LAND Remediation, Inc.
74 Hudson River Road
Waterford, NY 12188
(518) 766-4105

June 8th, 2021

Michael Squire
Project Manager
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7014

Re: NYSEG Clyde Manufactured Gas Plant Site
NYSDEC Site # 8-59-019

Dear Mr. Squire,

LAND Remediation, Inc. (LRI) has prepared this letter on behalf of NYSEG to present an alternative design for the excavation protection system (EPS) associated with the remedial activities at the Village of Clyde Manufactured Gas Plant (MGP) Site.

This letter includes several follow-up items as requested in an initial phone call between NYSEG and New York State Department of Environmental Conservation (NYSDEC) on May 26th, 2021. During this phone call, NYSDEC indicated that it is agreeable to the installation of an in-situ stabilization (ISS) gravity wall to serve as the EPS for the deep excavation area as identified in the Record of Decision (ROD).

We believe the information presented herein will demonstrate to the NYSDEC the applicability of this alternative, its compliance with the requirements of the ROD, and how it will be implemented. This package includes a work plan (Attachment 1), a plan view of the proposed ISS gravity wall, a plan view overlaying the historical MGP-related impacts with the gravity wall, and a draft specification section for the ISS.

Introduction and Original EPS Design Summary

The area requiring MGP impacted material removal is approximately 8,300 SF and included excavation depths to bedrock that ranged from 12′ to 19′ in depth. The original approach was to utilize a 3′ wide soil mixed hydraulic barrier wall to control groundwater infiltration in combination with a steel soldier beam and steel plate lagging system as the EPS. The western edge of the cell (also the deepest excavation area) borders the existing energized electrical substation. In addition, the electrical substation's energized transmission/distribution lines border the northern excavation limits.

Alternative EPS and Applicability

During a pre-mobilization site visit, a licensed land surveyor confirmed the electrical line height and horizontal location of the energized overhead transmission and distribution lines. The energized line locations were compared to the original northern EPS design. The overhead lines were within 2′ of the originally proposed EPS which created safety and constructability challenges, as well as risks to live electrical infrastructure. As an alternative to the soldier pile and lagging system, LRI has proposed to utilize an ISS gravity wall for the EPS around the excavation area. LRI has prepared an ISS work plan describing this alternate that is provided as Attachment 1. The dimensions and depths of the ISS gravity wall are also shown in this attachment and have been developed to provide the

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required stability as an EPS for the proposed excavation depths which will be completed to the bedrock surface as originally planned. LRI's work approach will ensure a homogeneous ISS mixture is achieved down to the existing bedrock surface. In addition, this alternate approach will allow for the full remediation of the existing site soils to the north that were in conflict due to the overhead electrical lines. These soils will be mixed and incorporated into the ISS gravity wall. As shown on the ISS Layout drawing the proposed ISS gravity wall will incorporate all of the previously approved hydraulic barrier wall limits as well as provide additional remedial treatment along the eastern and southern excavation boundaries in order to remove MGP impacted material to the full excavation limits.

The ISS gravity wall will serve as the EPS for the removal of the MGP impacted materials including full removal of the former underground gas holder. Also provided is an overlaid plan view of GEI's Figure 4 from the Feasibility Study Report and the ISS gravity wall limits. In addition to providing excavation support, the ISS gravity wall will provide a hydraulic barrier to minimize groundwater flow below the wall. The ISS gravity wall will be completed to a width of 12-15'.

In compliance with NYSDEC criteria, the ISS gravity wall will be excavated at the end of the project to a depth of 4' below ground surface to minimize freeze / thaw impacts. In addition, several wall penetrations along the northern and southern walls will be completed to a depth of 10' below grade to restore groundwater flow patterns.

Thank you for your consideration in this matter. Please feel free to contact Mr. John Ruspantini with any additional questions or concerns related to this matter. We appreciate your assistance.

Sincerely,

Will Lindheimer

cc: John J. Ruspantini – NYSEG
Jason Brien – Arcadis
Dan Kopcow – GEI
Harper Callahan - LRI

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Attachment 1
ISS Work Plan

New York State Electric & Gas
Clyde Former Manufactured Gas Plant Site
ISS Implementation Plan
Clyde, NY
SITE NO. 8-59-019

SUBMITTED TO:

NYSEG
Mr. John Ruspantini., Senior Project Manager
Environmental Remediation
PO Box 5224
Binghamton, NY 13902-5224

SUBMITTED BY:

LAND Remediation, Inc.
74 Hudson River Road
Waterford, NY 12188

6/8/2021

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FIGURES

ATTACHMENTS

1.0 INTRODUCTION

This submittal is intended to outline the In-Situ Soil Stabilization (ISS) process, equipment, materials, construction methods, and quality control relative to the work at the Clyde MGP Site in Clyde, NY.

LRI's work will include the following:

- Mobilization of soil mixing equipment
- ISS Installation
- Demobilization and general site cleanup

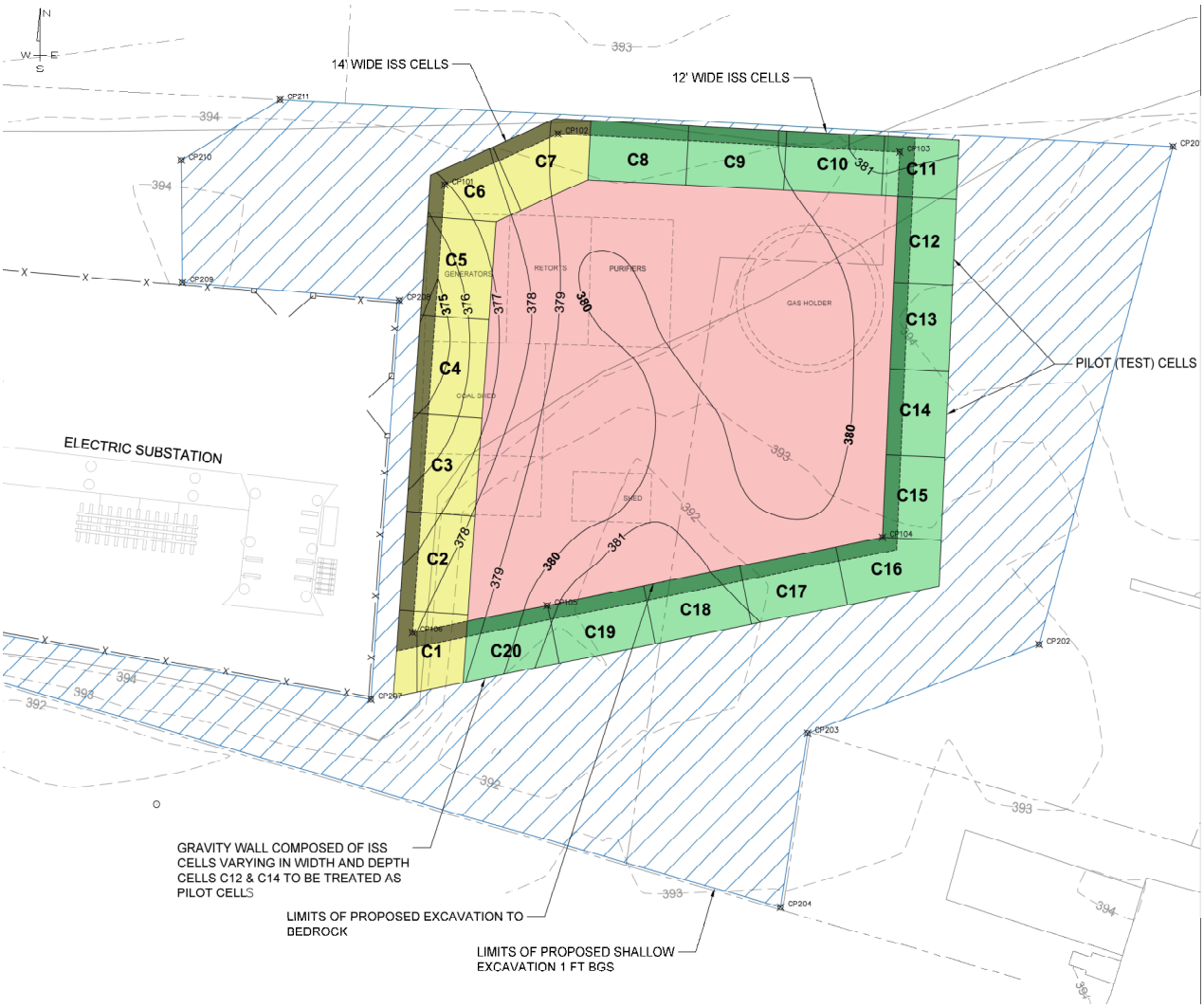
Sections of this submittal include:

- Mix Design
- ISS Mixing Equipment
- Materials
- Batch Plant Mixing
- Construction Methods and Execution
- Post ISS Excavation

1.1 MOBILIZATION

This task will include mobilization of equipment, materials, and personnel to the site. The grout production equipment will be assembled in the lined grout mixing area. The equipment and material to be used for the project includes the slurry mixing plant, storage tanks and a cement storage silo. The mobilization will include the grout plant, two 50-ton silos, material handling equipment, and a generator.

Proposed Site Layout



2.0 ISS IMPLEMENTATION

2.1 ISS Pilot Cells

The purpose of the pilot cells is to ensure the soil mixing equipment is producing a consistent grout-soil mixture and that the equipment and procedures will ensure the full-scale SMW meets the performance objectives established. During the start-up phase, the grout measurements will be recorded to ensure the grout density and viscosity is as expected. LRI will perform a pilot test using a 10%, 12% and 14% re-agent to soil mix ratio. Based on QAQC sample results, an appropriate dosage rate will be implemented for full scale ISS operations.

Cells C-12 and C-14, will be bisected (forming C-12 A/B and C-14 A/B) in order to perform an on-site pilot test on a smaller footprint. LRI will mix and sample these two partial cells at a 40%/60% blend of Portland Cement Type I/II and Grade 100 Ground Granulated Blast Furnace

Slag (GGBFS) at total reagent addition rates of 10%, 12%, and 14% per wet weight of soil (assume soil unit weight of 130 pounds per cubic foot) to be treated. The water:cement ratio will be adjusted to from 1 to 1.5 for cell C-12A and Cell C-14A based on field conditions during mixing. LRI understands the performance criteria of the ISS to have an Unconfined Compressive Strength (UCS) of 75 psi and achieve a target average Hydraulic Conductivity of 1 x 10-6 cm/sec or less.

2.2 FULL SCALE ISS IMPLEMENTATION

2.2.1 BATCH PLANT MIXING

Portland Cement and GGBFS grout will be produced on-site in a high speed/high shear colloidal batch plant. The grout mixture produced in the batch plant will be transferred to the ISS location via the pump from the agitation tank and discharged in the current mix cell. Grout will be batch mixed for each cell in accordance with the completed mix design. Upon water addition, cement and GGBFS will be added from silos adjacent to the batch plant. The silos will be equipped with a dry reagent auger. Each batch mixed will be prepared by adding the proper amounts of dry reagents measured by the load cells. The unit weight of each grout batch will be checked twice per day using a mud balance to further ensure compliance with the mix design. The amount of grout required for each cell will be measured and controlled using a flow meter or based on batched volumes.

2.2.2 CONSTRUCTION METHODS AND EXECUTION

The pre-excavation or pre-cut is performed primarily to remove overburden soils and debris that may interfere with the soil mixing. The pre-cut is also performed to create a reservoir for the swell that is created by blending the grout in with the soil, therefore increasing the volume and expansion of the subsurface soils. LRI typically pre-cuts an ISS cell the day before or the same day of soil mixing depending on the site constraints. There will be several pre-cuts as it relates to this site with all pre-excavations to be approximately 2.5' depth to contain swell.

Once the preparatory activities are complete and ISS begins, the grout is pumped to the cell and the excavator starts mixing the soil until the prescribed batch for that cell has been added. The vertical mixing will take place in approximately one-foot-thick lifts as the excavation proceeds. This will allow the excavator operator to control the mixing process. The excavation/mixing process will continue until bedrock is reached. The operator will thoroughly mix across the bedrock surface and key in to weathered rock if possible. The GPS system will log the bucket position and record survey shots taken at the 4 corners and center when the design depth or refusal has been reached.

In order to control water on any areas that surface water would flow towards the ISS area, berms or shallow swales will be constructed to divert any storm water away from the ISS mixing zone. LRI will maintain submersible pumps, hoses and a frac tank (as necessary) to manage water.

During excavation if debris is encountered, the debris will be removed and staged and processed to 12" minus material and re-deposited back into fresh ISS cells. Material that cannot be re-deposited will be sized for disposal with the excavator. LRI will allow the excess grout to solidify

prior to loading the excess material out to the landfill. It is intended that the Link-Belt 700 excavator should be able to handle any obstructions encountered and as part of the ISS Gravity Wall. A second, smaller excavator will also be on-site to assist and size any debris encountered and to perform sampling of freshly mixed soil.

Upon completion of the ISS cell, equipment that had contacted the contaminated material will be decontaminated. The cleaning of the equipment will be performed at least daily to keep the amount of grout mixture from building up on the excavator. Daily cleaning of equipment using a high- pressure power washer is typically performed over the work area that has been previously mixed or is intended to be mixed or remediated in the future.

Based on the size and depth of the cells as they relate to sensitive structures, LRI will utilize two different excavators to perform the work. A Link-Belt 700 Excavator will be used for cells C-1 through C-5 and C-12 through C-20. A Komatsu 360 Excavator will be utilized while mixing cells C-6 through C-10 along the North side of the project. The Komatsu 360 is smaller and will allow the crew to maintain a safe working distance from the overhead electric infrastructure adjacent to the work area.

2.2.3 POST ISS EXCAVATION

Following the ISS and curing of the gravity wall, LRI will excavate the remaining interior MGP impacted soils down to weathered bedrock. This material will be transported and disposed of off-site, as per the ROD. Once contaminated soils are removed and clean backfill is placed, LRI will remove sections of the ISS to 10' bgs to facilitate groundwater flow. The north and south walls will be removed to 10' bgs, unless additional groundwater modelling demonstrates the effectiveness of partial removal. At the end of the excavation any remaining ISS monolith will be excavated to a depth of 4' below ground surface to minimize frost impacts to the monolith.

2.2.4 SOIL MIXING EQUIPMENT

LRI plans to use a Link-Belt 700 excavator for this project as well as a Komatsu 360 excavator. The two excavators have the digging capacity to reach the design elevations, however the Link-Belt 700 can achieve a higher production rate. Both the Link-Belt 700 excavator and Komatsu PC360 have skeleton buckets to allow for grout to flow into and out of the bucket for better homogenization of the soil and grout mixture.

LRI will utilize a Trimble GPS system integrated into the excavators to maintain horizontal and vertical control. LRI maintains spare parts onsite in the event there is a breakdown with the GPS equipment. If a GPS breakdown occurs while mixing a cell, LRI can utilize grout lines on the stick and boom and hard measurements off the stick of the excavator to confirm depth. Due to the depth of the ISS at this site, the use of a survey rod plunged through the soil mix is difficult to implement as an alternate method. Additional cells will not be initiated until the GPS system is functional if a breakdown occurs. The Trimble® GCS900 Grade Control System with dual GPS will be installed on the excavator bucket. The system uses two GPS receivers and solid-state angle sensors to measure the precise 3D position of the tip of the bucket. The units will be backchecked

daily to established control points to ensure that calibration and grade control is consistently within tolerance. These back-check readings will be logged and made available at request.

The Trimble dual GPS antenna configuration computes the exact position and orientation of the machine bucket. With the accurate, 3D positioning of the bucket, the system guides the operator to quickly perform mixing of the entire cell.

The rugged AS300 angle sensors have no moving parts and can be submerged in up to 20 meters (66 feet) of water making the GCS900 for excavators ideal for underwater excavation applications. This application will take this same rugged sensor along with additional protection of the sensors. This protection will include welding steel shrouds over the sensors to protect them from directly encountering any subsurface obstructions. The on-board Trimble Control Box determines the position of each tip of the bucket and compares these positions to a design elevation. This combined with the in-cab mounted light bars show the operator what bucket movement is required to get to grade.

All equipment being utilized is conventional construction equipment. All equipment will be equipped with factory supplied mufflers and exhaust system. Noise monitoring will be performed periodically around the perimeter of the work area to confirm that sound levels are below project thresholds. The air quality will be monitored under the Employee and Community Air Monitoring Plan (ECAMP) and the Health and Safety Plan for worker exposure levels. LRI will be responsible for mitigating any noise or dust issues and will maintain odor control measures including Bio-Solve and Rusmar foam for suppression.

LRI's batch plant will be comprised of the following:

- Capacity - Approximately 30 CY/hr. maximum mixing capacity (with water/re-agent ratio = 1:1)
- Control Panel - Automatic/manually operated from the control panel. The Mixing Unit is in a 20' long container. By means of the control panel it is possible to control all the Mixing Unit components. The control panel displays a lay-out of the mixing plant with lights that indicate the working components. There are also other devices displayed, such as, air pressure gauge of the air compressor, blowers air pressure gauge, hour meter, batch counter, switches for the automatic/manual operations of the system, timers for the emergency manual operations (in case of scale breakage), alarm lights for incorrect electrical powering. The control panel is located in a separate room inside the container.
- Weighing system - Electronic weighing system by means of 3 load cells. With the scale located on the control panel it is possible to control up to 10 components mixing designs. The data of the mixed components can be stored on a flash card and transferred to a PC.
- Mixer tank - Tank maximum capacity: 338 gallons. Pump is an open impeller type driven by a 22 kW electric motor.
- Agitator tank - Tank maximum capacity: 850 gallons. The tank has a vertical shaft with two level steel blades driven by an electric motor with a reduction gear.
- Pneumatic system - Air compressor (positioned in separate soundproof compartment) with 105 gal/minute capacity and 26-gallon tank. The system is pneumatically operated to permit the mixing operations and also to transfer the grout from the mixer to the

agitator tank. The system is equipped with an auxiliary air hose for operating blowers located in the cement silo(s).
- Water tank and water line - The water tank is located under the container roof and has a capacity of 343 gallons. The water discharging in the mixer tank is controlled by a pneumatic valve.
- Spare Parts – Some spare parts will be maintained on-site, most parts are available for overnight delivery, if required. LRI maintains spare parts for many of the components of the system.

Equipment cut sheets are provided in the Attachments.

Ancillary Equipment

- Pneumatic cement storage silo with cement metering device, air filter and cement loading blower.
- Link-Belt 235 Excavator: Spoils handling, debris.
- Generator: Power batch plant and electric pumps.
- Air Compressor: Clean out grout lines.
- Manlift: Maintenance and repair to the silos, grout plant or excavator.

2.2.4 MATERIALS

LRI will be using Portland Cement Type I/II and Grade 100 Ground Granulated Blast Furnace Slag (GGBFS) as supplied by Lehigh Cement or Lafarge. LRI will coordinate all ordering, delivery, and storage of materials. Potable water for the mix design will be from a local hydrant.

2.2.5 PERFORMANCE CRITERIA

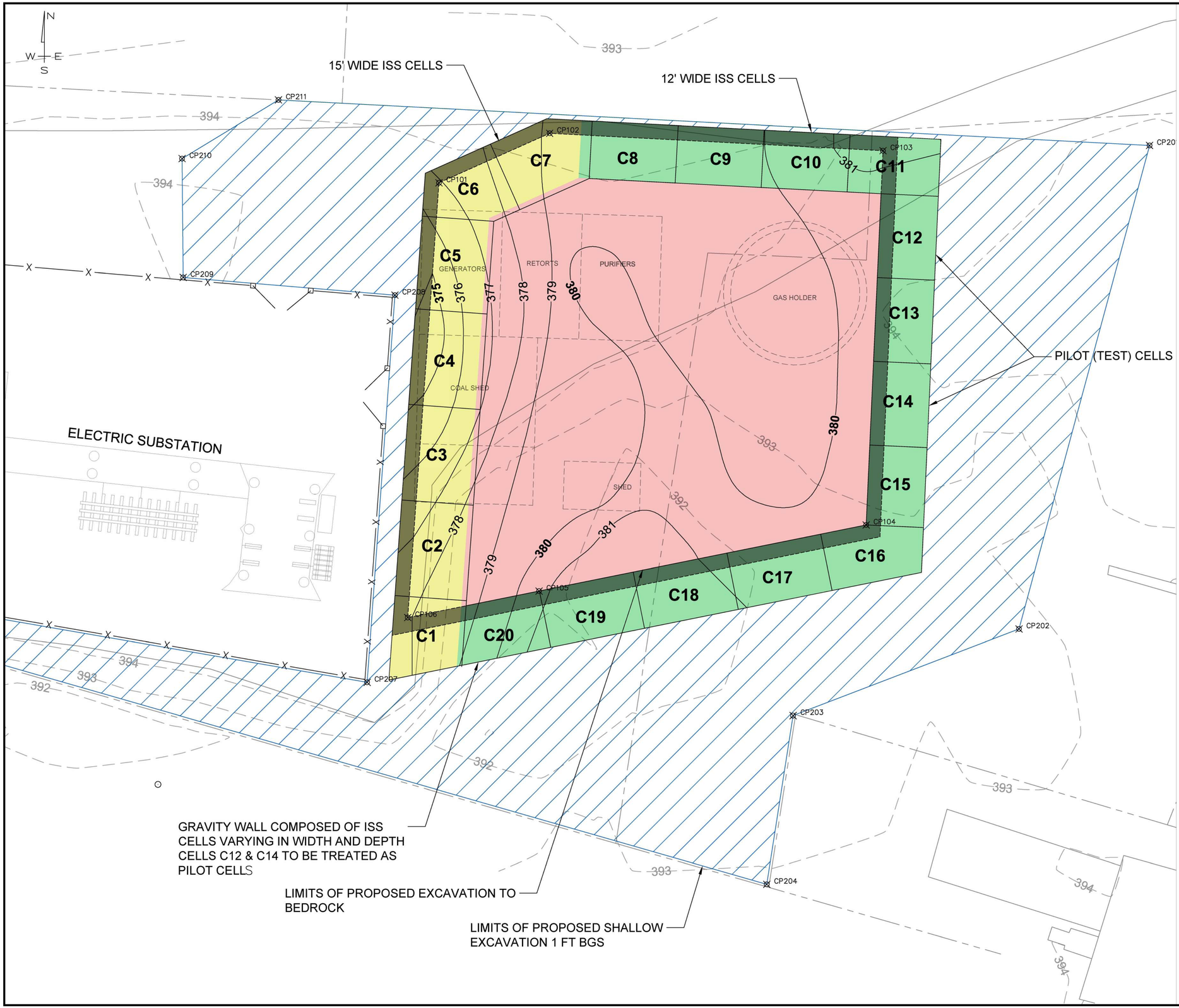
LRI will collect verification ISS samples at a frequency of 1 set for every 500 cubic yards or at a minimum 1 set per day. The samples will be tested for permeability and compressive strength (ASTM D5084 and D1633, respectively). Each set of samples shall consist of six 3-inch by 6-inch sample specimens (cylinders) of homogenized solidified soils obtained from the ISS monolith surface, mid-point, or other depths to be determined onsite in coordination with the engineer. Samples will be collected using LRI's discrete interval sampling device. Samples will be prepared and cured in accordance with ASTM D4832. Samples will be shipped to the laboratory for the remaining holding times and physical testing.

LRI will utilize PW Labs to analyze the geotechnical parameters. The Unconfined Compressive Strength (UCS) shall be determined by ASTM D1633. USC tests shall be performed after a 7-day cure time. As determined by the Engineer, additional samples may be tested at a longer cure time (i.e., 28 days) if 7-day samples do not meet the project performance standard of at least 75 psi. Hydraulic conductivity (permeability) of the treated soil matrix shall be determined by ASTM D5084. Hydraulic conductivity testing shall be performed after a 28-day cure time, LRI may elect to run early permeabilities to ensure the ISS is meeting the performance criteria. 7 and 14 day conductivities will be performed on early ISS cells to ensure performance criteria is being achieved.

In addition to performing QAQC testing above, LRI will utilize Parratt Wolf to complete a post ISS coring program. One core borehole will be completed for every 5,000 SF. The entire ISS treatment area is approximately 4,785 SF so 1 core boring will be performed, or as directed by the engineer.

Figure 1

ISS Layout



KEY:

- GRAVITY WALL ISS CELLS
- C1 GRAVITY WALL ISS CELL ID
- EXISTING CONTOURS
- DESIGN CONTOURS (APPROXIMATE BEDROCK)
- EXCAVATION CONTROL POINT
- PROPOSED GRAVITY WALL ISS CELL 12' WIDE X DEPTH TO BEDROCK
- PROPOSED GRAVITY WALL ISS CELL 15' WIDE X DEPTH TO BEDROCK
- PROPOSED SURFACE SOIL EXCAVATION AREA (1 FT BGS)
- PROPOSED DEEP SOIL EXCAVATION AREA (TO BEDROCK)
- LIMITS OF ORIGINAL DESIGN HYDRAULIC BARRIER WALL

NOTES:

1. ALL ELEVATIONS SHOWN REFER TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UNLESS SPECIFIED OTHERWISE.
2. GRAVITY WALL TO BE MIXED FROM 2.5' BGS TO BEDROCK WITH EXPECTED TOP OF GRAVITY WALL ELEVATION AFTER SWELL & SOLIDIFICATION BACK TO ORIGINAL GRADE.
3. GRAVITY WALL DESIGN WIDTH TO BE A MINIMUM OF 70% OF THE DEPTH TO BEDROCK UNLESS OTHERWISE SPECIFIED BY DESIGN ENGINEER.
4. GRAVITY WALL ISS MIX TO CONSIST OF APPROXIMATELY 12% REAGENT (REAGENT SHALL BE 60:40 BLEND OF GROUND GRANULATED BLAST FURNACE SLAG TO PORTLAND CEMENT RESPECTIVELY) PER WET WEIGHT OF CELL AND WATER RATIO OF 1.25:1 UNLESS OTHERWISE SPECIFIED BY DESIGN ENGINEER. PERCENT REAGENT AND WATER RATIO MAY VARY SLIGHTLY BASED ON RESULTS OF ON SITE PILOT/TEST CELLS.
5. ISS SHALL BE THOROUGHLY MIXED TO THE TOP OF COMPETENT BEDROCK. NOTIFY ENGINEER IF BEDROCK DEPTHS EXCEED THOSE SHOWN ON THE DRAWINGS.
6. NOTIFY ENGINEER IF GROUNDWATER TABLE IS ENCOUNTERED SHALLOWER THAN 4 FEET BELOW GRADE.
7. MAINTAIN ISS SLURRY WITHIN 3 FEET OF THE TOP OF THE CELL AT ALL TIMES TO MAINTAIN STABILITY AND MINIMIZE SLOUGHING OF ADJACENT SOILS DURING MIXING.
8. ISS CELLS SHALL ACHIEVE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH (UCS) OF 75 PSI PRIOR TO EXCAVATING IN FRONT OF THE CELL. UCS TESTING SHALL BE COMPLETED ON EACH ISS CELL, WITH SAMPLES TO BE TAKEN FROM BOTTOM THIRD OF CELL. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO EXCAVATION.
9. 240 PSF CONSTRUCTION SURCHARGE IS INCLUDED IN DESIGN. DO NOT STOCKPILE SOILS WITHIN 20 FEET OF THE ISS GRAVITY WALL.
10. DURING EXCAVATION - LIMIT SURCHARGE ON GRAVITY WALL BY MINIMIZING OPEN EXCAVATION DIRECTLY ADJACENT TO GRAVITY WALL.
11. DEWATER THE EXCAVATION TO MAINTAIN WATER LEVELS AT OR BELOW THE EXCAVATION DEPTH.
12. MONITOR SURROUNDING AREAS DURING EXCAVATION. NOTIFY ENGINEER OF ANY UNSUSPECTED GROUND MOVEMENTS AND/OR CRACK FORMATION DURING EXCAVATION.
13. BACKFILLING SHALL COMMENCE AS SOON AS PRACTICABLE FOLLOWING EXCAVATION.

