3	X/X/XX	NAME	X
2	X/X/XX	NAME	X
1	X/X/XX	NAME	X

CAD FILENAME: X | PLOT DATE: X | DO NOT SCALE THIS DRAWING

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AK Steel — MIDDLETOWN WORKS, MIDDLETOWN, OHIO

DEPT. COKEMAKING
UNIT COKE HANDLING CONVEYOR
SUBJECT INTEGRATION OF SUN COKE FACILITIES
DESCR. CONVEYOR No. 2
MKD. | DR. X | TR. X | CKD. X | APP. X
SCALE 1/32"=1'-0" | DATE XXX
CHECKED FOR SAFETY DEVICES
SHEET 1