0 5 10 20 Feet
1:120

REVISIONS	DRN	CHK	DATE
0	ZN	WL	6/2/2021

NYSEG CLYDE FORMER MGP SITE
SODUS STREET
CLYDE, NEW YORK 14433

PROPOSED GRAVITY WALL & EXCAVATION PLAN

LAND Remediation, Inc.
an environmental services company

DATE
2 JUNE 2021

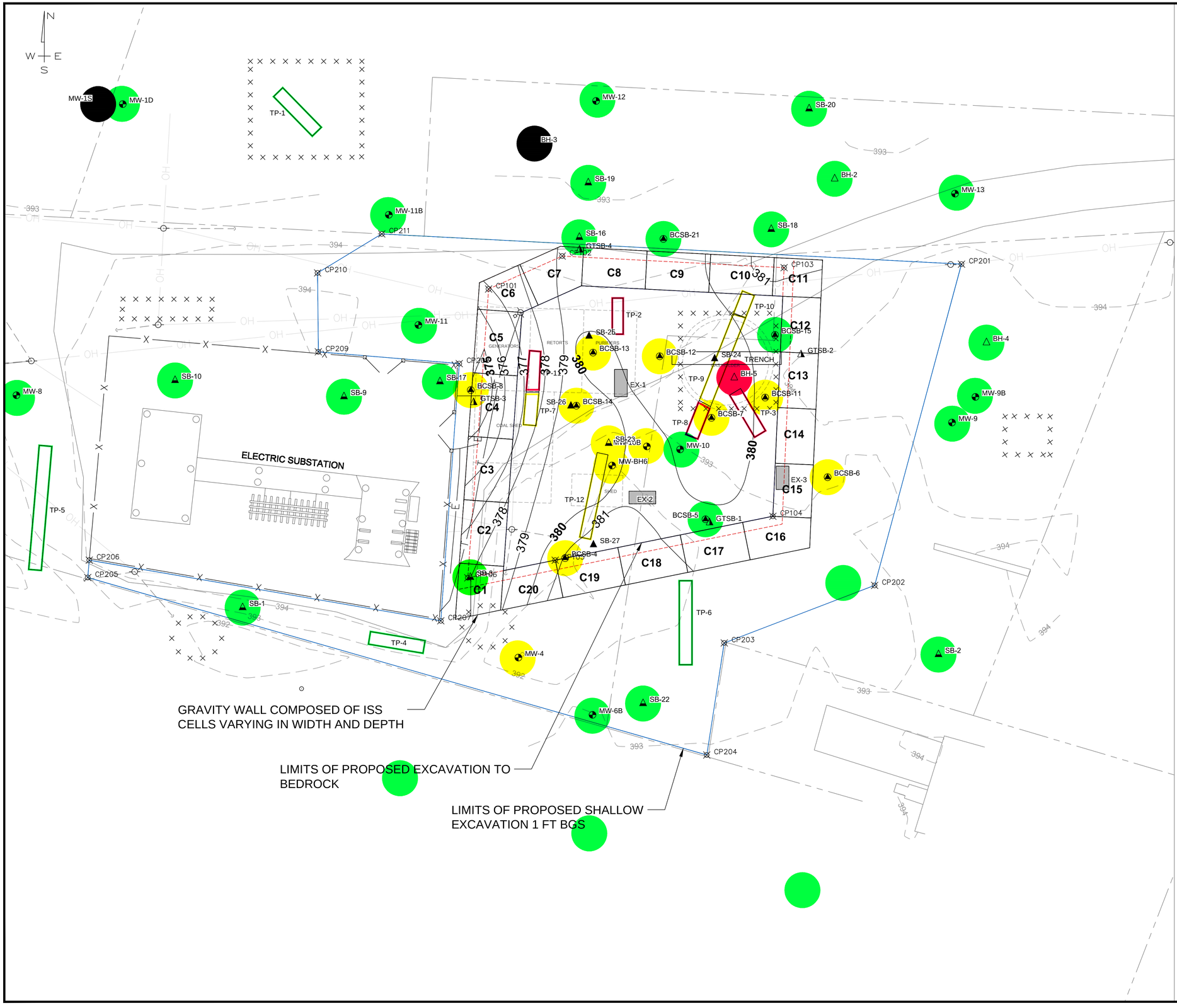
PROJECT NO
ARCADIS NO. B0013151.0000.00004

DRAWING NO
210602 GW-EXCAV

SHEET NO
1 of 1

Figure 2

Investigation vs. Proposed Gravity Wall Layout



KEY:

- GRAVITY WALL ISS CELLS
- C1 GRAVITY WALL ISS CELL ID
- 393 EXISTING CONTOURS
- DESIGN CONTOURS (APPROXIMATE BEDROCK)
- EXCAVATION CONTROL POINT
- PROPOSED SURFACE SOIL EXCAVATION AREA (1 FT BGS)
- PROPOSED DEEP SOIL EXCAVATION AREA (TO BEDROCK)
- LIMITS OF ORIGINAL DESIGN HYDRAULIC BARRIER WALL
- MONITORING WELL
- TP-2 TEST PIT LOCATION
- SOIL BORING LOCATION
- PDI SOIL BORING LOCATION
- PDI GEOTECHNICAL SOIL BORING LOCATION
- SOIL BORING LOCATION WITH BEDROCK CORE
- COAL TAR OR COAL TAR NAPL COATED OR SATURATED SOIL
- HYDROCARBON STAIN, SHEEN OR NAPL BLEBS
- PETROLEUM IMPACTS, STAINING & ODOR
- NO VISIBLE HYDROCARBON IMPACTS OBSERVED

NOTES:

1. ALL ELEVATIONS SHOWN REFER TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UNLESS SPECIFIED OTHERWISE.
2. LOCATIONS OF BORINGS, TEST PITS AND VARIOUS SAMPLING SHOWN FOR REFERENCE ONLY. SEE PROJECT PLANS AND SPECIFICATIONS FOR DETAILS OF INVESTIGATION STUDY.

0 7.5 15 30 Feet
1:180

	DATE	DRN	CHK
ZN	6/2/2021	WL	
0			NO

REVISIONS

NYSEG CLYDE FORMER MGP SITE
SODUS STREET
CLYDE, NEW YORK 14433

NVESTIGATION VS PROPOSED GRAVITY WALL RELATIVE LOCATIONS

LAND Remediation, Inc.
an environmental services company

DATE
2 JUNE 2021

PROJECT NO
ARCADIS NO. B0013151.0000.00004

DRAWING NO
210602 GW-INV-REF

SHEET NO
1 of 1

Attachment A

Mix Tables

LAND Remediation, Inc.
an environmental services company

LAST REVISED: 6/2/2021

NYSEG CLYDE FORMER MGP SITE
SODUS STREET
CLYDE, NEW YORK 14433

CAD QUANTITIES

TABLE 1 - OU1 - GRAVITY WALL - PRE-EXCAVATION & ISS TREATMENT MIX

CELL ID	CELL AREA	TOTAL CELL VOLUME	CELL WIDTH	AVERAGE CELL DEPTH (OG TO BEDROCK)	PRE-CUT DEPTH BELOW ORIGINAL GRADE	PRE-CUT VOLUME	AVERAGE DEPTH BELOW PRE-CUT TO BEDROCK	ISS TREATMENT VOLUME	APPROXIMATE ISS VOLUME PER FOOT	UNIT WEIGHT	ISS TREATMENT WEIGHT	DRY RE-AGENT MIX RATE	DRY RE-AGENT MIX (40% PC)	DRY RE-AGENT MIX (60% GGBFS)	TOTAL DRY RE-AGENT MIX	WATER TO RE-AGENT RATIO	WATER VOLUME	TOTAL ISS TREATMENT MIX	RE-AGENT MASS/MIX CYCLE	MIX CYCLES
	FT^2	CY	FT	FT	FT	CY	FT	CY	CY/FT	LBS/FT^3	TONS	%	TONS	TONS	TONS	W:RA	GALLONS	GALLONS	KG	QTY
C1	234.0	132.7	15.0	15.3	2.5	21.7	12.8	111.0	8.7	130.0	194.8	12%	9.4	14.0	23.4	1.25	7,007.2	8,877.6	1,000.0	47.7
C2	300.0	176.5	15.0	15.9	2.5	27.8	13.4	148.7	11.1	130.0	261.0	12%	12.5	18.8	31.3	1.25	9,388.8	11,894.8	1,000.0	63.9
C3	300.0	193.9	15.0	17.5	2.5	27.8	15.0	166.1	11.1	130.0	291.6	12%	14.0	21.0	35.0	1.25	10,488.5	13,288.1	1,000.0	71.4
C4	300.0	204.3	15.0	18.4	2.5	27.8	15.9	176.5	11.1	130.0	309.7	12%	14.9	22.3	37.2	1.25	11,141.9	14,115.9	1,000.0	75.9
C5	291.0	193.2	15.0	17.9	2.5	26.9	15.4	166.3	10.8	130.0	291.8	12%	14.0	21.0	35.0	1.25	10,496.1	13,297.7	1,000.0	71.5
C6	224.0	137.9	15.0	16.6	2.5	20.7	14.1	117.2	8.3	130.0	205.6	12%	9.9	14.8	24.7	1.25	7,397.5	9,372.0	1,000.0	50.4
C7	273.2	151.5	15.0	15.0	2.5	25.3	12.5	126.2	10.1	130.0	221.5	12%	10.6	15.9	26.6	1.25	7,967.2	10,093.9	1,000.0	54.3
C8	216.0	114.5	12.0	14.3	2.5	20.0	11.8	94.5	8.0	130.0	165.9	12%	8.0	11.9	19.9	1.25	5,967.0	7,559.7	1,000.0	40.6
C9	216.0	112.6	12.0	14.1	2.5	20.0	11.6	92.6	8.0	130.0	162.5	12%	7.8	11.7	19.5	1.25	5,845.2	7,405.4	1,000.0	39.8
C10	216.0	108.0	12.0	13.5	2.5	20.0	11.0	88.0	8.0	130.0	154.5	12%	7.4	11.1	18.5	1.25	5,556.0	7,039.1	1,000.0	37.8
C11	228.2	110.3	12.0	13.1	2.5	21.1	10.6	89.2	8.5	130.0	156.5	12%	7.5	11.3	18.8	1.25	5,630.5	7,133.4	1,000.0	38.3
C12	210.0	104.8	12.0	13.5	2.5	19.4	11.0	85.4	7.8	130.0	149.9	12%	7.2	10.8	18.0	1.25	5,391.0	6,830.0	1,000.0	36.7
C13	210.0	105.2	12.0	13.5	2.5	19.4	11.0	85.8	7.8	130.0	150.5	12%	7.2	10.8	18.1	1.25	5,414.3	6,859.5	1,000.0	36.9
C14	210.0	103.2	12.0	13.3	2.5	19.4	10.8	83.7	7.8	130.0	146.9	12%	7.1	10.6	17.6	1.25	5,284.3	6,694.8	1,000.0	36.0
C15	200.4	94.2	12.0	12.7	2.5	18.6	10.2	75.7	7.4	130.0	132.8	12%	6.4	9.6	15.9	1.25	4,778.0	6,053.3	1,000.0	32.5
C16	228.9	104.4	12.0	12.3	2.5	21.2	9.8	83.2	8.5	130.0	146.0	12%	7.0	10.5	17.5	1.25	5,250.9	6,652.5	1,000.0	35.8
C17	240.0	103.7	12.0	11.7	2.5	22.2	9.2	81.4	8.9	130.0	142.9	12%	6.9	10.3	17.2	1.25	5,141.1	6,513.4	1,000.0	35.0
C18	240.0	97.5	12.0	11.0	2.5	22.2	8.5	75.3	8.9	130.0	132.2	12%	6.3	9.5	15.9	1.25	4,754.1	6,023.1	1,000.0	32.4
C19	240.0	97.7	12.0	11.0	2.5	22.2	8.5	75.4	8.9	130.0	132.4	12%	6.4	9.5	15.9	1.25	4,763.0	6,034.3	1,000.0	32.4
C20	207.6	94.6	12.0	12.3	2.5	19.2	9.8	75.4	7.7	130.0	132.3	12%	6.3	9.5	15.9	1.25	4,758.2	6,028.3	1,000.0	32.4
TOTAL	**4,785.2**	**2,540.7**		**14.1**	**2.5**	**443.1**	**11.6**	**2,097.6**	**180.3**	**130.0**	**3,681.3**		**176.7**	**265.1**	**441.8**		**132,420.8**	**167,766.9**		**901.7**

TABLE 2 - UNIT CONVERSION & ASSUMED VARIABLES

Assumed Constants	Values	Units	Physical State
Water - Specific Gravity	1	(SG)	Liquid
Portland Cement - Specific Gravit	3.15	(SG)	w/in Grout Mix
GGBFS - Specific Gravity	2.9	(SG)	w/in Grout Mix
Water - Unit Weight	62.43	lbs/ft^3	Liquid
Portland Cement - Unit Weight	94.0	lbs/ft^3	Dry (Loose)
GGBFS - Unit Weight	75.0	lbs/ft^3	Dry (Ground)
Portland Cement - Unit Weight	196.7	lbs/ft^3	Wet
GGBFS - Unit Weight	181.0	lbs/ft^3	Wet

NOTE:
C12 & C14 TO BE TREATED AS PILOT CELLS TO DETERMINE BEST %RE-AGENT AND WATER RATIO TO BE TARGETED BASED ON EXISTING SITE CONDITIONS.

EXCAVATION QUANTITIES (POST ISS SOLIDIFICATION):

DEEP SOIL EXCAVATION AREA	6,400	SF	(AREA BOUNDED BY INTERIOR LIMITS OF ISS GRAVITY WALL)
DEEP SOIL EXCAVATION VOLUME	3,250	CY	(SURFACE TO SURFCAE TIN CALCULATION OF ORIGINAL GRADE TO BEDROCK)
AVERAGE DEEP SOIL EXCAVATION DEPTH	13.7	FT	(AVERAGE DEPTH FROM ORIGINAL GRADE TO BEDROCK)
4' EXCAVATION POST ISS SOLIDIFICATION - AREA	4,785	SF	(HORIZONTAL LIMITS OF GRAVITY WALL)
4' EXCAVATION POST ISS SOLIDIFICATION -VOLUME	709	CY	

Attachment B

Material Data Sheets

Material Certification Report

Brand Name: **Allcem Slag Cement** **Test Period:** **08-04-19**
Type: **ASTM C989 Grade 100** **to:** **08-26-19**

General Information

Supplier:	Lehigh Cement Company	Source Location:	Picton Plant
Address:	1370 Highway 49 South		
	Picton, ON, K0K 2T0	Contact:	Mike Stanzel
		Phone	226-868-4422

Allcem Slag Cement meets ASTM C-989 and AASHTO M-302 for Grade 100 Ground Granulated Blast-Furnace Slag
We are not responsible for improper use or workmanship

Test Data on ASTM "Standard" Requirements

Chemical (C989, Table 2)			Physical (C989, Table1)		
Item	**Limit**	**Result**	**Item**	**Limit**	**Result**
			+45 µm (No. 325) Sieve (%)	20 max	4.53
			Blaine Fineness (m^2/g)		524
Sulfide S (%)	2.5 Max	0.6	Autoclave Expanion (%)	max 0.5	0.03
			Air Content (%)	12 max	10.5
Sulfate Ion - SO_3 (%)	NA	0.79			
			Slag Activity Index (SAI %)		
Al2O3 (%)	NA	9.25	Average of Last 5 Samples:		
			Avg 7 Day Index		60
			Avg 28 Day Index	95 min	107
			Current Samples:		
			7 Day Index		59
			28 Day Index	90 min	106

Test Data on Reference Cement

Chemical			Physical		
Item	**Limit**	**Result**	**Item**	**Limit**	**Result**
Total Alkalies as Na_2O (%)	0.60-0.90	0.89	Blaine Fineness (m2/kg)	-	358
C_3S	-	51	Compressive Strength MPa (psi):		
C_2S	-	22	7 Day	-	30.8 (4470)
C_3A	-	4.5	28 Day	35 (5000) min	33.2 (4817)
C_4AF	-	11			

Optional Test Data

Chemical			Physical		
Item	**Limit**	**Result**	**Item**	**Limit**	**Result**
% Total Alkalies	-	0.61	Specific Gravity	-	2.83
%Cl (Chloride)	-	0.018	Sulfate Expansion, C-1038, %	0.02%	-

Notes

October 23, 2019

Date

Quality Control Manager:

Mill Test Certificate Report

Type: I-II ASTM

Grind Number: August-19

Test Period: 08-09-19 **to:** 08-29-19

Certification

Lehigh Cement Company, LLC certifies that at time of shipment, the portland cement designated as Type I – II manufactured at the Picton, Ontario plant conforms to the standard composition and physical requirements of the current Standard Specification for Portland Cement of ASTM C 150 for both Type I and Type II portland cement. This certification carries no other express or implied warranties and Lehigh Cement Company LLC, is not responsible for improper use or workmanship of the described cement.

General Information

Supplier:	**Supplier:**	Lehigh Cement Company LLC	**Source Location:** Picton Plant
Address:	**Address:**	1370 Highway 49 South	
		Picton, ON, K0K 2T0	**Contact:** Mike Stanzel
Telephone:	**Telephone:**	613-476-3233	1-226-868-4422

Test Data on ASTM "Standard" Requirements

Chemical Requirements (ASTM C-150, Table 1)

Item	Limit	Results
SiO_2	A	21.05
Al_2O_3	6.0 Max	4.96
Fe_2O_3	6.0 Max	3.40
CaO	A	63.37
MgO	6.0 max	1.99
SO_3	D	3.77
Loss on Ignition	3.5 max	1.82
Na_2O	A	0.13
K_2O	A	0.62
Insoluble Residue	1.5 max	0.65
CO_2	A	1.34
Limestone %	5.0 max	3.65
$CaCO_3$ in Limestone	70% Min	83.7
Potential Compounds:		Adjusted
C_3S	A	41.82
C_2S	A	27.48
C_3A	8 max	7.22
C_4AF	A	10.17
$C_3S+4.75*C_3A$	<100	76

Physical Requirements (ASTM C-150, Table 3)

Item	Limit	Results
Fineness:		
% Retained 45µm (No. 325)	A	3.32
Blaine Fineness (m^2/Kg)	260 min	362
Autoclave Expansion (%)	0.8 max	-0.02
Vicat Setting Time:		
Initial Set (minutes)	45 min	121
Normal Consistency		25.3
Air Content (%)	12 max	8.6
Compressive Strengths Mpa:		
1-Day	A	13.64
3-Day	12.0 min	24.87
7-Day	19.0 min	31.27
28-Day	A	43.17
Compressive Strengths, PSI:		
1-Day	A	1977
3-Day	1450 min	3607
7-Day	2760 min	4534
28-Day	A	6259
Mortar Bar Expansion, C-1038, %	Max 0.020	0.004

Test Data on ASTM Optional Requirement

Chemical Requirements (ASTM C-150, Table 2)

Item	Limit	Results
Equivalent Alkalies	0.6 max	0.55
Cl		0.002

Physical Requirements (ASTM C-150, Table 4)

Item	Limit	Result
False Set	Min 50	76
Heat of Hydration, 3-day C-1702, cal/g		282.1

Item	Limit	Limestone	Inorganic Processing Addition
Amount	5.0 Max	3.65	-
SiO_2		10.60	-
Al_2O_3		2.56	-
Fe_2O_3		1.56	-
CaO		81.11	-
SO_3		0.71	-

Base Cement Phase Compostion	Result
C_3S	43.38
C_2S	28.54
C_3A	7.49
C_4AF	10.55

Notes

Footnotes: A: no limit applicable

SG=3.15

D: if SO3 exceeds 3.0%, C-1038 shall not be more than 0.020%

October 25, 2019
Date

Quality Control Manager:

Attachment C

Equipment Cut Sheets

Link-Belt
EARTHMOVING | FORESTRY
MATERIAL HANDLING EQUIPMENT

700 LX

Operating Weight: 153,300 lbs (69 500 kg)

SAE Net Horsepower: 425 HP (317 kW)

Bucket Range: 2.12 – 4.89 yd^3 (1.62 – 3.74 m^3)

LBX Company LLC

Designed for Durability and Performance...

Smarter. Faster. Better.

Inte-LX® or ***Intelligent LX*** is the most advanced technology to date. Inte-LX® maximizes the balance between speed, power, and fuel efficiency. *Page 4*

First Electronic Engine Control in an Excavator

This results in increased responsiveness to the job requirements; faster cycle times, increased fuel efficiency, cleaner and quieter. *Page 6*

Reduced Maintenance and Extended Component Life

The Nephron® Filtration system means less wear and tear on the hydraulic components, reducing hydraulic system breakdowns and maintenance costs. *Page 8*

Faster Cycle Times

A smarter more efficient hydraulic system uses dual pump flow, auto power swing and regenerative circuits for increased productivity. *Page 5*

Anti-Theft System

To protect your investment, a password protected anti-theft system comes as standard equipment and can be activated at the users choice. *Page 4*

Superior Serviceability

On-board diagnostics with memory and fewer hydraulic oil changes result in superior serviceability. *Page 8*

Exceptional Travel Performance

High torque travel motors automatically shift to provide increased tractive effort when operating in difficult ground conditions. *Page 5*

Maximized Operator Comfort

The industry's largest cab providing low noise, climate controlled heat and air conditioning, standard. *Page 3*

Auto Power-Up

Auto power-up automatically increases system pressure by 9% to power through tough ground or when lifting a heavy load. *Page 4*

Cleaner Side-Wall Cuts

With Auto Power-Swing, Inte-LX® automatically prioritizes swing torque when simultaneously working the swing and attachment. *Page 5*

Low Ground Pressure and Exceptional Stability

LC undercarriage for low ground pressure and stability incorporates heavy-duty excavator style components. *Page 7*

Long Life Pin and Bushing Design

EMS chrome pins and brass bushings throughout the entire attachment, except bucket, hold up to torsional stresses and reduce greasing to six month intervals. *Page 7*

Heavy Duty Boom and Arm

Built to handle powerful breakout forces, strong lifting capacities and the stresses of allied attachments. *Page 7*

Operator's Control Station

Large, Low Noise Cab Design

A wide cab design provides expanded leg and elbow room. **Six silicon filled isolation mounts** float the entire cab above the noise and vibration of an already quiet machine greatly reducing operator fatigue. Large entry door and access width makes entering and exiting the cab a breeze.

Control Panel

Many machine function switches are concentrated in a panel in clear view and easy reach of the operator.

Tilting Console and Sliding Seat

The seat slides independently of the control consoles to assure optimal joystick positions at all times. The joysticks can be tilted to any of three settings, allowing the operator to work in the most comfortable position. The entire platform can then be moved forward or backward for best foot pedal positioning.

Panoramic Visibility

This cab provides more window space than ever. Even the sunroof is large. The Operator's "office with a view" has rear and side windows made of LEXAN® MARGUARD™. Standard vandal covers protect the safety glass front windows and stow on top when you're working.

Informative LCD Monitor

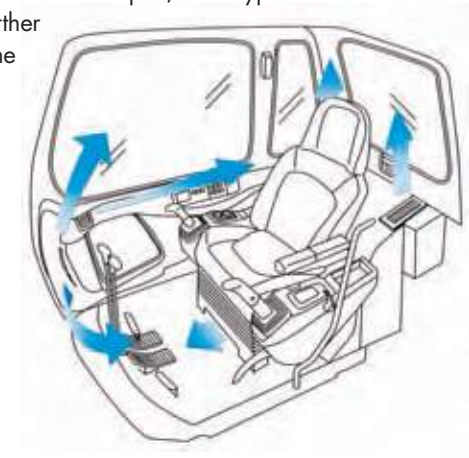
Large size LCD Monitor displays graphically a wide range of operating information such as; engine temperature, hydraulic oil temperature, fuel level, travel speed, work mode and engine idle. Additional messages include system/machine warnings and service due messages in your choice of English and 13 other languages. Backlit illumination ensures displays are always readable – day and night.

All Weather Visibility

With built-in washer and intermittent speed control, the wiper keeps your windshield clear, whatever the condition outside. The "rise-up" design takes the wiper arm and blade out of the line of sight when its not in use, plus lifts the blade from the cab surface so that it doesn't freeze to the cab in icy weather.

Climate Control

LX provides exceptional heating/cooling capabilities with a climate control system that automatically regulates the temperature for the operator's comfort. Now with 6 vents, LX Series excavators provide exceptional air circulation for optimum operator comfort. Front-side air outlet and defroster ensure a comfortable operating environment while the open/close type rear window further improves the ventilation.



Best Seat at the Site

The KAB 515 seat adjusts to your size and comfort. The semi-bucket seat provides firm support and comfort with armrests, adjustable seat suspension, adjustable lumbar support, and durable urethane cushions.

Tripmeter

In addition to the hour meter, LX has added a Tripmeter. Every job or application can be measured.

AM/FM Stereo Radio

Standard equipment.

Emergency Escape Window

Allows operator to escape from the rear window in case of emergency.

Inte-LX®

Inte-LX®, the intelligent computer command control system monitors hydraulic output, pressures, and regulates engine performance for the maximum balance between speed, power and fuel efficiency needed to handle the job.

Auto Power-Up

The LX series can quickly respond to changes in operating conditions, automatically supplying a power increase, without operator interaction and regardless of the work mode. Hydraulic pressure sensors detect resistance and pressure is increased by 9% for 8 seconds. Auto Power-Up stays on 100% of the time in the "L" mode.

Anti-Theft Device

Your Link-Belt distributor can set up your Inte-LX® control system to include a password protection feature that requires the password to start and run the machine.

One-Touch and Auto Idle Control

When user-preset time has elapsed after leaving the control handles in the neutral position, auto-idling automatically drops the engine to idle speed (1200 rpm). Or, you can choose to use the one-touch idling switch, located at the top of the right controller to manually drop the engine idle to 900 rpm.

Control Pattern Selector Valve (CPSV)

Standard equipment control pattern selector valve makes it easy to quickly switch between SAE and ISO controls. Easy access in the compartment behind the cab.

Operating Modes

The LX series enables the operator to have a choice on how the machine is operated. Simply choose the work mode that matches the machines output to the job application. Five operating modes are available.

A: Auto-Mode

The most revolutionary approach to maximizing power & fuel efficiency available today. Just select the Auto-Mode with the switch panel. Using actual working pressure readings, Inte-LX® instantly changes modes assuring the best combination of speed and power while you can stay focused on the work at hand.

H: Heavy Mode

For heavy excavation or whenever you need extra power.

S: Standard Mode

For standard digging and loading operations reducing fuel consumption.

L: Lift Mode

For lifting and other operations that need fingertip accuracy.

Allied Attachment Work Mode

Automatically adjusts engine speed and pump output to match additional attachments such as hammers. The engine rpm's can be pre-set to match the hydraulic requirements.

On-Board Diagnostics

An on-board diagnostic system allows service personnel to quickly analyze up to 148 items in four categories;

- **Machine Status:** The diagnostic system provides a detailed view of pump pressure, engine rpm, water temperature, oil temperature, fuel temperature, throttle setting and ongoing operating functions such as auto power-up and auto-mode.
- **Troubleshooting:** Service personnel can easily locate system faults such as machine and engine sensor failures.
- **History:** An on-going record of machine faults is stored in the computer including the hour meter reading at time of the fault to assist in the diagnostics procedure.
- **Systems Configuration:** Service personnel can change machine operating characteristics such as; time delay for auto-idle, language selection, and engine rpm preset for allied attachment mode.

Performance

Advanced Hydraulic System

Top-of-the-Class Cycle Times/Fuel Efficient
The LX Series hydraulic system efficiently delivers power, speed and control when and where it's needed. Fuel consumption and cycle times are more efficient in swing/dump operations over conventional models. This is accomplished by reducing system pressure loss, re-using return oil and providing double pump flow during key operations.

Regeneration System

By re-using the returning oil from the arm and the boom, ground excavating operation speed is increased.

Two Hydraulic Return Lines

Two hydraulic return lines mean faster speed in the system, and reduces back pressure build-up.

2 Speed Boom and Arm

The 2-speed boom lifting and arm opening and closing function provides the LX series with top-of-its-class lifting speed especially in swing/excavating simultaneous operations such as truck loading.

Boom Priority

For faster cycle times, hydraulic oil can be prioritized to the boom circuit during the raise function to get loads up and out of the trench quicker. A switch located on the left hand console allows you to turn this function on and off.

Auto Power-Swing

This patent pending design incorporates a selector valve that helps maintain attachment and hydraulic flow to achieve excellent swing and digging forces in side wall-cut operations. In normal digging when side pressure is not needed, LX sends all the flow to the attachment always insuring the best performance for either operation.

Cushioned Swing

This built-in special cushion valve greatly reduces the shock and vibration at the end of each swing cycle.

Cushioned Attachment Control

In addition to having cushioned cylinders, selectable cushioned attachment control lets you smooth out the attachment movements. A cushion valve in the boom and arm circuits reduce shock loading and vibration during attachment operation.

Free Swing

Allows the operator to disengage the swing brake providing crane-like precision and control when handling loads.

Single Pedal Travel

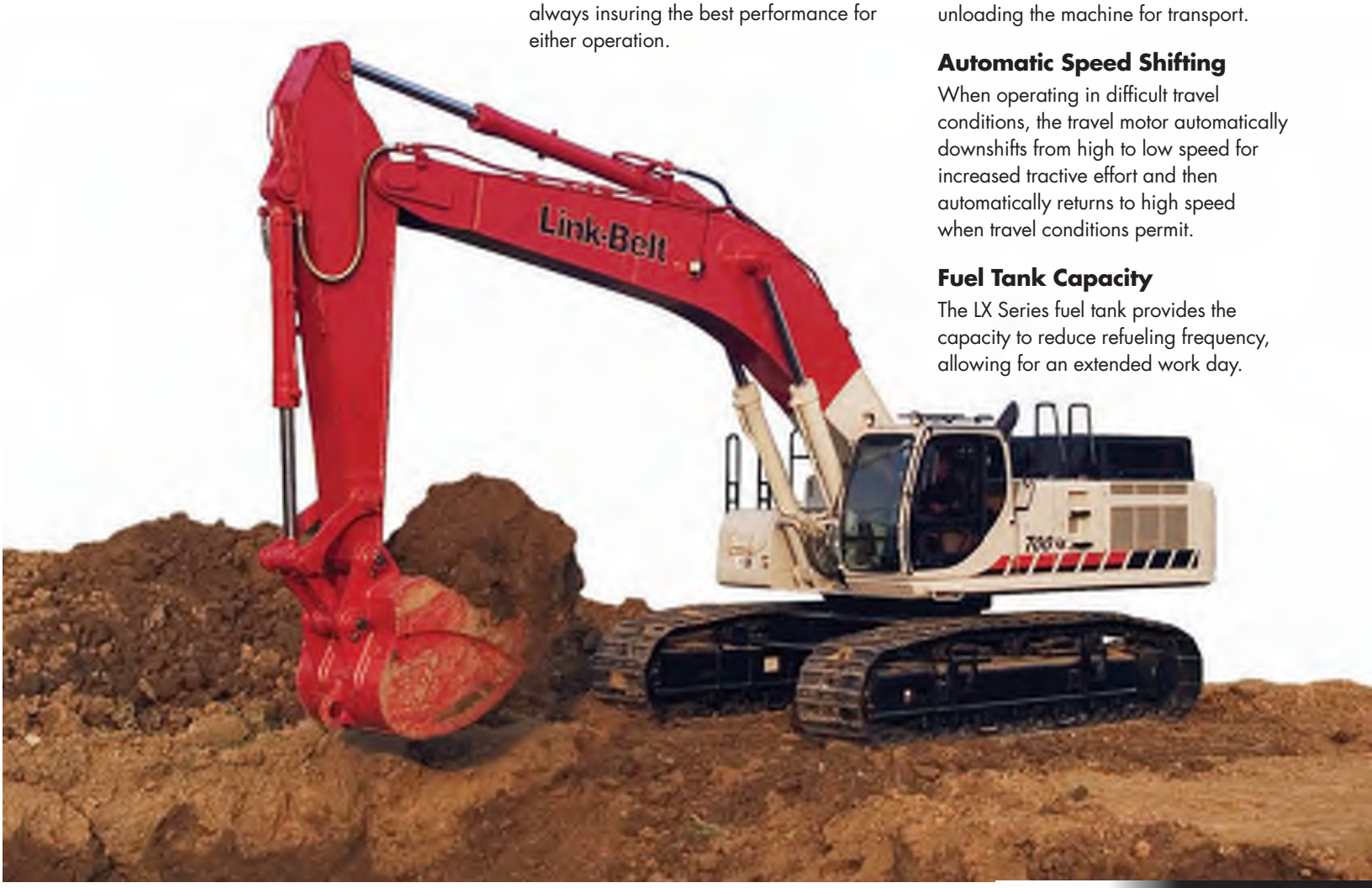
Allows the operator to engage both tracks at the same time using only one pedal. This keeps the machine in line with the ditch and provides safety and ease in loading/unloading the machine for transport.

Automatic Speed Shifting

When operating in difficult travel conditions, the travel motor automatically downshifts from high to low speed for increased tractive effort and then automatically returns to high speed when travel conditions permit.

Fuel Tank Capacity

The LX Series fuel tank provides the capacity to reduce refueling frequency, allowing for an extended work day.



Dependable Isuzu Power

First In Class

The 700 LX is the first excavator in its class to utilize an electronic engine control function. By optimizing the level of fuel injection to match the load, this responsive new system assures more efficient use of fuel, plus by keeping the engine closer to the target engine speed, less lugging takes place so cycle times are faster, exhaust noise, vibration, and smoke are reduced making the environment in the cab and around the machine cleaner and quieter.

Electronic Engine Control (EEC)

Inte-LX® maintains engine rpm's when load demands change. Engines equipped with mechanical governors spike rpm's up-and-down when operating loads increase and decrease. This phenomena causes engines to consume extra fuel and be louder.

Cleaner Emissions

Isuzu Tier III engines incorporate exhaust gas recirculation technology and fuel cooling to help reduce noxious emissions for a cleaner environment.

Tier III Certified

LX engines meet EPA standards requirements.

Idle Start

At start-up, the engine defaults to idle regardless of throttle position. This prevents over-revving a cold engine, helping to extend its service life.

Low Idle Up

When low temperatures or other conditions reduce engine rpm to a point that alternator output won't keep the battery charged, Inte-LX® automatically increases the idle speed from 900 to 1100 rpm keeping the batteries fully charged.

Auto Engine Warm-Up

If the engine temperature is low following start-up, the auto warm-up system will operate automatically and continue with engine speed increasing gradually until normal engine operating temperatures are reached.

Air Filtration

LX Series engines are equipped with a pre-cleaning dual element air filter with an evacuator cup, a restriction indicator and ground line serviceability for ease of maintenance.

Hydraulic-Driven Cooling Fan

A variable speed, hydraulic-driven fan provides optimum temperature control for the 700's cooling system independent of engine speed. At lower temperatures, fan speed is minimal. As system temperatures rise, so does the cooling fan speed. This helps to reduce power consumption and noise. Fan rotation can be reversed to blow dust and debris from the fins for efficient cooling capacity and ease of maintenance.

Fan Reverse Switch

Larger Muffler

The LX series features a larger muffler which absorbs more sound and makes this the quietest Link-Belt yet.

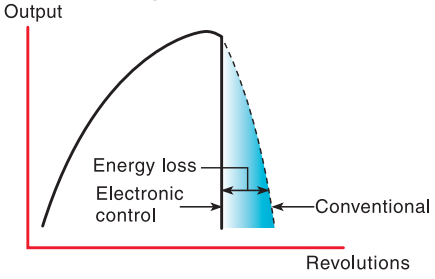
Emergency Engine Shutdown

In emergency situations, the engine can be shut down with the push of a switch located on the control panel in the cab. This switch must be re-engaged prior to restarting the engine.

Engine Product Support

Isuzu North America offers 24-hour access to their full line of engine parts through 2 regional distribution centers, 27 Master Distributors and 690 Authorized Service Dealers.

Advantages of EEC



Maintaining engine revolution at a fixed rate regardless of the load prevents the energy loss that occurs when shifting cycle times to accommodate higher or lower loads.

Low Fuel Consumption

The electronic governor responds to changes in operating loads quicker than a mechanical governor. As a result, EEC regulates the amount of fuel injection accurately and quickly.

Lower, Cleaner Emissions

Low fuel consumption results in high ignition efficiency (cleaner emission) and low emissions.

Low Sound Levels

At high idle, EEC can control engine speed at rated horsepower. This means the engine doesn't overrun, resulting in lower sound levels.

Low Vibration

EEC causes engine rpm to be stable, resulting in low vibration.

Upper and Attachments

Powerful Breakout Forces

Deep and wide box sections of high yield steel and deep groove welding hold up to high breakout forces, strong lifting capacities and the stresses of **allied attachments** such as hammers, thumbs, compactors, shears, grapples and crushers.

Strength and Durability

LX heavy duty booms and arms have internal baffles which provide better strength and durability to withstand torsional loads.

Improved Pin and Bushing Life

EMS chrome plated pins with brass bushings throughout the entire attachment (except bucket) make a durable and long

lasting connection at these high stress points. This also makes it possible to extend the lubrication interval on this type of pin to once every 6 months or 1,000 hours of operation, whichever comes first.

A. The surface of the bushing is stratified with a solid lubricant in hard brass to protect the parts from abrasion.

B. The pin's surface is plate-processed to increase hardness and protect from abrasion.

C. The original dust seal is double-structured to keep out dust and dirt and protect from subsequent abrasion.

Four Arm Choices and a wide variety of buckets provide the reach and breakout forces for optimum productivity.

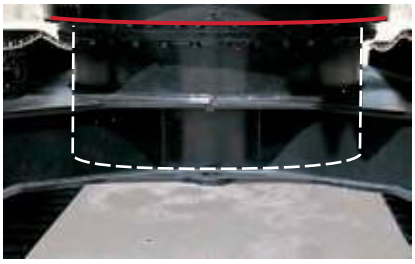
Mass Excavator Version

The 700 LX can be set up as a mass excavator with shorter boom and arm, and larger buckets, for increased production in high capacity applications.

Undercarriage

LC Undercarriage

Long undercarriages incorporate heavy duty excavator style components and improve both stability and ground bearing pressure. The modified X style carbody is integrally welded for maximum strength and durability. High torque compact final drives keep you going up steep grades and through deep mud.



Bearing Tub

Built into the "X" style carbody is the turntable bearing "tub" which extends down through the top plate and is welded to the bottom of the carbody as well as the top for increased strength and durability.

Two-Speed Travel Motor

Offers smooth shifting and the needed pull when going up grades and making turns.

Strut Type Chain Links

There are no weak links in our chain. Struts reduce twisting and hold up to severe point loading when all of the machine weight is transferred through one roller.

Track Rollers

Filled with synthetic oil to reduce heat build up and for long term reliability.

Track Adjustment

Adjustments are made easy with standard grease cylinder track adjusters and shock absorbing springs.

Side Frames

Incorporate a peaked saddle shape and large cut-outs on top for reduced dirt build-up.

Heavy Duty Swivel Guard

Standard equipment swivel guard protects internal carbody components from damage, saving you unnecessary repair expense and downtime.

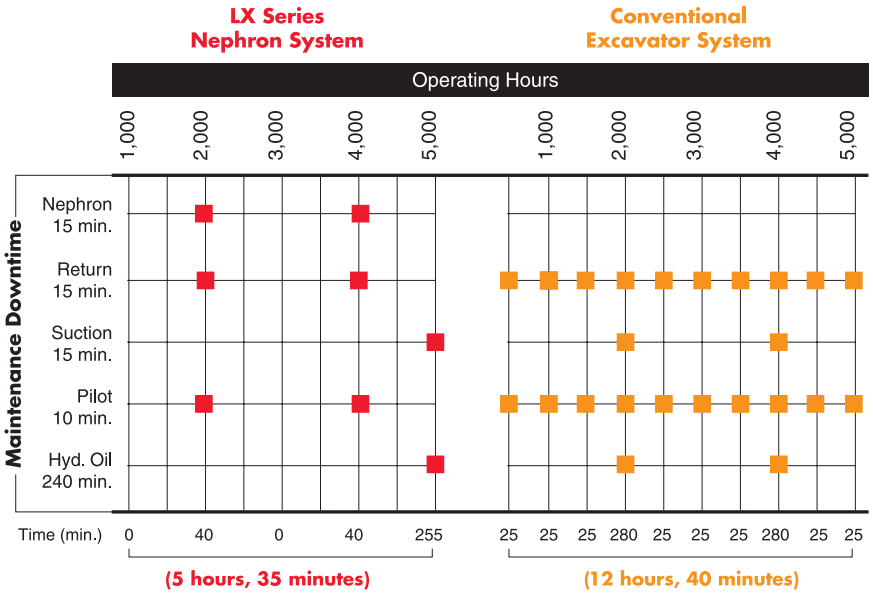
Reliability/Serviceability

Nephron® Filtration Extends the Service Life of the Hydraulic System

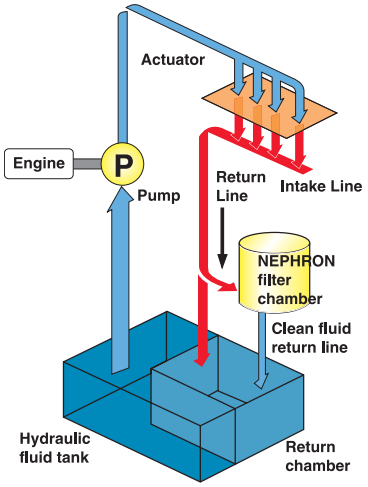
The Nephron® Filtration System eliminates contaminants of 1 micron or more in size. This significantly reduces hydraulic system breakdown and maintenance costs under normal usage. Less wear and tear on the hydraulic components means more years of reliable performance.

Nephron® Filter Advantages

1. Problems associated with hydraulic system contamination are substantially reduced. Machine down time and costs for repairing are saved as a consequence.
2. The interval of hydraulic oil replacement is extended to every 5000 hours.
3. The wear of hydraulic components is reduced, which lengthens the service life of the machine.



This chart shows the LX machine with the Nephron® filter vs. most other excavators. As you can see hydraulic fluid changes are reduced from every 2,000 hours to every 5,000 hours. Also, 22 filter changes on a typical excavator is reduced to 7 filter changes. All of this results in lower labor, downtime, and maintenance costs.



Inte-LX® On-Board Diagnostics

Inte-LX® monitors, stores, and displays information about the electrical and hydraulic systems such as; the current machine conditions, diagnostic warnings, history, and machine default settings. Information stored in Inte-LX® can also be downloaded to your personal computer using standard connectors.

Large wide opening access doors

These doors make it easy to get to all routine maintenance locations.

Reversible Fan

For easy clean-out of the cooling fins, the rotation of the hydraulically-driven fan can be reversed to draw dust and debris out for ease of maintenance. A switch located on the left hand console activates the reverse rotation at engine start-up. During reverse rotation, no work functions can be engaged to prevent continuous operation in this mode.

Hydraulic Fittings

"O" ring face seals are used as hydraulic connectors to assure tighter seals.

Air Conditioner Air Intake Filter

This filter lets in fresh clean air and is mounted on the outside of the cab, enabling easy cleaning and replacement.

Sealed Automotive Style Wiring Harness

These harnesses are sealed to eliminate dirt and moisture that can cause a circuit to short out. Wiring is also color and number coded to make trouble shooting faster and easier.

Exceptional Customer/ Product Support

Your investment in the Link-Belt LX Series Excavator is always protected. LBX Distribution is located from coast to coast; you're never far from quality service professionals. "Level Two" support takes the form of experienced factory service advisors, on-call at a moment's notice. And to expedite parts, LBX utilizes the proven parts system e-Spin…an on-line, around the clock parts distribution solution. You can be assured that we have the parts when you need them.

Specifications

Engine

Isuzu AH-6WG1X-S Turbo charged, intercooled, 4-cycle diesel, 6 cylinder in-line, direct injection, 958 CID (15 700 cc), 5.78" (147 mm) bore x 6.06" (154 mm) stroke.

SAE net horsepower .. 425 HP (317 kW) @ 1,800 rpm
Maximum torque ..... 1,460 ft-lbs. (1 980 N-m) @ 1,500 rpm
Starter 24V
Alternator ..... 50 amp
Air cleaner ..... Double element
Governor ..... Electronic

Fuel Usage*

Heavy ..... 18.1 gph (68.5 l/hr)
Average ..... 14.9 gph (56.4 l/hr)
Light ..... 11.8 gph (44.6 l/hr)

*Fuel economy varies widely depending upon application. The "heavy" category represents nearly continuous operation in tough digging applications. The "light" category represents applications that utilize the machine about 50% of the time in easier digging.

Hydraulic System

Two variable displacement axial piston pumps and one gear pump for pilot controls

Hydraulic Pumps
Two variable volume piston pumps provide power for attachment, swing and travel.

Maximum flow ..... 2 x 116.2 gpm (2 x 440 l/min)
Pilot pump max. flow ..... 7.1 gpm (27 l/min)

Relief Valve Settings
Boom/arm/bucket ..... 4,551 psi (320 kg/cm^2)
Swing circuit ..... 4,053 psi (285 kg/cm^2)
Travel circuit ..... 4,978 psi (350 kg/cm^2)

Hydraulic Cylinders
number of cylinders – bore x rod x stroke
Boom ..... 2 - 7.5" x 5.1" x 71.0"
(190 mm x 130 mm x 1 805 mm)
Arm ..... 1 - 7.9" x 5.5" x 79.7"
(200 mm x 140 mm x 2 025 mm)
Excavator Bucket ..... 1 - 7.0" x 4.9" x 57.7"
(180 mm x 125 mm x 1 465 mm)
Excavator Bucket (Mass) ..... 1 - 7.87" x 5.51" x 57"
(200 mm x 140 mm x 1 450 mm)

Control Valve One 4-spool valve for right track travel, boom, bucket, and arm acceleration, and one 5-spool valve for left track travel, swing, boom acceleration, auxiliary spool and arm.

Oil Filtration
Nephron® filter ..... 1 micron
Return and pilot filters ..... 10 micron
Suction screen ..... 105 micron

Cab and Controls

Cab mounted on 6 fluid filled mountings. Features include safety glass windows, sliding front window with auto-lock. Windshield washer and wiper, heater, air-conditioner, AM/FM radio with auto tuner, floor mat, skylight window and right and rear side mirrors. KAB 515 operators seat with manual weight adjustment, seat height and tilt adjustment, adjustable headrest, backrest angle adjustment, adjustable pivoting arm rests and seat belt. Control pattern selector valve. Reliable soft-touch switches.

Swing

Fixed displacement axial piston motor. Internal ring gear with grease cavity for swing pinion. Swing bearing is single-row shear type ball bearing. Swing cushion valve and dual stage relief valves for smooth swing deceleration and stops. Mechanical disc swing brake.

Swing speed ..... 0 – 6.5 rpm
Tail swing ..... 13' 2" (4.0 m)
Swing torque ..... 177,752 lbf-ft. (241 kN•m)

Undercarriage

X-style carbody is integrally welded for strength and durability. Grease cylinder track adjusters with shock absorbing springs. Undercarriage equipped with sealed track, lubricated rollers and idlers. Double-bar grouser track shoes.

Carrier rollers ..... 3 per side
Track rollers ..... 8 per side
Track link pitch ..... 10.25" (260 mm)
Shoes ..... 47 per side
Shoe width ..... 35.5" (900 mm)
Ground pressure ..... 10.7 psi (.75 kg/cm^2)

Travel System

Variable displacement axial piston motor. Mechanical disc brake. All hydraulic components mounted within the width of side frame.

Max. travel speed ..... 1.9/2.5 mph (3.0/4.1 km/h)
Gradeability 70%

Lubricant and Coolant Capacity

Hydraulic tank ..... 82 gal. (310 liters)
Hydraulic system ..... 172 gal. (650 liters)
Final drive (per side) ..... 8 gal. (30 liters)
Engine ..... 13.7 gal. (52 liters)
Fuel tank ..... 238 gal. (900 liters)
Cooling system ..... 30 gal. (112 liters)

Attachment

Excavator Boom (Standard) ..... 25' 3" (7.70 m)

Excavator Boom (Mass) ..... 21' 7" (6.58 m)

Available Arms (Standard)	Digging Force*
• 9' 10" (3.0 m)	54,850 lbf. (244 kN)
in Auto Power-Up Mode	60,020 lbf. (267 kN)
• 11' 8" (3.55 m)	50,360 lbf. (224 kN)
in Auto Power-Up Mode	55,080 lbf. (245 kN)
• 13' 6" (4.11 m)	45,410 lbf. (202 kN)
in Auto Power-Up Mode	49,680 lbf. (221 kN)
• 16' 5" (5.0 m)	39,360 lbf. (175 kN)
in Auto Power-Up Mode	43,050 lbf. (192 kN)
Bucket Digging Force	65,200 lbf. (290 kN)
in Auto Power-Up Mode	71,260 lbf. (317 kN)

Available Arms (Mass)	
• 9' 10" (3.0 m)	53,280 lbf. (237 kN)
in Auto Power-Up Mode	58,230 lbf. (259 kN)
Bucket Digging Force	75,090 lbf. (334 kN)
in Auto Power-Up Mode	82,280 lbf. (365 kN)

*Digging force ratings are based on ISO 6015, "Earthmoving Machinery – Hydraulic Excavators – Tool Forces".

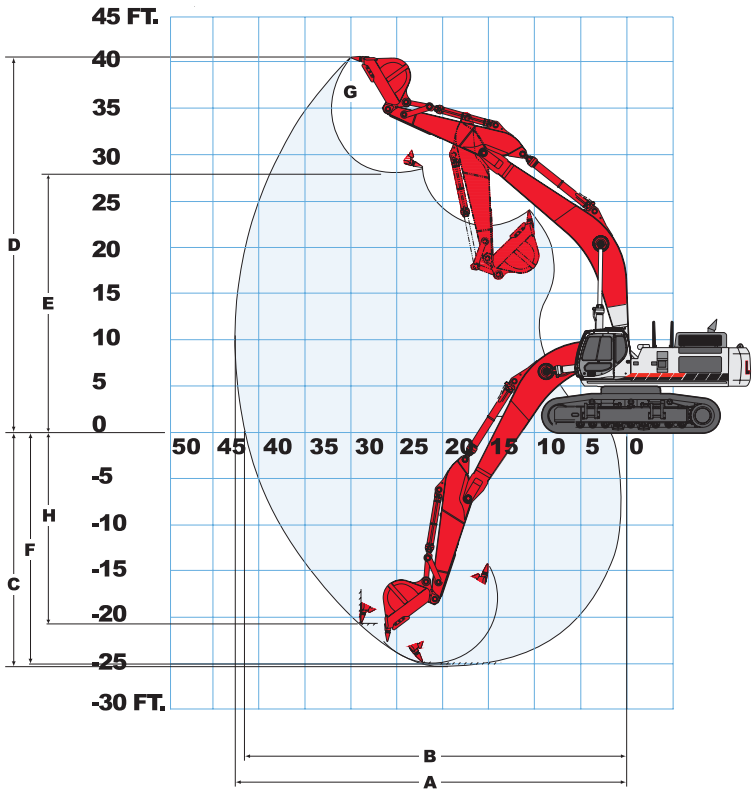
Operating Weight

Standard Excavator - Working weight with 35.5" (900 mm) shoes, 25' 3" (7.70 m) boom, 11' 6" (3.55 m) arm ... 153,300 lbs. (69 500 kg)

Mass Excavator - Working weight with 35.5" (900 mm) shoes, 21' 7" (6.58 m) boom, 9' 10" (3.0 m) arm ..... 153,700 lbs. (69 700 kg)

Specifications

Working Ranges



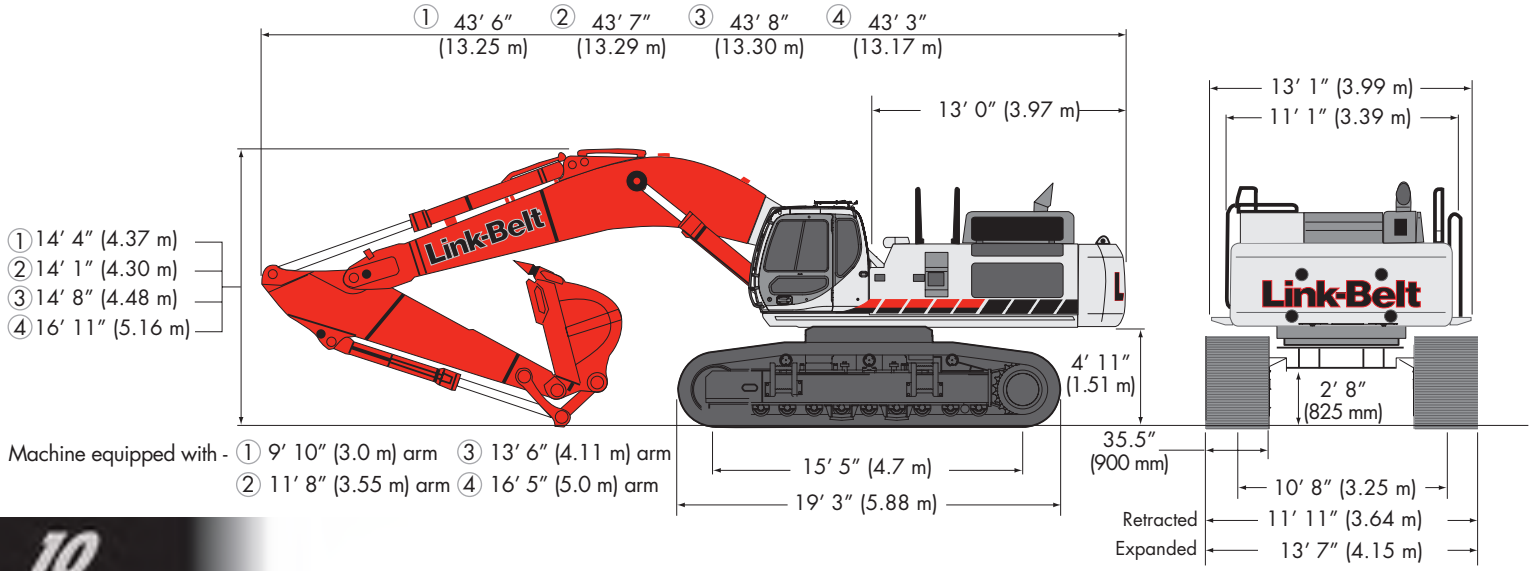
Standard Excavator

Machine equipped with 25′ 3″ (7.70 m) boom.	9′ 10″ Arm (3.0 m)	11′ 8″ Arm (3.55 m)	13′ 6″ Arm (4.11 m)	16′ 5″ Arm (5.0 m)
A Max. digging radius	42′ 3″ (12.87 m)	43′ 2″ (13.16 m)	44′ 9″ (13.65 m)	47′ 11″ (14.60 m)
B Max. digging radius @ ground level	41′ 4″ (12.60 m)	42′ 4″ (12.90 m)	43′ 11″ (13.40 m)	46′ 11″ (14.30 m)
C Max. digging depth	25′ 10″ (7.87 m)	27′ 0″ (8.40 m)	29′ 5″ (8.97 m)	32′ 4″ (9.85 m)
D Max. digging height	40′ 8″ (12.40 m)	39′ 1″ (11.92 m)	39′ 6″ (12.04 m)	41′ 8″ (12.70 m)
E Max. dumping height	27′ 4″ (8.33 m)	26′ 4″ (8.02 m)	26′ 9″ (8.16 m)	28′ 7″ (8.71 m)
F Digging depth – 8' (2.44 m) level bottom	25′ 4″ (7.72 m)	27′ 2″ (8.27 m)	29′ 0″ (8.85 m)	32′ 0″ (9.75 m)
G Bucket wrist angle	175°	175°	175°	175°
H Max. vertical wall depth	22′ 5″ (6.85 m)	22′ 6″ (6.87 m)	24′ 2″ (7.36 m)	28′ 4″ (8.63 m)

Mass Excavator

Machine equipped with 21′ 7″ (6.58 m) boom.	9′ 10″ Arm (3.0 m)
A Max. digging radius	38′ 7″ (11.75 m)
B Max. digging radius @ ground level	37′ 7″ (11.46 m)
C Max. digging depth	23′ 6″ (7.18 m)
D Max. digging height	36′ 6″ (11.13 m)
E Max. dumping height	23′ 1″ (7.04 m)
F Digging depth – 8' (2.44 m) level bottom	23′ 1″ (7.04 m)
G Bucket wrist angle	170°
H Max. vertical wall depth	16′ 8″ (5.1 m)

Dimensions



Lifting Capacities

9′ 10″ (3.0 m) Arm

25′ 3″ (7.70 m) Boom

Bucket Hook Height		Radius of Load													
		10' 0" (3.05 m)		15' 0" (4.57 m)		20' 0" (6.10 m)		25' 0" (7.62 m)		30' 0" (9.14 m)		35' 0" (10.66 m)		Cap. at Max. Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+35' 0" (10.66 m)	**lbs.** kg													**17,050*** 7 734*	**17,050*** 7 734*
+30' 0" (9.14 m)	**lbs.** kg													**15,800*** 7 167*	**15,800*** 7 167*
+25' 0" (7.62 m)	**lbs.** kg									**26,750*** 12 134*	**25,350*** 11 499*			**15,150*** 6 872*	**15,150*** 6 872*
+20' 0" (6.10 m)	**lbs.** kg							**31,800*** 14 424	**31,800*** 14 424	**28,350*** 12 859*	**24,850** 11 272			**14,900*** 6 759*	**14,250*** 6 464*
+15' 0" (4.57 m)	**lbs.** kg			**60,050*** 27 238*	**60,050*** 27 238*	**43,800*** 19 867*	**43,800*** 19 867*	**35,200*** 15 966*	**32,850*** 14 901*	**30,150*** 13 676*	**23,900** 10 841	**26,950*** 12 224*	**17,750** 8 051	**15,000*** 6 804*	**13,150** 5 965
+10' 0" (3.05 m)	**lbs.** kg			**64,000*** 29 030*	**64,000*** 29 030*	**48,650*** 22 067*	**45,050** 20 434	**37,150*** 16 851*	**31,400** 14 243	**30,950*** 14 039*	**23,000** 10 433	**26,550*** 12 043*	**17,300** 7 847	**15,400*** 6 985*	**12,650** 5 738
+5' 0" (1.52 m)	**lbs.** kg					**54,550*** 24 743*	**41,300** 18 733	**41,750*** 18 937*	**29,250** 13 268	**33,500*** 15 195*	**21,750** 9 866	**25,900** 11 748	**16,600** 7 530	**16,100*** 7 303*	**12,700** 5 761
Ground Line	**lbs.** kg			**30,850*** 13 993*	**30,850*** 13 993*	**56,200*** 25 492*	**39,850** 18 076	**43,200*** 19 595*	**28,100** 12 746	**32,700** 14 832	**21,000** 9 525	**25,450** 11 544	**16,200** 7 348	**17,300*** 7 847*	**13,350** 6 055
-5' 0" (1.52 m)	**lbs.** kg	**27,250*** 12 360*	**27,250*** 12 360*	**42,850*** 19 436*	**42,850*** 19 436*	**55,200*** 25 038*	**39,650** 17 985	**42,850*** 19 436*	**27,550** 12 496	**32,300** 14 651	**20,600** 9 344	**25,300** 11 476	**16,050** 7 280	**19,050*** 8 641*	**14,800** 6 713
-10' 0" (3.05 m)	**lbs.** kg	**39,650*** 17 985*	**39,650*** 17 985*	**59,800*** 27 125*	**59,800*** 27 125*	**51,800*** 23 496*	**39,950** 18 121	**40,600*** 18 416*	**27,600** 12 519	**32,000** 14 515	**20,600** 9 344			**20,600*** 9 344*	**17,550** 7 961
-15' 0" (4.57 m)	**lbs.** kg	**57,650*** 26 150*	**57,650*** 26 150*	**58,000*** 26 308*	**58,000*** 26 308*	**45,350*** 20 570*	**40,700** 18 461	**35,350*** 16 034*	**28,150** 12 769	**25,650*** 11 635*	**21,250** 9 639			**16,350*** 7 416*	**16,350*** 7 416*
-20' 0" (6.10 m)	**lbs.** kg			**43,300*** 19 641*	**43,300*** 19 641*	**33,900*** 15 377*	**33,900*** 15 377*	**23,600*** 10 705*	**23,600** 10 705						

11′ 8″ (3.55 m) Arm

25′ 3″ (7.70 m) Boom

Bucket Hook Height		Radius of Load													
		10' 0" (3.05 m)		15' 0" (4.57 m)		20' 0" (6.10 m)		25' 0" (7.62 m)		30' 0" (9.14 m)		35' 0" (10.66 m)		Cap. at Max. Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+35' 0" (10.66 m)	**lbs.** kg													**14,450*** 6 554*	**14,450*** 6 554*
+30' 0" (9.14 m)	**lbs.** kg													**13,600*** 6 169*	**13,600*** 6 169*
+25' 0" (7.62 m)	**lbs.** kg									**25,250*** 11 453*	**25,250*** 11 453*			**13,300*** 6 033*	**13,300*** 6 033*
+20' 0" (6.10 m)	**lbs.** kg									**26,750*** 12 134*	**25,200** 11 431	**20,650*** 9 367*	**18,400** 8 346	**13,350*** 6 055*	**13,350*** 6 055*
+15' 0" (4.57 m)	**lbs.** kg			**37,250*** 16 896*	**37,250*** 16 896*	**41,150*** 18 665*	**41,150*** 18 665*	**33,400*** 15 150*	**32,950*** 14 946*	**28,750*** 13 041*	**24,200** 10 977	**25,550*** 11 589*	**17,950** 8 142	**13,700*** 6 214*	**12,550** 5 693
+10' 0" (3.05 m)	**lbs.** kg			**64,000*** 29 030*	**64,000*** 29 030*	**48,650*** 22 067*	**45,050** 20 434	**37,150*** 16 851*	**31,400** 14 243	**30,950*** 14 039*	**23,000** 10 433	**26,550*** 12 043*	**17,300** 7 847	**14,350*** 6 509*	**12,050** 5 466
+5' 0" (1.52 m)	**lbs.** kg			**38,300*** 17 373*	**38,300*** 17 373*	**54,550*** 24 743*	**42,000** 19 051	**40,600*** 18 416*	**29,550** 13 404	**32,800*** 14 878*	**21,900** 9 934	**25,950** 11 771	**16,650** 7 552	**15,400*** 6 985*	**12,050** 5 466
Ground Line	**lbs.** kg			**39,150*** 17 758*	**39,150*** 17 758*	**56,350*** 25 560*	**40,100** 18 189	**42,700*** 19 368*	**28,250** 12 814	**32,800** 14 878	**21,000** 9 525	**25,350** 11 499	**16,100** 7 303	**16,900*** 7 666*	**12,550** 5 693
-5' 0" (1.52 m)	**lbs.** kg	**32,950*** 14 946*	**32,950*** 14 946*	**50,200*** 22 770*	**50,200*** 22 770*	**55,700*** 25 265*	**39,450** 17 894	**42,900*** 19 459*	**27,500** 12 474	**32,200** 14 606	**20,500** 9 299	**25,050** 11 362	**15,800** 7 167	**19,150*** 8 686*	**13,750** 6 237
-10' 0" (3.05 m)	**lbs.** kg	**42,300*** 19 187*	**42,300*** 19 187*	**63,500*** 28 803*	**62,950*** 28 554*	**53,250*** 24 154*	**39,600** 17 962	**41,400*** 18 779*	**27,350** 12 406	**32,050** 14 538	**20,350** 9 231			**21,900*** 9 934*	**16,100** 7 303
-15' 0" (4.57 m)	**lbs.** kg	**57,300*** 25 991*	**57,300*** 25 991*	**62,500*** 28 350*	**62,500*** 28 350*	**47,950*** 21 750*	**40,200** 18 234	**37,400*** 16 964*	**27,700** 12 565	**28,700*** 13 018*	**20,700** 9 389			**18,300*** 8 301*	**18,300*** 8 301*
-20' 0" (6.10 m)	**lbs.** kg	**64,700*** 29 347*	**64,700*** 29 347*	**49,650*** 22 521*	**49,650*** 22 521*	**38,600*** 17 509*	**38,600*** 17 509*	**28,950*** 13 132*	**28,550** 12 950						

Notes: Excavator lifting capacities

1. Lifting capacities shown should not be exceeded. Weight of all lifting accessories must be deducted from the above lifting capacities.
2. Lifting capacities are based on machine standing on firm, uniform supporting surface. User must make allowances for job conditions such as soft or uneven ground.
3. Lifting capacities shown do not exceed 75% of minimum tipping loads or 87% of hydraulic capacities. Capacities marked with an asterisk (*) are limited by hydraulic capacities.
4. Least stable position is over the side.
5. Operator should be fully acquainted with the Operator's Manual & Operating Safety Booklet, furnished by LBX before operating the machine.
6. Capacities apply only to the machine as originally manufactured and normally equipped by LBX Company, LLC.
7. Lift capacity ratings are based on SAE J1097, "Lift Capacity Calculation and Test Procedure".

Lifting Capacities

13′ 6″ (4.11 m) Arm

25′ 3″ (7.70 m) Boom

Bucket Hook Height		Radius of Load															
		10' 0" (3.05 m)		15' 0" (4.57 m)		20' 0" (6.10 m)		25' 0" (7.62 m)		30' 0" (9.14 m)		35' 0" (10.66 m)		40' 0" (12.19 m)		Cap. at Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+35' 0" (10.66 m)	**lbs.** kg															**12,200*** 5 534*	**12,200*** 5 534*
+30' 0" (9.14 m)	**lbs.** kg															**11,550*** 5 239*	**11,550*** 5 239*
+25' 0" (7.62 m)	**lbs.** kg															**11,350*** 5 148*	**11,350*** 5 148*
+20' 0" (6.10 m)	**lbs.** kg									**25,400*** 11 521*	**25,400*** 11 521*	**21,000*** 9 525*	**19,050** 8 641			**11,400*** 5 171*	**11,400*** 5 171*
+15' 0" (4.57 m)	**lbs.** kg							**31,700*** 14 379*	**31,700*** 14 379*	**27,550*** 12 496*	**24,900** 11 294	**24,850*** 11 272*	**18,500** 8 391			**11,700*** 5 307*	**11,700*** 5 307*
+10' 0" (3.05 m)	**lbs.** kg			**62,800*** 28 486*	**62,800*** 28 486*	**45,700*** 20 729*	**45,700*** 20 729*	**35,700*** 16 193*	**32,250** 14 628	**29,950*** 13 585*	**23,650** 10 727	**26,200*** 11 884*	**17,800** 8 074			**12,300*** 5 579*	**11,450** 5 194
+5' 0" (1.52 m)	**lbs.** kg			**47,350*** 21 478*	**47,350*** 21 478*	**52,700*** 23 904*	**43,050** 19 527	**39,450*** 17 894*	**30,250*** 13 721*	**32,100*** 14 560*	**22,400** 10 160	**26,350** 11 952	**17,050** 7 734	**17,700*** 8 029*	**13,100** 5 942	**13,250*** 6 010*	**11,400** 5 171
Ground Line	**lbs.** kg	**19,600*** 8 890*	**19,600*** 8 890*	**42,650*** 19 346*	**42,650*** 19 346*	**56,000*** 25 401*	**40,750** 18 484	**42,200*** 19 142*	**28,750** 13 041	**33,200** 15 059	**21,400** 9 707	**25,700** 11 657	**16,400** 7 439			**14,550*** 6 600*	**11,800*** 5 352*
-5' 0" (1.52 m)	**lbs.** kg	**31,250*** 14 175*	**31,250*** 14 175*	**49,700*** 22 544*	**49,700*** 22 544*	**56,150*** 25 469*	**39,600** 17 962	**43,100*** 19 550*	**27,800** 12 610	**32,450** 14 719	**20,700** 9 389	**25,250** 11 453	**16,000** 7 257			**16,500*** 7 484*	**12,800** 5 806
-10' 0" (3.05 m)	**lbs.** kg	**39,100*** 17 735*	**39,100*** 17 735*	**59,750*** 27 102*	**59,750*** 27 102*	**54,550*** 24 743*	**39,450** 17 894	**42,300*** 19 187*	**27,450** 12 451	**32,150** 14 583	**20,450** 9 276	**25,100*** 11 385*	**15,850*** 7 189*			**19,450*** 8 822*	**14,700** 6 668
-15' 0" (4.57 m)	**lbs.** kg	**51,650*** 23 428*	**51,650*** 23 428*	**66,650*** 30 232*	**65,050** 29 506	**50,450*** 22 884*	**39,900** 18 098	**39,350*** 17 849*	**27,600** 12 519	**30,850*** 13 993*	**20,600** 9 344					**20,350*** 9 231*	**18,250** 8 278
-20' 0" (6.10 m)	**lbs.** kg	**71,650*** 32 500*	**71,650*** 32 500*	**55,700*** 25 265*	**55,700*** 25 265*	**42,800*** 19 414*	**40,650** 18 439	**32,950*** 14 946*	**28,350*** 12 859*								
-25' 0" (7.62 m)	**lbs.** kg			**38,200*** 17 327*	**38,200*** 17 327*	**28,900*** 13 109*	**28,900*** 13 109*										

16′ 5″ (5.0 m) Arm

25′ 3″ (7.70 m) Boom

Bucket Hook Height		Radius of Load															
		10' 0" (3.05 m)		15' 0" (4.57 m)		20' 0" (6.10 m)		25' 0" (7.62 m)		30' 0" (9.14 m)		35' 0" (10.66 m)		40' 0" (12.19 m)		Cap. at Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+35' 0" (10.66 m)	**lbs.** kg															**9,450*** 4 286*	**9,450*** 4 286*
+30' 0" (9.14 m)	**lbs.** kg															**8,950*** 4 060*	**8,950*** 4 060*
+25' 0" (7.62 m)	**lbs.** kg											**16,500*** 7484*	**16,500*** 7484*			**8,700*** 3 946*	**8,700*** 3 946*
+20' 0" (6.10 m)	**lbs.** kg											**18,900*** 8 573*	**18,900*** 8 573*	**12,900*** 5 851*	**12,900*** 5 851*	**8,700*** 3 946*	**8,700*** 3 946*
+15' 0" (4.57 m)	**lbs.** kg									**24,850*** 11 272*	**24,850*** 11 272*	**21,850*** 9 911*	**19,150** 8 686	**16,400*** 7 439*	**14,350** 6 509	**8,900*** 4 037*	**8,900*** 4 037*
+10' 0" (3.05 m)	**lbs.** kg			**35,650*** 16 171*	**35,650*** 16 171*	**40,950*** 18 575*	**40,950*** 18 575*	**32,750*** 14 855*	**32,350** 14 674	**27,850*** 12 633*	**24,400** 11 068	**24550*** 11 136*	**18,300** 8 301	**18,900*** 8 573*	**13,900** 6 305	**9,300*** 4 218*	**9,300*** 4 218*
+5' 0" (1.52 m)	**lbs.** kg			**67,100*** 30 436*	**67,100*** 30 436*	**48,700*** 22 090*	**44,700*** 20 276*	**36,950*** 16 760*	**31,200** 14 152	**30,400*** 13 789*	**23,000** 10 433	**26,150*** 11 861*	**17,450** 7 915	**21,050*** 9 548*	**13,400** 6 078	**9,900*** 4 491*	**9,900*** 4 491*
Ground Line	**lbs.** kg	**18,750*** 8 505*	**18,750*** 8 505*	**45,300*** 20 548*	**45,300*** 20 548*	**54,050*** 24 517*	**41,750** 18 937	**40,600*** 18 416*	**29,350** 13 313	**32,600*** 14 787*	**21,800** 9 888	**25,950** 11 771	**16,650** 7 552	**20,550** 9 321	**12,900** 5 851	**10,850*** 4 921*	**10,250** 4 649
-5' 0" (1.52 m)	**lbs.** kg	**26,750*** 12 134*	**26,750*** 12 134*	**46,300*** 21 001*	**46,300*** 21 001*	**56,100*** 25 447*	**39,950** 18 121	**42,650*** 19 346*	**28,050** 12 723	**32,650** 14 810	**20,900** 9 480	**25,300** 11 476	**16,050** 7 280	**20,200** 9 163	**12,600** 5 715	**12,150*** 5 511*	**11,000** 4 990
-10' 0" (3.05 m)	**lbs.** kg	**34,650*** 15 717*	**34,650*** 15 717*	**54,900*** 24 902*	**54,900*** 24 902*	**55,550*** 25 197*	**39,250** 17 804	**42,750*** 19 391*	**27,400** 12 428	**32,100** 14 560	**20,400** 9 253	**25,000** 11 340	**15,750** 7 144	**16,500*** 7 484*	**12,500** 5 670	**14,150*** 6 418*	**12,400** 5 625
-15' 0" (4.57 m)	**lbs.** kg	**44,200*** 20 049*	**44,200*** 20 049*	**66,500*** 30 164*	**63,950*** 29 007*	**53,050*** 24 063	**39,350** 17 849	**41,150*** 18 665*	**27,250** 12 360	**32,000** 14 515	**20,250** 9 185	**25,000** 11 340	**15,750** 7 144			**17,200*** 7 802*	**14,800** 6 713
-20' 0" (6.10 m)	**lbs.** kg	**62,300*** 28 259*	**62,300*** 28 259*	**63,200*** 28 667*	**63,200*** 28 667*	**47,650*** 21 614*	**39,950** 18 121	**36,950*** 16 760*	**27,650** 12 542	**28,600*** 12 973*	**20,650** 9 367					**17,200*** 7 802*	**17,200*** 7 802*
-25' 0" (7.62 m)	**lbs.** kg	**68,350*** 31 003*	**68,350*** 31 003*	**49,800*** 22 589*	**49,800*** 22 589*	**37,850*** 17 168*	**37,850*** 17 168*	**28,350*** 12 859*	**28,350*** 12 859*								

Lifting Capacities (Mass Excavator)

9′ 10″ (3.0 m) Arm

21′ 7″ (6.58 m) Boom

Bucket Hook Height		Radius of Load											
		10' 0" (3.05 m)		15' 0" (4.57 m)		20' 0" (6.10 m)		25' 0" (7.62 m)		30' 0" (9.14 m)		Cap. at Max. Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+30' 0" (9.14 m)	**lbs.** kg											**13,500*** 6 123*	**13,500*** 6 123*
+25' 0" (7.62 m)	**lbs.** kg											**12,800*** 5 806*	**12,800*** 5 806*
+20' 0" (6.10 m)	**lbs.** kg							**32,550*** 14 764*	**32,550*** 14 764*			**12,600*** 5 715*	**12,600*** 5 715*
+15' 0" (4.57 m)	**lbs.** kg					**42,200*** 19 142	**42,200*** 19 142	**35,600*** 16 148	**33,800*** 15 331	**29,150*** 13 222*	**24,000** 10 886	**12,800*** 5 806*	**12,800*** 5 806*
+10' 0" (3.05 m)	**lbs.** kg			**67,150*** 30 459*	**67,150*** 30 459*	**48,900*** 22 181*	**46,950*** 21 296*	**39,150*** 17 758*	**32,200*** 14 606*	**33,400*** 15 150*	**23,250** 10 546	**13,350*** 6 055*	**13,350** 6 055
+5' 0" (1.52 m)	**lbs.** kg			**76,500*** 34 700	**70,650*** 32 046	**54,500*** 24 721*	**44,100** 20 003	**42,200*** 19 142*	**30,650** 13 903	**34,300*** 15 558*	**22,400** 10 160	**14,350*** 6 509*	**14,350** 6 509
Ground Line	**lbs.** kg	**32,900*** 14 923	**32,900*** 14 923	**75,300*** 34 156	**67,350*** 30 549	**57,700*** 26 172*	**42,200** 19 142	**44,000*** 19 958*	**29,450** 13 358	**33,500*** 15 195*	**21,700** 9 843	**15,900*** 7 212*	**15,900** 7 212
-5' 0" (1.52 m)	**lbs.** kg	**46,250*** 20 979	**46,250*** 20 979	**78,750*** 35 720*	**67,250*** 30 504	**57,350*** 26 014*	**41,350** 18 756	**43,900*** 19 913*	**28,750** 13 041	**33,200** 15 059	**21,400** 9 707	**18,350*** 8 323*	**18,350** 8 323
-10' 0" (3.05 m)	**lbs.** kg	**65,500*** 29 710*	**65,500*** 29 710*	**72,200*** 32 749*	**68,150*** 30 912*	**53,600*** 24 313*	**41,350** 18 756	**40,650*** 18 439*	**28,700** 13 018			**20,950*** 9 503*	**20,950** 9 503
-15' 0" (4.57 m)	**lbs.** kg	**81,900*** 37 149*	**81,900*** 37 149*	**59,750*** 27 102*	**59,750*** 27 102*	**44,400*** 20 140*	**42,100** 19 096	**30,650*** 13 903*	**29,550** 13 404				

Bucket Sizes

Standard Excavator

Bucket Type	Capacity	Width Outside Lip	Weight	# Teeth	Arm 9′ 10″ (3.00 m)	Arm 11′ 8″ (3.55 m)	Arm 13′ 6″ (4.11 m)	Arm 16′ 5″ (5.00 m)
ESCO HDP	2.12 yd³ (1.62 m³)	37″ (940 mm)	4,928 lb. (2 235 kg)	4	H	H	H	H
	2.35 yd³ (1.80 m³)	40″ (1 016 mm)	5,094 lb. (2 311 kg)	4	H	H	H	H
	2.89 yd³ (2.21 m³)	47″ (1 194 mm)	5,578 lb. (2 530 kg)	5	H	H	H	M
	3.29 yd³ (2.51 m³)	52″ (1 321 mm)	5,857 lb. (2 657 kg)	5	H	H	H	M
	3.84 yd³ (2.94 m³)	59″ (1 499 mm)	6,245 lb. (2 833 kg)	5	M	M	M	L
	4.25 yd³ (3.25 m³)	64″ (1 626 mm)	6,619 lb. (3 002 kg)	6	M	M	L	L
	4.89 yd³ (3.74 m³)	72″ (1 829 mm)	7,062 lb. (3 203 kg)	6	L	L	L	NA
ESCO XDP	1.78 yd³ (1.36 m³)	35″ (1 651 mm)	5,293 lb. (2 400 kg)	3	H	H	H	H
	2.47 yd³ (1.89 m³)	45″ (1 143 mm)	6,059 lb. (2 748 kg)	4	H	H	H	H
	3.26 yd³ (2.57 m³)	56″ (1 322 mm)	6,765 lb. (3 068 kg)	4	H	H	M	L
	3.99 yd³ (3.05 m³)	66″ (1 676 mm)	7,531 lb. (3 415 kg)	5	M	M	L	L
	4.43 yd³ (3.39 m³)	72″ (1 829 mm)	7,916 lb. (3 590 kg)	5	L	L	L	NA

Mass Excavator

Bucket Type	Capacity	Width Outside Lip	Weight	# Teeth	Arm 9′ 10″ (3.00 m)
ESCO HDP	2.12 yd³ (1.62 m³)	37″ (940 mm)	4,928 lb. (2 235 kg)	4	H
	2.35 yd³ (1.80 m³)	40″ (1 016 mm)	5,094 lb. (2 311 kg)	4	H
	2.89 yd³ (2.21 m³)	47″ (1 194 mm)	5,578 lb. (2 530 kg)	5	H
	3.29 yd³ (2.51 m³)	52″ (1 321 mm)	5,857 lb. (2 657 kg)	5	H
	3.84 yd³ (2.94 m³)	59″ (1 499 mm)	6,245 lb. (2 833 kg)	5	M
	4.25 yd³ (3.25 m³)	64″ (1 626 mm)	6,619 lb. (3 002 kg)	6	M
	4.89 yd³ (3.74 m³)	72″ (1 829 mm)	7,062 lb. (3 203 kg)	6	L
ESCO XDP	1.78 yd³ (1.36 m³)	35″ (1 651 mm)	5,293 lb. (2 400 kg)	3	H
	2.47 yd³ (1.89 m³)	45″ (1 143 mm)	6,059 lb. (2 748 kg)	4	H
	3.26 yd³ (2.57 m³)	56″ (1 322 mm)	6,765 lb. (3 068 kg)	4	H
	3.99 yd³ (3.05 m³)	66″ (1 676 mm)	7,531 lb. (3 415 kg)	5	M
	4.43 yd³ (3.39 m³)	72″ (1 829 mm)	7,916 lb. (3 590 kg)	5	L

Approval Code For Arm/Bucket Combinations

H - Heavy material (up to 3,370 lbs./ yd³)

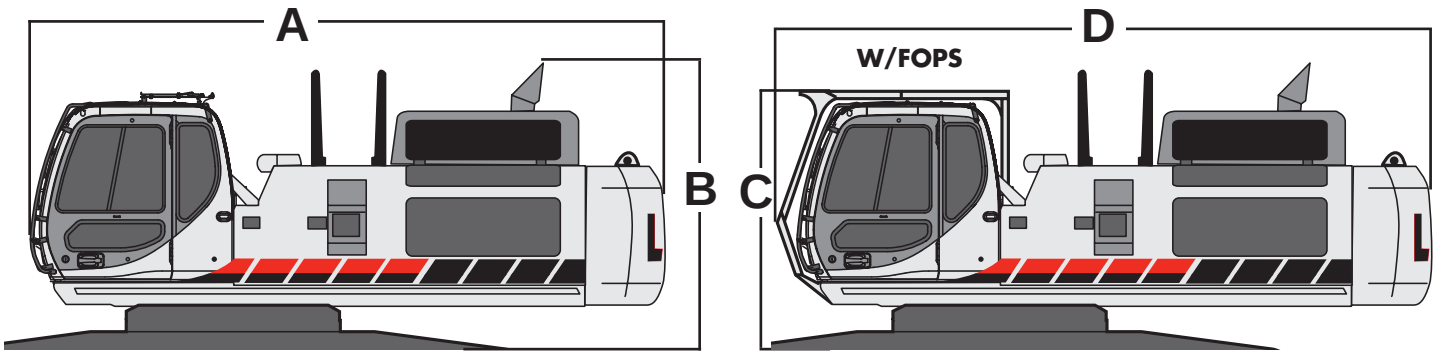
M - Medium material (up to 2,700 lbs./ yd³)

L - Light material (up to 2,020 lbs./ yd³)

N/A - Not applicable

Transportation Specifications

Upper Structure w/TTB Counterweight and Lower Cross Frame

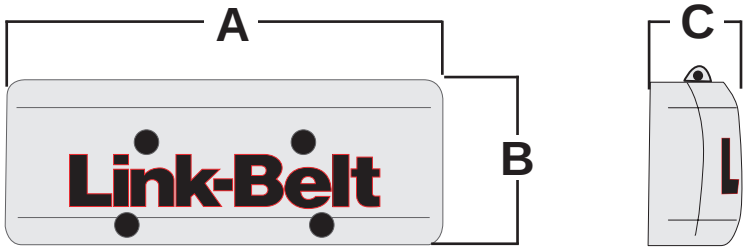


Weight: 69,330 lbs. (31 442 kg)
Weight: W/FOPS 70,035 lbs. (31 762 kg)

Dimension A: 19' 2" (5.85 m)
Dimension B: 9' 9" (2.96 m)
Dimension C: 9' 3" (2.80 m)
Dimension D: 19' 8" (6.00 m)

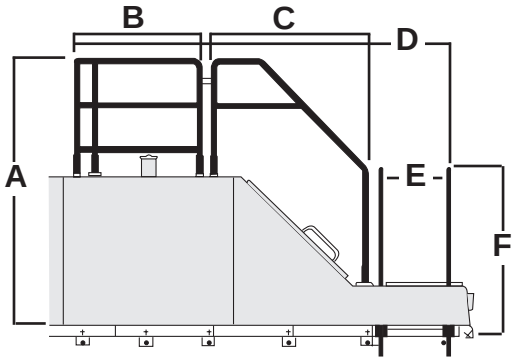
FOPS Head Guard:
(Optional)
Weight: 705 lbs. (320 kg).

Counter Weight



Weight: 22,932 lbs. (10 400 kg)
Dimension A: 11' 1" (3.39 m)
Dimension B: 4' 2" (1.26 m)
Dimension C: 2' 6" (.76 m)

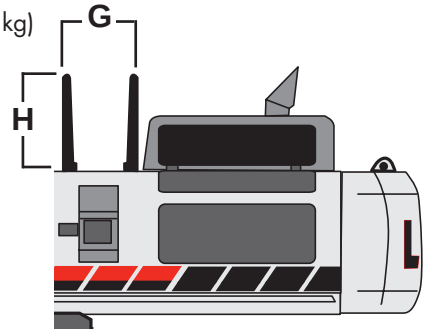
Hand Rails



Right Side

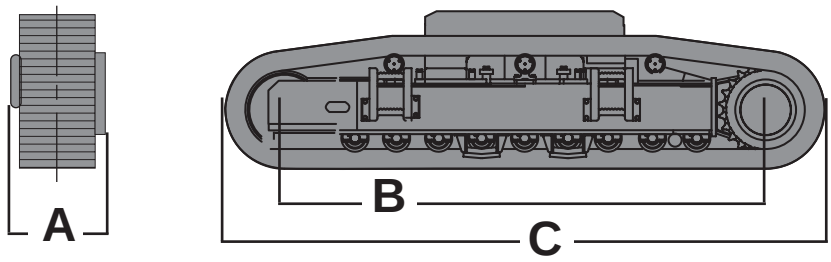
Total Weight: 126 lbs. (57 kg)

Dimension A: 6' 4" (1.92 m)
Dimension B: 1' 5" (.44 m)
Dimension C: 1' 6" (.46 m)
Dimension D: 5' 11" (1.80 m)
Dimension E: 1' 1" (.49 m)
Dimension F: 5' 0" (1.52 m)
Dimension G: 2' 0" (.60 m)
Dimension H: 2' 9" (.84 m)



Cab Side

Undercarriage



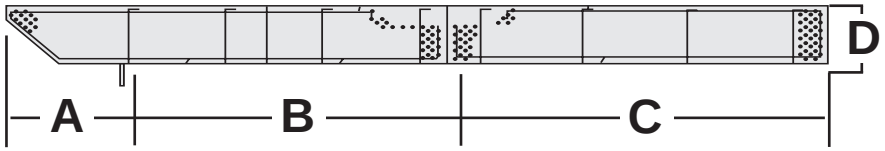
Side Frame with Steps:

Shoe Width	**Weight:** (per side)
25.6" (650 mm)	22,118 lbs. (10 031 kg)
29.5" (750 mm)	22,795 lbs. (10 338 kg)
35.4" (900 mm)	23,675 lbs. (10 737 kg)

Dimension A:
W/ 25.6" (650 mm) shoes - 31.1" (790 mm)
W/ 29.5" (750 mm) shoes - 33.1" (840 mm)
W/ 35.4" (920 mm) shoes - 36.0" (915 mm)
Dimension B: 15' 5" (4700 mm)
Dimension C: 19' 3" (5875 mm)

Transportation Specifications (cont.)

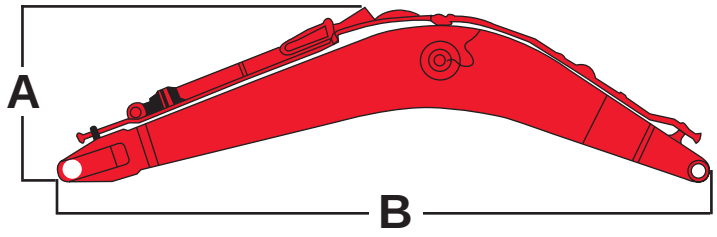
Catwalk



Weight:
Left Front: 28 lbs. (12.9 kg)
Left Rear: 207 lbs. (94 kg)

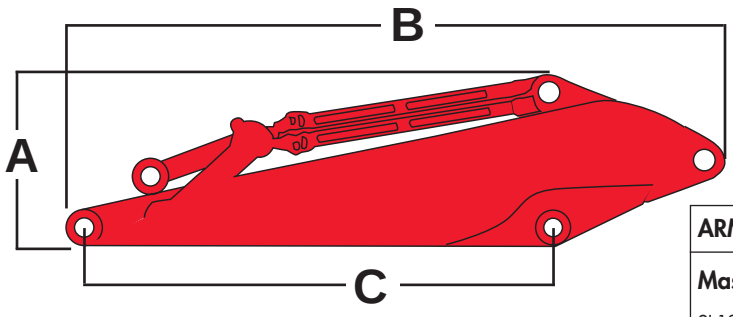
Dimension A: 3' 1" (929 mm)
Dimension B: 6' 2" (1834 mm)
Dimension C: 6' 2" (1834 mm)
Dimension D: 1' 0" (306 mm)

Boom with Arm Cylinder and Piping



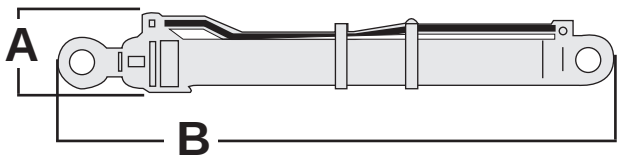
BOOM	A	B	Width	Weight
Standard	6' 6" (1.98 m)	26' 4" (8.03 m)	3' 4" (1.03 m)	14,544 lbs. (6 596 kg)
Mass	8' 2" (2.50 m)	22' 8" (6.91 m)	3' 4" (1.03 m)	11,827 lbs. (5 364 kg)

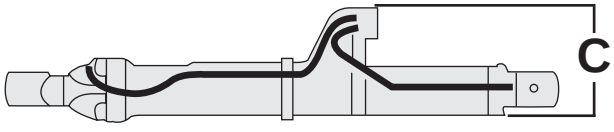
Arm with Bucket Cylinder and Linkage



ARM	A	B	C	Width	Weight
Mass 9' 10" (3.0 m) arm	4' 7" (1.41 m)	14' 0" (4.27 m)	9' 10" (3.0 m)	1' 6" (.457 m)	7,455 lbs. (3 381 kg)
Standard 11' 8" (3.55 m) arm	4' 5" (1.34 m)	16' 2" (4.93 m)	11' 8" (3.55 m)	1' 6" (.457 m)	7,721 lbs. (3 502 kg)
Standard 13' 6" (4.11 m) arm	4' 11" (1.24 m)	18' 1" (5.50 m)	13' 6" (4.112 m)	1' 6" (.457 m)	8,260 lbs. (3 746 kg)
Standard 16' 5" (5.0 m) arm	5' 1" (1.56 m)	20' 11" (6.37 m)	16' 5" (5.0 m)	1' 6" (.457 m)	8,954 lbs. (4 061 kg)

Boom Cylinder





Boom Cylinder: Weight: 1,583 lbs. (718 kg)

Dimension A: 1' 7" (.370 m)
Dimension B: 9' 0" (2.755 m)
Dimension C: 1' 9" (.545 m)

Specifications

Standard Equipment

- Inte-LX® Computer Control System
- Five selectable working modes
- Auto Work Mode
- Attachment Work Mode
- Auto power-up mode
- Free swing control
- Cushioned attachment control
- Auto power swing
- Illuminated LCD service monitor
- Self-diagnostic system
- Control pattern selector valve
- Tier III Isuzu diesel engine with electronic control
- Auto idle start
- Auto engine warm up
- Auto idling system
- One-touch idle
- Low idle up
- Reversible cooling fan
- Fuel cooler
- Low noise/low vibration cab floating on 6 fluid filled mounts
- Sliding/reclining, suspension cloth upholstered seat with adjustable arm rests and lumbar support, retracting seat belt
- 3-position tilting consoles
- 4th position on left console for entering and exiting the cab also serves as control lock-out
- Climate control heater and air conditioner
- Safety glass front windows with automatic lock and intermittent rise-up windshield wiper and washer, large LEXAN® rear/ side windows
- 12 volt accessory outlet for cell phones/ audio extras
- Horn, interior lighting, AM/FM STEREO radio, digital clock, floor mat, cigarette lighter
- Rear view mirror, coat hook, storage compartment
- Gate lock and gate lock lever (control lock-out device)
- Single pedal travel
- Travel alarm
- Common key for cab & house doors, engine hood, tool box, and fuel cap
- Vandalism locks/guarding
- Hand grab rails both sides
- Nephron® hydraulic filtration system
- Boom and arm holding valves
- Integral cylinder cushioning
- EMS (Extended Maintenance System) chrome pins with brass bushings throughout entire attachment except bucket
- Upper and lower undercovers
- Long undercarriage
- Sealed and lubricated track
- Catwalks
- 22,932 lbs. (10 400 kg) counterweight

Options

- Arms
  - 9′ 10″ (3.0 m)
  - 11′ 8″ (3.55 m)
  - 13′ 6″ (4.11 m)
  - 16′ 5″ (5.0 m)
- Track
  - 35.5″ (900 mm) 3-Bar Grouser
  - 25.5″ (650 mm) 2-Bar Grouser
  - 29.5″ (750 mm) 2-Bar Grouser
- Auxiliary Hydraulics
  - Single Acting
  - Multi-Function
  - Thumb
- Hydraulic counterweight removal
- Hose Burst Check Valves
- Couplers (field install)
  - Hendrix Hydraulic Coupler
  - Esco Multi-Pin Grabber
- Thumbs (field install)
  - Esco Universal rigid
  - Esco Hydraulic non-link
  - Esco Hydraulic non-link (for coupler)
  - Esco Hydraulic link
  - Esco Hydraulic link (for coupler)

LBX Company LLC
Lexington, Kentucky www.lbxco.com

Litho in USA 12/05 #LBX2108

KOMATSU®

PC360LC-10

Tier 4 Interim Engine

PC360LC

NET HORSEPOWER
257 HP @ 1950rpm
192 kW @ 1950rpm

OPERATING WEIGHT
78,255–79,930 lb
35496–36255 kg

BUCKET CAPACITY
0.89–2.56 yd³
0.68–1.96 m³

PHOTOS MAY INCLUDE OPTIONAL EQUIPMENT

WALK-AROUND

PC360LC-10

Photos may include optional equipment

NET HORSEPOWER	OPERATING WEIGHT	BUCKET CAPACITY
257 HP @ 1950rpm	**78,255–79,930 lb**	**0.89–2.56 yd³**
192 kW @ 1950rpm	35496–36255 kg	0.68–1.96 m³

KOMATSU CARE™

FAST CYCLE TIMES & LOW FUEL CONSUMPTION

Komatsu's Closed Center Load Sensing (CLSS) hydraulic system provides quick response and smooth operation to maximize productivity.

New engine and hydraulic pump control technology improves operational efficiency and lowers fuel consumption.

A powerful Komatsu SAA6D114E-5 engine provides a net output of 192 kW **257 HP**. This engine is EPA Tier 4 Interim and EU stage 3B emissions certified.

Komatsu Variable Geometry Turbocharger (KVGT) uses a hydraulic actuator to provide optimum air flow under all speed and load conditions.

Komatsu Diesel Particulate Filter (KDPF) captures 90% of particulate matter and provides automatic regeneration that does not interfere with daily operation.

Two boom mode settings provide power mode for maximum digging force or smooth mode for fine grading operations.

Increased drawbar pull provides improved steering and manueverability.

Large LCD color monitor panel:

- 7" high resolution screen
- Provides "Eco-Guidance" for fuel efficient operation
- Enhanced attachment control

Rearview monitoring system (standard)

Enhanced working modes are designed to match engine speed, pump delivery, and system pressure to the application.

Enhanced working environment

- High back, heated, and air suspension operator seat
- Integrated ROPS cab design (ISO 12117-2)
- Cab meets ISO Level 1 Operator Protective Guard (OPG) top guard (ISO 10262)

Equipment Management Monitoring System (EMMS) continuously monitors machine operation and vital systems to identify machine issues and assist with troubleshooting.

Heavy duty boom design with large one piece castings provides increased strength and reliability.

Guardrails (standard) located on the machine upper structure provide a convenient work area in front of the engine.

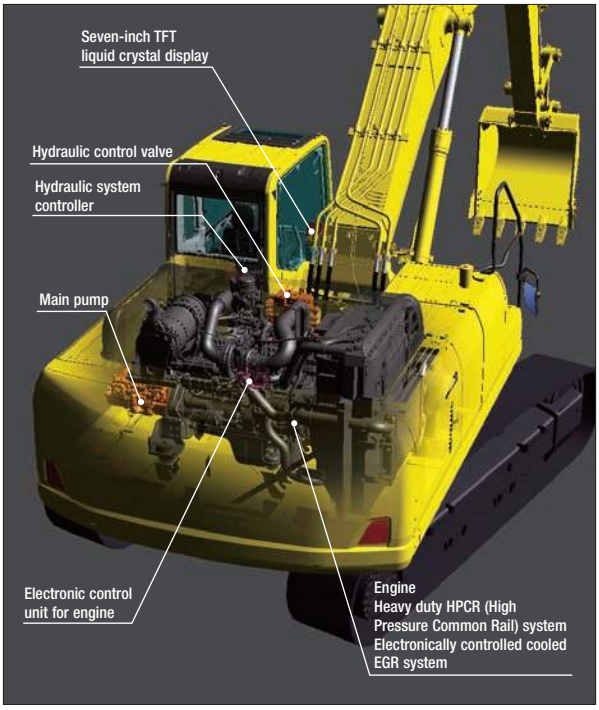
Battery disconnect switch allows a technician to disconnect the power supply before servicing the machine.

Komatsu designed and manufactured components

KOMTRAX®

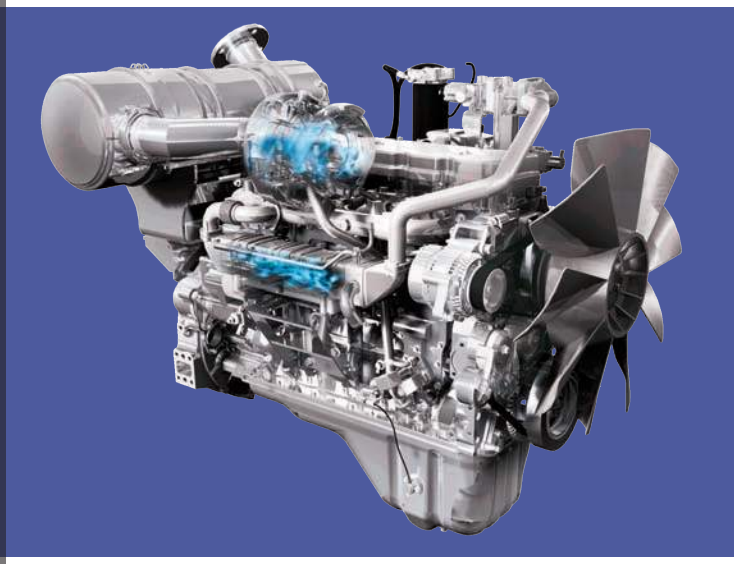
Komtrax equipped machines can send location, SMR and operation maps to a secure website utilizing wireless technology. Machines also relay error codes, cautions, maintenance items, fuel levels, and much more.

PERFORMANCE FEATURES



Advanced Electronic Control System

The engine control system has been upgraded to effectively manage the air flow rate, EGR gas flow rate, fuel injection parameters, and aftertreatment functions. The new control system also provides enhanced diagnostic capabilities.



Environment-Friendly Engine

The Komatsu SAA6D114E-5 engine is EPA Tier 4 Interim and EU Stage 3B emissions certified and provides exceptional performance while reducing fuel consumption. Based on Komatsu proprietary technologies developed over many years, this new diesel engine reduces exhaust gas particulate matter (PM) by more than 90% and nitrogen oxides (NOx) by more than 45% when compared to Tier 3 levels.

Through the in-house development and production of engines, electronics, and hydraulic components, Komatsu has achieved great advancements in technology, providing high levels of performance and efficiency in virtually all applications.

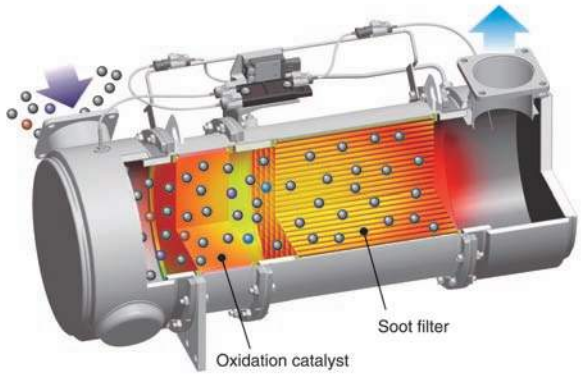
Low Operational Noise

The PC360LC-10 provides low noise operation using a low noise engine and methods that reduce noise at the source such as sound absorbing materials.

Komatsu Diesel Particulate Filter (KDPF)

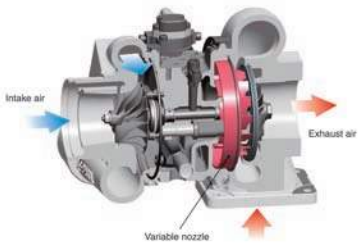
Komatsu has developed a high efficiency diesel particulate filter that captures more than 90% of particulate matter. Both passive and active regeneration are automatically initiated by the engine controller depending on the soot level of the KDPF. A special oxidation catalyst with a fuel injection system is used to oxidize and remove particulate matter while the machine is running so the regeneration process will not interfere with daily operation.

The operator can also initiate regeneration manually or disable regeneration depending on the work environment.



Komatsu Variable Geometry Turbocharger (KVGT)

Using Komatsu proprietary technology, a newly designed variable geometry turbocharger with a hydraulic actuator is used to manage and deliver optimum air flow to the combustion chamber under all speed and load conditions. The robust hydraulic actuator provides power and precision, resulting in cleaner exhaust gas and improved fuel economy while maintaining performance.

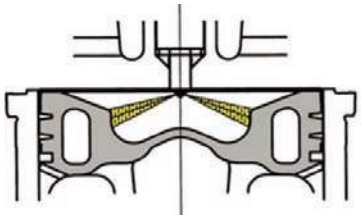


Closed Crankcase Ventilation (CCV)

Crankcase emissions (blow-by gas) are passed through a CCV filter. The CCV filter traps oil mist which is returned back to the crankcase while the gas, which is almost oil mist free, is fed back to the air intake.

Redesigned Combustion Chamber

The combustion chamber located at the top of the engine piston has a new shape designed to improve combustion and further reduce NOx, PM, fuel consumption, and noise levels.



Large Digging Force

The PC360LC-10 is equipped with the Power Max system. This function temporarily increases digging force for 8.5 seconds of operation.

Maximum arm crowd force (ISO):

160 kN (16.3 t) ➡ **171 kN (17.4 t)** **7 % UP**

(with Power Max.)

Maximum bucket digging force (ISO):

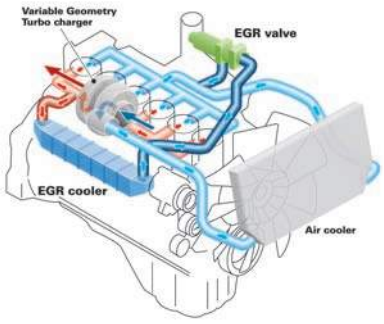
213 kN (21.7 t) ➡ **228 kN (23.2 t)** **7 % UP**

(with Power Max.)

* Measured with Power Max function, 3185 mm arm and ISO rating

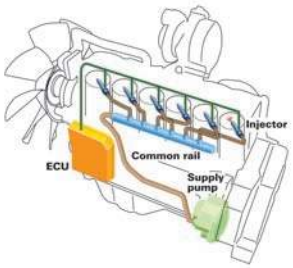
Cooled Exhaust Gas Recirculation (EGR)

Cooled EGR, a technology that has been well proven in Komatsu Tier 3 engines, reduces NOx emissions to meet Tier 4 levels. The hydraulically actuated EGR system has increased capacity and uses larger and more robust components to ensure reliability for demanding work conditions.



Heavy Duty High Pressure Common Rail (HPCR) Fuel Injection System

The heavy duty HPCR system is electronically controlled to deliver a precise quantity of pressurized fuel into the combustion chamber using multiple injection events to achieve complete fuel burn and reduce exhaust gas emissions. Fuel injector reliability has been improved by using ultra-hard wear resistant materials.



PERFORMANCE FEATURES

Efficient Hydraulic System

The PC360LC-10 uses a Closed Center Load Sensing (CLSS) hydraulic system that improves fuel efficiency and provides quick response to the operator's demands.

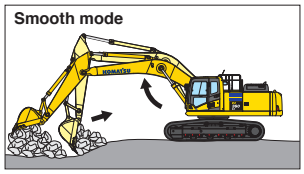
The PC360LC-10 also introduces new technology to enhance the engine and hydraulic pump control. This total control system matches the engine and hydraulics at the most efficient point under any load condition. There have also been improvements in the main valve and hydraulic circuit to reduce hydraulic loss, resulting in higher efficiency and lower fuel consumption.

Reduced Up To 10% Fuel consumption

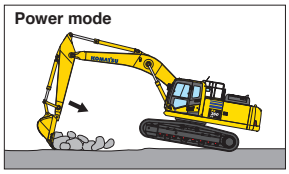
vs PC350LC-8
Based on typical work pattern collected via KOMTRAX

Two Boom Mode Settings

Smooth boom mode provides easy operation for gathering blasted rock or when scraping down. Power boom mode maximizes digging force for more effective excavating.



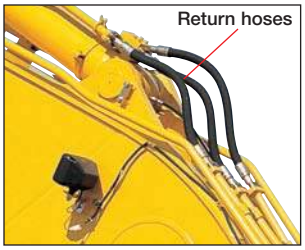
Boom floats upward, reducing lifting of the machine. This improves comfort while gathering blasted rock and scraping down.



Boom pushing force is increased, ditch digging and box digging operation on hard ground are improved.

Smooth Loading Operation

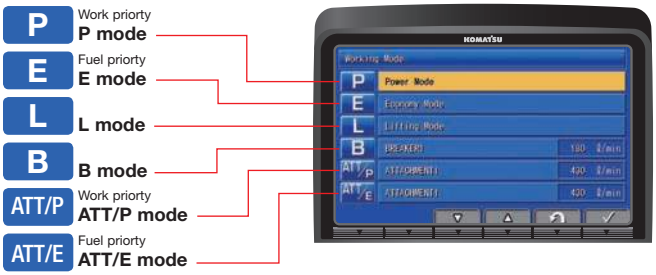
Two return hoses improve hydraulic performance. During the arm out function, a portion of the oil is returned directly back to the tank for smooth operation.



Working Mode Selection

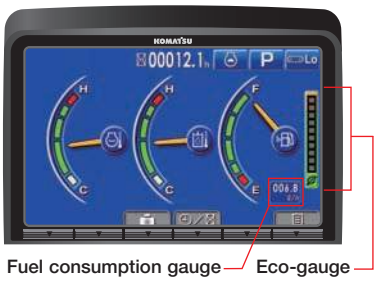
The PC360LC-10 excavator is equipped with six working modes (P, E, L, B, ATT/P and ATT/E). Each mode is designed to match engine speed, pump flow, and system pressure to the application. The PC360LC-10 features a new mode (ATT/E) which allows operators to run attachments while in Economy mode.

Working Mode	Application	Advantage
P	Power mode	•Maximum production/power •Fast cycle times
E	Economy mode	•Good cycle times •Better fuel economy
L	Lifting mode	•Increases hydraulic pressure
B	Breaker mode	•Optimum engine rpm, hydraulic flow
ATT/P	Attachment Power mode	•Optimum engine rpm, hydraulic flow, 2-way •Power mode
ATT/E	Attachment Economy mode	•Optimum engine rpm, hydraulic flow, 2-way •Economy mode



Eco-Gauge Assists with Energy Saving Operations

The Eco-gauge and new fuel consumption gauge are viewed on the right side of the color monitor and assist the operator in maintaining low fuel consumption and environment friendly operation.



RELIABILITY FEATURES

High Rigidity Work Equipment

Booms and arms are constructed with thick plates of high tensile strength steel. In addition, these structures are designed with large cross-sectional areas and large one piece castings in the boom foot, the boom tip, and the arm tip. The result is work equipment that exhibits long term durability and high resistance to bending and torsional stress. An HD boom assembly is offered for increased strength and reliability.

Komatsu Designed Components

All of the major machine components such as the engine, hydraulic pumps, hydraulic motors, and control valves are exclusively designed and manufactured by Komatsu.

High Efficiency Fuel Filter

A new high efficiency dual element fuel filter improves fuel system reliability.

Equipped with a Fuel Pre-filter (With Water Separator)

A fuel pre-filter removes water and contaminants in the fuel to increase reliability. For convenience, the fuel pre-filter has a built in priming pump.

Fuel filter Fuel pre-filter (with water separator)

Durable Frame Structure

The revolving frame, center frame, and undercarriage are designed using the most advanced three dimensional CAD and FEM analysis technology.

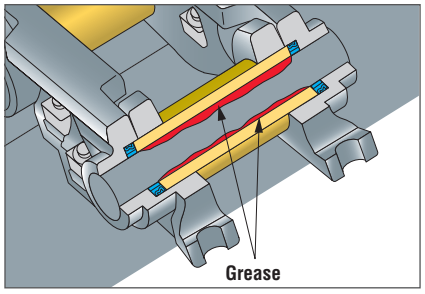
Highly Reliable Electronic Devices

Exclusively designed electronic devices have passed severe testing.

- Controllers
- Connectors
- Sensors
- Heat Resistant Wiring

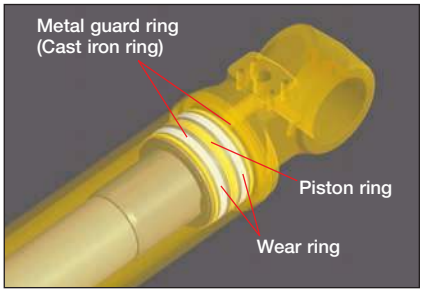
Grease Sealed Track

The PC360LC-10 uses grease sealed tracks for extended undercarriage life.



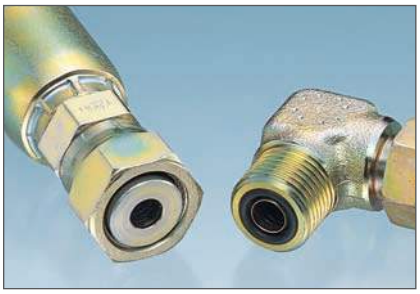
Metal Guard Rings

The PC360LC-10 uses metal guard rings to protect all of the hydraulic cylinders and improve long term reliability.



O-Ring Face Seals

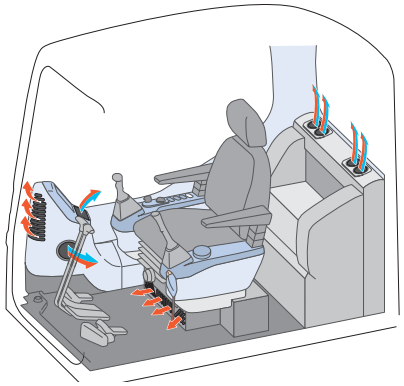
Flat face-to-face O-ring seals are used to securely seal hydraulic hose connections.



WORKING ENVIRONMENT

Automatic Air Conditioner

The automatic air conditioner allows the operator to easily and precisely set the cab atmosphere using the large LCD color monitor panel. The bi-level control function improves air flow and keeps the inside of the cab comfortable throughout the year.



Newly Designed Wide Spacious Cab

The newly designed wide spacious cab features a high back, fully adjustable seat with a reclining backrest. The console and seat have an integrated design so that they move together and provide additional comfort for the operator.

The new higher capacity operator seat has been enhanced to provide more comfort.

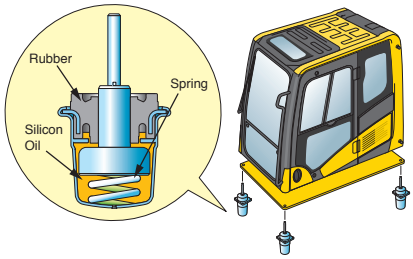
- Heated
- Air Suspension
- Integrated Seat
- Console Mounted Arm Rests

Pressurized Cab

The air conditioner, air filter, and a higher internal cab air pressure minimize the amount of external dust that enters the cab.

Low Vibration with Viscous Cab Mounts

The PC360LC-10 uses viscous mounts for the cab that incorporate a longer stroke and the addition of a spring. The cab damper mounting combined with a high rigidity deck reduces vibration at the operator's seat.

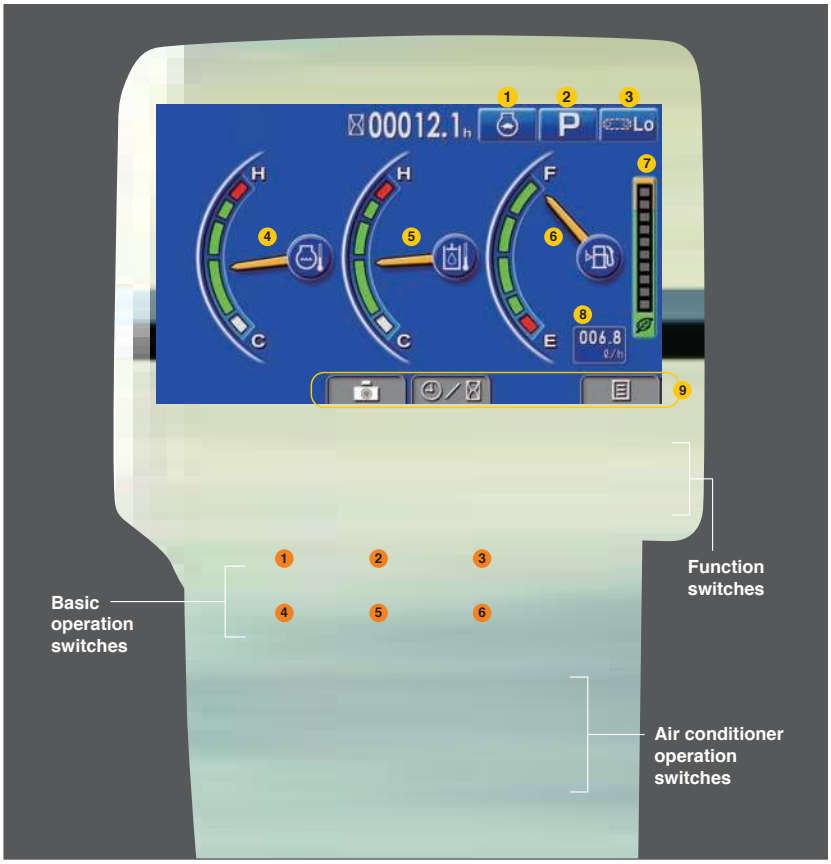


Low Cab Noise

The new cab design is highly rigid and has excellent sound absorption ability. By improving noise source reduction and by using a low noise engine, hydraulic equipment, and air conditioner, this machine is able to generate low noise levels similar to that of a modern automobile.

Auxiliary Input (MP3 Jack)

By connecting an auxiliary device such as an MP3 player to the auxiliary input, the operator can hear the sound through the speakers installed in the cab.



Large High Resolution LCD Monitor Panel

A new large, user-friendly, high resolution LCD color monitor enables accurate and smooth work. Screen visibility and resolution are further improved compared to the previous LCD monitor panel. The switches and function keys are easy to operate and provide simple navigation through the monitor screens.

Data is displayed in 25 languages to support operators around the world.

Indicators

1. Auto-decelerator
2. Working mode
3. Travel speed
4. Engine water temperature gauge
5. Hydraulic oil temperature gauge
6. Fuel gauge
7. Eco-gauge
8. Fuel consumption gauge
9. Function switches menu

Basic operation switches

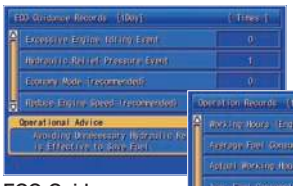
1. Auto-decelerator
2. Working mode selector
3. Traveling selector
4. Buzzer cancel
5. Wiper
6. Windshield washer

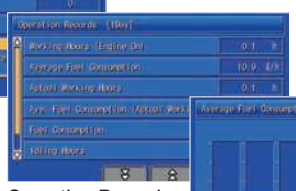
Operational "ECO" Guidance

The monitor panel provides operational advice to the operator to help improve machine efficiency and lower fuel consumption. The operator can access the ECO guidance menu to check the Operation Records, Eco Guidance Records, and Average Fuel Consumption Logs.


ECO Guidance


ECO Guidance menu


ECO Guidance Records


Operation Records


Average Fuel Consumption Logs

Improved Attachment Control

The PC360LC-10 is capable of storing up to ten different attachments in the new monitor panel. The name of each attachment can be changed for better tool management. Hydraulic flow rates can be easily adjusted for one-way and two-way flow attachments.


Attachment Setting Screen


Attachment Flow Screen

MAINTENANCE FEATURES

KDPF Regeneration Notification

The LCD color monitor panel provides the operator with the status of the KDPF regeneration, without interfering with daily operation.

When the machine initiates active regeneration an icon will appear to notify the operator.

Easier Engine Access

Engine maintenance is made easier with a new platform.

Sloped Track Frame

Minimizes dirt and sand accumulation while allowing easy mud removal.

Battery Disconnect Switch

A standard battery disconnect switch allows a technician to disconnect the power supply and lock out before servicing the machine.

Manual Stationary Regeneration

Under most conditions, active regeneration will occur automatically with no effect on machine operation. In case the operator needs to disable active regeneration or initiate a manual stationary regeneration, this can be easily accomplished through the monitor panel.

A soot level indicator is displayed to show how much soot is trapped in the KDPF.

Soot level indicator

Long Life Oils, Filters

High performance filters are used in the hydraulic circuit and engine. By increasing the oil and filter replacement intervals, maintenance costs can be significantly reduced.

Hydraulic oil filter
(Eco-white element)

Engine oil & Engine oil filter	every **500** hours
Hydraulic oil	every **5000** hours
Hydraulic oil filter	every **1000** hours

Extended Work Equipment Greasing Intervals

Special hard material is used for the work equipment bushings to lengthen the greasing intervals. All work equipment bushing lubrication intervals, except the arm tip and bucket linkage, are 500 hours, reducing maintenance costs.

Equipped with Eco-drain Valve

Minimizes ground contamination due to oil leakage when replacing the engine oil.

Photos may include optional equipment

Gas Assisted Engine Hood Damper Cylinders

The engine hood can be easily opened and closed by using the gas assisted engine hood damper cylinders.

Equipment Management Monitoring System (EMMS)

The PC360LC-10 features an advanced diagnostic system that continuously monitors the machine's vital systems. EMMS tracks maintenance items, provides advanced troubleshooting tools, reduces diagnostic times, and displays error codes.

Through continuous monitoring, the EMMS helps identify issues before they become worse and allows the operator to concentrate on the work at hand.

Abnormalities Display with Code

When an abnormality occurs an error code is displayed on the monitor. When an important code is displayed, a caution lamp blinks and warning buzzer sounds to alert the operator to take action.

The monitor also stores a record of abnormalities for more effective troubleshooting.

Advanced Monitoring System

The monitor provides advanced monitoring diagnostics to assist with troubleshooting and reduce costly downtime.

Maintenance Tracking

When the machine approaches or exceeds the oil and filter replacement interval, the monitor panel will display lights to inform the operator.

GENERAL FEATURES

ROPS Cab Design

The PC360LC-10 is equipped with an integrated ROPS cab as standard equipment. The cab also meets OPG Top Guard Level 1 requirements.

Guardrails

Guardrails have been added on the upper structure of the machine. This provides additional convenience during engine service.

Thermal and Fan Guards

Thermal and fan guards are placed around high temperature parts of the engine and fan drive.

Increased Drawbar Pull

Increased drawbar pull provides improved steering and manueverability.

Rear-view Monitoring System (standard)

On the large LCD color monitor the operator can view the image from one camera that will display areas directly behind the machine. An optional 2-camera system is available.

Rear view image on monitor

Seat Belt Caution Indicator

A warning indicator on the monitor appears when the seat belt is not engaged.

Lock Lever

When the lock lever is placed in the lock position, all hydraulic controls (travel, swing, boom, arm, and bucket) are inoperable.

Secondary Engine Shutdown Switch

A new secondary switch has been added to shutdown the engine.

Slip Resistant Plates

Durable slip resistant plates maintain excellent foot traction

KOMTRAX EQUIPMENT WORKING ENVIRONMENT MONITORING

KOMTRAX is Komatsu's remote equipment monitoring and management system. KOMTRAX gathers critical machine and operation information and provides it in a user-friendly format so that you can make well-informed decisions. KOMTRAX gives you more control of your equipment and better control of your business!

KOMTRAX comes standard on all new Komatsu machines with complimentary manufacturer communications services throughout the entire ownership period. It is a powerful tool and makes Komatsu machines an even better purchase!

Fleet Optimization

KOMTRAX tells you how your machines and operators are performing. KOMTRAX provides:

- Fuel consumption data and trends, by unit or fleet
- Machine fuel level
- Machine utilization
- Actual working hours/Machine idle hours
- Attachment usage hours
- Machine travel hours
- Machine load analysis
- Operating mode ratios

Location and Asset Management

KOMTRAX tells you where your machines are and can help prevent unauthorized use. KOMTRAX provides:

- GPS location/Operation maps
- Out-of-area and movement alert with location and time
- Engine, nighttime, and calendar lock

Maintenance Management

KOMTRAX monitors the health of your machines and provides critical information so that you, and your distributor, can take proactive maintenance measures and reduce downtime. KOMTRAX provides:

- Service Meter Reading (SMR)
- Cautions/Abnormality codes
- Maintenance replacement notifications

Easy and Flexible Access to Information

With KOMTRAX, information about your machines is through a convenient, internet-based portal. KOMTRAX provides:

- A user-friendly KOMTRAX website that provides customized access to your machine information
- E-mail and text alerts
- Web dial-up service
- Monthly fleet summary reports

For more information, including terms and conditions of the manufacturer complimentary KOMTRAX communication service, ask your distributor, pick up a KOMTRAX brochure, or go to www.komatsuamerica.com/komtrax.

KOMTRAX®

For construction and compact equipment.

KOMTRAX Plus®

For production and mining class machines.

KOMATSU PARTS & SERVICE SUPPORT

Komatsu is an industry leader in building reliable and technologically advanced machines. It is only fitting that we would provide superior Product Support. Komatsu and its distributors are focused on providing their customers unparalleled Product Support throughout the entire lifecycle of the machine. It's called Komatsu CARE.

Komatsu CARE – Complimentary Scheduled Maintenance

Komatsu remains focused on lowering the customer's ownership costs by engineering machines with increased fuel efficiency and productivity. In addition, one Komatsu CARE program aimed at further reducing your owning and operating costs is Complimentary Scheduled Maintenance. Komatsu machine owners can now rely on their Komatsu Distributor to perform the preventative maintenance on their Komatsu Tier 4 machines.

- Complimentary scheduled maintenance for the earlier of 3 years or 2,000 hours is standard on all Komatsu Tier 4 construction machines and is available at all distributors in the U.S. and Canada.
- Service is performed by factory certified technicians using only Komatsu Genuine parts and fluids
- Significantly lowers your cost of ownership while maintaining high equipment uptime and reliability
- Increases resale value and provides detailed maintenance records

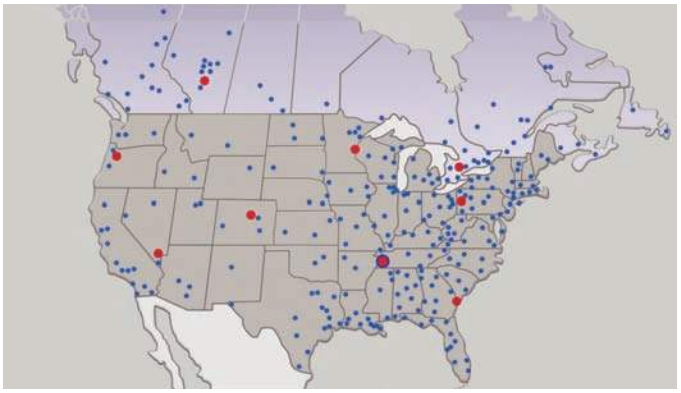
Komatsu CARE – Extended Coverage

Komatsu equipment is built to withstand harsh operating environments, but our Extended Coverage can provide further peace of mind by protecting customers from unplanned expenses and impacts in cash flow. Purchasing Komatsu CARE's Extended Coverage locks-in the cost of covered parts and labor for the extended warranty period and helps to turn these variable expenses into a fixed cost.

- No Stop Loss or Loss Limits imposed, regardless of the coverage type or repair expense
- Any combination of months and hours out to five years and 10,000 engine hours – KOWA kits included
- Coverage premium can be rolled into the machine financing at time of sale or purchased any time before the expiration of the machine's standard warranty
- Coverage is fully transferable and honored by all Komatsu distributors throughout the U.S. and Canada

Komatsu CARE – Total CARE

Total CARE combines the benefits of the Komatsu CARE Scheduled Maintenance and Extended Coverage programs on your Tier 4 machine. This ensures the use of Komatsu genuine parts and fluids during regular maintenance intervals as well as highly skilled and efficient technicians to perform any other warranty repair work that might be necessary to keep your Komatsu equipment running like new.



Komatsu Parts Support

Because downtime can be costly, Komatsu maintains a a strategic distribution network throughout the U.S. and Canada, to ensure superior parts availability and to keep your Komatsu machine up and running.

- Komatsu America has nine Parts Distribution Centers strategically located throughout the U.S. and Canada
- Komatsu America's Parts distribution network is accessible 24/7/365 to fulfill your parts needs
- Komatsu has a distributor network of over 325 locations across the U.S. and Canada
- Online parts ordering available through Komatsu eParts, 24/7/365. (See distributor for details)
- Komatsu offers a a full line of factory Remanufactured products with same-as-new warranties at a significant cost reduction:
    1. Complete Engine Assemblies
    2. Transmissions
    3. Torque Converters
    4. Hydraulic components
    5. Starters, Alternators, turbochargers and circuit boards

Komatsu Oil and Wear Analysis (KOWA)

The KOWA program uses independent laboratories across the United States to determine how your machine is performing based on a small sample of oil or other fluid. Just like a doctor will take a blood test to check on your personal health, KOWA allows you to check how your equipment is performing. Used with PM Clinic and PM Tune Up, KOWA is one of your best tools for proactively maintaining your Komatsu equipment and maximizing it's availability and performance.

KOWA detects fuel dilution and coolant leaks, identifies contaminants, and measures wear-metals. Your distributor will help you interpret this information so you can identify potential problems and head them off before they lead to major repairs.

For more information of all of the manufacturer sponsored programs mentioned in this brochure, including terms and conditions of the individual programs, please speak with your distributor or go to www.komatsuamerica.com

SPECIFICATIONS

ENGINE

Model ..... Komatsu SAA6D114E-5*
Type ..... Water-cooled, 4-cycle, direct injection
Aspiration ..... Turbocharged, aftercooled, cooled EGR
Number of cylinders 6
Bore ..... 114 mm **4.49"**
Stroke ..... 144.5 mm **5.69"**
Piston displacement ..... 8.85 ltr **540 in³**
Horsepower:
SAE J1995 ..... Gross 202 kW **271 HP**
ISO 9249 / SAE J1349 ..... Net 192 kW **257 HP**
Rated rpm 1950
Fan drive method for radiator cooling ..... Mechanical
Governor ..... All-speed control, electronic

*EPA Tier 4 Interim and EU stage 3B emissions certified

HYDRAULICS

Type ..... HydrauMind (Hydraulic Mechanical Intelligence New Design) system, closed-center system with load sensing valves and pressure compensated valves
Number of selectable working modes 6
Main pump:
Type ..... Variable displacement piston type
Pumps for ..... Boom, arm, bucket, swing, and travel circuits
Maximum flow ..... 535 ltr/min **141.3 gal/min**
Supply for control circuit ..... Self-reducing valve
Hydraulc motors:
Travel ..... 2 x axial piston motors with parking brake
Swing ..... 1 x axial piston motor with swing holding brake
Relief valve setting:
Implement circuits ..... 37.3 MPa 380 kg/cm² **5,400 psi**
Travel circuit ..... 37.3 MPa 380 kg/cm² **5,400 psi**
Swing circuit ..... 27.9 MPa 285 kg/cm² **4,050 psi**
Pilot circuit ..... 3.2 MPa 33 kg/cm² **470 psi**
Hydraulic cylinders:
(Number of cylinders – bore x stroke x rod diameter)
Boom 2–140 mm x 1480 mm x 100 mm **5.5" x 58.3" x 3.9"**
Arm .... 1–160 mm x 1825 mm x 110 mm **6.3" x 71.9" x 4.3"**
Bucket ..... for 3.2 m **10'5"** and 4.0 m **13'2"** Arms
1–140 mm x 1285 mm x 100 mm **5.5" x 50.6" x 3.9"**
for 2.54 m **8'4"** Arm
1–150 mm x 1285 mm x 110 mm **5.9" x 50.6" x 4.3"**

DRIVES AND BRAKES

Steering control ..... Two levers with pedals
Drive method ..... Hydrostatic
Maximum drawbar pull ..... 290 kN 29570 kg **65,191 lb**
Gradeability ..... 70%, 35°
Maximum travel speed: High ..... 5.5 km/h **3.4 mph**
(Auto-Shift) Mid ..... 4.5 km/h **2.8 mph**
(Auto-Shift) Low ..... 3.2 km/h **2.0 mph**
Service brake ..... Hydraulic lock
Parking brake ..... Mechanical disc brake

SWING SYSTEM

Drive method ..... Hydrostatic
Swing reduction ..... Planetary gear
Swing circle lubrication ..... Grease-bathed
Service brake ..... Hydraulic lock
Holding brake/Swing lock ..... Mechanical disc brake
Swing speed ..... 9.5 rpm
Swing torque ..... 11386 kg•m **82,313 ft lbs**

UNDERCARRIAGE

Center frame ..... X-frame
Track frame ..... Box-section
Seal of track ..... Sealed track
Track adjuster ..... Hydraulic
Number of shoes (each side) 48
Number of carrier rollers (each side) 2
Number of track rollers (each side) 8

COOLANT & LUBRICANT CAPACITY (REFILLING)

Fuel tank ..... 605 ltr **159.8 U.S. gal**
Coolant ..... 37 ltr **9.7 U.S. gal**
Engine ..... 35 ltr **9.2 U.S. gal**
Final drive, each side ..... 9.0 ltr **2.4 U.S. gal**
Swing drive ..... 13.7 ltr **3.6 U.S. gal**
Hydraulic tank ..... 188 ltr **49.7 U.S. gal**
Hydraulic system ..... 365 ltr **96.4 U.S. gal**

OPERATING WEIGHT (APPROXIMATE)

Operating weight includes 6500 mm **21'3"** one-piece HD boom, 3185 mm **10'5"** arm, SAE heaped 1.96 m³ **2.56 yd³** bucket, rated capacity of lubricants, coolant, full fuel tank, operator, and standard equipment.

Triple-Grouser Shoes	Operating Weight	Ground Pressure
700 mm	35,496 kg	0.59 kg/cm²
28"	**78,255 lb**	**8.31 psi**
800 mm	35876 kg	0.52 kg/cm²
31.5"	**79,093 lb**	**7.40 psi**
850 mm	36255 kg	0.50 kg/cm²
33.5"	**79,930 lb**	**7.00 psi**

Component Weights

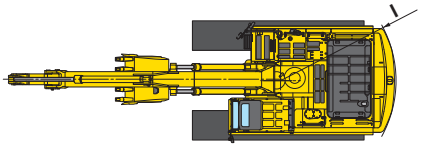
Arm including bucket cylinder and linkage
3185 mm **10'5"** arm assembly ..... 1761 kg **3,882 lb**
4020 mm **13'2"** arm assembly ..... 1988 kg **4,383 lb**
One piece HD boom including arm cylinder
6500 mm **21'3"** boom assembly ..... 3135 kg **6,912 lb**
Boom cylinders x 2 ..... 259 kg **571 lb**
Counterweight ..... 7090 kg **15,631 lb**
1.96 m³ **2.56 yd³** bucket - 54" width ..... 1554 kg **3,425 lb**

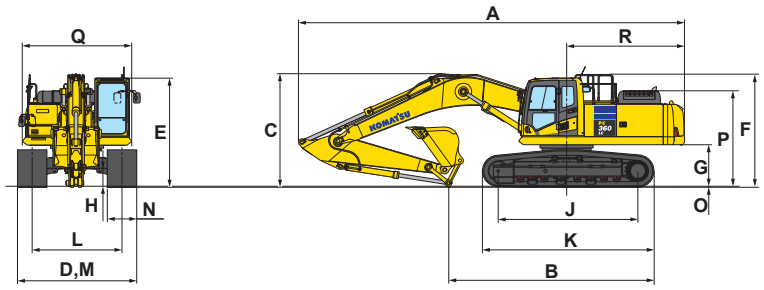
SPECIFICATIONS

DIMENSIONS

	Arm Length	2540 mm	8'4"	3185 mm	10'5"	4020 mm	13'2"
A	Overall length	11180 mm	36'8"	11145 mm	36'7"	11170 mm	36'8"
B	Length on ground (transport)	6760 mm	22'2"	5935 mm	19'6"	5475 mm	18'0"
C	Overall height (to top of boom)*	3410 mm	11'2"	3285 mm	10'9"	3760 mm	12'4"
D	Overall width	3440 mm	11'3"				
E	Overall height (to top of cab)*	3160 mm	10'4"				
F	Overall height (to top of handrail)*	3255 mm	10'8"				
G	Ground clearance, counterweight	1185 mm	3'11"				
H	Ground clearance, minimum	498 mm	1'8"				
I	Tail swing radius	3445 mm	11'4"				
J	Track length on ground	4030 mm	13'3"				
K	Track length	4955 mm	16'3"				
L	Track gauge	2590 mm	8'6"				
M	Width of crawler	3440 mm	11'3"				
N	Shoe width	850 mm	33.5"				
O	Grouser height	36 mm	1.4"				
P	Machine cab height	2750 mm	9'0"				
Q	Machine cab width **	3145 mm	10'4"				
R	Distance, swing center to rear end	3405 mm	11'2"				

* : Including grouser height ** : Including handrail



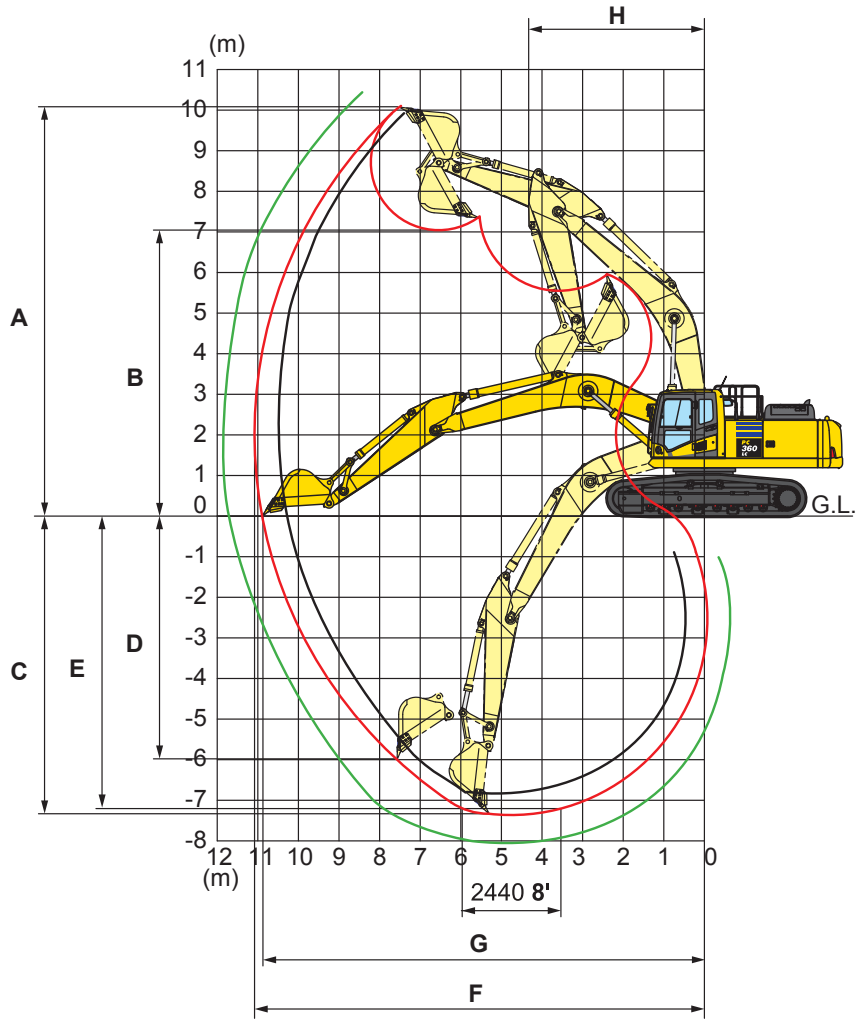


BACKHOE BUCKET, ARM AND BOOM COMBINATION

Bucket Type	Bucket Capacity		Bucket Width		Bucket Weight		6.5 m (21'3") Boom 2.6 m (8'4")	6.5 m (21'3") Boom 3.2 m (10'5")	6.5 m (21'3") Boom 4.0 m (13'2")
Komatsu TL	0.93 m³	1.21 yd³	762 mm	30"	1097 kg	2418 lb	V	V	V
	1.18 m³	1.54 yd³	914 mm	36"	1198 kg	2641 lb	V	V	V
	1.44 m³	1.88 yd³	1067 mm	42"	1325 kg	2921 lb	V	V	V
	1.70 m³	2.22 yd³	1219 mm	48"	1426 kg	3144 lb	V	V	W
	1.96 m³	2.56 yd³	1372 mm	54"	1554 kg	3425 lb	W	W	X
Komatsu HP	0.68 m³	0.89 yd³	610 mm	24"	1022 kg	2254 lb	V	V	V
	0.93 m³	1.21 yd³	762 mm	30"	1178 kg	2598 lb	V	V	V
	1.18 m³	1.54 yd³	914 mm	36"	1358 kg	2993 lb	V	V	V
	1.44 m³	1.88 yd³	1067 mm	42"	1439 kg	3173 lb	V	V	V
	1.70 m³	2.22 yd³	1219 mm	48"	1555 kg	3429 lb	V	V	X
	1.96 m³	2.56 yd³	1372 mm	54"	1701 kg	3750 lb	W	X	Y
Komatsu HPS	0.68 m³	0.89 yd³	610 mm	24"	1112 kg	2451 lb	V	V	V
	0.93 m³	1.21 yd³	762 mm	30"	1294 kg	2853 lb	V	V	V
	1.18 m³	1.54 yd³	914 mm	36"	1437 kg	3167 lb	V	V	V
	1.44 m³	1.88 yd³	1067 mm	42"	1607 kg	3543 lb	V	V	W
	1.70 m³	2.22 yd³	1219 mm	48"	1750 kg	3857 lb	V	W	X
	1.96 m³	2.56 yd³	1372 mm	54"	1921 kg	4236 lb	W	X	Y
Komatsu HPX	0.68 m³	0.89 yd³	610 mm	24"	1239 kg	2731 lb	V	V	V
	0.93 m³	1.21 yd³	762 mm	30"	1421 kg	3133 lb	V	V	V
	1.18 m³	1.54 yd³	914 mm	36"	1564 kg	3447 lb	V	V	V
	1.44 m³	1.88 yd³	1067 mm	42"	1734 kg	3823 lb	V	V	W
	1.70 m³	2.22 yd³	1219 mm	48"	1877 kg	4137 lb	V	W	X
	1.96 m³	2.56 yd³	1372 mm	54"	2048 kg	4516 lb	X	X	Y

V - Used with material weights up to 3,500 lb/yd³
W - Used with material weights up to 3,000 lb/yd³
X - Used with material weights up to 2,500 lb/yd³
Y - Used with material weights up to 2,000 lb/yd³
Z - Not useable

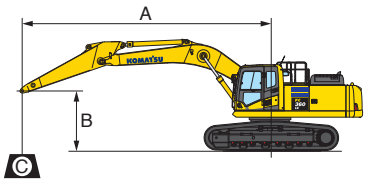
WORKING RANGE



	Arm Length	2540 mm	8'4"	3185 mm	10'5"	4020 mm	13'2"
A	Max. digging height	9965 mm	**32'8"**	10210 mm	**33'6"**	10550 mm	**34'7"**
B	Max. dumping height	6895 mm	**22'7"**	7110 mm	**23'4"**	7490 mm	**24'7"**
C	Max. digging depth	6705 mm	**22'0"**	7380 mm	**24'3"**	8180 mm	**26'10"**
D	Max. vertical wall digging depth	5880 mm	**19'4"**	6480 mm	**21'3"**	7280 mm	**23'11"**
E	Max. digging depth for 8' level bottom	6520 mm	**21'5"**	7180 mm	**23'7"**	8045 mm	**26'5"**
F	Max. digging reach	10550 mm	**34'7"**	11100 mm	**36'5"**	11900 mm	**39'1"**
G	Max. digging reach at ground level	10355 mm	**34'0"**	10920 mm	**35'10"**	11730 mm	**38'6"**
H	Min. swing radius	4400 mm	**14'5"**	4310 mm	**14'2"**	4320 mm	**14'2"**
SAE rating	Bucket digging force at power max.	229 kN 23300 kg / **51,370 lb**		200 kN 20400 kg / **44,970 lb**		200 kN 20400 kg / **44,970 lb**	
	Arm crowd force at power max.	193 kN 19700 kg / **43,430 lb**		165 kN 16800 kg / **37,040 lb**		139 kN 14200 kg / **31,310 lb**	
ISO rating	Bucket digging force at power max.	259 kN 26400 kg / **58,200 lb**		228 kN 23200 kg / **51,150 lb**		227 kN 23100 kg / **50,930 lb**	
	Arm crowd force at power max.	201 kN 20500 kg / **45,190 lb**		171 kN 17400 kg / **38,360 lb**		144 kN 14700 kg / **32,410 lb**	

LIFT CAPACITIES

LIFTING CAPACITY WITH LIFTING MODE



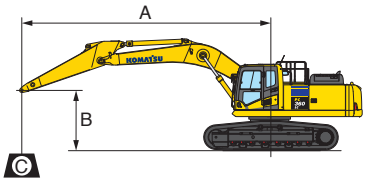
A: Reach from swing center
B: Bucket hook height
C: Lifting capacity
Cf: Rating over front
Cs: Rating over side
⊗ : Rating at maximum reach

Conditions :
- 6500 mm **21' 3"** one-piece boom
- Bucket: None
- Lifting mode: On

Arm: 3185 mm **10'5"** **Shoes:** 800 mm **31.5"** **Unit:** kg **lb**

A / B	3.0 m **10'**		4.6 m **15'**		6.1 m **20'**		7.6 m **25'**		9.1 m **30'**		⊗ MAX	
	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs
7.6 m **25'**											* 7250 * **15900**	* 7250 * **15900**
6.1 m **20 '**							* 8890 * **19600**	7600 **16700**			* 7050 * **15500**	6440 **14200**
4.6 m **15'**					* 10740 * **23600**	10260 **22600**	* 9370 * **20600**	7430 **16300**			* 7100 * **15600**	5750 **12600**
3.0 m **10'**			* 16210 * **35700**	14630 **32200**	* 12090 * **26600**	9790 **21500**	* 10030 * **22100**	7200 **15800**	8240 **18100**	5570 **12200**	* 7380 * **16200**	5390 **11800**
1.5 m **5'**			* 18180 * **40000**	13820 **30400**	* 13220 * **29100**	9370 **20600**	10510 **23100**	6980 **15300**	8120 **17900**	5460 **12000**	7820 **17200**	5260 **11600**
0 m **0'**			* 18550 * **40900**	13460 **29600**	* 13740 * **30200**	9100 **20000**	10330 **22700**	6810 **15000**	8040 **17700**	5390 **11800**	7990 **17600**	5360 **11800**
-1.5 m **-5'**	* 13710 * **30200**	* 13710 * **30200**	* 17720 * **39000**	13380 **29500**	* 13480 * **29700**	8980 **19800**	10240 **22500**	6730 **14800**			8570 **18800**	5710 **12600**
-3.0 m **-10'**	* 20540 * **45200**	* 20540 * **45200**	* 15850 * **34900**	13490 **29700**	* 12300 * **27100**	9010 **19800**	* 9440 * **20800**	6780 **14900**			* 8870 * **19500**	6490 **14300**
-4.6 m **-15'**	* 15670 * **34500**	* 15670 * **34500**	* 12560 * **27600**	* 12560 * **27600**	* 9590 * **21100**	9210 **20300**					* 8350 * **18400**	8250 **18100**

*Load is limited by hydraulic capacity rather than tipping. Ratings are based on ISO standard No. 10567. Rated loads do not exceed 87% of hydraulic lift capacity or 75% of tipping load.



A: Reach from swing center
B: Bucket hook height
C: Lifting capacity
Cf: Rating over front
Cs: Rating over side
⊗ : Rating at maximum reach

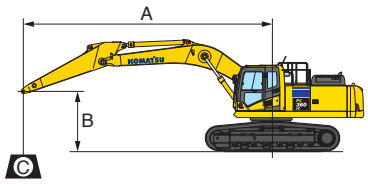
Conditions :
- 6500 mm **21' 3"** one-piece boom
- Bucket: None
- Lifting mode: On

Arm: 3185 mm **10'5"** **Shoes:** 850 mm **33.5"** **Unit:** kg **lb**

A / B	3.0 m **10'**		4.6 m **15'**		6.1 m **20'**		7.6 m **25'**		9.1 m **30'**		⊗ MAX	
	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs
7.6 m **25'**											* 7250 * **15900**	* 7250 * **15900**
6.1 m **20 '**							* 8890 * **19600**	7630 **16800**			* 7050 * **15500**	6470 **14200**
4.6 m **15'**					* 10740 * **23600**	10300 **22700**	* 9370 * **20600**	7460 **16400**			* 7100 * **15600**	5770 **12700**
3.0 m **10'**			* 16210 * **35700**	14690 **32300**	* 12090 * **26600**	9830 **21600**	* 10030 * **22100**	7230 **15900**	8280 **18200**	5590 **12300**	* 7380 * **16200**	5410 **11900**
1.5 m **5'**			* 18180 * **40000**	13880 **30600**	* 13220 * **29100**	9410 **20700**	10560 **23200**	7010 **15400**	8160 **18000**	5490 **12100**	7850 **17300**	5290 **11600**
0 m **0'**			* 18550 * **40900**	13520 **29800**	* 13740 * **30200**	9140 **20100**	10380 **22800**	6840 **15000**	8080 **17800**	5410 **11900**	8030 **17700**	5380 **11800**
-1.5 m **-5'**	* 13710 * **30200**	* 13710 * **30200**	* 17720 * **39000**	13450 **29600**	* 13480 * **29700**	9020 **19900**	10290 **22700**	6770 **14900**			8610 **18900**	5740 **12600**
-3.0 m **-10'**	* 20540 * **45200**	* 20540 * **45200**	* 15850 * **34900**	13550 **29800**	* 12300 * **27100**	9050 **19900**	* 9440 * **20800**	6810 **15000**			* 8870 * **19500**	6520 **14300**
-4.6 m **-15'**	* 15670 * **34500**	* 15670 * **34500**	* 12560 * **27600**	* 12560 * **27600**	* 9590 * **21100**	9260 **20400**					* 8350 * **18400**	8290 **18200**

*Load is limited by hydraulic capacity rather than tipping. Ratings are based on ISO standard No. 10567. Rated loads do not exceed 87% of hydraulic lift capacity or 75% of tipping load.

LIFTING CAPACITY WITH LIFTING MODE



A: Reach from swing center
B: Bucket hook height
C: Lifting capacity
Cf: Rating over front
Cs: Rating over side
⊗: Rating at maximum reach

Conditions :
- 6500 mm **21' 3"** one-piece boom
- Bucket: None
- Lifting mode: On

Arm: 4020 mm **13'2"** **Shoes:** 800 mm **31.5"** **Unit:** kg **lb**

A / B	3.0 m 10' Cf	3.0 m 10' Cs	4.6 m 15' Cf	4.6 m 15' Cs	6.1 m 20' Cf	6.1 m 20' Cs	7.6 m 25' Cf	7.6 m 25' Cs	9.1 m 30' Cf	9.1 m 30' Cs	⊗ MAX Cf	⊗ MAX Cs
7.6 m							* 7750	* 7750			* 5610	* 5610
25'							* **17000**	* **17000**			* **12300**	* **12300**
6.1 m							* 7950	7680	* 6550	5740	* 5460	* 5460
20 '							* **17500**	**16900**	* **14400**	**12600**	* **12000**	* **12000**
4.6 m							* 8520	7470	* 7870	5660	* 5470	4980
15'							* **18700**	**16400**	* **17300**	**12400**	* **12000**	**10900**
3.0 m			* 14340	* 14340	* 11020	9870	* 9280	7190	8210	5520	* 5640	4700
10'			* **31600**	* **31600**	* **24300**	**21700**	* **20400**	**15800**	**18100**	**12100**	* **12400**	**10300**
1.5 m			* 16890	13900	* 12370	9350	* 10010	6900	8040	5370	* 5950	4590
5'			* **37200**	**30600**	* **27200**	**20600**	* **22000**	**15200**	**17700**	**11800**	* **13100**	**10100**
0 m	* 8320	* 8320	* 18090	13270	* 13230	8960	10200	6670	7910	5240	* 6480	4640
0'	* **18300**	* **18300**	* **39800**	**29200**	* **29100**	**19700**	**22500**	**14700**	**17400**	**11500**	* **14200**	**10200**
-1.5 m	* 12420	12420	* 17980	13030	* 13400	8740	10050	6530	7840	5180	* 7330	4890
-5'	* **27300**	**27300**	* **39600**	**28700**	* **29500**	**19200**	**22100**	**14400**	**17200**	**11400**	* **16100**	**10700**
-3.0 m	* 17840	* 17840	* 16780	13030	* 12760	8700	* 10020	6510			* 8040	5410
-10'	* **39300**	* **39300**	* **37000**	**28700**	* **28100**	**19100**	* **22000**	**14300**			* **17700**	**11900**
-4.6 m	* 19190	* 19190	* 14360	13230	* 11040	8810	* 8190	6640			* 7850	6480
-15'	* **42300**	* **42300**	* **31600**	**29100**	* **24300**	**19400**	* **18000**	**14600**			* **17300**	**14300**

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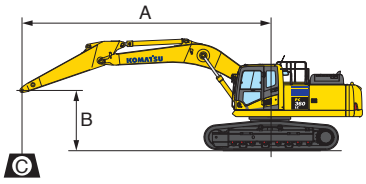

A: Reach from swing center
B: Bucket hook height
C: Lifting capacity
Cf: Rating over front
Cs: Rating over side
⊗: Rating at maximum reach

Conditions :
- 6500 mm **21' 3"** one-piece boom
- Bucket: None
- Lifting mode: On

Arm: 4020 mm **13'2"** **Shoes:** 850 mm **33.5"** **Unit:** kg **lb**

A / B	3.0 m 10' Cf	3.0 m 10' Cs	4.6 m 15' Cf	4.6 m 15' Cs	6.1 m 20' Cf	6.1 m 20' Cs	7.6 m 25' Cf	7.6 m 25' Cs	9.1 m 30' Cf	9.1 m 30' Cs	⊗ MAX Cf	⊗ MAX Cs
7.6 m							* 7750	* 7750			* 5610	* 5610
25'							* **17000**	* **17000**			* **12300**	* **12300**
6.1 m							* 7950	7720	* 6550	5770	* 5460	* 5460
20 '							* **17500**	**17000**	* **14400**	**12700**	* **12000**	* **12000**
4.6 m							* 8520	7500	* 7870	5690	* 5470	5010
15'							* **18700**	**16500**	* **17300**	**12500**	* **12000**	**11000**
3.0 m			* 14340	* 14340	* 11020	9910	* 9280	7220	* 8220	5550	* 5640	4720
10'			* **31600**	* **31600**	* **24300**	**21800**	* **20400**	**15900**	* **18100**	**12200**	* **12400**	**10400**
1.5 m			* 16890	13960	* 12370	9390	* 10010	6940	8080	5400	* 5950	4610
5'			* **37200**	**30700**	* **27200**	**20700**	* **22000**	**15300**	**17800**	**11900**	* **13100**	**10100**
0 m	* 8320	* 8320	* 18090	13330	* 13230	9000	10250	6710	7950	5270	* 6480	4660
0'	* **18300**	* **18300**	* **39800**	**29400**	* **29100**	**19800**	**22600**	**14700**	**17500**	**11600**	* **14200**	**10200**
-1.5 m	* 12420	* 12420	* 17980	13090	* 13400	8790	10100	6570	7880	5200	* 7330	4910
-5'	* **27300**	* **27300**	* **39600**	**28800**	* **29500**	**19300**	**22200**	**14400**	**17300**	**11400**	* **16100**	**10800**
-3.0 m	* 17840	* 17840	* 16780	13090	* 12760	8740	10020	6540			* 8040	5440
-10'	* **39300**	* **39300**	* **37000**	**28800**	* **28100**	**19200**	**22000**	**14400**			* **17700**	**11900**
-4.6 m	* 19190	* 19190	* 14360	13290	* 11040	8860	8190	6670			* 7850	6520
-15'	* **42300**	* **42300**	* **31600**	**29300**	* **24300**	**19500**	**18000**	**14700**			* **17300**	**14300**

*Load is limited by hydraulic capacity rather than tipping. Ratings are based on ISO standard No. 10567. Rated loads do not exceed 87% of hydraulic lift capacity or 75% of tipping load.

STANDARD EQUIPMENT

- Alternator, 60 Ampere, 24 V
- AM/FM radio
- Automatic engine warm-up system
- Automatic air conditioner/heater
- Auxiliary input (3.5mm jack)
- Batteries, large capacity
- Battery disconnect switch
- Boom and arm holding valves
- Converter, (2) x 12 V
- Counterweight, 7090 kg **15,631 lb**
- Dry type air cleaner, double element
- Electric horn
- EMMS monitoring system
- Engine, Komatsu SAA6D114E-5
- Engine overheat prevention system
- Extended work equipment grease interval
- Fan guard structure
- Fuel system pre-cleaner 10 micron
- High back air suspension seat, with heat
- Hydraulic track adjusters
- KOMTRAX® Level 4.0
- Large LCD color monitor, high resolution
- Lock lever
- Mirrors, (LH and RH)
- Operator Protective Top Guard (OPG), Level 1
- Pattern change valve (ISO to BH control)
- Power maximizing system
- PPC hydraulic control system
- Pump/engine room partition cover
- Radiator and oil cooler dustproof net
- Rear reflectors
- Rearview monitoring system (1 camera)
- Revolving frame deck guard
- Revolving frame undercovers
- ROPS cab
- Seat belt, retractable, 76 mm **3"**
- Seat belt indicator
- Secondary engine shutoff switch
- Service valve
- Shoes, triple grouser, 800 mm **31.5"**
- Skylight
- Slip resistant foot plates
- Starter motor, 11.0 kW/24 V x 1
- Suction fan
- Thermal and fan guards
- Track frame undercover
- Travel alarm
- Working lights, 2 (boom and RH front)
- Working mode selection system

OPTIONAL EQUIPMENT

- (1) additional rearview camera
- Arms
  - 2540 mm **8'4"** arm assembly
  - 3185 mm **10'5"** arm assembly
  - 3185 mm **10'5"** arm assembly with piping
  - 4020 mm **13'2"** arm assembly
  - 4020 mm **13'2"** arm assembly with piping
- Booms
  - 6500 mm **21'3"** HD boom assembly
  - 6500 mm **21'3"** HD boom assembly with piping
- Cab guards
  - Full front guard, OPG Level 1
  - Full front guard, OPG Level 2
  - Bolt-on top guard, OPG Level 2
  - Lower front window guard
- High pressure in-line hydraulic filters
- Hydraulic control unit, 1 actuator
- Rain visor
- Revolving frame undercovers, heavy duty
- Shoes, triple grouser, 700 mm **28"**
- Shoes, triple grouser, 850 mm **33.5"**
- Sun visor
- Straight travel pedal
- Track roller guards, full length
- Working light, front, one additional

ATTACHMENT OPTIONS

- Cab air pre-cleaner
- Grade control systems
- Hydraulic couplers
- Hydraulic kits, field installed
- Super long fronts
- PSM thumbs
- Rockland thumbs
- Vandalism protection guards with storage box

For a complete list of available attachments, please contact your local Komatsu distributor.

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GROUT PLANT

JM30 Impianto di Miscelazione – Batching plant – Mischannlage - Mezclador

Informazioni tecniche generali

L'impianto JM30 allestito su container standard da 20 piedi è un impianto completamente automatizzato - benché possa essere utilizzato anche in funzione manuale - per produzione miscele cementizie con metodo della somma di pesata. Nelle varie versioni può gestire fino a 4 liquidi e 3 componenti in polvere. La miscela cementizia viene poi trasferita ad altre unità a seconda dei tipi di lavorazioni geotecniche previste. Il container è dotato, a seconda delle richieste del cliente, sia del certificato di utilizzazione CSC temporanea (validità 1 anno), sia di certificazione CSC definitiva (validità 5 anni rinnovabile) che permette di spedire l'impianto come un container standard.

General technical information

The mixing unit JM30, installed in 20' standard container, is an automated batching plant that can be used also in manual operation mode. The mixing unit has been conceived mainly to produce a cement mixture with weight summation, step by step. The different versions of this batching plant can control up to 4 liquids and 3 dust components. The cement mixture is then transferred to other units, according to the foreseen geotechnical activities. According to customer's requirements the container can have the temporary CSC certification (1 year validity) or the full CSC certification (5 years validity, renewable) that permits the shipping of the plant as standard container.

Informaciones técnicas generales

El mezclador JM30 montado en un contenedor estándar de 20' es un equipo completamente automatizado – si bien puede ser utilizado incluso en funcionamiento manual - para la producción de mezclas de cemento utilizando el método de la suma de pesadas. En los diferentes modelos el mezclador puede trabajar con hasta 4 líquidos y 3 componentes en polvo. La mezcla de cemento se transfiere después a otras unidades de acuerdo con los tipos de trabajos geotécnicos programados. El contenedor está provisto, en función de lo solicitado por el cliente, tanto del certificado CSC de utilización temporal (con validez de 1 año) como del certificado CSC definitivo (con validez de 5 años renovable) que permite expedir el equipo como un contenedor estándar.

Allgemeine technische informationen

Die Mischanlage JM30 ist in einem 20-Fuß- Standardcontainer untergebracht. Es handelt sich um eine komplett automatisierte Anlage, wobei auch die manuelle Bedienung für die Herstellung von Zementmischungen mit Hilfe eines Wägesystems möglich ist. Die verschiedenen Versionen können bis 4 Flüssigkeiten und 3 Pulverkomponenten steuern. Die Zementmischung wird dann zu anderen Geräte je nach Bedarf für verschiedene geotechnischen Verfahren befördert. Nach Anforderungen des Kunden kann der Container über ein befristetes CSC-Zertifikat (Gültigkeit: 1 Jahr) oder über ein unbefristetes CSC-Zertifikat (Gültigkeit: 5 Jahre, verlängerbar) verfügen, das den Transport der Anlage als Standardcontainer ermöglicht.

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JM30 Specifiche tecniche - Technical specifications - Datos técnicos - Technische Daten

Produzione max (miscela binaria rapp.1/1) Max mixing capacity (double mixture ratio 1/1)	m³ / h	30
Potenza totale assorbita (min-max) Total electric power (min-max)	kW	33-55
Sistema gestione e controllo automatico e manuale Automatic and manual mixing control		
SISTEMA DI PESATURA / WEIGHTING SYSTEM		
Centralina elettronica programmabile per max 10 componenti e max 20 miscele memorizzate completa di flash card Programmable electronic control panel for max. 10 components and 20 memorized formulas with flash card		
Gestione componenti a somma di pesata con celle di carico Components management with step by step summation weighting system by load cells		
Capacità max sistema di pesatura Maximum weighting system capacity	kg	3000
Gestione tempi di mescolazione intermedi e finali per ciascuna ricetta Control of intermediate and final mixing times for each formula		
Memorizzazione pesi componenti per singolo impasto o per produzione giornaliera, per ciascun tipo di miscela memorizzata Weight components record store for each mixture or for daily production		
MISCELATORE / MIXER		
Capacità teorica - Load capacity	l	1450
Pompa miscelazione - Mixing pump	l/min	1800
Motore elettrico pompa - Pump electric motor	kW	15
VASCA DI STOCCAGGIO CON AGITATORE / STORAGE TANK WITH AGITATOR		
Capacità teorica - Load capacity	m^3	3,3
Motore elettrico - Electric motor	kW	4
SERBATOIO ACQUA / WATER TANK		
Capacità max - Max capacity	l	1.300
COMPRESSORE / AIR COMPRESSOR		
Portata - Delivery	l/min	310
Serbatoio aria (n. 2) - Air tank (n. 2)	l	100
Motore elettrico - Electric motor	kW	2,2
ALIMENTAZIONE POMPA FIUME / EXTERNAL WATER PUMP POWER SUPPLY		
Nr. 1 presa di predisposizione - no. 1 special-purpose socket	kW	5,5
CORREDO / EQUIPMENT		
Nr. 1 Pompe acqua - Nr. 1 Water pump	kW	3
OPTIONAL		
Nr. 2 Pompe sovralimentazione - Nr. 2 Booster pumps		
Stampante - Printer		
Nr. 3 Coclee (Ø max 219 mm con motore 5,5 kW)- No. 3 conveyors (Ø max 219 mm with 5,5 kW motor)		
Nr. 2 Pulsantiere di comando e servizio acqua / cemento per pompe di sovralimentazione/ No. 2 control remote push-button boards and water - cement selector for booster pumps.		
DIMENSIONI E PESO / DIMENSIONS AND WEIGHT		
Larghezza - Width	mm	2.450
Lunghezza - Length	mm	6.060
Altezza - Height	mm	2.590
Peso - Weight	Kg	6.000

Max. Produktion (Zweikomponentenmischung Verhältnis 1/1) Producción máxima (mezcla doble proporción 1/1)	m³ / h	30
Gesamtleistungsaufnahme (min-max) Potencia total consumida (min-max)	kW	33-55
Automatisches und manuelles Steuer– und Kontrollesystem Sistema de gestión y control automático y manual		
DAS WÄGESYSTEM / SISTEMA DE PESADA		
Mit 10 Komponenten und 20 gespeicherten Formeln programmierbare elektronische Steuerung ausgestattet mit Flash Card Centralita programable con 10 componentes y 20 tipos de mezcla, con ficha referenciada		
Steuerung der Komponenten mit zusätzlicher Wägung durch Ladezellen Gestión de los componentes mediante la suma de pesadas por medio de celdas de carga.		
Maximale Kapazität des Wägesystems Capacidad máxima del sistema de pesada	kg	3000
Überwachung der Zwischen- und Endmischungszeiten für jede Formel Gestión de los tiempos de mezclamiento intermedio y final por cada mezcla memorizada		
Speicherung der Gewichte der Komponenten für jede Mischung oder für die tägliche Produktion. Memorización de los pesos de los componentes por cada mezcla o cada producción diaria.		
MISCHER / MEZCLADOR		
Behälterkapazität - Capacidad teórica	l	1450
Mischpumpe - Bomba de mezclado	l/min	1800
Elektromotor Mischer - Motor eléctrico de la bomba	kW	15
VORRÄTSBEHÄLTER MIT RÜRHRWERK / TANQUE DE ALMACENAMIENTO CON AGITADOR		
Behälterkapazität - Capacidad teórica	m^3	3,3
Elektromotor Rührwerk - Motor eléctrico	kW	4
WASSERTANK / TANQUE DE AGUA		
Behälterkapazität - Capacidad teórica	l	1.300
DRUCKLUFTVERSORGUNG / COMPRESOR DE AIRE		
Förderleistung - Caudal	l/min	310
Druckluftbehälter - Tanque de aire	l	100
Elektromotor - Motor eléctrico	kW	2,2
STROMVERSORGUNG WASSERPUMPE / ALIMENTACIÓN BOMBA DE CAUDAL CONSTANTE		
Nr. 1 eigens dafür vorgesehene Steckdose - Nr. 1 toma de predisposición	kW	5,5
ZUBEHÖR / ACCESORIOS		
Nr. 1 Wasserpumpe - Nr. 1 Bomba de agua	kW	3
OPTIONEN / OPCIONALES		
Nr. 2 Druckerhöhungspumpen - Nr. 2 Bombas de sobrealimentación		
Drucker - Impresora		
Nr. 3 Feststoffschnecken (max. Ø 219 mm mit 5,5 kW Motor) - Nr. 3 transp. Sinfín (Ø máx. 219 mm con motor 5,5 kW)		
Nr. 2 Bedientafeln mit Einstellmöglichkeit "Wasser/Zement" für Druckerhöhungspumpe Nr. 2 Cuadro de mandos y servicio agua/cemento para bombas de sobrealimentación		
ABMESSUNGEN UND GEWICHTE / DIMENSIONES Y PESOS		
Breite - Anchura	mm	2.450
Länge - Longitud	mm	6.060
Höhe - Altura	mm	2.590
Gewicht - Peso	Kg	6.000

TRIMBLE GCS900 GRADE CONTROL SYSTEM

TRIMBLE GCS900 GRADE CONTROL SYSTEMS

Trimble

TAKE THE GUESSWORK OUT OF EARTHWORKS. ONLY FROM THE LEADER. TRIMBLE.

The Connected Construction Site

An interesting thing happens when you connect your office, people and machines. Productivity jumps. Rework disappears. Cash flow improves. Profits soar. Only one company has the technology and experience to connect your site. The leader ... Trimble.

Performing earthworks smarter, faster and more profitably is critical to success in today's highly competitive construction industry. You need to perform all parts of the job faster and more accurately than ever before. From estimating to completion, the Trimble GCS900 Grade Control System is truly revolutionizing the total construction process.

FULLY UPGRADEABLE

The Trimble GCS900 Grade Control System is flexible, fully upgradeable, and can be installed on machines from any manufacturer. Using the industry-standard Controller Area Network (CAN), you can easily add sensors and upgraded software to meet specific machine and application requirements. The upgradeable wiring harness is designed for plug-and-play flexibility, allowing you to upgrade the system from a single sensor control to a multi-functional GNSS 3D solution.

EQUIP YOUR ENTIRE FLEET

Whether you are using excavators for mass excavation, dozers or scrapers for bulk earthworks, motor graders for finished grading, or compactors for material density - the Trimble GCS900 family has a solution to meet your needs. Our flexible and upgradeable GCS family can be installed on a wide range of machines—dozers, compactors, motor graders, scrapers, excavators and more. You can use a common platform across your entire fleet, while at the same time choose the best option for the machine and the application.

TRIMBLE READY™ MACHINES

Trimble has worked with leading machine manufacturers to reduce the effort required to install 2D and 3D grade control components. Today, Trimble Ready machines come pre-plumbed with wiring and brackets for common system configurations. This simplifies installation and lets you easily move the system from one machine to another.

Trimble READY™

Trimble offers you the most complete line of Grade Control Systems. From laser or sonic-based through to 3D, these rugged systems are easy to use, fully upgradeable and flexible enough to meet a wide range of application and jobsite requirements. Quite simply, there is no better solution to meet the challenges of today's schedules and budgets.

Gain a competitive edge and streamline your operations with the next generation of grade control systems from Trimble, the company that invented grade control.

FASTER JOB CYCLES

Spend more time being productive and less time waiting for surveying and grade checking. With site plan and grade information displayed in the cab, operators can finish jobs faster with minimal supervision—even in dusty, windy or dark conditions.

FLEXIBLE

Perform a wide range of work, from mass excavation through to finished grade, on both large and small jobs. Trimble machine control products are designed to adapt to a variety of machines and jobsite applications.

LOWER OPERATING COSTS

Getting the job done right the first time eliminates rework. With design information at your fingertips, the need for stakes, hubs or stringlines is reduced. Through improved productivity, personnel and machine costs are also reduced. Plus, accurate grading helps you carefully control material usage.

RETURN ON INVESTMENT

The Trimble GCS900 Grade Control System quickly pays for itself—often on the first project! Faster completion, less rework, less staking, less checking, lower costs, and improved material yields all add up to a stronger bottomline for your company.

2D GRADE CONTROL SYSTEMS FOR UNCONVENTIONAL PRODUCTIVITY.

Trimble productivity-enhancing grade control systems are extremely scalable and can be configured for just about any machine or job. 2D systems begin with a single laser receiver system, and progress through combinations of laser receivers, sonic tracers, angle sensors

TRIMBLE GCS900 GRADE CONTROL SYSTEM 2D SINGLE OR DUAL ELEVATION CONTROL

The Trimble 2D single elevation control option uses a single LR410 Laser Receiver to control the lift of the machine blade. Ideal for smaller construction projects, it is an excellent first investment in grade control.

The Trimble 2D dual elevation control option controls both the lift and tilt of the blade by connecting two LR410 laser receivers or one LR410 and an AS400 Slope Sensor to the system. By controlling both functions, the system allows the operator to control the material more accurately, especially across larger jobsites.

Easy to set up and use, the system is designed primarily for use on dozers; however, they can be used on other machines.

APPLICATIONS:

- Finished Grading
- Housing Pads
- Commercial Building Sites
- Sports Fields

TRIMBLE GCS900 GRADE CONTROL SYSTEM 2D CROSS SLOPE CONTROL

The Trimble 2D cross-slope option is designed to be used on motor graders for fine grading work. The system uses two AS400 angle sensors and an RS400 rotation sensor to calculate the cross-slope of the blade. The system allows the operator to select which side of the blade is controlled and switch sides on the return pass. Providing a high degree of flexibility, the AS400 has 100% slope capability making the system ideal for a wide range of applications, including cutting road slopes, ditches and embankments.

APPLICATIONS:

- Road Maintenance
- Road Construction
- Sports Fields
- Embankments
- Road Ditches

and rotation sensors. All Trimble grade control components have been designed for ease of use, quick setup and extreme durability to ensure the highest uptime and longest life possible in jobsite conditions.

TRIMBLE GCS900 GRADE CONTROL SYSTEM 2D CROSS SLOPE AND ELEVATION CONTROL

The Trimble 2D cross-slope and elevation control option is designed to be used on motor graders for fine grading work. The option uses two AS400 angle sensors and an RS400 rotation sensor to calculate the cross-slope of either side of the blade; in addition it uses an LR410 laser receiver or an ST400 sonic tracer to provide elevation control. Using the ST400, the system allows for stringline, previous pass, or curb and gutter tracing. Using one or two LR410 laser receivers, the system can be used for fine grading of plane surfaces. The 2D cross-slope and elevation system is ideal for applications with tight tolerances and finished grade work.

APPLICATIONS:

- Small-to-Large Housing and Building Site Pads
- Road Construction
- Highway Construction and Maintenance
- Runways

TRIMBLE GCS900 GRADE CONTROL SYSTEM 2D FOR EXCAVATORS

The Trimble 2D for excavators is a depth and slope control system for excavation, trenching, grading and profile work. The system uses an AS450 Angle Sensor, AS460 Dual Axis Sensor and LC450 Laser Catcher to measure the relationship between the body, boom, stick and bucket to determine where the cutting edge is and should be, directing the operator to the desired depth and slope. Designed for both tracked and wheeled hydraulic excavators, it is ideal for earthmoving contractors looking for an economical and easy-to-use grade control system to improve their excavation productivity and profitability.

APPLICATIONS:

- Mass excavation
- Grading and sub-surfaces
- Trenching, ditch and finished slope work
- Dredging
- Waterways

FLEXIBLE SENSOR OPTIONS FOR ALL YOUR JOBSITE REQUIREMENTS.

TRIMBLE CB450 CONTROL BOX

Designed for use in harsh construction environments, the Trimble CB450 Control Box gives the operator a full-color graphical display for easy viewing and guidance to grade. Priced for maximum return on investment, the CB450 offers the following key features:

- 4.3" full color LCD display with adjustable backlight controls
- Audible tones for real-time grade guidance or warnings and alerts
- Four LED lightbars to provide grade guidance at a glance

TRIMBLE CB460 CONTROL BOX

The Trimble CB460 Control Box is the premium display for the Trimble CCS900 Compaction Control System and all machine types in the Trimble GCS900 Grade Control System portfolio.

The CB460 offers the same key features as the CB450, plus:

- A large, easy-to-read 7" full color LCD display,
- Support for external lightbars,
- Faster data transfer via Ethernet connection with the on-machine radio

TRIMBLE GCS900 2D MACHINE CONTROL SYSTEMS

Configuration	Target Machines	Description	Key Components
ELEVATION CONTROL	Dozers Graders	Single control system that uses a laser receiver to control the lift of the machine blade for flat work and finished grading	Laser Laser receiver Control box
DUAL ELEVATION OR ELEVATION AND BLADE SLOPE CONTROL	Dozers Graders	Dual control system that controls both the lift and tilt of the machine blade for flat, slopework and finished grading	Laser 2 Laser receivers -or- Laser receiver Slope sensor Control box
CROSS-SLOPE CONTROL	Dozers Graders	Cross-slope control system to be used on motor graders for fine grading work for road maintenance, ditches and slope work	2 angle sensors Rotation sensor Control box
CROSS-SLOPE AND ELEVATION CONTROL	Graders	Highly flexible cross-slope and elevation control system for fine grading work with tight tolerances for road maintenance and construction, embankments, flat and slope work	2 angle sensors Rotation sensor Laser receiver -or- Sonic tracer Control box
DEPTH, SLOPE, AND ELEVATION	Excavators	Highly flexible system for excavation, trenching, grading and profile work	Angle sensors Laser catcher Control box
GRADE AND SLOPE CONTROL	Asphalt Pavers	Grade and slope control system for paving of base material and asphalt	Sonic tracer Sonic Averaging Beam Contact sensor Slope sensor Control box

TRIMBLE SONIC TRACERS

The Trimble ST400 Sonic Tracer mounted to the blade of the motor grader uses a physical reference such as curb and gutter, stringline, existing or previous pass as an elevation reference. Using a sonic tracer, the system can match curves and accurately get to grade in fewer passes. This reduces operator fatigue, saves material and reduces the need for grade checkers.

TRIMBLE LASER RECEIVERS

The Trimble LR410 Laser Receiver is fully linear and has smooth corrections the full length of the receiver. It is mounted to a mast on the blade and connected to the machine hydraulics to control lift to an accuracy of 3-6 millimeters (0.01 to 0.02 feet). In auto mode, the system uses the LR410 grade information to automatically move the blade up or down to the on grade position.

MORE PRODUCTIVITY FOR EVERY MACHINE AND EVERY JOB.

From bulk earthmoving through grading to finished material compaction, Trimble has a 3D grade control solution for your machine type and application requirements. Just select the appropriate 3D sensor option – GNSS with or without laser augmentation,

MASS EXCAVATION

The Trimble GCS900 Grade Control System is ideal for bulk earthmoving applications such as land reclamation, dam and reservoir construction, new infrastructure projects, landfills and waste deposits.

With GCS900, design information and live cut/fill indications are displayed in the cab, allowing excavation to be done in a safer, stakeless environment - even at night.

The system provides real-time information for monitoring avoidance zones and simultaneously collects as-built data as the machine cuts to grade. With these capabilities, operators can keep tighter control over safety issues and see precisely where dirt is being moved on site.

Used on a dozer, excavator or scraper, GCS900 allows even lesser skilled operators to work faster, more consistently, and with less rework.

IDEAL CONFIGURATIONS:

- Trimble GCS900 with dual GNSS on an excavator
- Trimble GCS900 with single GNSS on a dozer
- Trimble GCS900 with dual GNSS on a dozer
- Trimble GCS900 with single GNSS on a scraper

GRADING

Using the Trimble GCS900 Grade Control System on a dozer or grader allows the operator to get to grade faster than ever, even with complex designs.

The on-board Trimble control box determines the position of each tip of the blade and compares it to the design elevation to compute cut or fill to grade. The cut/fill data is used to drive the valves for automatic blade control or is passed to in-cab lightbars that provide visual guidance to the operator.

Ideal for residential site prep and subdivision construction, single house pads or the entire neighborhood – project infrastructure can be constructed better and faster using GCS900.

IDEAL CONFIGURATIONS:

- Trimble GCS900 with dual GNSS on a dozer
- Trimble GCS900 with dual GNSS on a grader
- Trimble GCS900 with the Universal Total Station on a dozer
- Trimble GCS900 with the Universal Total Station on a grader

or the Trimble SPS730 and SPS930 Universal Total Stations---then use the same components across your entire fleet, through the life cycle of the project.

COMPACTION

Once grade is achieved, most earthworks projects require that sub-surface material is compacted to a target density for increased durability, stability, and load-bearing capacity.

The Trimble CCS900 Compaction Control System enables the contractor to accurately control the compaction process, while reducing unnecessary passes that result in over compaction.

The system achieves compaction density faster, more accurately, with less rework. The early detection of sub-surface material anomalies means that soft spots and hidden obstructions can be excavated and re-graded or compacted prior to the more costly phases of the construction process such as paving.

Compaction results are recorded and stored for analysis and generation of documentation deliverables at the end of the project.

IDEAL CONFIGURATIONS:

- Trimble CCS900 with the dual GNSS on a compactor
- Trimble CCS900 with the Universal Total Station on a compactor

FINISHED GRADE

The Trimble GCS900 Grade Control System allows the operator to achieve finished grade to millimeter accuracy with fewer passes.

Trimble GCS900 is quite simply the market leading solution for fine-grading application. Used on motor graders and dozers, it is ideal for new road construction and widening, airport construction, fine grading for concrete pours and slab placement, and commercial site preparation requiring the highest accuracy.

By maintaining tight tolerances every time, GCS900 results in higher quality work delivered to the client. Finished grade materials can be placed more accurately and in a shorter time period, keeping the material costs to a minimum and realizing better profits.

With more confidence in the cost of operations and quicker completion to finished grade, the equipment owner is able to lower bids and gain more business in every phase of the project.

IDEAL CONFIGURATIONS:

- Trimble GCS900 with the Universal Total Station on a grader
- Trimble GCS900 with dual GNSS and laser augmentation on a grader
- Trimble GCS900 with the Universal Total Station on a dozer
- Trimble GCS900 with dual GNSS and laser augmentation on a dozer

TRIMBLE GCS900 GRADE CONTROL SYSTEMS. 3D AUTOMATIC CONTROL FOR ULTIMATE PRODUCTIVITY.

TRIMBLE. THE LEADER IN GRADE CONTROL SYSTEMS.

Trimble is focused on driving your productivity at all stages of the construction process. Here are just of few of the reasons why Trimble should be your productivity partner:

BETTER SATELLITE POSITIONING UPTIME
Trimble GNSS systems are guided by the most powerful RTK engine on earth. Stronger signal acquisition from more satellites means you can run faster, longer and without interruptions and downtime.

CONSTRUCTION TOUGH
Trimble components have been designed to withstand the beating they can take on big machines and rough sites. More robust components mean less downtime and more productivity.

FINISH FASTER
Trimble positioning systems let you run at higher speeds without losing accuracy thanks to faster data transfer, fully linear receivers and faster valve response.

TWO ANTENNAS ARE BETTER THAN ONE
Trimble's patented dual GNSS antenna system gives you exact course and blade position... not the estimated position.

SMART PRODUCTIVITY
Only Trimble offers the Smart GNSS Antenna ... an integrated GNSS receiver and antenna designed to provide maximum portability, flexibility and accuracy.

MAKE EVERY OPERATOR GREAT
The displays in Trimble Grade Control Systems are intuitive and simple to use ... maximizing operator productivity.

EASIER AND FASTER SET UP
Trimble systems set up easier and faster than zone systems, which means you can get the work started sooner.

FUTURE READY, NOW
Trimble 3D grade control systems support modernized GNSS signals and will track the GPS L5 signal when it becomes available. You won't have to invest in new systems to take advantage of the latest signal capabilities.

Trimble Total Stations

Trimble SPS Series Universal Total Stations can be used for even greater accuracy when performing fine or finished grading, with blade guidance to 2-5 millimeters (0.007 to 0.016 feet).

Integrated Laser Receivers

When improved vertical accuracy is needed, the GNSS systems can be enhanced with integrated laser receivers that can provide blade control to 3-6 millimeters (0.01 to 0.02 feet).

TRIMBLE GCS900 3D GRADE CONTROL SYSTEMS

Configuration	Target Machines	Description	Key Components
SINGLE GNSS	Dozers Graders Scrapers Excavators	Cost effective, full 3D control system that measures the position and slope of the blade and compares that to design data for rough grading and mass excavation on complex design surfaces	Angle and rotation sensors Single Smart GNSS Antenna Control box Rugged on-machine radio
DUAL GNSS	Dozers Graders Scrapers Excavators	Full 3D control system that measures the exact position, cross slope and heading of the blade, bucket, drum for rough grading and mass excavation on steep slopes and complex design surfaces	Dual Smart GNSS Antennas Control box Rugged on-machine radio
SINGLE OR DUAL GNSS	Soil Compactors	Continuous compaction control and documentation for Soil Compaction with real-time material compaction mapping and detection	Single or dual Smart GNSS Antenna(s) Compaction sensor Control box Rugged on-machine radio
SINGLE OR DUAL GNSS WITH LASER AUGMENTATION	Dozers Graders	Single and dual GNSS systems enhanced with laser augmentation to improve vertical accuracy for high accuracy guidance to complex design surfaces such as super-elevation grading for rough through finished grade work	Single or dual Smart GNSS Antenna(s) Laser receiver Control box Rugged on-machine radio
UNIVERSAL TOTAL STATION	Dozers Graders Excavators Soil Compactors	Total station based system for applications requiring extreme accuracy for lift and layer control, material monitoring, or for jobs where GNSS is not the ideal solution because of overhead obstructions	Single on-machine active target Control box Rugged on-machine radio Universal Total Station
UNIVERSAL TOTAL STATION	Asphalt Pavers Milling Machines Trimmers	Total station based systems for high accuracy paving, milling and trimming without stringlines	Single on-machine active target Control box Rugged on-machine radio Universal Total Station

Trimble GNSS Smart Antennas

The Trimble MS992 is "smart" because it contains an integrated GPS+GNSS receiver, antenna, and isolation system all in a single, durable housing. It uses the advanced Trimble RTK engine for faster initialization times when satellite lock is lost and enhanced performance near obstructions.

The MS972 offers a cost-effective alternative for contractors who need a highly accurate GNSS receiver at a lower price point. It is optimized for cab or machine body mount only.